

## Swiss Academies of Art and Sciences

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### Origins and history

In contrast to the rest of Europe, where academies were founded by monarchs and princes in defiance of the church's sole authority and to act as expert bodies, the four institutions in Switzerland which have been designated as academies only since the 1980's were set up in the tradition of scientific communities. They were established in the second half of the 18<sup>th</sup> century with the aim of applying knowledge to solve the economic and social problems of the time, and in the 19<sup>th</sup> century made a not insignificant contribution to national education.<sup>1</sup>

With a view to organising and promoting their respective scientific community and advocate its interests vis-à-vis the state and society, the four academies were founded at different points in time and took different forms. As early as 1815 the Swiss Academy of Sciences (SCNAT) was founded in the form of an association, to act as an umbrella organisation for natural sciences. It was not until 1943 that the medical and veterinary faculties of Swiss universities and the Swiss Academy of Medical Sciences (SAMW) were established. Unlike the other three academies, which are organised as associations, the SAMW takes the legal form of a foundation. These learned societies were joined in 1946 by the Swiss Academy of Humanities and Social Sciences (SAGW). 1981 saw the establishment of the Swiss Academy of Engineering Sciences (SATW), which – like the SCNAT and SAGW – has the legal form of an association.

The four academies differ not only in terms of their legal form, but also with regard to their membership structure. With the exception of honorary members, the SCNAT and SAGW have no individual members. Rather, their membership is made up of expert associations specialising in their field. SAMW membership includes individual members as well as Swiss medical and veterinary faculties and the Swiss Medical Association. The youngest academy – the Swiss Academy of Engineering Sciences – opted for a mixed membership that covers individual members as well as institutions and organisations active in the field of technical sciences.

Founded at different times, taking different forms and operating from different locations, the four academies perform a wide range of tasks aligned to the needs of their respective research communities. The portfolios of the individual academies are not the subject of this article and are therefore discussed only in summary form in this context. For detailed information, please refer to the respective websites.

Based in Berne, the SCNAT ([www.scnat.ch](http://www.scnat.ch)) supports the scientific activities of its members, as documented in the newsletters and publications issued by these organisations. It has also built up a number of databases, inventories and platforms that provide access to research findings and make them available to the public and government authorities. In addition the academy is responsible for a wide range of long-term editing projects.

The SAGW ([www.sagw.ch](http://www.sagw.ch)), also based in Berne, is organised differently from the SCNAT but manages a very similar portfolio: it promotes the newsletters and publications issued by its member organisations, manages its own databases, is responsible for a wide range of editing projects and incorporates various expert commissions.

By issuing guidelines and recommendations of a quasi-legal nature on medical practice, the Basel-based SAMW ([www.samw.ch](http://www.samw.ch)) is a well-respected institution among politicians and the public alike. Its second remit is the promotion of professional training for the next generation of scientists, with the focus on clinical research.

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<sup>1</sup> See Emile Erne, *Die schweizerischen Sozietäten*, Zürich 1988, and Ulrich Im Hof, *das gesellige Jahrhundert*, Zürich 1984

Based in Zurich, the SATW ([www.satw.ch](http://www.satw.ch)) supports the activities of its member organisations and is committed to promoting an understanding, particularly among young people, of technology and its practical applications. All four academies are also involved in shaping scientific policy, engage in professional publicity work and play an active role in the international scientific and umbrella organisations relevant to their particular fields.

All four academies are officially recognised institutions for the promotion of research, and as such are entitled to public funding under the terms of the Swiss Federal Law on Research. The SAMW and SCNAT have substantial private funds.

## **The merger of the four academies to create the Swiss Academies of Arts and Sciences – Background**

As the oldest institutions in Switzerland for the promotion of research, the four scientific academies have been instrumental in shaping the country's nation-wide research policy and a corresponding national system for the promotion of research. In the wake of this expansion, the four academies took on more and more new responsibilities, and new institutions – in particular the Swiss National Science Foundation – were set up which have access to significantly more funds than the academies and therefore play a more central role in promoting research. Starting in the 1990s, the large number of institutions engaged in research and scientific policy in Switzerland prompted politicians and the government to call for structures to be simplified. Due to their many and varied tasks, the four academies were the subject of much political and government scrutiny. It transpired that neither politicians nor the public had any clear idea of their activities. The four academies lacked any adequately defined profile that could be effectively communicated to the public. Moreover, the focus over the past five decades on promoting and advocating the interests of individual scientific fields was becoming outdated, and the increasing importance of interdisciplinary and transdisciplinary research highlighted the need for closer collaboration among the four academies. In view of the decline in progress certainty and growing scientific scepticism, it also became clear that the sciences needed to be represented as a united front. This gave rise to the idea of reshaping the relationship between the sciences and society, and assigning a central function to the academies in this context. Their membership structure as well as their historic mandate to act as an interface between science and society made them an ideal candidate for this task. With a view to assuming this mandate of mediation in response to contemporary needs and conditions, the four academies merged in June 2006 to create a strategic management holding under the umbrella of the Swiss Academies of Arts and Sciences (akademien-schweiz).<sup>2</sup> The following mission statement was used as the basis for formulating their joint core tasks.

