

SSIC Document 4/2015

From Science Council to Innovation Council

The historical development of the Swiss Science Council — an outsider's view

Urs Hafner



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Swiss Science and Innovation Council

The Swiss Science and Innovation Council

The Swiss Science and Innovation Council SSIC is the advisory body to the Federal Council for issues related to science, higher education, research and innovation policy. The goal of the SSIC, in line with its role as an independent consultative body, is to promote a framework for the successful long term development of Swiss higher education, research and innovation policy.

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The author alone bears full responsibility for the contents of his text.

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Foreword by the President of the Swiss Science and Innovation Council

Astrid Epiney

The Federal Council set up the Swiss Science Council (SSC) in 1965. The Swiss Science and Innovation Council (SSIC), as it is now known, has therefore existed for 50 years.

For the SSIC, this occasion prompted a historical review and a presentation of the current actor constellations involved in Swiss education, research and innovation policy.

In terms of the historical review and therefore the presentation and analysis of its own history, the Council invited journalist Urs Hafner to obtain information about the institution's history and gave him free rein to organise it and to analyse it where necessary. If the SSIC had decided to produce a semi-official presentation of its own history, it would not have been true to the Council's view of its own activities. Instead, the SSIC wanted to find out how its development is understood from outside, irrespective of how it sees itself.

Urs Hafner's essay is supplemented by a chronology of events, which is intended to offer guidance and encourage readers to pick out their own central themes in the institution's historical development.

The aim of the historical review was for the SSIC to hold a mirror up to itself. This goal is fully achieved with the article by an independent journalist. He casts a critical eye on themes and developments, thereby making a welcome contribution to the debate about the Council's tasks in relation to the institutions that deal with science and innovation. This review therefore provides the opportunity to discuss the role of the Science Council in the development of national institutions in an impartial way, and helps the Council qualify its position and where necessary tackle controversial issues. I would like to sincerely thank Urs Hafner for the very inspiring and professional way he completed the task assigned to him.

The chosen approach means that the view of the SSIC and its President sometimes differs from the proposed analysis of individual stages. For example, the year 2000 undoubtedly marked a key turning point in the institution's history. You can, however, read more into this than just "Renovation and weakness". The Swiss Federal Administration was by then sufficiently equipped to formulate the "basis" for an analysis of the Swiss science system on its own and to design and implement a policy to develop it. Under these circumstances, both the gathering of data and reconciling the

interests and intentions of major players, such as educational authorities, university boards, national foundations and academies, became matters for the Confederation. Losing these tasks, however, cleared the way for the Science Council to explore new avenues: its significance was not weakened but shifted, and the Council evolved from a platform for reconciling the interests of various institutions into a "mouthpiece for science" that took a long-term view of the entire higher education, research and innovation (ERI) system. The newly-constituted Council was aware that it was uniquely placed to be able to highlight to the Confederation, research funding institutions and university trusteeships completely independently which factors would promote the development of science and which would not.

In this respect, the compelling interpretation of this phase in Urs Hafner's essay supports the Council in more accurately formulating and justifying its own self-image and mission in times of change. Furthermore, this historical review allows current positions to be once again placed in a broader context. For example, the Council has recently been closely looking at the effects of accountability on universities. While this principle has helped politicians better understand the activities of universities, the SSIC has also observed negative effects that come from it being inappropriately applied to science and which could, ultimately, jeopardise the quality of teaching and research. In this context, the Council criticised the initial proposals for accreditation of universities. The Council firmly believes that simple processes which take into account the uncontested prestige of established Swiss universities are better than a heavy-handed, one-size-fits-all approach.

This example is a good illustration of how the SSIC sees itself. After careful reflection, it accentuates the better argument, advocates it in a calm and professional manner and presents it to key decision-makers. As mentioned above, to mark its 50-year anniversary, the SSIC is also producing its own, unanimously approved presentation of the relationships between the main actors in education, research and innovation policy, in addition to this essay.¹ In this presentation, the Council sheds light on the interplay between institutions, outlines the specifically Swiss way of defining and implementing policies, and

identifies the weaknesses of the system, which could compromise the success of science in the long term. In doing so, the Council fulfils its current legal mandate of recognising the effects of Swiss science policy and the way the system functions from a comprehensive perspective shaped by the experiences of university researchers and teachers.

Urs Hafner's independent interpretation of the history of the Science Council, the chronology and the discussion of the actor constellations in Swiss science policy form a unity in diversity. On this note, I hope you will find this outsider's view of the Science Council a stimulating read.

1 The Constellation of Actors in the Swiss Higher Education, Research and Innovation (HERI) Sector: SSIC Theses and Recommendations. SSIC Document 3/2015.

50 In the centre yet on the periphery Urs Hafner, Science journalist² years

Even though many people in Switzerland are not aware of it, the country has had a science council for fifty years. The Council, which is made up of just over a dozen professors – from humanities scholars to engineers – is designed to support the Swiss government in its science policy work. A good idea, you might think, as politicians are all too often fixated on their own power and pleasing their cronies – not the best premise for taking a long-term view. It can't hurt for them to come into regular contact with academics who are creative and impartial. You can imagine that if nothing else, this transfer of knowledge at the highest level benefits the population, who are governed by enlightened politicians.

At the same time, this is puzzling as Switzerland is famous for its pragmatism. Its politicians had better not pretend to be academic if they want to curry voters' favour. The image of the highly educated intellectual is not very popular. Or if it is, it would be the renowned, visionary engineer. How can it be that hardly any high-profile, legitimate scientists or academics have been democratically allowed to partake in government in this country? Did one administrative unit suddenly fancy the idea of Plato's elitist philosopher king? As is well known, Plato postulated that the state should be governed by wise men for justice to reign. Either wise men would have to come to power or else politicians would have to become philosophers.

Needless to say, Switzerland does not have a philosopher king. The leading politicians usually hold practically-orientated degrees in law or economics, which are deemed the best ways to prepare for a career in the civil service or private sector. They are therefore armed against high-flying ideas. Furthermore,

no philosophers have a seat on the current Science Council. And yet we are unwilling to move away from the idea that politicians should not only be inspired by economic theories or the agonal principle of sport, but also by the knowledge obtained through free reflection in academia. This cannot be such a far-fetched idea in a society that calls itself the knowledge society.

