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Academy as Warrantor of Objectivity, Impartiallity and Excellence in Policy Advice[*]

Abstract

The last twenty years are characterized by rather sharp changes in the way scientific research is carried out and the role of the governments in it. In such moving waters it is important to have some solid references for keeping the right course both for further sound development of the objective knowledge and most fruitful application of its spin-offs. The Academies of sciences as learned societies of scientists and scholars elected for their contributions on the one hand and, very often, as systems of research institutes on the other hand are responsible for keeping close contacts with the governments and providing policy advice on the regulation process of interaction between science and society.

The contribution elaborates on six aspects of the policy advice which the Academy should be able to deliver.

1) Convincing and assisting the Government to invest the public money mostly in pure academic research, while leaving the applied one to business and industry.
2) Assisting the Government in establishing national priorities in academic research according to the excellence available or near to emerge.
3) Developing scientific expertise in strategic fields of public interest, e. g. energy sustainability, national security, environment protection, protection from natural and anthropogenic catastrophes, public health care, safe food production, etc.

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4) Guidance and participation in the design, development and exploitation of national, regional, and pan-European research infrastructures.
5) Contribution in multilateral initiatives leading to better use and development of research networks at EU and international level and in the creation of European Research Area (ERA).
6) Assistance in the reform and the improvement of the education and training systems.

What makes Academies unique in the capacity to accomplish such tasks is the well developed system of global control on the quality of their membership and collaborators. What is to be done now and in the near future is to strengthen and develop further this system mostly by wider opening for international co-operation and peer review control on not only the individual carrier paths but more and more on the national R&D&I systems.

In the last twenty years rather sharp changes occurred in the way scientific research is carried out including the role of the governments in it. In such moving waters it is important to have some solid references for keeping the right course both for further sound development of the objective knowledge and most fruitful application of its spin-offs. The Academies of Sciences as learned societies of scientists and scholars elected for their contributions on the one hand and, very often, as systems of research institutes on the other, are responsible for keeping close contacts with the governments providing policy advice on the regulation of interaction between science and society.
The contribution elaborates on six aspects of the policy advice, which an Academy in general and the Academies in Southeast Europe (SEE) in particular should be able to deliver.

1) Convincing and assisting the Government to invest the public money mostly in pure academic research, while leaving the applied one to business and industry.

1.1 Fundamental, curiosity-driven research is economically important, at least on the long run. It is to be supported by public rather than private funds because it yields far-reaching benefits, which are general, rather than specific to individual products. The private sector is generally likely to do better in financing the applied research.

1.2 Diverting public support from academic to applied scientific research would result in impoverishment of the knowledge bases of the society.

1.3 Investing of public money in excellent academic research is directly important for ensuring both indispensable scientific advice and expertise for the Governments and ensuring viable and competitive education.

2) Assisting the Government in establishing national priorities in academic research according to the excellence available or near to emerge (Investing in excellence*)*

2.1 How should Government choose what to support and at what level? The solution, not always easy to be made alone on a national level, is to concentrate on a limited number of fields with approved local strength in science with at least some potential of application in industry, and sufficient future potential; in other words, the identification of **Centres of excellence or competence** of the country.

2.2 Academies are strong in the international cooperation providing the platform for assistance by the European Union in the sensitive field of policy making, based on strong selection**.**

2.3 Identification of Centres of excellence supported by the European commission in many countries of Central and Eastern Europe before their adhesion to the European Union together with the „bottom-up" principle of project selection of the Framework programmes stimulated the difficult process of national S&T priority setting.

2.4 Academies should develop and maintain the process of assessment of their units relying strongly on international expertise. There is no other human activity like scientific research where the peer review is developed, as the only mean for attainting and developing the excellence.

3) Assistance in the reform and the improvement of the education and training systems

3.1 It goes without need of additional arguments that efficient teaching could be delivered by people active or closely associated to academic research.

