

Chapter 14

Science and Higher Education in Poland: Changing Rules



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The situation of higher education in Poland needs to be viewed from a historical angle. After losing its independence at the end of the eighteenth century, Poland was divided almost 150 years between Russian, Austrian and Prussian empires. Academic life in those countries followed different patterns, and minor relicts of them are still traceable in Warsaw, Cracow and Poznan—the main cities of the parts of Poland administered by each of the empires. During the short period of independence between the First and the Second World Wars, Poland was firmly oriented towards Western Europe. Polish universities regained their autonomy at that time, and academic life followed to a large extent the French fashion.

As the result of Yalta Treaty, Poland was incorporated in 1945 into the Eastern Block controlled by the Soviet Union. Under the communist regime, science and higher education were administered in Poland similarly as in other countries belonging to this Block, although in a less restrictive way. Polish universities were given more independence than universities in the Soviet Union. Polish scientists could travel to the West, attending conferences and conducting research funded by such institutions like the Alexander von Humboldt Foundation or the Fulbright Foundation.

Science and Higher Education in Contemporary Poland

After democracy was re-established in Poland in 1989, an open discussion about drawbacks in organizing scientific research and higher education became possible. Despite the changes introduced ad hoc in 1989–91, the system still retained many

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features typical of the ancient regime and, hence, it was heavily criticized. In particular, the following questions were raised:

1. To what extent administrative bodies should interfere in the choice of research topics by scientists?
2. How should public money be distributed among universities, research institutions and individual researchers?
3. How should institutions conducting research be structured? In particular, do we need the Polish Academy of Sciences (pol. PAN)?
4. How should the higher education sector be organized? In particular, on what terms commercial high schools should act?
5. What profile of professional carrier is preferable? In particular, do we need the second scientific degree?

Such discussion lasted over a decade until the Minister of Science and Higher Education Prof. Barbara Kudrycka enforced a general reform of the system. This reform was incorporated into a series of laws approved by the Polish Parliament (pol. Sejm) during the period 2003–2011. In the sequel, the main features of the new system will be discussed.

Restructuring Institutions

Let us consider the domains of research and higher education separately. Before the reform, the research domain encompassed research units belonging to PAN, or to a university, or to a Government Ministry. The last units were seen as the research and development background of a specific branch of industry, so they were supervised by the Ministry responsible for this branch. Such institutes were called Research and Development Units (pol. JBRs).

The main research effort was carried out by the institutes affiliated to the Academy (PAN-institutes) and those belonging to universities (UNI-institutes). Since chairs were replaced by institutes at almost all Polish universities, UNI-institutes clearly outnumbered PAN-institutes. However, ranking lists, appearing numerous after 1989, showed an advantage of PAN-institutes regarding the quality of research (staff, publications, etc.). Researchers working at PAN and universities competed for resources allocated by the Government (e.g. salaries, grants, laboratories). This led to a certain tension between both groups. After the Government had announced its will to reform the science sector, prominent representatives of university milieu demanded that PAN should be abolished and that PAN-institutes should be incorporated into universities.

Fortunately, this radical step was not accepted by the Parliament. The 2010 law on the Polish Academy of Sciences (2010a) retains its twofold character. On the one hand, PAN is a corporation of 350 members (full, corresponding and foreign).

On the contrary, it is a research agency comprised of 79 units (institutes, research centres, etc.). PAN under the new law consists of five Divisions (Humanities and Social Sciences; Biological and Agricultural Sciences; Mathematics, Physics, Chemistry and Earth Sciences; Engineering Sciences and Medical Sciences). Each Division consists of the corporative part led by a Dean and a research part led by a Council of Provosts. Such solution seems to be reasonable because the priorities of each part of the Academy differ. Self-governance is the most critical value for the corporation of scientists, while the part conducting research needs proper management and conformity with the policy of the state.

The law on research institutes (2010b) applies to units that are neither PAN–nor UNI-institutes. Many of JBRs were dissolved, but the best of them adapted themselves quite well to the market economy. They meet requests on applications from the domestic industry, compete for national and European grants, cooperate with PAN- and UNI-institutes.

Issues related to institutions of higher education were regulated by the law (2005) modified later in the bill (2011). The Polish nomenclature was brought in conformance with the naming conventions in the European Union, a two-stage scheme (bachelor and master) was introduced, and some changes were adopted in the administrative structures (e.g., a position of Chancellor, helping Rector on administrative issues, was introduced).

