The Royal Swedish Academy of Sciences

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Brief history

The Royal Swedish Academy of Sciences was founded in 1739 by Jonas Alströmer, Anders Johan von Höpken, Sten Carl Bielke, Carl Linnæus, Mårten Triewald and Carl Wilhelm Cederhielm, the most renowned of the group being the 32-year old Carl Linnaeus (knighted von Linné). In 1739, Sweden had just begun to recover from its involvement in wars on the European continent. It was argued that science could have a major positive influence in furthering this recovery. The goal set for the young academy was "…in Sweden to generate and spread knowledge in mathematics, natural science, economy, trade and useful arts and manufacturing"; and proceedings were to be in Swedish, not Latin. Through its members and Permanent Secretary the Academy developed a well-established and network of broad international contacts. In the 18th century, Swedish science had already acquired an impressive position in many fields, in particular in systematic botany, but also in astronomy and chemistry.

The current activities of the Academy are based on the foundation laid by the chemist Jöns Jacob Berzelius, when he reformed its operations as its Permanent Secretary in 1818-1848. Greater focus was placed on basic research in mathematics and the natural sciences. Since its foundation in 1739, about 1,550 Swedes have been elected members of the Academy.

Mission

The Royal Swedish Academy of Sciences is an independent, non-governmental organisation with a charter which lays down in its first article that its task is "to promote the sciences and strengthen their influence in society".

The Academy promotes science of the highest quality by stimulating research aiming at new discoveries, strengthens the social role of science by focusing on important social issues, appraising them from a scientific perspective and communicating its findings and also participates in cooperation on global issues, with the aim of being an international scientific protagonist of sustainable development. It is the Academy's conviction that a knowledge based society that gives priority to education, research and innovation has the best chances to meet future challenges.

Organisational structure

The Academy consists of its members. Today it has about 400 Swedish and 175 foreign members. They are divided into ten classes: mathematics, astronomy and space science, physics, chemistry, geosciences, biosciences, medical sciences, engineering sciences, social sciences and a class for the

humanities and for outstanding services to science. Each class selects a Chairman and has a part-time administrative secretary.

The Academy's foremost representative is its President, who is assisted by three vice presidents – all elected to their offices for a fixed period. Together with the full-time Permanent Secretary they constitute the Presidium. Responsibility for the development of the Academy's activities and the effective use of available resources lies with the Academy Board, which consists of the presidium and ten members representing the classes.

The Academy is served by a secretariat with a staff of about 30 headed by the Permanent Secretary. The secretariat's responsibilities include communication, administration, finance and the programme of activities. The Academy also operates through a number of research institutes. If these institutes are included, the Academy has a permanently employed staff of about sixty and about the same number on fixed-term contracts.

Activities

The Academy's research institutes

Over the years a large number of research institutes have been established at the Academy's initiative. Several of these have subsequently been spun off. This is the case, for instance, with the Swedish Museum of Natural History, the Swedish Institute of Space Physics in Kiruna and, most recently, Kristineberg Marine Research Station. Today, the Academy operates **Abisko Scientific Research Station,** where ecological, geological, geomorphological and meteorological research is conducted in a sub-arctic region, the **Bergius Foundation**, a botanical research institute located in the Bergius Botanic Garden close to the Academy, the **Beijer Institute,** which focuses on the interplay of ecological systems with social and economic development, **Institut Mittag-Leffler**, which is an international institute for mathematics, the **Institute for Solar Physics of the Royal Swedish Academy of Sciences**, which undertakes research using one of the world's leading solar telescopes on La Palma, and the **Center for History of Science,** which maintains the Academy's archives, scientific instrument collection and the Nobel archives and also manages the Academy's Observatory Museum.

Policy activities: Influencing research policies

One of the major goals of the Academy is to influence research policies in Sweden. The Academy can do this impartially due to its high degree of legal and financial independence, and to the fact that through its members it represents frontline science in the whole of Sweden. Although Sweden has a small population it still holds a forefront position in science. More than 3% of Sweden's GDP is invested in science and development. Somewhat less than one third of this support is financed by the Government, and this funding is mainly earmarked for basic research.

The reputation enjoyed by the Academy and its independent, non-governmental status means that governmental proposals to the parliament, primarily relating to issues linked with research, are often referred to it by the government. The Academy also undertakes assessments and evaluations, for instance of research foundations such as the Swedish Foundation for Strategic Research and MISTRA, the Swedish Foundation for Strategic Environmental Research.