2 Urs Hafner is a freelance science journalist and editor for the *Neue Zürcher Zeitung* among others. Prior to this, Hafner, who holds a PhD in early modern history, was a science writer for the Swiss National Science Foundation and the *Wochenzeitung* as well as editor of the Historical Dictionary of Switzerland. He has written several books, most recently *Subversion im Satz. Die turbulenten Anfänge der "Neuen Zürcher Zeitung" (1780–1798)* ("Subversion in type. The turbulent beginnings of the Neuen Zürcher Zeitung", 1780–1798) (NNZ Libro, 2015) and *Heimkinder. Eine Geschichte des Aufwachsens in der Anstalt* ("Institutionalised children. A story about growing up in an institution") (Hier und Jetzt, 2011).



Innovation and self-monitoring

(since 2014)

1944–1965

Timeline

Brown:
Events occurring in Switzerland

Blue:
Events of
Switzerland (but nevertheless
concerning Switzerland as well)

1944

The Swiss federal government
founds the Commission
for the Promotion of Scientific
Research.

Since 2014, the Science Council that was founded in 1965 has been called the Swiss Science and Innovation Council (SSIC). Its fifteen professorial members who teach at the Swiss federal institutes, cantonal universities and universities of applied sciences, meet five times a year to push forward the work that is planned on a four-year cycle: they proactively author publications and statements, recently for example on biomedical research, on the position of universities of applied science and on the economisation of science. They also work on behalf of the Federal Council to carry out impact assessments and evaluations of topics such as the funding instruments of the Swiss National Science Foundation and paraplegic research. The Council is supported by an 11-member secretariat, which does the majority of the work. The Council has an annual budget of around 2.5 million Swiss francs, which is moderate in relation to its remit and what is demanded of it. The Council members receive a modest attendance fee for their voluntary work.

The Science Council is an “independent advisory body to the Federal Council”. This advisory committee—this is the body’s organisational status—occupies a special position in the rather opaque sphere of research and educational policy. The Council deals with the whole field of science policy and does not represent any special interests, for example of particular universities or cantons; moreover, it does not grant any funds. Administratively speaking, it is attached to the Federal Department of Economic Affairs, Education and Research (EAER). The EAER was set up in 2012, when education, which had previously been handled by the Federal Department of Home Affairs, was incorporated into the then

Department of Economic Affairs. Up until this point, the Science Council was therefore attached to two departments.

On a day-to-day basis, its contact and contracting authority is the State Secretariat for Education, Research and Innovation (SERI), which was also newly set up in 2012. It also comprises the former Federal Office for Professional Education and Technology (OPET), which previously belonged to the Department of Economic Affairs. The SERI mainly distributes funds to the Swiss National Science Foundation and the two Swiss Federal Institutes of Technology. It has probably always been unusual for members of the Science Council to exchange views directly with the Federal Councillor who is in charge of them, as provided for in the relevant provisions of the Science Council since its inception; or indeed, for a Federal Councillor to be thirsty for knowledge and to go knocking at the door of the “wise men and women” to seek advice for his or her own activity, but in the last ten years this is certainly true.

The restructuring of the Federal Administration means that the Science Council is henceforth only responsible for one department, or rather—conversely and more realistically—that only one department is responsible for the Council. It is notable that the areas of education, vocational education and training, research, technology and economics have moved closer, even though the cantons still have the final say when it comes to education issues. One of the first postulates of the Science Council has therefore become a reality.

The guiding concept behind the restructuring is “innovation”, which is reflected in the Science Council’s new name. The word innovation in the field of sci-

1945

The U.S. Air Force drops atomic bombs on Hiroshima and Nagasaki. These weapons were products of the Manhattan Project.

1945

Vannevar Bush submits his report “Science—The Endless Frontier” to U.S. President Franklin D. Roosevelt.

1945

The Commission for Atomic Science holds its first meeting.

ence policy usually refers to a marketable product that has resulted from an invention or finding. Innovative science is science that is guided by economic benefits. Other benefits of science – pure gaining of knowledge, aesthetic edification – take a back seat here. The new organisation aims to incorporate sciences more closely in global competition. By strengthening Switzerland as a location for research, it is also bolstering the country's position internationally. Nowadays, science is considered the most important economic resource.

The Council does not seem entirely at ease with this approach to innovation. Its President affirms that the term also includes “social innovation”, in other words a society's ability to find solutions to problems such as poverty and marginalisation. The Council has criticised the so-called economisation of science, which goes hand in hand with the more intensive evaluation of sciences—both of which can be attributed to the new public management that emerged in the 1990s – in several publications in recent years.

The Council believes that subjects which present easily accessible economic benefits should not get preferential treatment, that evaluations of scientific institutions should not be based on a culture of mistrust; and that performance incentives and assessments go against the nature of scientific work. They believe that basic funding must remain sufficient and that the career prospects for PhD students must be improved. For Switzerland to “remain one of the most innovative countries in the world”, it not only needs to enable young academics “to better cope with a faster-paced working world, but also to live more innovative, happy and healthy lives”.

Not only has the Science Council got a new name, it has also obtained a new legal basis. Article 54 of the

revised Research and Innovation Promotion Act that entered into force in 2014 states that the SSIC should advise the Federal Council proactively or on its authority on all matters related to research and innovation policy, that it should work on behalf of the Federal Council to evaluate the Confederation's support measures, and that it should take a stand on research and innovation policy projects and periodically review these. Compared with the previous Research Act of 1999 it is notable that the Science Council could previously propose, among other things, “global approaches” and “foundations for a Switzerland-wide science, research and technology policy” and propose measures to make them a reality.

The Science Council's sphere of influence was therefore reduced in 2014. It is no longer involved in fundamental considerations about research policy, should they arise. The main focus is now on the evaluation and assessment tasks it is assigned. It is also striking that education does not feature. Naturally, this does not belong in research legislation, but should an official science council not also deal with education? It is, after all, the origin of all science, research and innovation.

