

PROGRAM STATEMENT

Czech Academy of Sciences at a crossroads:

SCIENCE AND RESEARCH
FOR COMPETITIVENESS & SUSTAINABILITY
OF SOCIETAL DEVELOPMENT



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PROLOG

The Czech Academy of Sciences (CAS) is an internationally respected non-university research institution. In the 1990s, it underwent a successful transformation process. It has convincingly defended its existence and has made a major contribution to strengthening the respect of scientific research in our country and in international competition. It has also made a significant contribution to shaping university education after the regaining of freedom in our country. The CAS is primarily an institution of basic scientific research, but its main activity goes hand in hand with its educational role, in particular the training of young researchers, doctoral students in cooperation with universities, and postdoctoral fellows, as well as the education of the general public through various forms of popularisation of science and research. All this makes the CAS a unique research, educational and cultural institution with significant potential for the application of the results of scientific research. There can therefore be no doubt about its fundamental social importance.

Yet, 30 years after its creation, CAS finds itself at a crossroads. It should decide whether it will stay on its current trajectory and continue to maintain the *status quo* or take the path of dynamic management with appropriate differentiation of individual institutes according to the success of their research activities. I believe that this is precisely the way in which the Academy would significantly strengthen the respect of other subjects of our research area, the respect of universities, departmental or private research institutions, industry and wider social practice, both at home and in the world.

Therefore, the CAS must not ignore the question of the effectiveness of research activities, it must be able to critically evaluate them and seek ways to optimise them, for example by grouping smaller institutes with a related thematic focus into research centres.

EXTERNAL ASSUMPTIONS

Between 2025 and 2029, CAS will be exposed to, among other things, two significant circumstances:

- (1) Preparation of a new Act on Research, Development, Innovation and Knowledge Transfer (instead of the pending amendment to Act No. 130/2002 Coll.): the Academy should not waste the opportunity to convince the legislator and the executive of the need for non-university research in a wide range of fields from mathematics to natural and technical sciences to social sciences and humanities, and hence of the uniqueness of the Academy. The latter should be seen as a complementary and synergistic partner for HEIs in the domestic research space, not as an unwanted competitor and rival. In the framework of this new legislative norm, CAS should occupy the niche of basic scientific research of an oriented type. The priorities of such basic science-oriented research should be primarily topics from the CAS portfolio assessed as excellent or international/global developments in a given field.
- (2) The end of the 2021-2027 programming period for the European Structural and Investment Funds and the financial support from the EU operational programmes - for Czech science and research this will mean a drop of up to CZK 9 billion in subsidies and additional costs associated with ensuring the mandatory sustainability of large infrastructures from its own funds. All this in a difficult macroeconomic situation of our country with a large structural deficit of public budgets. BILLIO

CZECH ACADEMY OF SCIENCES

& NON-UNIVERSITY RESEARCH

Non-university - basic scientific research of the oriented type - represents mainly large and financially demanding projects, usually with a longer implementation period (5-7 years) and with considerable demands on financial resources. Non-university research in instrumental and investment-intensive fields cannot sustain itself in the long term with relatively short grant funds, which should be directed more towards university or non-university research of less financially demanding nature. The budget chapter of the Academy of Sciences is not sufficient, it mainly provides for the salaries of staff and partly for the overheads of institutes, the consequence is an unfavourable ratio between institutional and earmarked funding: earmarked funds from domestic sources (e.g. CSF (GA ČR) /TA CR etc.) are insufficient! Resources from EU Operational Programmes (e.g. P JAC) are the solution only until 2027; after that we will be left to competitions in direct European/international competition, while the CAS is relatively best placed to break the persistent low success rate in ERC and other highly competitive competitions. Another option would be consortia with industry and other private bodies on the basis of contractual relationships for collaborative translational applied research.

SUGGESTIONS FOR SOLUTIONS:

Finally, to find the courage to use the results of the international evaluation of the research teams of the institutes to differentiate their annual budgets much more significantly; not to be afraid to dampen long-term unsuccessful research programmes and to create consolidation tools to increase the efficiency of the institutes.

At the same time, to simplify and streamline the international evaluation of research teams. Its current form is unnecessarily time-consuming and costly and distracts research teams from their own research work for long periods of time. It must always be extremely frustrating for international panellists from many scientific disciplines to find that the results of their work cannot be properly applied by the CAS in the qualitative differentiation of the institutes being evaluated.