Promoting excellence in science

This work is undertaken primarily within the Academy's classes and comprises, for instance, responding to government proposals, assessments and evaluations, scientific conferences, research at the Academy's institutes and procedures relating to prizes, awards, grants and research appointments.

Lectures, workshops, conferences and seminars on subjects of current interest involve both members and other invited experts. The initiatives come from individual members, the Academy's classes or various committees. The work of strengthening the role of science in society is mainly interdisciplinary and includes for instance the Academy's permanent and ad-hoc committees and projects.

Young scientists

One important goal of the Academy's activities is to support and promote talented young scientists. A number of the foundations for which the Academy is responsible can be used for direct support to science in this way. This support focuses on graduate students and on early postdocs (1-6 years after graduation). Committees under the classes select recipients of the Academy grants.

The Academy is closely associated to a private foundation, the Göran Gustafsson Foundation. Academy members prepare the selection of recipients of the Göran Gustafsson Prizes. These prizes are given in five different fields: mathematics, physics, chemistry, molecular biology, and medicine, and recipients of these prizes should be below 45 years of age. The relevant faculties of different universities can each nominate one candidate. These prizes have now been awarded for more than 15 years and recipients include the best of young Swedish researchers. Each prize consists of a personal award of 100 000 Swedish kronor and more importantly a research grant of 1,5 million Swedish kronor per year for three consecutive years.

The Academy's permanent committees

The Environmental Committee monitors, identifies and studies critical environmental issues on the basis of the contributions research and science can make to increased knowledge about the environment in which we live. The committee arranges seminars, debates and symposia, and also drafts responses to consultation documents and on other issues linked to the environment.

Since the beginning of the 1980s the Academy has launched and been involved in numerous activities intended to improve teaching in schools and stimulate scientific learning. NTA, "Science and

Technology for All", is one of these initiatives. Most of these activities are organised through the **Science Education Committee.**

The Human Rights Committee consists of representatives from the Royal Swedish Academy of Sciences, the Royal Swedish Academy of Letters, History and Antiquities and the Swedish Academy. The task of the committee is to monitor the situation for researchers all over the world who are subject to various forms of legal abuse. Its work is based on the UN Declaration of Human Rights and other international conventions.

Current ad-hoc committees of the Academy

Questions that concern energy often cover many different disciplines. The Academy's **Energy Committee** has the task of producing knowledge about current energy issues with the emphasis on their scientific and technological aspects. Trends in the supply and use of energy as well as ongoing research, development and demonstration projects provide the basis for its analyses. Its perspective is global and extends about 50 years into the future. The results of its work are circulated to actors in the field of energy and to the general public.

Education, knowledge and science are vital for positive social development. The Academy's **Research Policy Committee** has the task of undertaking analyses from a broader social perspective and an independent point of view and offering advice that can help to improve the conditions and potential for research in Sweden.

The Health Committee focuses on experiences of ill-health among schoolchildren. The point of departure consists of the reports on increasing mental illness among the young that have been presented repeatedly since the economic crisis in Sweden in the mid-1990s. Explanations are sought at a social level, in changing social and economic conditions as well as in trends towards increased individualisation in society and the greater demands made of young people.

Publications

A special means for effective international contact is through the publication of scientific journals. Over the years this activity of the Academy has been reduced. However, the Academy alone or together with another Scandinavian academy still is publisher or joint publisher of a number of journals: *Ambio - A Journal of the Human Environment, Physica Scripta, Acta Mathematica, Arkiv för Matematik (Mathematical Archives), Acta Zoologica, and Zoologica Scripta.* Some of these journals are also published electronically. The Academy is guardian of one journal which is published electronically, but not in print; *Electronic Transactions on Artificial Intelligence*.

In addition, the Academy publishes a number of reports emanating from work performed by its classes and committees. Most of these reports can be downloaded from the Academy web site; www.kva.se.

International activities

The work of international, global cooperation is led primarily by the presidium and involves both cooperation within the framework of international academic and research organisations as well as bilateral collaboration.

Sweden is represented in a number of international academic organisations. *The International Council for Science*, ICSU, is an organisation consisting of a large number of non-government scientific associations. ICSU runs several research programmes, such as The International Geosphere Biosphere Programme, IGBP, whose international secretariat is housed by the Academy. Many of the Academy's national committees also belong to the various ICSU unions for different specialised areas. Further, the Academy is one of the founding organizations of the Inter Academy Panel (IAP).

In Europe, the Academy was also involved in the launching of All European Academies, ALLEA and of the recently establishedEuropean Academies' Science Advisory Council, EASAC.