

## THE CZECH ACADEMY OF SCIENCES

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### 1. THE HISTORY OF THE CZECH ACADEMY OF SCIENCES

The first proposal to establish an autonomous non-university scientific institution was made by Jan Evangelista Purkyně, the Czech biologist and philosopher, in the second half of the nineteenth century. The main purposes were to link research institutes representing the main fields of science of the time, and create a space for interdisciplinary research, corresponding to the concept and structure of the present Czech Academy of Sciences. The Czech Academy of Science and the Arts was founded in 1890 with significant financial support from the Czech architect and builder Josef Hlávka, who became its first President. The beginning of the Academy is related to the effort to support Czech culture in the frame of the Austro-Hungarian Empire. The Academy was to promote the development of Czech science and literature and to support Czech arts.<sup>1</sup>

After 1948, the totalitarian communist regime dissolved all the main scientific non-university institutions and learned societies and instead founded the Czechoslovak Academy of Sciences (1953–1992). Despite heavy ideological pressure, the Academy was able to undertake high quality<sup>2</sup> scientific work,<sup>3</sup> especially in the natural sciences, which were less ideologically controversial than the social sciences and humanities. The Academy was sometimes called the Isle of Freedom because its employees had a freer hand than academics at universities, who were under greater control due to their contact with and influence on students.

<sup>1</sup> CAS: “History of the CAS.” [http://www.cas.cz/o\\_avcr/historie/index.html?month=11-&year=1993&](http://www.cas.cz/o_avcr/historie/index.html?month=11-&year=1993&)

<sup>2</sup>The quality of research was evident, for example by the awarding of the Nobel Prize to chemist Jaroslav Heyrovský in 1959.

<sup>3</sup>CAS (n 1).

In 1990, the first internal research assessment was carried out as an instrument for rectifying past wrongs and assessing quality. Consequently, low quality institutes and departments were eliminated and only half of the employees remained.

## 2. THE CZECH ACADEMY OF SCIENCES TODAY

### 2.1. *Status*

After the fall of the communist regime, the Academy became a standard public research institution dedicated to basic research. Basic research is also performed at universities, but their main role is to teach students.

Originally, the Czech Academy of Sciences (CAS) was a state-funded organization. In 2007 it was transformed into a public research institution according to Act No. 341/2005 on Public Research Institutions. This was primarily motivated by the need to change the status of the Academy vis-à-vis European research. Second, the change conferred the power to carry out secondary activities for profit and transferred property into the ownership of institutes. The Academy has retained financial autonomy in the form of a separate budgetary chapter and autonomy with regard to research evaluation. It does not distribute institutional funding among its institutes according to the national evaluation methodology (dubbed the coffee-grinder, currently under revision with a new methodology to be instituted as of 2018) but has its own performance formula.

Following the 2014 parliamentary elections, the position of Vice Prime Minister for Science, Research and Innovation was created, with a Section for Science, Research and Innovation at the Office of the Government. This section shares the remit for research and development policy with the Ministry of Education and Ministry of Industry and Trade as the most important actors. Negotiations are under way to create a new ministry specifically dedicated to managing research and higher education, but the outcome of this political plan is as yet uncertain. Thus far, the budget for universities has been distributed by the Ministry of Education, whereas the Academy negotiates its budget directly with the Ministry of Finance and the Council for Research and Development.

### 2.2. *Structure and self-governance*

The Academy of Sciences comprises 53 public research institutes (36 in natural sciences, technical sciences and chemistry, of which 18 in non-life

sciences and 18 in life sciences, 17 in social sciences and humanities) and has the right to establish new institutes. The directors of the institutes are elected by the research staff of the particular institute and approved by the Academy leadership. We do not know of any cases in which the leadership has overridden the results of the vote.

The supreme self-governing body of the Academy of Sciences is the Academy Assembly. Two-thirds of the members are representatives of Academy institutes and the remaining third are representatives of universities, the state administration, the business sector and other notable persons. Currently the Assembly has 257 members. The executive body of the Academy is the Academy Council, headed by the President of the Academy of Sciences. It can consist of up to 17 members and the proportional representation of the main research areas of the Academy has to be ensured.

The Council for Sciences is primarily engaged in setting the science policy of the Academy. Its members are representatives of the institutes, universities, other research and development institutions and distinguished foreign scientists. The maximum number of members is thirty with at least one quarter and at most one third being external members, including foreigners. Members of each of these Academy bodies are elected for a four-year period.

Academy Evaluation Committees, where professional fields correspond to the respective science sections of the Academy, undertake an independent assessment of the quality of research and the research objectives of individual Academy institutes. The Academy reports to the Parliament.