During the discussion preceding the reform, some controversy regarding the role of non-public institutes of higher education was noticeable. After 1989, over 200 of such institutions were founded in Poland. They were run on commercial grounds taking a fee for studies and offering bachelor and master diploma in such fields, like management, law, business and administration, computer science. An uncontrolled expansion of the higher education sector had a devastating effect: most of the new schools “borrowed” the staff from public universities, and some of them had poor curricula and non-fair fees. The new law eliminated many distortions. At present, a person employed at the university and willing to take a position at other institution needs the permission of Rector. Leading universities adopted a rule that such authorization is given as an exception and not more than once (under previous law, some professors were employed at 3–4 high schools).

Under the present law, all units in the sector of higher education are supervised and periodically evaluated by the Ministry of Science and Higher Education (pol. MNiSzW). An independent board, called the Polish Commission for Accreditation (pol. PKA), reviews applications for opening of new schools and evaluates existing schools. By such evaluation, the Minister allows the university to run bachelor and master studies on specific disciplines. A stronger control by the state eliminated most pseudo-universities. The number of non-public high schools decreases at present rapidly. This reduction is also caused by the lack of students—the result of a low birth rate 20 years ago.

Planning and Financing Research

Until 1989, planning and financing research was to a large extent centralized. Most funds were distributed by the Ministry within the framework of the so-called Central Research Programs (pol. CPBPs), planned and executed in a period of 5 years. After Poland was restored to the democratic system, planning research was abandoned, and the distribution of funds was shifted to the Committee for Scientific Research (pol. KBN). This new body was independent of the Government, its members were elected by the scientific community, and money was distributed through individual grants evaluated by the panels of KBN in a peer-review manner.

During first years, the new system worked quite well, and scientists were satisfied by full freedom in choosing a subject of research and by self-governance in funding it. However, gradually the disadvantages of this funding scheme became apparent. Limited funds assigned by the Government inclined the KBN to discriminate large and costly projects. This led to the disintegration of the research community: it became almost impossible to form larger research groups for solving problems that are interdisciplinary in their nature. Directors of research units were not able to steer them efficiently because it was hard to predict who will win a grant and what will be the subject of this project. Moreover, theoretically, fair system of electing the members of the KBN was soon replaced in practice by a struggle between informal groups and lobbies. This circumstance gave the Ministry arguments towards regaining the control over funding.

Poland in the World Context: Funding of Research

The experience of countries leading in the world suggests that to plan and finance scientific research properly one needs to keep a balance between two schemes. On the one hand, it is impossible to plan in advance new findings in science, like, e.g., a discovery of the graphene. On the contrary, large projects in science and technology, like sending a man to the Moon or building a super-collider of elementary particles, require careful planning and coordination of large interdisciplinary teams of researchers.

The reform in Poland opened both ways of planning and funding research. The part of national budget dedicated to science is distributed by two agencies. The National Science Centre (pol. NCN) (2010c) supports fundamental research. This agency is led by Director, appointed by the Minister of Science and Higher Education for at most two terms, each lasting four years. The appointment is preceded by a public call for position and by an evaluation of candidates performed by a commission appointed by the Minister.

The Director is responsible for the efficient functioning of the NCN. The rest is in the hands of the NCN Council comprising 24 members. They are appointed by the Minister for the period of two to four years: the term of the Council lasts four

years, but after two years half of the members are replaced. The way of composing the Council is rather complicated. At first, universities and research institutes propose candidates. These candidates are evaluated by the Selection Board appointed by the Minister. The Minister takes the final decision taking into account recommendations of the Selection Board and trying to achieve proper representation of all scientific fields.

The NCN Council decides how three topical areas—Art, Humanities and Social Sciences, Life Sciences, and Physical Sciences and Engineering—are to be divided into disciplines and their groups. It also announces calls for research projects. For example, at present the NCN conducts the following funding schemes:

1. OPUS—general grants;
2. PRELUDIUM—grants for young scientists;
3. SONATA—Ph.D. holder grants;
4. MAESTRO—grants for advanced scholars;
5. HARMONIA—international projects;
6. SYMFONIA—interdisciplinary grants and;
7. ETIUDA—Ph.D. scholarships.

Applications for the OPUS grants are evaluated in a two-stage procedure, similar to that known for European grants. At first, a formal compliance with the application rules is checked. These rules are not very restrictive. An application can be submitted by any research unit or even by a private person. If a project is to be carried out by a group of researchers, foreigners may be included in such a group. The most restrictive rule concerns the subject of the project. Application-oriented research is excluded from consideration.