3.2 Research in basic science provides an excellent training in problem solving for those who go on to work in applied research or development in industry. Furthermore, this creates valuable networks of links between researchers in different industries and in academia, which would not exist if all training took place in industry. **The economists recognize the value of such networks as a benefit of publicly funded basic science.**

3.3 There is evidence that basic science (in the case of physics, particularly astronomy, cosmology and particle physics) plays an important role in exciting the interest of youngsters in science and technology.

3.4 An exemplar of that kind in the regional co-operation in Southeast Europe is the network in astronomy created by a support from UNESCO-ROSTE (now UNESCO-BRESCE) having as hub the National Astronomical Observatory at Rozhen, Bulgaria. Together with the joint research programmes for highly qualified professionals, it attracts young pupils and students to make research and choose sciences as carrier path.

4) Guidance and participation in the design, development and exploitation of national, regional, and pan-European research infrastructures.

4.1 In a larger sense, spin-offs from the basic science are the devices and techniques developed to do basic academic research, which turns out to have other uses.

4.2 The economists are recognizing the importance of spin-offs especially in the form of instruments developed to do fundamental research. Much of the equipment in a modern electronics factory began in academic research institutes, and there are many examples of instrumentation passing through all or part of the chain from physics to chemistry, to biology, to clinical medicine, to health care.

4.3 As the former director of CERN Professor Lewellin-Smith put it, the basic scientists are motivated by the desire to gain priority, and generally to publish and publicize their work, whereas applied scientists working for the industry are motivated to protect, hide and patent. For that reason, it may paradoxically be that there are more spin-offs from basic than applied research.

5) Developing scientific expertise in strategic fields of public interest[1]

5.1 No national government or international organization could cope with the complex and interwoven economic, social and environmental processes without appropriate *scientific expertise*.

5.2 The creation of such expertise involves working methods that are quite different from those the scientists need to create good academic science. The CUDOS[2] scheme drives academics to become experts in narrow fields, because specialization is the only strategy leading to original breakthroughs. For that reason alone, individual scientists are rarely able to act as effective advisors dealing with complex, more wide-ranging questions that require urgent solutions. In the same time, they are the only 'actors' in the society capable of tapping into the tank of the objective knowledge that is needed to build up expertise[3].

5.3 They do this within panels of scientists, gathered from various specialized fields, which may come up with sound proposals as a result of thorough discussions and sometimes commissioning of additional research. Thus, their work as experts represents yet another social role, similar to the role in applying the results of basic science for military or economic goals. In these cases, the scientists are working as problem-solvers, pooling a large variety of competences in order to achieve concrete results. **Which are the institutions able to contribute in selecting experts helping the Governments to elaborate decisions and policies?** One obvious answer is: the **National Academies** of Sciences both as **learned societies** gathering under one roof the best scientists and as **networks of research institutes** and centers directly or indirectly related to their members.

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1 E. g. energy sustainability, national security, environment protection, protection from natural and anthropogenic catastrophes, public health care, safe food production, etc.

2 CUDOS is the acronym for *Communality, Universality, Disinterestedness, Originality* and *Scepticism*; five principles, regulating the functioning of the invisible colleges building the corpuses of the various scientific disciplines; for a recent discussion, see John Ziman, *Real Science: what it is, and what it means*, Cambridge University Press 2000, and the original paper of Robert Merton, The Sociology of Science, University of Chicago Press, Chicago 1973

3 As often the economists put it: the objective knowledge is a public good, but not a free one; only highly- trained scientists could make a proper use of it.

5.4. The above option is proposed since 1993 by the Interacademy Panel (IAP), which is „*a global network of the world's science academies. Its primary goal is to help member academies work together to advise citizens and public officials on the scientific aspects of critical global issues. IAP is particularly interested in assisting young and small academies to achieve these goals and, through the communication links and networks created by IAP activities, all academies will be able to raise both their public profile among citizens and their influence among policy makers*".

