



Current Tasks of Academies and Academia

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Abstract

The present article is written as an issue paper on academies for the GL-21 Project. It traces activities of academies and their associations in the present information-rich society. The state-of-the-art of the academic world is briefly described. This permits to focus on general trends in knowledge management in general and the role of academies. The successful strategies and interdependencies form the framework of activities, where one should also understand the possible obstacles. The impact of these activities together with ideas for more social responsibility and cooperation are examined. The unique position of WAAS in organizing a network for social progress is underlined.

1. Background on Academia

In general terms, Academia as the learned world is connected with studying and thinking on a wide range of themes, including community and environment. This learned world is comprised of universities, academies, research institutes and professional associations, all of which are concerned with the pursuit of research, education and scholarship.

The most important groups within Academia are the following:

- National Academies are, by definition, bodies of selected distinguished scientists with varying degrees of oversight by the nation states to which they belong. In this way, National Academies are really cross-cutting bodies for research and knowledge, sometimes clustered into general fields such as humanities, social science and natural science academies.
- Universities are at the forefront of higher education of the general public and of future generations of academics, as well as the creation of knowledge.
- Specialized research institutes are mostly IGOs launched by states or international authorities for fostering research in particular fields.

- International Unions unite scientists and scholars within constituent National Associations for particular fields of natural and social sciences and are the main organisers of professional conferences that drive new trends in research.
- Various knowledge-sector NGOs and networks, launched either for promoting research or uniting scientists and scholars, enrich Academia with their bottom-up initiatives.

In this issue paper we focus on activities of National Academies of science and arts and their international networks (education and science are topics of other issue papers). National Academies have a long history and a wide range of activities and aims (Engelbrecht and Mann, 2011; Šlaus, to be published), including:

- promoting research and scholarship in all fields of natural and social science, engineering and humanities, and recognizing excellence in science and arts;
- supporting science at national, regional and global levels;
- maximising the impact of scientific understanding;
- advising governments, policy-makers and society.

National Academies have been founded in most countries of the World. Some of them are the learned society type (fellows only), while others also have research institutes (research staff in addition to fellows). These structures have developed historically and depend upon the system of research in a particular country as well as the general governance system of the state. Usually there is one National Academy in a country, although in some cases there might be more. In addition, there might be national academies for particular branches of knowledge such as medicine, engineering, arts, etc., for example in the USA, France, Spain, Australia and Russia. In most countries the National Academies are state institutions but in some countries, they have the status of an NGO.

Scientists were among the first to recognize the importance of international cooperation and knowledge exchange. The global umbrella organisations of academies thus have a history of more than over a century: ICSU was founded in 1899, ISSC in 1952 and their merged successor organisation, the International Science Council (ISC), was launched in 2018. The latter is the World's premier representative scientific organization today, uniting more than 140 national and regional academies together with research councils and 40 international scientific unions and associations. Meanwhile, the InterAcademy Panel was launched in 1993 and its successor InterAcademy Partnership (IAP) in 2016. The IAP includes also the former InterAcademy Medical Panel, InterAcademy Council and regional networks in Asia/Pacific, Europe, Americas, and Africa. The IAP brings together more than 140 national and regional academies. The International Union of Academies (UAI) founded in 1919 created additional possibilities for cooperation among academies in philology, history, moral sciences and political sciences. It unites more than a hundred academies from 63 countries from all continents.

The regional networks of academies are also important actors in formulating science policy. In Europe, ALLEA has 57 member academies from 41 countries (as of 2019), while EASAC

has member academies from all the EU countries together with Norway, Switzerland and Academia Europaea. There are regional networks of academies in Asia, Americas and Africa.

Academia Europaea and the European Academy of Sciences and Arts, finally, are examples of regional academies with individual fellows from across countries in the region concerned, in this case Europe. Other thematic and regional organisations include the Academy of Sciences for the Developing World (TWAS), later renamed the World Academy of Sciences; the Islamic World Academy of Sciences (IAS), Latin American Academy of Sciences (ACAL), African Academy of Sciences (AAS), Academia Europaea (AE) and others.

In addition to international networks of national and regional academies, there are global academies whose fellows are top scientists and artists from various countries around the world. On the initiative of Albert Einstein, Robert Oppenheimer, Bertrand Russel and other prominent scientists and thinkers, the World Academy of Art and Science (WAAS) was launched in 1960. Presently, WAAS has more than 700 Fellows. The objectives and purpose of WAAS are stated in its Statutes as follows:

- to contribute to the progress of global civilization, human welfare, evolution of global governance, peace, sustainable development and the realization of human dignity through transnational studies, projects, appraisals and recommendations; and
- to function as a transnational forum for interdisciplinary discussion of art and science and the social consequences and policy implication of knowledge.

The Global Young Academy (GYA) was launched in 2010 and has about 200 Fellows. The declaration of young scientists before launching the GYA characterizes their willingness to act: “Making a better world needs better science—we young scientists are ready to contribute our share”.