Project proposals that have passed the formal proof are further evaluated by an expert panel. This panel may include experts from abroad. Therefore, all proposals must be written in English. Experts evaluate research achievements of the coordinator and the two principal investigators of the proposed project. This evaluation is based upon bibliometric parameters, like the Hirsch index, the number of publications and the number of cited papers. Additionally, originality of the proposal and its potential cognitive value are assessed. The outcome of the evaluation procedure is the ranking list of proposals accepted for funding. This list is published on the website of the NCN.

Application-oriented research is funded by the National Centre for Research and Development (pol. NCBiR) (2010d). This agency is managed by Director, appointed under the same rules as the Director of the NCN. The policy of the NCBiR is influenced by the two bodies: a Council and a Steering Board. The NCBiR Council consists of 30 members. One-third of them is appointed from the candidates proposed by the scientific community, one-third—from the candidates proposed by industry and finances and one-third—from the candidates tabled by the Government. The Council formulates opinions about the strategic plans for research and development of the country and conducts general supervision of the activity undertaken by the agency. Decisions on funding specific projects lie in the hands of

the Steering Board. This Board includes representatives of the Ministries of Defence, Science and Higher Education, Internal Affairs, the National Security Agency, as well as representatives of the industry.

Contrary to the NCN, the NCBiR follows a top-down approach: it finances large projects on the topics selected by the Government as current priorities in R&D. Consortia called up to carry such projects include research units and industrial partners. For example, at present, the following strategic programs are financed by NCBiR:

1. BIOSTRATEG—natural environment, agriculture and forestry;
2. STRATEGMED—prophylactics and therapy of civilization induced diseases;
3. Advanced technologies of acquiring energy;
4. Measures for improving safety in coal mines and;
5. Technologies supporting safe nuclear energetics.

NCBiR also plays an important role in proper usage of funds allocated for Poland by the European Commission. This agency coordinates Polish activities in such international projects like AAL, BONUS 185, EUREKA or ERA-NET.

Evaluating Results of Research

Since democratic system promotes free competition for public funding, a fair and transparent evaluation of research achievements becomes crucial for the domain of science and higher education. Let us briefly describe the present state of this issue in Poland.

Each person employed at the university or research institute undergoes periodic evaluation of his or her achievements. Typically, it is done at the end of the year, and it is based upon the form filled by the evaluated person. Such a form includes data on publications (e.g. books, articles in scientific journals, participation in conferences, awarded titles and degrees, obtained grants and patents, teaching, reviewing). Each form of the activity is assigned a certain score, and a summary score (possibly weighted) indicates the level of professional activity. Nowadays, most universities and research institutes include the Hirsch index and the number of cited papers into the evaluation criteria.

Similar procedure is applied when evaluating institutions. The Ministry of Science and Higher Education performs such evaluation once in four years. The assessment, based on the forms submitted by evaluated units, is done by the Committee for Evaluation of Research Units (pol. KEJN). In addition to data mentioned with respect to a person, such a form includes the characterization of staff (number of professors, doctors, etc.) and the rights to promote owned by the unit (e.g. at the Ph.D. level or Doctor of Science level). Research units are evaluated within groups related to specific disciplines of science. The KEJN assigns a group of experts that carries out the evaluation.

A score given for certain achievement is awarded by the Ministry. Thus, the MNiSzW publishes periodically a list of scientific journals with a number of points granted for an article published with them. For example, a paper in “Nature” brings 50 points, whereas an article in a local journal might be “worth” 5 points. Proceedings of conferences are not regarded as publications, whereas much attention is given to the transfer of research achievements into practice (patents, etc.).

The outcome of the evaluation is the assignment of a category to each research unit:

A+ —leading; A—very good; B—satisfactory; C—non-satisfactory. The level of statutory funding depends upon the category: research units of category A+ receive additional resources, whereas category C indicates that the unit should be closed.

Parametric evaluation of persons and research institutions is one of the novelties introduced by the reform of science in Poland. Like any innovation, it is contested by conservative part of the community. It is argued that the value of scientific result can hardly be assessed by a number and that parametric evaluation is easily prone to cheating. Indeed, in the Western world, where the rule “publish or perish” dominates over a longer period, certain adverse effects are clearly visible (some editors cleverly “pump” impact factors of their journals, some groups of researchers form “mutual citation circles”). However, it seems that there is no other way of distributing fairly public money than using bibliometric parameters as a base for evaluation. These parameters should be regarded as important, yet not remaining, ingredients of the assessment done by experts or supervisors.