In the context of the forthcoming new law on research, development, innovation and knowledge transfer, it is essential that CAS asserts the necessary expert capacity already at the stage of drafting the new legislative norm, not only in the comment procedure. This is the only way to achieve the necessary position for CAS in direct negotiations with legislators and the executive with regard to the future setting of financially demanding research. In this process, CAS must achieve credibility for its complementary position with all partners in our research area. The result must be a synergy of the unique research capacity of the CAS (personnel/infrastructure) with the capacities and interests of HEIs and other science and research 'stakeholders'.

& RELATIONSHIP WITH UNIVERSITIES

The Academy of Sciences has always tried to have fair relations with universities (HEIs), but this has not always been successful and the fault has usually been on both sides. The most damaging aspect of this relationship has been the Academy's need to remind itself that it is better than HEIs in scientific production, not least because it is internationally ranked. The HEIs, on the other hand, liked to provoke by claiming that research in CAS was less effective. Such 'haggling' tended to be an expression of a lack of understanding of the problem: HEIs and CAS are by the very nature of their main research activities (university vs. non-university) largely incommensurable and compared in a mostly misleading way. Indeed, any mutual confrontation ends at scientometrics, and that is not enough! The search for symbiotic relationships in order to achieve the necessary synergies in the direction of both types of institutions must become a categorical imperative, otherwise our science and research, but also university education, will continue to pay the price. Nothing must prevent CAS and HEIs from clarifying these roles and finding the necessary *modus vivendi*. One of the common denominators at the interface between HEIs and CAS is shared doctoral programmes (Ph.D). It is their sharing that usually guarantees their high quality! Shared large research infrastructures acquired with EU funds or with our taxpayers' money under the ESFRI roadmap are another common denominator highlighting the synergistic potential and complementarity between CAS and HEIs.

SUGGESTIONS FOR SOLUTIONS:

The high quality of doctoral programmes in the national system of postgraduate education must be an ongoing task of fundamental importance and CAS must play an essential role in it. A common way to achieve this goal could be 'doctoral schools' in relevant disciplines as joint educational/training units of faculties of HEIs and institutes of the Academy of Sciences; to begin to accomplish this task without further delay, first informally and at the same time to make the necessary efforts to enact them now in the process of the protracted amendment of Act No. 111/1998 Coll. on HEIs, or during the preparation of a new law, which is already under serious consideration. Doctoral schools at the interface between university and non-university institutions are a proven tool for quality doctoral education in developed countries around the world. There is no reason why we should not follow this proven path here too. The CAS should motivate its institutes to enter into doctoral schools with universities abroad and create the necessary conditions for this within its foreign agenda.

& HYPERTROPHIED SCIENCE AND RESEARCH INFRASTRUCTURE IN THE CZECH REPUBLIC

The situation in the number of research institutions in our country changed significantly at the end of the 1st EU programming period in 2015, when the map of research infrastructures, including those with the participation of the CAS institutes, was supplemented by 48 more against the originally planned 11 (built under the OP VaVpl call). This is a demonstration of the 'big eyes' that science and research, as well as university education, suffer from in our country. In addition to the above-mentioned infrastructures, other financially extremely demanding projects of so-called large research infrastructures within the ESFRI roadmap, paid for from the public budget of the Czech Republic, have been approved. These are circumstances that have unintentionally put CAS in a new situation in the competitive environment of our research area. It has necessarily burdened its budgetary possibilities with the obligation to ensure their sustainability even after the end of the 'national sustainability programmes'. The Academy should evaluate the benefits and effectiveness of these large research infrastructures, otherwise there is a risk of wasting money not only in maintaining their current operation, but also in their subsequent required renewal. It would be unfair to regard these new costs, which are in a way forced on the CAS, as a waste of financial resources. Many of them are doing very well and presenting new opportunities for both domestic and international cooperation. The CAS must do all it can to capitalise on this increased competition in the domestic scientific research arena to its advantage. In a number of new research infrastructures located in the regions of our country, or in the immediate vicinity of Prague, the CAS institutes are established partners and thus have the opportunity to use tradition and existing experience to strengthen their respected position in the thematic area of scientific research with indicators for basic/oriented, translational or applied research. The draft budget for research, development and innovation for 2025 gives hope that the government's stated priority for science and research will continue to allow us to maintain our somewhat hypertrophied research base in the near term and despite the difficult economic situation of the present. However, it does not address the fundamental problem of its long-term sustainability.