## **Mission**

Committed to an open, pluralistic understanding of science, the four Swiss academies represent the sciences in their entirety – constrained neither by discipline nor university. Unconstrained by discipline but anchored in disciplines, their inter- and transdisciplinary approach to their tasks brings together scientists, experts in the worlds of politics, business and public administration, and interested laypersons. With a nationwide presence that transcends individual scientific and regional organisations, the academies are ideally placed to act as a national interface between science and society. As a largely autonomous, self-organised assembly of scientists and other groups interested in science, they

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<sup>2</sup> See also Anne-Claude Berthoud and Markus Zürcher, *Académie suisse des sciences sociales et humaines*, in: Institut de France, *Les Académies en Europe au XXI<sup>e</sup> siècle*, Paris 2008, pp 72 – 73

enjoy a close relationship with various target groups. Their main strengths are as follows:

- Independent i.e. trans-institutional and transdisciplinary approach
- Expertise and excellence thanks to being embedded in the scientific community
- Long-term view

High-level, versatile scientific competence, an inter- and trans-disciplinary approach, and the involvement of experts and laypersons from the worlds of politics, business and public administration enable the four academies to work closely with the relevant groups to perform the following interdisciplinary tasks:

- a) *Foresight* and communication of socially relevant topics related to education, research and technology and the related implications; foresight covers the promotion of new research areas in as yet un-established fields (e.g. palliative medicine), the identification of new needs, deficiencies and opportunities, as well as support for scientific fields of national importance.
- b) Conducting a balanced dialogue *between science and society* with the aim of promoting *mutual understanding*; this involves providing research findings and evaluations on pressing social problems (e.g. climate warming, loss of biodiversity, energy and water shortages, sustainable energy supplies, access to medical services).
- c) Promoting *ethical responsibility* in terms of way scientific findings are obtained and applied; formulation of guidelines and standards governing good scientific practice.

## Organisation

As a strategic management holding entity, akademien-schweiz has no operating units of its own. The existing activities of the four academies are integrated at different levels. This model entails the following legal and organisational consequences:

- Each of the four academies has retained its former organisational and legal form: The four academies continue to operate as legally autonomous entities.
- As a strategic management holding entity, the Swiss Academies of Arts and Sciences has no operating units of its own. All mandates arising from the organisation are operationally implemented either by one academy on behalf of all academies, or jointly by two or more academies.
- Existing and new activities are integrated to different degrees, thus necessitating the classification of all existing activities into the following categories

The above-listed **coordinated tasks** – foresight, ethics and dialogue – are performed by all four academies in the name of and under the responsibility of the Swiss Academies of Arts and Sciences. Likewise the new organisation bears responsibility for all issues relating to science policy which are relevant for all disciplines. By the same token, all contacts with national and international partners come under the remit of the organisation.

The individual academies remain responsible for all activities related to the organisation of their respective scientific communities. These are designated as **fundamental tasks** and cover the following activities:

- Organisation and networking of scientists, experts and interested laypersons within the context of scientific communities, commissions and forums within and between disciplines at regional, national and international levels;
- Promotion of an exchange of ideas and opinions by means of events and conferences, and the preparation, provision and support of scientific publications, in particular journals;
- Conducting expert and discipline-specific studies and surveys.

As before, editing projects, databases and other research infrastructures are autonomously managed and updated by the individual academies. These activities are classified as **special or supplementary tasks**, since many of these projects are implemented by the individual academies on behalf of public authorities or third parties, and in many cases have access to special funding.

Like three of the four academies, akademien-schweiz has the legal form of an association. Strategic management is the responsibility of a Committee consisting of the four Presidents of the affiliated academies. The four Secretaries General of the individual academies make up the General Management Board which is responsible for operational implementation. Important business is submitted to the Delegates' Assembly, consisting of three representatives from each of the four academies. These representatives must also be members of the supervisory organs of their respective academies. This ensures an exchange of views and information between the umbrella organisation and the individual academies. In addition, the Presidents are free at all times to consult the management boards of their academy on any Swiss Academies of Arts and Sciences business.