NGOs like AAAS, Euroscience and others in principle also unite all scientists. A prominent place for discussing global problems is the World Science Forum, started by the initiative of the Hungarian Academy of Sciences in Budapest. ISC, IAP and TWAS have regular meetings called Science International. Meanwhile, analytical IGOs like OECD, or PP Cooperation like WEF unite societal sectors.

In order to characterize the general picture of Academia, the general international organisations for universities must also be briefly described. The International Association of Universities (IAU), founded in 1950 under the auspices of UNESCO, unites about 650 universities from 130 countries. The IAU is called the global voice of higher education, stressing leadership and internationalisation. Other regional associations of universities, for example in Europe (European University Association (EUA), League of European Research Universities LERU, Coimbra Group, etc.), unite universities in a particular region. Some associations are founded on language principles, such as the Association of Commonwealth Universities or L’Agence Universitaire de la Francophonie. These associations (and many more) share information about innovative structures and strategies that help universities face the challenges of global development that should be reflected in higher education.

2. Challenges and Possible Activities

From the viewpoint of the academic world “a fundamental challenge to contemporary science is to identify manageable pathways to global sustainability through the complex web of cause and effect connecting planetary, social and economic processes, and to assist in the creation and promotion of policies and public action that can move societies along them.”(ISC, 2019) This idea is supported also by academies, including WAAS (see above).

The main role of academia (universities and academies) is knowledge generation, management and dissemination. This must be supported by education. Academia is nowadays an important player in addition to the trifunctionality of state, civil society, private sector model, according to Governance Model 3.0 #Next Gen (Destatte, 2019). Here we focus on the perspective of National Academies.

National Academies and their international networks (see background) and their members have formulated strategies in order to address global challenges (ISC, 2019; IAP, 2019; ALLEA, 2019a, 2019b; Bishop and Baudains, 2010; UN Policy Note, 2014; UNDP Sustainable Development Goals 2015). For example:

ISC (2019) has indicated four main domains for action:

- the 2030 agenda for sustainable development;
- the digital revolution;
- science in policy and public discourse;
- the evolution of science and science systems.

IAP (2019) has formulated the following strategic objectives:

- to build the capacity of regional networks of academies and their national members;
- to empower academies and networks to provide independent, evidence-based, authoritative advice on global, regional and national issues;
- to promote the importance of science in research, education and literacy;
- to build IAP as a progressive and more resilient global academies network.

WAAS is actively working on:

- introducing collective membership of WAAS;
- encouraging activities jointly with national academies;
- explaining the ideas of new paradigms to society and policy-makers;
- joining Science International to cultivate contacts with the ISC and the IAP;
- strengthening contacts with global institutions like the UN, UNESCO, World Bank, etc.

In all these activities the importance of education must be stressed. Education for the future means that (i) curricula are designed to convey knowledge about major transitions of the world and its complexity; (ii) graduates of today are equipped to tackle the foreseeable

problems of the coming 30-40 years as well as unknown challenges; (iii) research in universities contributes to 'hot' problems within society while also allowing scientists and scholars the necessary freedom in research to find unexpected knowledge (blue sky research).

3. Interdependencies and Obstacles

In this complex world, people, their associations, states and actions are all linked and dependent upon the environment. This means that knowledge about complex systems must be disseminated as a part of education at all levels, and also to present policy-makers. Every change in one field of human activity might influence others and the links between policy actions should always be indicated in terms of their cross-cutting effects. These links might be shadowed by political actions.

As far as obstacles are concerned, IAP has listed the following (IAP Report, 2019):

- science and policy worlds are different and typically weakly connected;
- the scientific research is conducted in disciplinary silos;
- interactions between the SDGs and their targets are complex and poorly understood (inherent complexity of the SDGs);
- the lack of reliable data;
- the lack of funding and other incentives.

WEF has pointed out trends that must be taken into account (WEF Report, 2017):

- rising income and wealth disparity,
- changing climate;
- increasing polarization of societies;
- rising cyber dependency;
- ageing population.

National Academies often face (see also above IAP, 2019):

- local political turbulence;
- difficulties obtaining funding for their projects;
- weak links with their respective governments.

WAAS, with its many initiatives, needs:

- to foster a post-internationalist sense of the knowledge sector as a global community;
- to further develop links to other sectors at a global level;
- to specify and focus on core activities;
- to actively involve more of its members;
- to find stable sources of funding and thus provide stronger incentives for member involvement.

4. Successful Strategies and Impact

The academic sector has identified several shortcomings on which appropriate action should be taken (IAP Report, 2019):

- increase understanding between science and policymaking communities;
- bridge the gap between knowledge supply and knowledge demand;
- facilitate the development of science, technology and innovation for the SDG roadmaps and action plans to 2030;
- facilitate the reorientation of research and research support systems, so that they are more conducive to supporting global goals.

“Lessons concerning the weaknesses of social systems must be studied in depth and analyzed to understand why and how conventional thinking has led to global crises, the vulnerabilities generated by globalization and networking, and the ideas needed to foster effective social innovation.”