Decision-makers do not consider the reduced remit of the Science Council a problem, however. While the Council's President, Astrid Epiney, a legal scholar from the University of Fribourg, sees a risk of the Council losing itself in bitty mandatory tasks, she points out that it regularly presents unanimously approved reports on subjects of its choice. She adds that the Council continues to speak out on higher education policy matters. Mauro Dell'Ambrogio, State Secretary of the SERI, and also a lawyer, is happy with the work of the SSIC, even though he does not have an equal interest in all of the Council's reports, for

1952

The Swiss National Science Foundation (SNSF) is established.

1953

The European Organization for Nuclear Research (CERN) begins building its laboratories in Geneva.

1957

The USSR launches Sputnik, the first man-made satellite, into orbit.

example, he considers the “economisation” report of less interest. He values the Council’s independence and its role in the balance of power within Switzerland’s complex science and research system. He believes that the Council helps ensure that the system is self-monitoring and that it continues to learn and improve. There is no great need for “philosophy”, for reflection and visions, or for strategy and planning on the part of politicians.

1958

The Swiss federal government sends its first Science attaché to the Swiss Embassy in Washington.

1962

The European Space Research Organisation and the European Launcher Development Organisation (ESRO/ELDO) are established in Paris.

1963

The Piganiol Report of the Organisation for Economic Cooperation and Development (OECD) recommends each member state should develop its own science policy.



Spirit of optimism and planning

(1965-1980)

1965–1980

1965

The Swiss federal government creates the Swiss Science Council.

1967

A Committee for Science, Education and Culture is created in each house of Parliament.

In 1957, the Western World was in the midst of the Cold War—and reeling from the shock of the Sputnik crisis. The Soviet Union had unexpectedly fired the first satellite into orbit, thereby demonstrating to the United States in particular its technological and military supremacy. The Confederation's economic development body maintained that the Soviet Union achieved this leap forward by making economic sacrifices and deploying resources cleverly. It was time for Switzerland to come up with a new education and science policy. Similar views were common right across the Western World, which set about making up lost ground. The sciences, and particularly technical ones, were seen as the key drivers of progress and modernisation.

At the end of World War II, apart from the United Kingdom, hardly any countries in Europe had a government office for scientific and technical research. The exception and example was the United States. During the War, it had expanded government research funding and demonstrated through the Manhattan Project that such actions paid off. One scientific policy mastermind was the engineer Vannevar Bush, Director of the Office of Scientific Research and Development. In his paper *Science—The Endless Frontier*, published in 1945, he demonstrated that there was no conflict between scientific freedom and technical-scientific success, but that success was in fact attributable to freedom.

Bush established the terms “pure basic research” versus “applied research”. While basic research is driven by a desire to expand our knowledge of the world without an end goal in mind, applied research pursues practical, possibly even commercially valuable benefits. This conceptual pair protects research from being usurped by business and the government. On

one end of the research process is pure curiosity and the pursuit of knowledge without any thought of practical ends, and at the other is a practical application and a new product. Science and technology form a linear innovation model, where science can decide which research it pursues, provided it contributes to a social benefit.

While most countries in Europe were busy clearing up the wreckage in the aftermath of World War II, Switzerland, which had escaped unscathed, set about developing a national education and science policy. However, education and the university system were traditionally a matter for the cantons, which were not interested in research policy. There was no single competent office for this at federal level either. Exceptions to this were the Commission for the Promotion of Scientific Research (now CTI), which was set up in 1944, and the Swiss Commission for Atomic Science, which was founded in 1945. The latter funded nuclear research in physics, medicine and life sciences and facilitated both basic research and military and civilian technical projects. Prior to this, the only way for the Confederation to strengthen research promotion was through ETH Zurich. That changed in 1952, however, with the founding of the Swiss National Science Foundation, which from then on would promote free basic research from its office in Bern. The first attempt to do so dated back to the early 1940s but failed due to opposition from the universities.

In 1957 the Sputnik reached orbit—and in 1965 the Federal Department for Home Affairs under Social Democrat Federal Councillor and Professor of Law Hans-Peter Tschudi, set up the Swiss Science Council (SSC). In the absence of any legal basis, the university cantons were faced with a *fait accompli* situation. The 13-member body featured professors, as well as

1969

The Federal Act on Higher Education Funding of 28 June 1968 is enacted. The Swiss University Conference holds its first meeting.

1969

The Ecole Polytechnique of the University of Lausanne is transformed into the second Federal Institute of Technology (EPFL) after the ETH Zurich.

1969

A Division for Science and Research is established in the Swiss federal administration.

representatives from industry (Sulzer, Geigy AG), universities and the administration and was presided over by liberal-minded Professor of Constitutional Law, Max Imboden. It comprised three sub-committees: for applied research, teaching and basic research and university support.

The Science Council only obtained a legal basis in 1968 with the Federal Act on Higher Education Funding, which it drafted itself. This legislation was the first of its type in the country's history and sparked the nationally-focused science policy. Article 18 contained a clause that still applies today, stipulating that the Science Council is an advisory body to the Federal Council for all issues – explicitly stated as national or international – relating to science policy. The law placed emphasis on the provision and review of “foundations for a science and research policy for the whole of Switzerland and the measures necessary to implement them”. In addition, the Science Council was intended to establish guidelines for development and collaboration between universities and take a stand on the work of the recently founded University Conference.

Just a year later, in 1969, the Council was no longer the only body to deal with science and education at national level. The Confederation set up the Division for Science and Research, which was part of the Federal Department of Home Affairs and which was upgraded to the status of office in 1973 (it was later incorporated into the current SERI). The University Conference, an association of the cantonal universities (later known as the Swiss University Conference and presided over by the Head of the Federal Department of Economic Affairs, who was also responsible for the Science Council) was set up at the same time. These new bodies started to receive financial contributions from the Swiss Confederation. There was some

overlap between the issues handled by the University Conference, the Division for Science and Research and the Science Council.