### 2.3. *The Academy as a provider of degrees and education*

The Czech Academy of Sciences does not grant any formal “academic ladder” degrees, only honorary ones (“doctor of sciences” for special achievements in a discipline on the basis of the decision of the Academic Board of the Academy), which have high prestige but are not part of the standard academic hierarchy. Regular doctoral and professorial degrees are granted by universities only. This means that one has to teach at a university in order to habilitate for associate professorship or to become full professor.

Since the reform of postgraduate training after the fall of the communist regime, the Academy has had the right to train postgraduate students but cannot grant PhD degrees as it could before. The objective was to adopt the Western model and introduce a standard PhD system in place of the “*aspirantura*” system which awarded the Candidate of Sciences degree (CSc., *candidatus scientiarum*), introduced in 1953 under the Soviet model. This was more of a formality than a matter of content change because the “*aspirantu-*

ra” system carried similar obligations as the PhD in that it included the defence of a thesis. The CSc. degree was granted by both the Academy of Sciences and universities. After the reform, the Academy of Sciences became purely a research institution and the award of degrees and teaching became the responsibility of universities. It is, however, possible to accredit joint Academy-University degrees, and the Academy is training a large number of students. The number today is at approximately 2,000 doctorate holders a year. The debate over whether the Academy should regain the right to grant PhD degrees periodically resurfaces because the current system is unclear: some students do their PhD research at the Academy of Sciences through jointly accredited programmes, but it is the university that receives the per capita payment for students. These students are often employed by the Academy but the defence takes place at a university with which the students usually lack any connection. This system creates an even greater problem for students who work at a workplace that has no connection with a university (see below).

### *2.3. The Academy as a representative of the academic community*

The Academy of Sciences speaks in the name of the entire domestic academic community as part of the public consultation system. It ensures expertise for political decision makers and the Czech government has a duty to consult with the Academy. It has been successful in lobbying for its interests as well as for the wider interests of research and development with the government even if researchers of the Academy of Sciences represent only 18 per cent (5,604 persons) of the public research and development staff in the Czech Republic.<sup>4</sup>

Most researchers work at universities, and researchers from the Academy of Sciences tend to work at universities, too. There are also 55 joint research centres which belong to both the Academy of Sciences and universities (e.g. new centres of excellence dedicated to natural biosciences). Employees of the Academy of Sciences are also members of the Council of Higher Education Institutions of the Czech Republic. However, the Academy itself has no control over universities.

Although the Academy of Sciences represents only 18 per cent of the public research and development staff in the country, it produced 45 per

<sup>4</sup>Úřad vlády České republiky: *Analýza stavu výzkumu, vývoje a inovací v České republice a jejich srovnání se zahraničím v roce 2013*. Praha, 2014. <http://vyzkum.cz/FrontClanek.aspx?idsekce=711241>.

cent of publication output between 1993 and 2009.<sup>5</sup> In comparison, Charles University is in second place with 25 per cent of publication output. This is logical because research is the Academy's main activity in contrast to universities which are primarily teaching institutions. The Academy thus presents itself as the leading basic research institution in the country.

#### 2.4. Funding

The Czech Academy of Sciences negotiates its budget directly with the Research, Development and Innovation Council and the Ministry of Finance. It has its own funding allocation mechanism based on its regular five-year research assessment system. There is no direct link with the national research assessment methodology. The institutional funding distributed by the Academy to institutes varies by discipline and covers different portions of the institutes' budget. In some cases, institutional and competitive funding mechanisms contribute equally; in other institutes, competitive funding makes up as much as 90 per cent of the budget. The Academy has also been assigned financial responsibility for 71 specialized Czech scientific societies associated with the Council of Scientific Societies.

In 2008, the government proposed to cut the Academy's budget significantly, this resulted in protests and demonstrations and negotiations with the government. The budget cut was reduced. However, the institutional funding that the Academy has received over the years shows a falling trend, as does the governmental sector overall. Between 2007 and 2013, institutional funding at the Academy of Sciences decreased from 62 per cent to only 35 per cent. According to an audit carried out by the Technopolis Group,<sup>6</sup> the lowest possible limit for institutional funding is 50 per cent; below this limit, an institution loses the ability to carry out meaningful research.<sup>7</sup> The rest of the Academy's budget is covered by short-term grant projects funded by the Czech Science Foundation (dedicated to funding ba-

<sup>5</sup>Thed van LEEUWEN and Rodrigo Costas COMESANA. *International Audit of Research, Development & Innovation in the Czech Republic Final Report – 8. Bibliometric Analysis of the Czech Republic: Research Output in an International Context 1993–2009*. CWTS Centre for Science and Technology Studies, 2011.

<sup>6</sup>Technopolis Group: *Mezinárodní audit výzkumu, vývoje a inovací v České republice. Závěrečná zpráva – 7. Lidské zdroje ve VaV* (Brighton: Technopolis Limited 2001). <http://audit-vav.reformy-msmt.cz/soubory-ke-stazeni/zaverecna-zprava-z-audit-u-va-v/>.