SUGGESTIONS FOR SOLUTIONS:

The CAS must make efforts to find a suitable model and conditions for sustainable financing of science and research for the medium and long term, as well as to formulate long-term challenges for science and research in the Czech Republic. The CAS should take it upon itself to be a driving force in this process, together with universities, but also with representatives of industry and other relevant partners. Otherwise, we will continue to be exposed to annual uncertainty and reliance on the negotiating position of the responsible minister when bidding for the science and research budget.

& CUTTING-EDGE INSTRUMENTATION AND TECHNOLOGY

Particularly, but not only, experimental workplaces are concerned with the call for systematic care for the maintenance of *state-of-the-art* instrumentation/technology at the CAS. The CAS must create the financial and administrative conditions for its institutes to be able to take advantage of all the opportunities offered by the grant and operational programmes of the current programming period and the future instruments of the European Commission in the new programming period, as well as other resources from abroad or the private sector. It should not be the case that centres of excellence, but without participation in an infrastructure centre consortium, start to decline due to ageing equipment.

SUGGESTIONS FOR SOLUTIONS:

Ensure the technical and technological level of the CAS institutes in accordance with the requirements for 'good practice', in addition to top researchers and 'good practice' in personnel policy, another condition necessary for prosperous development. In any case, the Academy must do everything possible to maintain the trend of an increasing budget and to ensure that the material and technological provision of the institutes is maintained at the necessary level and has a positive impact on the staffing situation of the institutes.

& PERSONNEL POLICY

In the field of personnel, the CAS and its individual institutes have done a tremendous amount of work; democratic principles within the Academy of Sciences generally ensure the necessary quality of scientific personnel and use financial incentives to this end wherever possible. What must remain a categorical imperative is the permanent effort to attract promising colleagues from abroad. Science by its very nature is a multinational phenomenon with a global reach, and so the best indicator of the staffing situation at the CAS is the diverse national composition of research teams and the plentory variations of English spoken in laboratories, offices and seminar rooms.

Postdoctoral fellowships for PhD graduates from home and abroad are a strategic issue for the top research programmes of any quality research institution, including the CAS. High-quality postdocs must therefore be the key employment category for science and research at the CAS.

SUGGESTION FOR SOLUTIONS:

The Academy of Sciences, in cooperation with the representatives of the state science policy, must constantly seek new possibilities and opportunities for the necessary organizational and financial provision of quality postdoctoral fellowships. Recently, it has become clear that the current programme for support of postdoctoral fellows of the PPLZ is no longer competitive, and the CAS must think about new forms and possibilities of support for this key category of researchers. One of the options currently on offer is the 'MSCA-COFUND' projects from the HORIZONE EUROPE programme, but they require financial participation beyond the budgets of the institutes. The CAS should create a financial instrument for the competition of institutes for such co-funding, with the result that it will have a great benefit.

& INTERNATIONAL RELATIONS

Throughout its modern history, the CAS has developed a system of functioning foreign agreements for bilateral and multilateral forms of cooperation and their active implementation not only for the mobility of researchers within the framework of reciprocal exchanges, but especially within the framework of agreements on cooperation in science and research with leading scientific and educational institutions. The centre of gravity of international cooperation lies with the CAS institutes; the CAS management must provide the necessary services for the functioning of exchanges, but in particular it must actively pursue science and research diplomacy in cooperation with the Ministry of Foreign Affairs or with scientific attachés at foreign diplomatic missions. They must coordinate procedures for intellectual property protection and cybersecurity for communication with foreign partners.

SUGGESTIONS FOR SOLUTIONS:

Seeking appropriate financial resources to further expand and deepen international relations. The openness of the CAS and the natural links of its institutes towards foreign partners are another necessary condition on the way to the competitiveness of the CAS and the strengthening of its international reputation. This is in the knowledge that the individual institutes of the CAS are themselves often extremely successful in their own interests in foreign activities, and thus only indirectly dependent on the leadership of the CAS.