Clearly the joint efforts of WAAS, IAP, ISC and other global organisations could accelerate the progress. One should also be aware of risks (WEF Report, 2017) in technological changes and new global economic and geopolitical imbalances, which requires scientific research. Here WAAS might play a leading role in indicating global trends and associated directions for research and academic debate.

Key imperatives for WAAS are:

- using its scientific potential and shaping mindsets;
- establishing good links with national academies and their international networks;
- stressing human-centred knowledge applications, human rights and inclusiveness.

In order to maximize the impact of all activities concerning research, education and the management of knowledge, several general principles must be followed (LERU Report, 206; 2017):

- the core values in research activities are excellence, openness, ethics and research impact;
- there is a clear need developing the capacity to conduct more research on transition problems;
- fostering transition from disciplinary-organized research to inter- and transdisciplinary research and creating the next generation of interdisciplinary researchers;
- developing open and explicit structures in universities corresponding to future-oriented policies;

- taking into account societal impact in the evaluation of research and education;
- generating cooperation and informal networks;
- fostering both problem-focused and academically oriented (blue sky) research;
- establishing clear messages and communication strategies to inform society about research results and possible trends;
- preventing the misuse of science;
- resourcing its action plans at national, regional and international levels.

Concerning the main challenges of research, the UN's 17 SDGs with their targets and indicators (Agenda 2030) are widely recognised as strategic goals for research and educational institutions. These goals are interdisciplinary but still some important fields of prospective study need to be stressed (ISC, 2019; IAP, 2019; IAP Report, 2019; WEF Report, 2017; EC SAM Report, 2017):

- Earth system megatrends (ecosystems, urbanisation, land degradation, water pollution, migration, etc);
- secure, clean (low carbon) and effective energy;
- emerging healthcare technologies;
- digitalisation and big data analysis;
- security (including cybersecurity) and defence;
- climate-compatible and sustainable agricultural management for food security;
- value changes, environmental consciousness and cultural dimensions of climate change;
- smart, green and integrated transport;
- humanities for interpreting all the changes and their ethical dimensions;
- basic sciences (particle physics, genetics, space studies, etc.) which form the foundation for future (yet unknown) applications and/or technologies.

WAAS has issued a Statement on Planetary Momentum (April 2020). The following has been stressed:

The community and its leaders should find the ways to change the situation from disunity to global solidarity again based on complementary top-down and bottom-up initiatives. Academia should analyze the risks and formulate paths to innovation and cooperation together with personal responsibility. Attention should be paid to decision theory, rational choice and values in framing solutions, taking into account the complex relations, interactions and reciprocal immediate and long-term influences involved. It also means that transdisciplinary thinking is needed. All sectors should seize the opportunities to alter established practices which have failed and have no future. Lessons concerning the weaknesses of social systems must be studied in depth and analyzed to understand why and how conventional thinking has led to global crises, the vulnerabilities generated by globalization and networking, and the ideas needed to foster effective social innovation. It calls for changes from technology-driven society to human and human-oriented technology utilizing opportunities generated by the

digital revolution as illustrated by web-based distance learning, which is already permeating our education system and work places.

One role of Academia, especially of National Academies, is to mobilize all scientists and scholars to convey information about scientific results to the wider society. This role becomes extremely important in today's information-rich globalized world where fake news and non-scientific ideas can spread widely and quickly. Integrity of research and a sound open-data policy must be supported by the scientific community in confronting threats to politicize scientific research. Here academies are at the front-line of activities (ISC, 2019; ALLEA, 2019a, 2019b). A general understanding of the complexity of world is present in the scientific community but not so well understood in the wider society. That is why *science education* is extremely important at all levels, from primary schools to policy-makers.

5. Conclusions

The activities of academies can cover many questions about social and technological development. Recent books by leading academics have listed many challenges and unanswered questions (Djurovic, 2017; Christophorou, 2018) for extending the boundaries of knowledge. Academies know their responsibility (see strategies of the ISC, 2019; and IAP, 2019), but the crucial problem is how to turn knowledge into action.

WAAS has a unique global position compared to other academies, and wide experience in dealing with problems on a large scale. The analytical knowledge derived from thematic meetings and intense discussions among leading experts allows for more advanced formulations of social policy goals, has revealed principles of human-centred economy and education, developed an understanding of the role of social power, and promoted science diplomacy, anticipated future challenges and promoted creativity. This work must be continued, imbued with the academic spirit envisaged by the Founders of WAAS. WUC courses on transforming the world and on complexity may serve as one way of disseminating these ideas.

The imperative for WAAS is to turn ideas into action by organizing a network for social progress. The challenge is to start actions guided by a human value system cognizant of the facts of science and willing to accommodate them. It means a tight cooperation with other actors, both NGOs and IGOs. It also means creating more activities that could change the mindset of society and policy-makers for a better future.

Effective leadership must be based on knowledge and knowledge generation needs effective structures, management and communication. Academies are leaders in thought, collective wisdom and social power.

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