It is astonishing how quickly the Confederation set about establishing a national education and science policy by setting up new offices. In doing so, it drew on its experiences since 1945 with the delegate for nuclear issues, the Swiss National Science Foundation (SNSF), the Commission for Scientific Research and involvement on international committees. The same year, EPF Lausanne was set up, ETH Zurich's counterpart in French-speaking Switzerland. The numerous new bodies led to overlapping remits and confusion, however, as bemoaned by the Science Council on several occasions. It was not always clear who was responsible for what and when things needed to be communicated. The Council felt snubbed once again.

Switzerland's efforts in science policy were no exception. All over the world, national governments were setting up science councils and ministries. Around 1950, only 14 countries had such bodies; by 1975 this figure had risen to 90. Even countries like Bangladesh and Congo, which spent almost nothing on research and development, appointed science councils. The model was the same everywhere: the councils did not conduct scientific research themselves but had direct access to the government. The driving forces behind the growth in science councils were the OECD and UNESCO, whose representatives met regularly with the SSC.

In 1960, UNESCO recommended making national science policy a top priority. Before the Cold War, the Organisation, which dates back to the League of Nations, pursued an international vision, whereby the science policies of individual countries were intended to contribute to expanding the world's knowledge and

1971

The European Commission launches the European Cooperation in Science and Technology (COST).

1971

The OECD publishes “Science, Growth and Society: A New Perspective” (the Brooks report).

1972

The Club of Rome publishes “The Limits to Growth”.

facilitating access to it for all. The idea was for state intervention to serve universal progress. However, under pressure from the United States, UNESCO replaced a sort of “Kantian transnationalism” with a “Hobbesian nationalism”. This meant that each country was supposed to promote science within its own borders and for its own benefit. Even the SSC pursued this policy, writing the following patriotic words in its publication *Science Policy* in 1970: “The characteristics of a Swiss research policy should reflect the general principles of our national character. Research policy is a part of government policy and should be smoothly integrated into it.”

In the early years, the Science Council compiled a simple statistical overview of the Swiss education system, dealing, for example, with the straightforward question of how many students were studying which subjects at which universities. The SSC prompted the Federal Statistical Office to set up an office for statistics on research and development. In its “Development reports” it addressed the issue of universities, which were in urgent need of expansion in order to accommodate the growing numbers of students. In 1965, there were only 30,000 students. In 1971, the Kneschaurek Report, which was commissioned by the Council, warned of an “impending bottleneck in our education system”. It also stated that future requirements of the economy and society had to be developed and enhanced, particularly in the areas of advancement of women in higher education, technology, economy and administration.

In addition, the SSC conducted “investigations” into pressing “research and research funding needs”. It first had to gain an understanding of the requirements of government, society and the economy with regard to science. According to the SSC, the following

subjects required funding: applied mathematics, statistics, cognitive science, social history and history of science, cultural anthropology, ethnology, but also educational science and newer social sciences (sociology, political science, “sciences of mass communications”), psychology, linguistics, life science research, IT, environmental research, preventative medicine and legislation. It is noteworthy that this broad range of subjects does not primarily comprise the technical sciences, but rather the social sciences, which had traditionally struggled in Switzerland. Finally, the investigations stated that training capacity in medical disciplines needed to be expanded.

The optimistic mood and the belief that the education and science system could work more efficiently in the national interest through planning were omnipresent in the early years of the Science Council. The Council actively proposed setting up national institutes under the auspices of the Confederation and founding new universities in the cantons of Aargau, Lucerne and Ticino. It focused on applied research, but without wanting to weaken basic research, which it considered to be a requirement of the former. The idea was for research and science to benefit the country by equipping society for the future and preparing it for technological change. Switzerland’s competitiveness was not a priority.

In 1969, Karl Schmid, Professor of German at ETH Zurich, writer, and, following the sudden death of Max Imboden, new President of the Science Council, wrote the following lines in *Science Policy*: “What distinguishes universities as a place of teaching and research only applies to universities, not to the economy, the arts or churches: they are places where people seek answers together, because no one is allowed to believe they are the first or the last or the best.

1973

Swiss voters and cantons agree in a referendum to insert an article on research into the federal constitution. The cantons, but not the voters, reject a referendum on education.

1973

The Division for Science and Research becomes the Federal Office for Science and Research.

1974

The SNSF launches the National Research Programmes (NRP).

Challenged by the truth, which we never possess; it is always concealed and always right in front of us.” These lines were primarily directed against the students who were revolting in Switzerland at the time and against the anarchists who wanted to make university into a playground, as he said. We can now also read this as a warning against universities being turned into companies. For Schmid, what set universities apart was their collective character and their attitude to seeking out the truth.

The first two presidents of the SSC were prominent humanities scholars and intellectuals. In 1963 Schmid published *Unbehagen im Kleinstaat* (“The micro-state and its discontents”), and Imboden published *Helvetisches Malaise* (“The Swiss Malaise”) in 1964. Both titles have become widely-cited in Swiss academic circles. But Schmid did not last long in office either. Frustrated by resistance motivated by *realpolitik*, he resigned in 1972 after just three years in the job. He wanted, for example, to grant the Confederation authority over the medical field, a proposal that is still relevant today. Nevertheless, the SSC was able to notch up its first successes: in 1973 the Swiss National Science Foundation set up its research programme. From this point on, the Confederation could get research conducted in areas it considered important through the National Research Programmes (NRP). The same year, the federal powers for research were enshrined in the Swiss Federal Constitution.

Meanwhile, the Council suffered a setback, when, also in 1973, the education article failed to win a cantonal majority. The decision paralysed the Confederation’s efforts to achieve a more coordinated education system. Furthermore, the oil crisis caused Switzerland to slide into recession. Gross national product fell sharply. The Science Council, which was by then

headed up by Hugo Aebi, a biochemist teaching at the University of Bern, met with the Vorort (now *economiesuisse*) in November 1974. The Council tried to win over the powerful association for its own ends: credit for the SNSF had been cut, the number of universities could not be increased, yet a well-developed further education system had a key role to play in promoting industry. Universities and industry shared the same interests, it argued. The Vorort reacted with caution. The shortage of funding forced Switzerland to reduce government research efforts to the bare minimum.