5.4 The Academies are those tanks of highly qualified scientists who may help Governments and the international organizations to take informed decisions in complex global problems like climate change, sustainable energy systems, preserving cultural and bio diversity, etc.

6) Need of Regional Expertise

6.1 One agrees in Central and Eastern Europe without difficulty that there is a need for international co-operation- mostly with the developed countries of the EU and beyond- in order to rebuild the national scientific infrastructures, which support academic science in this region. However, could we argue objectively in favour of the usefulness of an intraregional co-operation, or should we support the idea simply because it seems 'politically-correct'?

6.2 The experience with the so-called technology transfer in the last thirty years showed that general solutions to apparently similar problems rarely exist. Think globally, but act locally means that specific local approaches to the global problems are needed. Local solutions need concrete knowledge of the local conditions and specificities. Sometimes, local will mean simply national, but sometimes it will go beyond the national borders comprising two, three and more neighbouring countries within the same geographical and geopolitical region. Being part of the social organisms, science depends as everything else on concrete geopolitical circumstances.

6.3 Since more than ten years, the international community has been encouraging the co-operation among the countries of Southeast Europe (SEE) isolated for long decades by adverse geopolitical alliances. After acquiring some experience in organizing the dialogue and co-operation in the region, now the process geared up to the level of enhanced regional ownership whose concrete expression is the establishing of a Regional Co-operation Council

(RCC). Obeying the logic at the levels of G 8 and EU[4], **one can argue that a Committee or platform or think tank composed by the National Academies of Sciences in Southeast Europe, but comprising also participants beyond it, namely from Central Europe, could and should be an appropriate advisory body for RCC on scientific matters**. Pooling the competences of the National Academies of Sciences in a kind of SEE Scientific Advisory Council may help to adapt the informed decisions taken at G 8, EU or any other global level to the specificities of the region and its needs. It should work in coordination with SEE ERA-NET and Steering Platform for the Western Balkans constructed with the support of the European Commission involving Governmental structures like Ministries for scientific research and state agencies.

6.4 Given the weaknesses of the national S&D&I systems, it seems that the national Centres of excellence should be strengthened *via* networking with complementary entities in the neighboring countries thus attaining a mass closer to the critical one. This policy idea has been launched more than 7 years ago at a Conference in Venice organised by UNESCO- ROSTE (now UNESCO- BRESCE)[5]. A strong accent was put on the regional co-operation and creation of regional networks, which might be considered as distributed Centres of excellence or competence. More extensive co-operation within and among the European regions, in general, and with and within Southeast Europe in particular is a warranty for securing regional relevant expertise, and breeding ground for innovative ideas and new talents.

6.5 The building of expertise on a regional scale is mandatory, *e. g.* in health care, sound food production and control, the environment problems, weather forecasting and control of the climate changes, the prevention of local natural disasters, clean and sustainable energy production, efficient transportation systems, etc.

6.6 Scientific co-operation among regional academic institutions, working on collaborative projects in some fields of regional interest, can and should contribute to acquiring the problem-solving experience needed to provide regionally relevant expertise. By the same token, it should also be the breeding

[4] Described in detail in the contributions of Professors Hassan, Engelbrecht and Friedrich to this Conference.

[5] Reconstruction of Scientific Co-operation in Southeast Europe, International Conference of Experts, Proceedings, eds. Pierre Lasserre, Simeon Anguelov, Iulia Nechifor, Rosana Santesso, UNESCO ROSTE, Venice 2001

ground for new knowledge based products and services thus contributing to the economic recovery of the region.

Concluding remark

What makes Academies unique in the capacity to accomplish such tasks is the well developed system of global control on the quality of their membership and collaborators. What is to be done now and in the near future is to strengthen and develop further this system mostly by wider opening for international co-operation and peer review control not only on the individual carrier paths but more and more on the national R&D&I systems.

Closing Session