The organisational form presented here, as well as the aforementioned division of tasks, has been enshrined in the revised Swiss Federal Law on Research, providing akademien-schweiz with a sound legal basis within the Swiss scientific promotion system. Their tasks are also now clearly defined and sufficiently demarcated from those of other organisations.

The foundation of akademien-schweiz has created the largest, most cost-effective scientific network in Switzerland, covering an estimated 100,000 individuals in around 160 expert associations, around 100 responsible commissions and 29 cantonal organisations.<sup>3</sup> It has three centres of competence in the form of TA-Swiss, the Centre for Technology Assessment assigned to it by the government, International Scientific Committee on Research in the Alps – part of SCNAT – and the Network for Transdisciplinary Research (td-net). With its ability to draw on an exceptionally broad, varied and proven pool of knowledge and experience provided by a network of experts and interested laypersons in the fields of science, public administration, business and politics, the new organisation is in an ideal position to act efficiently and effectively in the interests of foresight, ethics and dialogue with society.<sup>4</sup>

### **Implementation and first products**

akademien-schweiz is currently concentrating on seven focal themes,<sup>5</sup> in keeping with the maxim that solutions and answers are to be sought and found at the intersection between disciplines, and that knowledge has an impact only if it has been validated in the context of a dialogue between the public, politicians and government authorities. In the interests of transdisciplinarity, it is important to generate

<sup>3</sup> BFI Message 2008 – 2011 dated 24 January 2007, p. 1309; see also SAGW Bulletin 3/06, p.9.

<sup>4</sup> BFI Message 2008 – 2011, p.1309 and p.1449 / For the latest information, please visit [www.akademien-schweiz.ch](http://www.akademien-schweiz.ch)

<sup>5</sup> In the framework agreement for education and research concluded for the 2008 – 2011 period, akademien-schweiz pledged to address the following seven priority topics: 1) Approach to new technologies, 2) Development of the Swiss habitat, 3) Swiss education system, 4) Scientific integrity, 5) Gender, 6) The changing face of medicine and 7) Methodology for foresight.

"socially robust knowledge" (Helga Nowotny) that meets the needs not only of science but also of society in terms of acceptance, desirability and transparency. Foresight, ethics and dialogue constitute transversal tasks that also aim to uphold the trust charter between science and society. In this context the academies serve as observatories, laboratories and dialogue platforms.

As *observatories* they aim to identify trends and emerging issues in good time, before mere indications escalate to become pressing concerns. To this end they use existing monitoring instruments (ProClim, Alpine Research), apply the proven expertise of TA-SWISS, and are currently developing additional instruments for forecasting trends. As *laboratories* they enjoy a great deal of freedom and, in addition to working with other Swiss research institutes, can turn to new forms of collaboration such as expert evaluations as well as new predictive methods. Finally, akademien-schweiz acts as a *dialogue platform* to safeguard against the risk that the dynamic nature of science and technology leads to a parting of the ways between scientific and technological progress on the one hand and social progress on the other, giving rise to a growing discrepancy between functional and substantial rationality (Karl Mannheim). The questions facing society must be translated into research questions and their ideological components set aside, so that they can be treated as scientific objects. The aim is to achieve a new quality of dialogue between science and society, as well as between natural sciences and cultural sciences.<sup>6</sup>

With this in mind, akademien-schweiz is currently implementing 18 projects. The initial results obtained from these have attracted great interest and achieved an exceptionally high resonance. In December 2007 the Energy Memorandum was issued, which illustrates and explains the need for sweeping innovations in the field of energy efficiency, conversion and substitution.<sup>7</sup> Following the publication of these findings, a proposal was drawn up and submitted for a national research programme entitled "The future of energy in Switzerland: social risks and challenges". The aim of the programme is to examine, from a social science perspective, whether and how the energy-saving potential outlined by the Memorandum can be exploited. Two additional energy-related projects are currently under way: the first aims to analyse the emerging conflict between the use of renewable energies and landscape conservation, in order to identify possible solutions; in the second project akademien-schweiz will formulate a scientifically-grounded position statement on future electricity supplies in Switzerland. As part of its foresight mandate, akademien-schweiz is also looking into nanotechnology: nanotechnology theses are published, following which measures for an integrated ELSI research programme are outlined, with the aim of implementing them as part of ongoing nanotechnology research programmes. In addition, the organisation published the "Handbook of transdisciplinarity research" as an important contribution to methodology. The "Principles and procedural regulations governing scientific integrity" ("Grundsätze und Verfahrensregeln zur wissenschaftlichen Integrität") published in spring 2008 proved extremely popular. It provided a detailed analysis of existing international and national regulations as well as recommendations in a range of different fields, and brought them together in a consistent form that can be universally applied by all scientific disciplines. In parallel with this, an integrity protection organisation was set up.<sup>8</sup> Medical humanities is one important line of action: this involves a series of events, starting this year, as well as additional conferences in the course of the year and a study on "Enhancement Medicine" conducted in conjunction with TA-Swiss. Two important partnerships were also forged: akademien-schweiz is now the joint sponsor, with L'Oréal Switzerland, of the "Women for Science" grant and in future will act as the Swiss academic partner of the International Balzan Foundation. Finally, akademien-schweiz issues numerous statements on political issues. A full summary of the publications issues to date as well as position statements, past or future conferences and current projects is provided on the website at [www.akademien-schweiz.ch](http://www.akademien-schweiz.ch).