The Council continued to publish numerous reports on topics related to science- and further education policy, including on individual subjects. In 1978, it published its third “Development report” in which it set out the new demands of the education system. It argued that it was no longer only pure specialist knowledge that was required, but also the ability to solve problems, apply knowledge, work with others, communicate and assume social responsibility. There should be more rotation among non-professional teaching staff, it argued, while cantons that did not have any universities were urged to participate in university funding. And once again, the SSC reiterated that more organisation and planning were needed in the field of higher education.

1975

The European Space Agency (ESA) succeeds ESRO and ELDO.

1979

The Federal Office of Education and Science replaces its predecessor.

1984

The Federal Act on Science of 7 October 1983 is enacted.

1984

The European Union launches its first Research and Development Framework Programme.

1987

Switzerland participates in the EU framework programmes as a third-party state.



Consolidation and expansion

(1980–1990)

1990–1999

1990

The Swiss government establishes a Swiss Science Agency. In 1991, its director becomes a State Secretary.

1991

The National Priority Programmes in Research are created and placed under the jurisdiction of the SNSF and the ETH.

In the eighties, the Science Council pressed ahead with its efforts to become an evaluation body. It aimed to highlight to the Swiss research system where its strengths and weaknesses lay and how the universities were performing using sophisticated bibliometric studies. Time and again, for instance in its “Research policy objectives”, published in 1980, the Council addressed the need to keep track of all education and research policy, not to get lost in the details, to strengthen applied research and to ensure a better transfer of results. It also argued that academics should be trained in such a way that they could be deployed in various fields rather than just their specialised area.

In 1985, the Council once again set out the goals of Swiss research policy: research, it stated with pathos, was an “activity that is vital to life”. It prepares humans for the future and supplies the requisite knowledge. Humanities, particularly philosophy, play a compensatory and corrective role. They must cushion the blow of social phenomena, such as loneliness and isolation, caused by technical progress. While “mechanisation” irreversibly wears away social meaning, philosophy must repair this collateral damage.

In the mid-eighties, the SSC published a report on the “Service function of universities” which highlighted the benefits offered to society by universities beyond their actual function of educating students, teaching and research. The aim was to rectify the negative image of universities. The report pointed out that universities offered further training courses, ran universities for seniors and adult education centres, promoted applied research, formulated expert opinions and position papers and provided their lecture halls, sports facilities, libraries and museums to a non-academic public. Moreover, the university

hospitals and polyclinics dispensed psychological counselling and speech therapy services. The SSC made a great deal of effort to legitimise universities as almost non-academic institutions—and to open them up to society.

Furthermore, the Science Council addressed the topics of promotion of talented young scientists, the role of education in technology policy, early identification of environmental pollutants, development trends in engineering, dementia, the future of the work society, IT, social policy and more. Looking at the publication lists from this period, one might well ask if there were any topics the Council did not address. It also carried out important preliminary work for the Federal Research Act, which entered into force in 1983, and Switzerland’s participation in the EU framework programmes in 1987. Switzerland participated as a non-member country, as was the case recently following the passing of the “mass immigration initiative”. The international links of research in Switzerland have been a concern for the Science Council since its inception.

During this phase, the Council proved to be a key driving force. It addressed topics that would later become widely recognised as important, such as the evaluation of universities and subjecting them to external inspections, getting universities to open up to society and the promotion of talented young scholars. At this time, the Council was not very popular with many universities.

In 1985, the Council celebrated its 20-year anniversary. Federal Councillor Alphons Egli, Head of the Department of Home Affairs, also attended the celebration. He presented his pragmatic expectations of the Science Council, calling on it to modernise universities and strengthen further education.

1992

Following a parliamentary mandate, the Swiss Science Council establishes a Programme for Technology Assessment.

1995

The SNSF establishes a Liaison Office in Brussels (SwissCore).

1995

The Universities of Applied Sciences and Arts Act of 6 October 1995 comes into force.

Employed people would have to gain higher qualifications, he said, in order to keep pace with technological change. A mandated critic and physicist from the University of Geneva put forward a view that still deserves consideration: he argued that the Science Council's mandate was mis-formulated as the Federal Council did not have the necessary power of decision in science policy.

To put it bluntly, this meant that the Council could offer as much advice as it wanted, it would not be of any benefit because it was advising the wrong people. According to the physicist, the real decisions would be made by the ETH Board and the Swiss National Science Foundation. Indeed, the Council had published many reports on the situation at universities, but on this subject everyone knew that the University Conference made the decisions. Finally, the critic advised the Council to push forward a reform of universities, and to equip them with simple, effective and autonomous governing bodies, which could then compete with each other to the benefit of all involved. This heralded a new paradigm in science policy and throughout the whole administration. It also marked the end of the Science Council's thus far uninterrupted, somewhat unhurried, first phase.

1996

The Commission for the Funding of Scientific Research is transformed into the Commission for Technology and Innovation.

1997

The Government and Administration Organisation Act of 21 March 1997 comes into force. Principles of New Public Management are introduced into the federal administration.

1998

A Federal Office for Professional Education and Technology is established.

1998

The Science et Cité Foundation is established.

1998

A popular initiative on genetic engineering is rejected.

1999

The federal government signs the Bologna Declaration.



New public management and crisis

(1990–1999)

2000–2015

2000

The Federal Act on Financial Aid to Universities of 8 October 1999 is enacted. Since then, federal subsidies have been distributed partly based on performance.

2000

An amendment to the Federal Act on Science allows the SNSF to create National Centres of Competence in Research (NCCR). Priority Programmes are phased out.

The nineties were a turning point for the Science Council and for education and research policy, and one that continues today. “Neoliberalism” and “new public management” arrived on the scene, the buzz-words “knowledge society” and “innovation”, which see education as the driver of economic dynamism, were all the rage, and universities had to reorganise themselves in an “entrepreneurial” way. Management, rather than bureaucracy, was the order of the day. The ideal of long-term planning, which had dominated since the end of World War II, was making way for situational steering and governance. It focused on network- and partnership-based approaches.