<sup>7</sup>The total budget in 2014 was EUR 450 million. Only EUR 150 million was covered by the Academy's own budget chapter.

sic research),<sup>8</sup> the Technology Agency of the Czech Republic (dedicated to funding applied research and experimental development) and by international sources, especially the European Framework Programmes and European structural funds. However, in the previous programme period, the Academy was put at a significant disadvantage as most of its institutes are located in Prague and thus were not (or only very minimally) eligible for structural funds through the operational research and development for innovation programme which focuses on supporting less developed regions.<sup>9</sup> Thus, in negotiations for the current programme period the objective was to make the European Structural Funds available also in Prague.

The Academy had its own Grant Agency which closed in 2015 as part of the 2008 reform of research, development and innovation which sought to reduce the complicated governance structure with many research funding providers. The expectation was that the budget of the Czech Science Foundation would increase accordingly. The budget distributed by the Czech Science Foundation went from CZK 1.3 billion in 2005 to CZK 3 billion in 2013, or from 8% to 11% of the state budget distributed for research and development.<sup>10</sup>

In addition to the cuts in the Academy budget chapter, there is another related problem. The current research and innovation policy places considerable emphasis on economic results and knowledge transfer. This is also reflected in the distribution of funding. The Czech Republic is a country with a high proportion of public funding going towards the business enterprise sector. This has caused tensions between the governmental sector and the business enterprise sector and most clearly the Academy of Sciences, which is primarily dedicated to basic research. This means that the highest valued research outcomes are patents and knowledge transferable to industrial application and these are also the intended output of a significant proportion of grant schemes. This stress on the practical application of research output is especially problematic for the social sciences and humanities. Some grant schemes, for example, demand as one of the project outputs a bill of law or an amendment to the legislation. The position of the institutes of social sciences and humanities within the Academy is also made more difficult by the research assessment methodology, which is based on the standards and culture of the natural and technical sciences.

<sup>8</sup>There is no formal connection between the Academy of Sciences and the Czech Science Foundation. The Czech Science Foundation is a research funding organization for the entire country. Non-formal connections can be seen only in personal overlaps – employees of the Academy sit on decision-making bodies of the Foundation as experts.

<sup>9</sup>This is creating specific bottlenecks for the state budget because of the need to maintain the sustainability of recently founded research centres.

<sup>10</sup>Úřad vlády České republiky (n 4).

## 2.6. Academy membership and the status of Academy researchers

In contrast to the former socialist Czechoslovak Academy of Sciences which included a “Learned Society”,<sup>11</sup> CAS has no non-employed members or correspondent members. The Czech Academy of Sciences has no special status as is the case in some other post-socialist countries and consequently no specific membership. It has the status of a standard public research institution.

The Academy employs core and contract research staff. Core staff members are employees on fixed-term contracts that are funded through institutional funding for 3–5 years, depending on the “qualification audit” period (see below). Contract research staff are those who are employed only on individual grant projects (mostly for three years) with no institutional funding. This means that if contract research staff members do not secure additional funding through grants, their positions at the institutes are terminated at the end of the grant. Core staff members have a guaranteed salary through institutional funding, yet, given that this institutionally funded salary is rather low, core staff members also need to apply for grant projects. Grant money may constitute a significant part of salaries of core staff. Contract research staff can be employed both full-time and part-time, although the latter is more common. Core employees traditionally had full-time contracts but because of the increase in competitive grant funding at the expense of institutional funding, the proportion of part-time contracts is increasing. In general, the proportion of positions covered by institutional funding is decreasing at the expense of positions covered by grant funding (CAS Annual Report 2015: 28).<sup>12</sup>

The career rules of the Czech Academy of Sciences has been issued by the Academic Council based on the proposal of the Scientific Board of the Academy. These career rules pertain to all university-educated employees of Academy institutes. Individual researchers are assessed through an evaluation procedure called “qualification audits” (“*atestace*”) as provided for in Article 23 of the Appendix to the Statutes of the Academy.<sup>13</sup> This qualifi-

<sup>11</sup> The Learned Society of the Czech Republic was established in 1994 as a civic society of the most prominent Czech scientists. <http://www.learned.cz/en/>.

<sup>12</sup> CAS: *Annual Report 2015*. [http://www.avcr.cz/opencms/export/sites/avcr.cz/.content/galerie-souboru/vyrocní-zpravy/annual\\_report\\_2015.pdf](http://www.avcr.cz/opencms/export/sites/avcr.cz/.content/galerie-souboru/vyrocní-zpravy/annual_report_2015.pdf)

<sup>13</sup> Article 23 (1) The performance of the research workers shall be evaluated by regular qualification audits that will be performed at least once in five years.

