Science and public policy

Dagmar Simon, Stefan Kuhlmann, Julia Stamm, Weert Canzler (eds.): Handbook on science and public policy. Handbooks of research on public policy series. Cheltenham, UK; Northampton, MA, USA: Edward Elgar Publishing, 2019, 584 pp, £ 180 HB

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This is a crucial moment in time for science and public policy. The ongoing COVID-19 crisis certainly has exacerbated the importance of the issues covered by the Handbook under review here: How scientific expertise interacts in a meaningful way with policy-making; how science policy allows for proper governance of scientific research without putting the intellectual and moral independence of academic institutions at risk; and how scientific institutions respond to humanitarian, societal, and global challenges by taking on leadership and engaging constructively with other actors in society.

The COVID-19 crisis has clearly shown that the challenges faced by science and public policy are both national and global in scope. The Handbook therefore is a welcome addition to the literature. It provides an overview of developments in the US, Europe, and Australia (not so much in other parts of the world); it incorporates a multidisciplinary perspective from the social and human sciences; and it combines theoretical perspectives with empirical contributions. The Handbook, like many other handbooks, is not a handbook in the traditional sense of a reference work that is easy to access and provides ready reference. For such a purpose, the contributions are simply too diverse, and, as the editors state in their introduction, the field is best characterized as “a landscape in flux” (1).

The Handbook offers valuable insight into the changing relationship between science and public policy. Indeed, change is the recurring motif. The Handbook has six parts, all of which have the word “changing” at the start of their title. One of the reasons why, in the early twenty-first century, change has become an important issue to address is the exponential growth of scientific output, a well-established historical fact since Derek de Solla Price’s *Science since Babylon* (1961) and still valid today with even higher growth rates than before (Bornmann and Mutz 2015). With

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millions of papers published each year, science provides important knowledge on a wealth of topics. Moreover, in most, if not all, industrialized countries, the science and innovation system takes up a sizeable portion of the national budget—the OECD average for national research and development expenditures was 2.4% of GDP in 2018, which for many industrialized countries would be roughly comparable to their defense budget.

In the following, I will try to summarize the main points and give a few highlights from each of the six parts.

Changing contract between science, society, and public policy: The very idea of a social contract for science depicts the relationship between science and public policy as one that involves the exchange of money, goods, and services. A simple way to conceive this contractual relationship is to think that policy-makers delegate responsibility for knowledge production and appropriate funding to science, and then science somehow delivers reliable and useful knowledge to society. The contributors to the first part all make clear that in the light of contemporary complexities this is too simple. Stefan Kuhlmann and Arie Rip discuss different modes of governance needed for science and public policy to address “global challenges” such as concerted action and capacity-building. Richard Owen and Mario Pansera analyze the notions of “responsible innovation” and “responsible research and innovation,” which call for both science and public policy to be anticipative, reflective, inclusive, open, and responsive. Jan-Peter Voß makes the case for public engagement in science and technology as a way of promoting closer contact between science and citizens, while Sabine Maasen and Sasha Dickel add sustainability as a temporal dimension for the development of more intimate science-society relations in the future.

Changing national/global science and policy landscape: Science is a very special multinational enterprise. It has no governing body, and there is no CEO of science. Global science, as depicted by Caroline Wagner, is an emergent phenomenon with a network-like organizational structure. The global network is superimposed on different national systems of research and innovation, which also have developed contingently over time. Three national cases are presented in separate chapters: the bureaucratization of science from 1960 to 2010 in France, the focus and failings of public policy for science in Australia since the 1980s, and the call for global collaborations in the USA. Common keywords are excellence (in the global competition) and innovation (for national wealth and welfare).

Changing actors and framings of science and public policy: The fact that innovation is key to public policy has led, as Benoît Godin puts it, to the “marginalization of research.” Scientific research simply is “no longer enough.” Innovation is a comprehensive approach that combines research, development, design, production, marketing, customer services, and maintenance after sale. As a result, many actors, many forms of expertise, and many modes of governance are relevant if science and public policy are to deliver on innovation. At the same time, research has acquired a high status in the field of higher education. As Jeroen Huisman and Marco Seeber describe it, many higher education institutions that did not pursue research in the past now increasingly define themselves as universities tasked with both research and education.

Changing production of knowledge: One of the more persistent ideas in the past thirty years or so is that of knowledge production. It allows for greater diversity than scientific research, implying that knowledge is a product that can be made by any organization or enterprise, or in a project or network. Stefan Böschén prefers the notion of epistemic regimes, where many different actors come together to articulate and solve problems as a way of processing issues in science policy. Martina Franzen discusses the potential of citizen science to enable non-scientists to participate in scientific knowledge production, but also to open up science to democratic influence. Henry Etzkowitz and Alice Zhou present the Triple Helix, an analytical model for understanding knowledge production that takes place in university-government-industry collaborations or ventures.

Changing governance of scientific research and related public policies: Governance is the form of management that involves complex systems of assessment and accountability rather than steering, regulation, and financial compensation. It is ideally suited for organizations such as the university where most of the employees consider themselves their own boss (as my vice-chancellor once put it). Indeed, Jochen Gläser portrays researchers as “obligatory passage points” for effective science governance. Gläser’s science governance toolkit includes forms of coercing, equipping, and inducing researchers. Benedetto Lepori and Emanuela Reale take a systemic approach to science governance, looking at ways that research funding organizations could balance control versus autonomy and horizontal versus vertical task specialization.

Changing studies of science policy, science, and innovation: The sixth and final part contains only two chapters. Robin Williams makes the case for Innovations Studies (IS) and Science and Technology Studies (STS) in studies of science and public policy. IS and STS scholars endeavor to “open up” science, technology, and innovation by emphasizing human, social, and cultural aspects from a bottom-up perspective. In the past, they have been critical of “technocratic” ideas about the role of scientists and engineers in public policy-making, but more and more they opt for interventionist, reflective modes of research, also when it comes to science policy. The Handbook’s last chapter by Ben R. Martin appropriately addresses the future of Science Policy and Innovation Studies (SPIS). By looking at SPIS’s achievements and shortcomings, Martin identifies 18 challenges for future SPIS. It is beyond the scope of this review to treat them. Suffice to say that Martin’s chapter and the Handbook as such clearly show that the science and public policy landscape is not only in flux, but also provides stable and fertile ground for future explorations.

Reference

Bornmann, Lutz, and Rüdiger. Mutz. 2015. Growth rates of modern science: a bibliometric analysis based on the number of publications and cited references. *JASIST* 66 (11): 2215–2222. <https://doi.org/10.1002/asi.23329>.

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