The nineties were characterised by economic stagnation. Significantly more funds were pumped into the field of education and research, however. But the funds had to be distributed on a competitive basis. Academics and their institutions had to legitimise themselves by demonstrating their excellence in the competition for funding and had to prove their productivity in an evaluation process. This was a partial departure from Vannevar Bush’s linear innovation model, which started from the scientists conducting basic research. Bush’s model implied a sort of social contract between government and science, whereby the former would let the latter conduct research in a free and unobstructed way to ensure it resulted in a social benefit. This contract no longer existed.

The sciences found themselves in a dual performance relationship with politics. On the one hand, they provided the administration with expertise and advice, enabling it to make more informed decisions. Science was becoming an important proviso for politics to be successful in society. On the other, sciences were becoming increasingly subject to political intervention: requirement-linked funding, the legislation heavily

promoted by the Science Council, which brought increased regulation while guaranteeing freedom, and programme-orientated research funding. This shifted the focus even more heavily towards applied research to serve political interests. In 1991, the Swiss National Science Foundation and ETH Board launched the “Schwerpunktprogramme Schweiz” (National Priority Programmes in Research; precursor to the National Centres of Competence in Research), which the Science Council had long been calling for. In doing so, the Confederation’s aim was to develop and strengthen research in the areas of the environment, humans and technology.

In 1992, the Science Council was extended to include the field of technology assessment (now TA-Swiss, no longer affiliated to the Council). Together with research policy, higher education policy, technology policy and research policy early identification, the Council now had a total of five divisions, each with its own management committee. The technology assessment programme, through which the Council intended to act as an intermediary between science and society and to break down society’s reservations towards life sciences, initially dealt with the topics of ethics, health and ecology, and later with life sciences, biotechnology, genetic engineering and the “information society”. Meanwhile, the significance of basic research remained untouched by the SSC. In 1991, it published an in-depth study on the “State of Swiss basic research by international comparison”. The results of the bibliometric report were satisfactory: Swiss natural science research was said to have improved from an already high level and the impact of Swiss work in the scientific community to have risen again. Particularly in biomedicine, chemistry, physics, engineering and technology, Switzerland had topped the ranking.

2000

The Swiss Science Council is renamed the Swiss Science and Technology Council (SSTC).

2001

The federal government and the cantons set up the Swiss Center of Accreditation and Quality Assurance in Higher Education.

2004

Switzerland begins taking part in the EU research programmes as an associated state.

During this time, the SSC was a broad-based body, a sort of platform and hub, which acted as a bridge between research and politics; however, the Federal Act on Higher Education Funding, which entered into force in 1992, saw the Council switched to the Research Act and lose its influence on the University Conference. The University Conference’s Secretary General was assigned a key role here, coordinating the various policy matters. The General Secretariat had sixteen members. Meanwhile, the Council had its first female president at this time: Verena Meyer, a nuclear physicist from Zurich, former president of the University of Zurich, who took over the position in 1987.

Verena Meyer emphasises the fact that the office directors valued the direct contact with the Council. She says that the skill of the Science Council lay in influencing the officials in such a way as to make them think that the decisions were their own idea. She claims that, although the SSC was housed in the same building as the Federal Council, there had been no regular meetings. When asked about the most important achievements of her time in office, Meyer mentions the development of technology assessment and the evaluation of humanities and social sciences, which the SSC proactively set up. Unlike in the natural sciences, the key representatives of humanities did not know each other. It was her aim to strengthen solidarity between Swiss researchers. In terms of weaknesses of her work, Meyer cites the fact that the SSC had too little publicity and too little impact.

If the Science Council did not have much of an impact, this was the intention of one man who entered the science policy arena in 1997 to completely shake up the education system: Charles Kleiber, the legendary State Secretary, who single-handedly signed the Bologna Declaration—the document that aimed to

overhaul and simplify the whole higher education system. Kleiber, an architect by profession, which is unusual for a senior federal civil servant, succeeded Heinrich Ursprung, former ETH President and first Director of the small Swiss Science Agency (now SERI), which was set up in 1990 as part of the Federal Department of Home Affairs.

The Swiss Science Agency’s functional specification was to “develop research policy strategies and concepts and plan and control setting and implementation of the Department’s objectives in the field of education, science and research, including technology research”. This was in fact the task of the SSC. Ursprung did not only want to implement the Federal Act, but to define his own strategy and to set up competence centres at universities, although he faced a great deal of resistance from universities in the process, particularly in French-speaking Switzerland. While Ursprung’s Swiss Science Agency enjoyed a great deal of prestige, it had little influence. It was not in the same league as the SSC.

Kleiber changed all that. When he took office he published—again unusual for a senior official—a strategic book, a fascinating and unique mix of *cando* fervour and faith in the market. It was entitled *Die Universität von morgen* (“The University of Tomorrow”). Kleiber spread his visions for reinventing the higher education system with evangelical zeal. He believed the traditional university had had its day. For him it was all about “competition and coordination”. In his view, the Confederation should perform a coordinating role, which should urge the interconnected yet competitive universities to produce good science. He wanted universities to lead Swiss society and the Swiss nation to a successful future. This would mean economic prosperity for the nation, and knowledge

2005

The Swiss Science Agency and the Federal Office of Education and Science merge to form the State Secretariat for Education and Research.

2006

Swiss voters and cantons agree to a constitutional amendment on education, research and innovation.

2008

The Center for Technology Assessment (TA-Swiss) is transferred from the Swiss Science and Technology Council to the Swiss Academies of Science.

and success for society. In Kleiber's vision, there were no losers, only winners.

Kleiber persuaded the Science Council to follow his policy. Even though his plan to have a greater hand in controlling the autonomised universities eventually failed, he did help bring about an overhaul. As early as 1996, some universities were already spun off from cantonal administrations. The legal autonomy gave them entrepreneurial leeway. Strategic management lay with the university council, while operational management was a matter for the President. As they were now in a stronger position in relation to the government and faculties, universities could compete with each other for funding, scientists and promising students. The universities used this new autonomy to defend themselves against the Confederation's demands, however. This was not Kleiber's, or the Science Council's, intention. In this way, Kleiber's research policy planning proved untenable.