& THE NEEDS OF A GLOBAL WORLD

The globalised world has changed significantly in the last two decades in the demands placed on human society. It has accentuated the gulf between the poverty of developing countries and the prosperity of developed civilisation, while the availability of the latest information technologies has created unprecedented awareness even where this was difficult to imagine not so long ago. It is precisely the conflict at the interface between wealth and poverty that is increasingly becoming a unique challenge for scientific research in its full range of activities, from the natural and technical sciences to the humanities and social sciences. Probably never before has humanity faced such a serious challenge to the sustainability of human society: climate change, natural disasters, new human and animal diseases, infectious disease epidemics, ethnic and religious problems, war conflicts. These are just some examples of major issues and risks threatening human society that cannot be tackled without a concerted effort in scientific research to find causes and appropriate solutions. We have a rich tradition of scientific research, we have emerged from the prejudices of the past, from the days of totalitarian, bounded scientific progress, and so both university and non-university systems of scientific research or scholarship working side by side, complementing and enriching each other, should guarantee scientific knowledge for the benefit of human society.

SUGGESTIONS FOR SOLUTIONS:

They are everywhere we look across the CAS, and they challenge meaningful research projects in all their urgency and societal relevance.

& ITS PRESIDENT

The President must rely on the quality and reliability of the administrative and professional services of the CAS Head Office (= „KAV“) in conjunction with the Centre of Administration and Operations of the CAS (= „SSČ“). Its main task is to serve the CAS and all its institutes by coordinating management activities, by representing the CAS externally and internally, by dealing with the top political representation, both executive and parliamentary, by dealing with top representatives of universities, industry, state and public administration, and by advocating the direction of the CAS in the development and updating of the state's science policy. The competence of fundamental importance in the modern era of science and research is its care for ethical and moral principles in science and research (newly also arising from the risks of artificial intelligence), in caring for the necessary integrity of the Academy and its institutes in the issue of scientific view of the world and its problems. In order to fulfil these prerequisites, the President will need capable and reliable close associates in the Academic Council and also sufficient courage and courage.

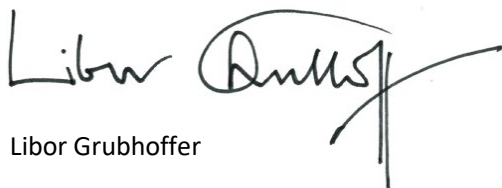
SUGGESTIONS FOR SOLUTIONS:

After 30 years, the CAS has reached a point where it will be necessary to review the activities of KAV and SSČ. The results of the audit of service activities and the findings have not yet been shared with the CAS institutes until the publication of this Programme Statement. From the perspective of an interested observer, it is clear that the process of bureaucratisation in these important parts of the CAS has reached a level that is no longer sustainable! It must be the task of the next President and the new management of the CAS to correct all the iniquities that have gradually taken over the practices of the central administrative and organisational service of the CAS. It will be urgently necessary to begin to address the legal anchorage of the SSČ itself and very likely to find another organisational form for this central service component of the CAS. While all CAS institutes as „v.v.i.“ undergo periodic demanding international evaluations, this is not the case for the SSČ, which is only purposefully registered as v.v.i. Its existence is completely non-transparent for other CAS institutes and the practical procedures of the SSČ often raise suspicions about their legitimacy. It will be necessary to look at the SSČ from the ground up, including the efficiency of its management.

CONCLUSION

The Academy of Sciences of the Czech Republic has taken a giant step towards the pinnacle of scientific knowledge, towards the advanced countries of Western civilization. The credit for this goes to the past leadership of our Academy of Sciences and especially to the numerous teams of excellent colleagues, researchers and other dedicated staff at the CAS institutes. They also deserve great thanks for the fact that the CAS has always been visible. The societal role of the CAS is irreplaceable and is another categorical imperative for its future. The Academy of Sciences must always be available to address the current needs of human society. We are obliged to fulfil the legacy of the founders of our Academy of Sciences and to contribute with the best of our knowledge and conscience to its further successful development. This will not be possible, however, without a fundamental review of management and procedural practices in the central activities of the CAS and the prompt correction of the shortcomings identified. After all, bureaucratisation of procedural procedures is quite a natural phenomenon in the life of any institution. After all, even these are only human and therefore imperfect. It is important to name all the irregularities early and do everything possible to correct them.

Science is an amazing adventure of infinite discovery, giving humanity another dimension while keeping man on guard against his own intelligence. Science precedes its utility, try to limit or neglect it and we will meet evil.

A handwritten signature in black ink, appearing to read 'Libor Grubhoffer', with a stylized flourish extending from the end.

Libor Grubhoffer

In České Budějovice, 16 September 2024