(2) The evaluation shall be performed by the Qualification Audit Committee appointed by the Institute Director. The Qualification Audit Committee shall have no less than five members. At least one third of the Qualification Audit Committee members shall be external members. The Qualification Audit Committee shall submit recommendations on the outcome

cation audit, evaluating the professional performance of individuals, is the main instrument for ensuring the quality of the scientific activity of Academy staff.<sup>14</sup> This qualification audit procedure has clear rules. The only controversy might arise from the fact that employees could also have agendas other than research (e.g. infrastructure or public dissemination), but the assessment criteria predominantly reflect research output, i.e. publications. The audit committee, consisting both of researchers from inside and outside the institute, makes a non-binding recommendation to the director of the institute. Directors usually follow the recommendations made by the audit committee. If an audit committee finds the research performance of an individual researcher to be unsatisfactory, it can recommend the termination of a contract. The director may then decide that the employee's research performance may be assessed less strictly because of his/her non-research agenda or that the employee will get a warning for next qualification audit period, e.g. the obligation to gain PhD or to produce more research outcomes, especially articles, until the next audit.

Based on the qualification audits, university-educated staff members are ranked in one of the following professional groups: Research assistant – Graduate student – Postdoctoral fellow – Associate scientist/scholar – Scientist/scholar – Senior scientist/scholar.

## 2.7. Working conditions

The low proportion of institutional funding has an impact on researchers, their working conditions and career paths. The current system creates precarious working positions. Early career researchers have a particularly low chance of obtaining more stable contracts. Most researchers are employed as contract research staff on research grant projects. In 2013, 3,096 employees were paid from special purpose and extra-budgetary means. This is creating barriers to the professional development of researchers. Early career researchers on part-time, short-term contracts tend to cumulate such contracts so that they have the wage of a full-time employee. These con-

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of the evaluation, conclusions and assigning of a qualification degree to the employee to the Director, who will make the final decision in these matters.

(3) If the qualification audit determines that an employee lacks the required qualification, the evaluation outcome may serve – provided that all statutory conditions are met – as grounds for termination of the employment. The evaluated employee may request a review of the audit through public adversary procedure. [http://www.cas.cz/o\\_avcr/zakladni\\_informace/dokumenty/stanovy/](http://www.cas.cz/o_avcr/zakladni_informace/dokumenty/stanovy/).

<sup>14</sup>[http://www.cas.cz/o\\_avcr/zakladni\\_informace/dokumenty/koncepcie\\_rozvoje\\_vav/index.html](http://www.cas.cz/o_avcr/zakladni_informace/dokumenty/koncepcie_rozvoje_vav/index.html).



tracts are often at different institutions or outside the academic sector.<sup>15</sup> Researchers often teach and teaching positions are also increasingly awarded on a part-time basis. Teaching at lower (assistant) positions is usually paid worse than research. There is pressure on university employees to supplement their salary with grant (research) money. In general, the salaries of Czech research and teaching employees are below the European average.<sup>16</sup>

The necessity of spending a significant amount of time looking for competitive sources for funding and the need to work simultaneously outside the academic sector takes time away from research and constrains the scientific growth of individuals. Moreover, research or, more precisely, research publications are the basis of the formal assessment of researchers. This means that many time-consuming activities necessary for running the institution are not covered by formal research assessment, which makes them invisible and “punishes” researchers who perform them.

## *2.8. Main achievements and problems*

The main achievement of the Czech Academy of Sciences is its successful transformation into a public research institution with no aristocratic system as is often the case in the former Soviet Union region. There used to be recurrent debates about disbanding the Academy and merging its institutes with universities but these sentiments have not appeared for some time now and do not seem to be a topic for discussion anymore. Another important attainment is that the Academy accounted for 45 per cent of publication output in the country between 1993 and 2009.

However, there is a growing concern about the ratio of institutional and competitive grant funding which has a negative impact on the ability of long-term planning by institutions and individuals. This is likely to have an effect on the future of the Czech research system, including the Academy of Sciences, in terms of research production and scientific quality as well as the deterioration of working conditions. This applies especially to early career researchers, and among them women in particular, whose professional growth is threatened especially by the instability caused by an increasing number of contract research staff positions and a decreasing number of core staff positions covered by institutional funding.

<sup>15</sup> Kateřina CIDLINSKÁ and Marta VOHLÍDALOVÁ: “Zůstat, nebo odejít? O deziluzi (začínajících) akademických a vědeckých pracovníků a pracovníc” *AULA* 2015/1, 3–36.

<sup>16</sup> Technopolis Group: *Mezinárodní audit výzkumu, vývoje a inovací v České republice. Závěrečná zpráva – 7. Lidské zdroje ve VaV* (Brighton: Technopolis Limited 2016) 19. <http://audit-vav.reformy-msmt.cz/soubory-ke-stazeni/zaverecna-zprava-z-audit-u-va-v/>.