The "quality assurance" of universities was carried out by the Center of Accreditation and Quality Assurance. It reviewed, among other things, the strategy, evaluation, controlling, communication of results—and the way in which quality assurance was applied. In the late nineties, again on the advice of the Science Council, the generously funded universities of applied sciences became part of the "Swiss Education Area", as it was known in education policy terms. They raised a number of technical and commercial programmes to tertiary level, promoted applied research and strengthened ties between vocational and industrial practice and academia.

The more or less established balance that had existed in research and education policy for some years was shaken up by Kleiber's actions. The conflicts between various actors, between Kleiber, the Federal De-

partment of Home Affairs, the university presidents and the Science Council came to a head during the preliminary work for the new Federal Act on Higher Education Funding. A preliminary draft for the 1998 law suddenly stated "abolition of the Swiss Science Council". In 1999, the Council stood down and was dissolved by the Federal Council but not abolished. The Federal Council re-invented it as the Swiss Science and Technology Council.

2010

Swiss voters and cantons accept the new constitutional article on research on humans.

2012

The Rectors' Conferences of all three types of higher education institutions in Switzerland (universities, universities of applied sciences, universities of teacher education) unite in an organisation called swissuniversities.

2013

The former State Secretariat for Education and Research is merged with the Federal Office for Professional Education and Technology to form the State Secretariat for Education, Research and Innovation.



Renovation and weakness

(from 2000)

2014

The Research and Innovation Promotion Act, completely revised on 14 December 2012, is enacted.

2014

Based on the Research and Innovation Promotion Act, the Swiss Science and Technology Council is renamed the Swiss Science and Innovation Council (SSIC).

At the beginning of November 2001, several daily newspapers featured a “Manifesto for Switzerland as an academic hub”, which was signed by a number of high-profile figures. It was followed shortly afterwards by a press conference in Bern. Gottfried Schatz, the new charismatic President of the Swiss Science and Technology Council (SSTC) appeared, together with exponents of the Rectors’ Conference, the ETH Board and the Swiss National Science Foundation. The scientists were calling for a ten per cent annual increase in funding for universities—including universities of applied sciences—and for research in the coming years. This was to be achieved through a redistribution, on which few details were given. The priority of education and research was to ensure the foundations of prosperity and security, they claimed. The publicity campaign was prompted by the preparations for the upcoming Confederation loan.

The incident revealed two things: firstly, the Confederation no longer—contrary to the law—aligned its science and education policy with long-term objectives or fundamental planning. The solution was governance: the Federal Council favoured seizing opportunities as they arose instead. Every four years, it adopted “dispatches”, in which as many actors from the field of science hoped to be included with as large sums as possible. The State Secretariat for Education and Research (SER) that was founded under Charles Kleiber in 2000 (now the State Secretariat for Education, Research and Innovation [SERI]), was responsible for this process. When it came to formulating the “ERI Dispatch” as it is now known, the Science Council was not involved.

Secondly, the new Science Council, the SSTC, had a new self-image.

According to the new regulations it still performed more or less the same tasks as the old Council, with

the addition of technology, a stronger vision function for devising strategies and responsibility for innovation. The new Council was to act as a “mouthpiece for science”. Gottfried Schatz, who was a professor at the Institute for Biochemistry at the University of Basel’s Biozentrum before becoming President of the SSTC, was a scientific luminary with an anti-bureaucratic stance: he liked to say that organisation was the enemy of innovation and coordination the enemy of motivation.

Schatz surrounded himself with around a dozen top scientists, cut all ties with the administration and other science policy bodies and did away with the General Secretariat. The SSTC now saw itself as an agile think tank comprising excellent researchers acting in the public domain as a mouthpiece for science and defending basic research. The newspaper *NZZ* dryly quipped that the new SSTC probably promised bolder ideas but would also be further removed from reality. On some points it went against its predecessor body, speaking out against bibliometrics and the evaluation of and focus on social relevance.

Although Gottfried Schatz notched up three successes during his time in office, namely improving funding of basic research, putting in place modern career structures for young scientists and increasing the budget for science and research, he looks back on this time with ambivalence. He claims the Federal Council rarely asked substantial questions and that the Science Council had to proactively approach politicians or appeal to the public directly. The Council’s originally intended main task was to evaluate universities and institutes supported by the Confederation, a task of which Schatz was not a fan. He claims that politicians and the administration pursued their own agendas and paid little heed to what others had to say.

2014

The Federal Act of 30 September 2011 on Research on Humans comes into force.

2014

On 9 February 2014, Swiss voters approve a popular initiative “to stop mass immigration”.

2014

Switzerland falls back to third-party status in its participation in EU framework programmes.

He resigned in 2003. In *Vision*, a science policy journal co-published by the SSTC, he proposed the creation of an “academic university council” because the Science Council had insufficient influence. The new council would replace the SSTC and ETH Board. But as he saw it, this council too would have to be independent and not represent any particular interests, for example those of the universities.

While the Council raised its profile, it actually lost manpower and resources and was publishing considerably fewer reports during this time. But nobody protested. The Council still had its affiliated institutions, the – expanded – Centre for Technology Assessment, TA-Swiss, and the newly-founded CEST, Centre d’Etudes de la Science et de la Technologie. The CEST’s mandate was to conduct bibliometric assessments and to screen and evaluate information for national research policy, higher education, technology and innovation. It compared the performance of individual institutes at Swiss universities.

On the whole, the Science Council was losing ground. And expertise. The Council’s foundation was being passed from the Council to the Federal Administration, which was gradually acquiring new skills in this area. The reconciliation and compromise functions that the Science Council held for research and education policy issues were now superfluous. The SSTC started working on an eminence-based rather than evidence-based manner. This model for the Science Council remained in effect under the new President, Susanne Suter, a medical scientist, and still holds today; only the mouthpiece function has been renounced. Under Suter a report was published highlighting the shortage of doctors and calling for twenty per cent more medical school places. In 2006, the education article was added to the Federal Constitution.