Profile of Scientific Career

It is commonly agreed that an average career of a scientist or university teacher in Poland suffers from two drawbacks: it is rather slow, and it is tied to a single institution of higher education. Customarily, one is entitled to build his or her group and to choose research topics freely after obtaining the second scientific degree (Dr. habil. in the Polish nomenclature). This often happens when the researcher is about 50 years old, which is obviously too late.

The second degree does not exist in many countries, and it was not included in the initial version of the law on scientific degrees and scientific title. Such a proposal caused very vivid controversy, and it turned out that the majority of scientists were against the drastic change. As a result, the version approved by the Parliament (2003) keeps Dr. habil., although in the procedure leading to this degree was significantly shortened. Under the present law, a person seeking to obtain Dr. habil. submits the Central Commission for Degrees and Titles (pol. CK) either a dissertation or a package of papers published on a certain subject. The candidate indicates in his or her application the institution (faculty of the institute), which should

consider the case. The CK checks in one week, whether the application is formally correct. If it is so, then the CK informs the Scientific Council (pol. RN) of the institution mentioned in the application that the candidate asks this Council to open the habilitation procedure. The RN may decline the request. Then, the CK assigns other Council to proceed with the case, this decision being obligatory. In 6 weeks from the opening of the habilitation procedure, the CK assigns a Commission to handle the application. Such a Commission incorporates four persons assigned by the CK (a chairperson and three reviewers), and three members assigned by the RN (a secretary and two reviewers). Reviewers must submit their opinions in six weeks, and the Commission must deliver its final recommendation to the RN in three weeks after opinions were ready. Thus, the whole procedure cannot last longer than 15 weeks. On the other hand, the new law imposes more strict requirements upon scientific achievements of the candidate. Until the end of *vacatio legis*, the majority of habilitation procedures was run according to the previous legislation. Hence, it is premature to judge, how the new scheme will affect the speed and quality of the scientific career.

Conclusion

Each country has its customs and cultural background. Therefore, solutions working perfectly, e.g., in the USA, need not be applicable for other countries. On the other hand, the experience of countries like Poland, who underwent earlier significant changes in the organization of science and higher education, might be worth considering prior to undertaking similar reforms.

As far as universities are concerned, the Bologna scheme of three-stage education (Bachelor–Master–Doctor) dominates in Europe and, thus, should be adopted by newcomers. On the other hand, there is no tendency to unify the way of funding research. France keeps its centralized model, whereas funding in Germany is to a large extent distributed over federal states. Nevertheless, distributing the public money through specialized agencies seems to be more efficient and transparent than assigning this task to the Ministry of Research and Higher Education.

It seems reasonable when a part of research is conducted outside universities. In France, this function is taken by CNRS-Institutes, whereas in Germany similar role play institutes belonging to the Max Planck Society. Poland has left research institutes affiliated with the Polish Academy of Sciences. Some countries, like Lithuania or the Czech Republic, incorporated all of them into universities. The future will show, which solution works better.

References

- The Law Issued on April 30, 2010 on the Polish Academy of Sciences. (2010a). Retrieved from <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20100960619>.
- The Law Issued on April 30, 2010 on Research Institutes. (2010b). Retrieved from <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20100960618>.
- The Law Issued on April 30, 2010 on the National Science Centre. (2010c). Retrieved from <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20100960617>.
- The Law Issued on April 30, 2010 on the National Centre for Research and Development. (2010d). Retrieved from <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20100960616>.
- The Law Issued on April 30, 2010 on the Rules of Financing Science. (2010e). Retrieved from <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20100960615>.
- The Law Issued on March 14, 2003 on Scientific Degrees and Scientific Title, as well as on Scientific Degrees and Scientific Title in the Domain of Arts. (2003). Retrieved from <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20030650595>.
- The Law Issued on July 27, 2005 on Higher Education. (2005). Retrieved from <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20051641365>.
- The Law Issued on March 18, 2011 on Changes in the Laws on Higher Education, Scientific Degrees and Scientific Title, Scientific Degrees and Scientific Title in the Domain of Arts, as well as on Changes in Some Other Laws. (2011). Retrieved from <http://isap.sejm.gov.pl/DetailsServlet?id=WDU20110840455>.