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<sup>6</sup> See also Anne-Claude Berthoud and Markus Zürcher, *Vergangene Zukunft – Die Akademien der Wissenschaften Schweiz*, in: Frédéric Darbellay & Theres Paulsen, Hrsg., *Herausforderung Inter- und Transdisziplinarität*, Lausanne 2008, pp 273 – 280

<sup>7</sup> Swiss Academies of Sciences, *Denk-Schrift Energie*, Berne 2007

<sup>8</sup> Swiss Academies of Sciences, *Wissenschaftliche Integrität, Grundsätze und Verfahrensregeln*, Bern 2008

## International relations

One of the aims behind the foundation of the SAMW (1943) and SAGW (1946) at the end of the Second World War was to forge a link with international developments and foster an exchange of ideas with international expert associations. Likewise the Council of Swiss Scientific Academies (CASS), the predecessor of akademien-schweiz, was created in 1981 in order, among other things, to meet criterion for international organisations that requires national representatives to represent the sciences in their entirety.<sup>9</sup>

The Swiss Academies of Arts and Sciences is now a member of the European Science Foundation (ESF), All European Academies (ALLEA), European Academies of Science Advisory Council (EASAC), the InterAcademy Panel on International Issues (IAP) and the InterAcademy Council (IAC). Representatives of our academies sit on various committees in the above organisations. The Swiss Academies of Arts and Sciences is also active in the Human Rights Network of Academies and Scholarly Societies. The new partnership with the International Balzan Foundation was mentioned above. This presentation does not cover the memberships held by the individual academies or their internal departments in expert associations relevant for their fields.

## Concluding summary

The merger of the four academies under akademien-schweiz is not so much an innovation in the world of academic institutions, but rather a return to their roots: communication, consultation and advice are part of the core tasks of scientific academies around the world.<sup>10</sup> Their role as mediators between the academic world and the community, their endeavours to place science and the dynamism that it produces firmly at the centre of Western culture, evoke the very origins of academic thinking and to this day remain one of the *raisons d'être* of academies. This also applies to the idea of bundling the available knowledge from different disciplines in order to address emerging challenges effectively and successfully. Scientific organisations and committees form a public from an "inquisitive but rapidly dispersed, unreliable audience"<sup>11</sup>, so that *mediation and dialogue* can be permanently conducted. With a nationwide presence that transcends individual scientific and regional organisations, the academies are ideally placed to act as a national interface between science and society. Finally, by merging all scientific fields under one organisational roof, the four academies have completed a lengthy process of standardisation with the rest of Europe.

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<sup>9</sup> See Beat Sitter-Liver and Markus Zürcher, In einem tieferen Sinn der Gesellschaft nützen, Der Kleine Bund, Saturday 19 October 1996; Beat Sitter-Liver, Akademien, in: Historisches Lexikon der Schweiz, Band 1, p.157, Basel 2002

<sup>10</sup> Pieter Drenth, Die Rolle einer Akademie der Wissenschaften. Veränderung und Kontinuität, in: Union der deutschen Akademien, (Hrsg.), Die Deutschen Akademien der Wissenschaften: Aufgaben, Herausforderungen und Perspektiven, Stuttgart 2001, pp17-28

<sup>11</sup> Claus Koch, Ein Publikum, das diesen Namen verdient, haben die Wissenschaften nicht, in: Berlin-Brandenburgische Akademie der Wissenschaften (Hrsg.), Gegenworte, Volume 3, Berlin 1999, p.55

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