This gave the Confederation, together with the cantons, coordination powers in the field of higher education. One of the Science Council’s first postulates was thereby partially fulfilled.

The same year, discussions flared up again about the Council’s future and its powers, which were to be cut back. The Council let it be known that it wanted to continue to formulate strategies for Switzerland’s knowledge society as an independent body and that its recommendations should have some kind of binding force. Whether innovation belonged in its remit was debatable, it claimed. What was clear, however, was that it had been weakened. In 2008, TA-Swiss was transferred to the Swiss Academies and the CEST was shut down. The Council thereby lost an important data basis for its activity. Part of the work of the CEST was taken over by the new State Secretariat for Education and Research (now SERI). The previous budget, which totalled around four million Swiss francs, was cut to 2.5 million. Parliament turned its back on the Science Council. At a meeting, the idea of abolishing it was mooted once again. But that never came to pass and in 2014 the SSTC was renamed the Swiss Science and Innovation Council (SSIC).

2015

The Federal Act of 30 September 2011 on the Funding and Coordination of the Higher Education Sector (Higher Education Act, HEEdA) comes into force, together with an agreement between the Federal Government

and the cantons on cooperation in the area of higher education. The Swiss University Conference (SUC), the Rectors’ Conference (now *swissuniversities*) as well as the Accreditation Council are installed.

The Federal Act on Universities of Applied Sciences is repealed. This type of university is now regulated by the Higher Education Act (HEEdA).



Conclusion:
the Science Council's
dilemma

How can we evaluate the work of the Science Council over its fifty-year history? That depends on how we measure its activities. One possible criterion is the “success” of Switzerland as a nation for science. But how can we determine this? Based on how open politicians are to science, how enthusiastic students are about research, the enlightened public climate or the innovative economy? One should not expect too much from a small body, even if it is made up of professors.

But one should not expect too little from a science council either. In an ideal world—according to sociologist Max Weber—science should, released from the obligation to act or offer any kind of usability, order the confusing diversity of empirical reality intellectually and conceptually, by aligning itself with the truth's claim to validity. It is science that breaks with what appears to be self-evident. If not science, then who else?

The Science Council is the independent advisory body to the Federal Council for all issues relating to science policy. In terms of science policy, Switzerland is doing rather well. “Switzerland as a centre of research”—one of Switzerland's new identity formulas—is officially successful. In relation to higher education, research and economic innovation, Switzerland is ranked number 1 in the Global Competitiveness Report and is near the top of the EU's Innovation Union Scoreboard. The same applies to the impact of its scientific publications and to the number of patents per capita. There are also the two Federal Institutes of Technology, in particular, which regularly feature near the top of international rankings. The satisfaction with what has been achieved can be felt in almost all the relevant bodies.

Yet Switzerland as a location for science also manifests some shortcomings and weaknesses. The Bologna reform has made courses more “school-like” and universities more decentralised to the company level. Autonomisation has not only made them more entrepreneurial but also more bureaucratic. A major problem is the lack of emerging Swiss academics; children from migrant families, in particular, too rarely gain access to university. The shortage is made up for by importing foreign students, but this is not a long-term solution.

But the Science Council should not be blamed for these weaknesses. It has repeatedly spoken out both

about Bologna and about the lack of junior professorships. During the complete revision of the Research and Innovation Promotion Act, it pointed out that “innovation” is not a task for the research bodies and should not be at the expense of scientific knowledge, and it recently indicated the ambivalence of “economisation”. It is preparing a statement on the “open” ideology (open access, open data) that is spreading across the scientific community, and which is intended to disseminate global progress and prosperity through the free publication of all results online.

This is the Science Council's first dilemma: it does not oblige anyone to take action, and when action is taken, often there is a significant time lag in relation to the current economic situation. The Council is not sufficiently listened to. This ties in to its second dilemma: it is integrated in academic life to such an extent that its existing independence is barely perceived from outside. Integration has made it institutionally weaker: in the past few years, the overview tasks and devising of basic policies have disappeared, the activities in higher education policy and evaluation have been restricted and the mouthpiece function for science has been relinquished. The Council used to be more heavily involved in drafting of relevant federal legislation. Furthermore, the academic community itself appears to be so integrated that outsiders do not realise that the community allows dissenting opinions.

The Science Council itself played a part in the integration of Switzerland as a successful location for science and education. When the Council was founded, the universities saw themselves as places that were primarily open to the elite. The attempt to open up universities and make them productive for the whole of society was justified; universities are all too willing to forget that without the public they would not exist. Not all professors were comfortable with the emerging democratisation of the academic world. The Council's aim was to strengthen sciences to serve the nation. To a large extent, it has successfully achieved this.

Today, universities are growth engines in the heart of the knowledge society; some universities act like vocational training centres. The national motive of science policy is on the wane. It is now all about preparing society to compete on a global scale. All of this resonates with “innovation”. The Science Council has a sense of

unease with the innovation rhetoric, yet it is reflected in its new name. The Council has helped science policy gain importance over the past fifty years and shifted it from the periphery back to the centre. If science policy is supposed to be little more than regional economic policy, this cannot be in science's interest – as emphasised by the Council itself.

Perhaps the Science Council should re-think its diminished role in the changed circumstances. The semantic excess of its name does not accurately reflect it. It may be that, in the near future, its voice becomes more necessary, if, for example, less funding is pumped into education and research, placing even more pressure on “practice”. In that case, a dissenting opinion with weight would be needed more than ever to counter the voices of the Federal Council and ERI administration.

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Swiss Science and Innovation Council SSIC
Einsteinstrasse 2
CH-3003 Bern
T 0041 (0)58 463 00 48
F 0041 (0)58 463 95 47
swir@swir.admin.ch
www.swir.ch

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Swiss Science and Innovation Council SSIC
Einsteinstrasse 2
CH-3003 Bern

T 0041 (0)58 463 00 48
F 0041 (0)58 463 95 47
swir@swir.admin.ch
www.swir.ch