Minerva (2012) 50:255–259
DOI 10.1007/s11024-012-9209-3

EDITORIAL

Minerva - 50 Years Reflecting on Science in Society

Peter Weingart

Published online: 11 September 2012

As of the fall of 2012, *Minerva*, probably the first scholarly journal devoted to the intellectual and systematic reflection on science and higher education policies, celebrates its 50th anniversary. Celebrating birthdays of institutions—a 50th, in particular, which marks a point in any biography of not being old yet nor being young anymore either—challenges imagination and self-conception. Those responsible for giving birth are long gone, those responsible for nurturing along the way had and have different interests, different styles, and thus different legacies. Biographies of institutions are shaped not just by one but by several foster parents. Thus, when planning this anniversary issue we, the editor and the managing editor, tried to devise a different format, one that would avoid well-established patterns. The idea was not only to unfold a retrospective view on how the field and the journal developed in the past, but also to reconstruct important past debates, trace their descent and judge their impact on current research in the field. Which topics (i.e. which articles by which authors) have received most attention (measured in citations) and how have the respective debates evolved over time, where do they stand now? By implication this would shed light on the role played by *Minerva* in these debates. The first step was to identify the most highly cited papers in *Minerva*. Obviously it is completely arbitrary where to set the threshold. For our purposes we chose 30 citations and ended up with the following list (cf. Table 1).

This rather diverse list of papers conveniently contains no paper having been published later than 1983 with the one exception of Sheila Jasanoff's article of 2003. The most highly cited paper is the one by Zuckerman and Merton, reflecting the early impact of the 'Mertonian' sociology of science, followed just a year later

With assistance from Niels Taubert.

P. Weingart (✉)
Institute for Science and Technology Studies (IWT), University of Bielefeld, P.O. Box 10 01 31, 33501 Bielefeld, Germany
e-mail: weingart@uni-bielefeld.de; minerva@uni-bielefeld.de

Table 1 Most highly cited papers in *Minerva*

Authors	Title	Times cited	Publication Year	Volume	Issue
ZUCKERMAN, H.; MERTON, R.K.	PATTERNS OF EVALUATION IN SCIENCE - INSTITUTIONALISATION, STRUCTURE AND FUNCTIONS OF REFEREE SYSTEM	349	1971	9	1
WEINBERG, A.M.	SCIENCE AND TRANS-SCIENCE	255	1972	10	2
POLANYI, M.	THE REPUBLIC OF SCIENCE - ITS POLITICAL AND ECONOMIC-THEORY	175	1962	1	1
MULLINS, N.C.	DEVELOPMENT OF A SCIENTIFIC SPECIALTY - PHAGE GROUP AND ORIGINS OF MOLECULAR BIOLOGY	111	1972	10	1
WEINBERG, A.M.	CRITERIA FOR SCIENTIFIC CHOICE	108	1963	1	2
ZUCKERMAN, H.; COLE, J.R.	WOMEN IN AMERICAN SCIENCE	71	1975	13	1
JASANOFF, S.	TECHNOLOGIES OF HUMILITY: CITIZEN PARTICIPATION IN GOVERNING SCIENCE	57	2003	41	3
ETZKOWITZ, H.	ENTREPRENEURIAL SCIENTISTS AND ENTREPRENEURIAL UNIVERSITIES IN AMERICAN ACADEMIC SCIENCE	56	1983	21	2/3
GLAZER, N.	SCHOOLS OF MINOR PROFESSIONS	49	1974	12	3
KOHLER, R.E.	MANAGEMENT OF SCIENCE - EXPERIENCE OF WEAVER, W AND ROCKEFELLER FOUNDATION PROGRAM IN MOLECULAR-BIOLOGY	41	1976	14	3
BULMER, M.; BULMER, J.	PHILANTHROPY AND SOCIAL-SCIENCE IN THE 1920S - BEARDSLEY RUML AND THE LAURA SPELMAN ROCKEFELLER MEMORIAL, 1922-29	35	1981	19	3
JOHNSON, H.G.	THE ECONOMICS OF THE BRAIN-DRAIN - THE CANADIAN CASE	35	1965	3	3
KARL, B.D.; KATZ, S.N.	THE AMERICAN PRIVATE PHILANTHROPIC FOUNDATION AND THE PUBLIC SPHERE 1890–1930	30	1981	19	2

by Nicolas Mullins' on the Phage-group which was probably the first attempt to test Thomas Kuhn's notion of 'paradigm—group' in an empirical sociological analysis. Interestingly enough, subsequent sociology of science articles have not left a similar impression on *Minerva's* readership.

To extract themes from the list of most highly cited papers takes some interpretative effort and, again, implies arbitrariness and selectivity. That said, we identified as 'grand themes':

Science policy and decision making on the distribution of public funds: Since Alvin Weinberg published his two papers on 'Criteria for Scientific Choice' in 1963

and 1964, *Minerva* is engaged in the debate about how to legitimate the distribution of public funds for science. Many models and mechanisms have been suggested since then but there is no definite solution nor can there be. Today, discussions about research assessment show that the topic is still relevant but that the concepts and perspectives have changed considerably.

The self-regulation of science: Some of the classic papers in *Minerva* deal with the self-regulation of scientific communities (e.g. Polanyi's paper on the Republic of Science) and specific mechanisms that represent and ensure the proper functioning of self-regulation (e.g. Merton's and Zuckerman's Patterns of Evaluation in Science). The debate over autonomous, self-regulated vs. directed science was, of course, a major concern of scientists and science policymakers in the context of the Cold War, carried well into the 1970s and the student revolt in Europe and the US. But it is also reflected in discussions of research on peer review as a central institutional mechanism of self-regulation.

Innovation and science in contexts of application: The relation of science and its contexts of application has been a topic of continued interest in *Minerva*. One important issue is knowledge transfer into contexts of application. This topic is present in articles about the triple helix concept, entrepreneurship and recently most prominently about university/industry relations.

Another perspective is on the effects of the orientation of research to practical applications. Most conspicuous in this context is the 'Mode 2'—concept and debates surrounding it.

Obviously, other topics could be deduced from the pertinent papers that appear in the list of the 'highly cited,' and the ones we have identified could possibly be framed slightly differently. But such concerns proved to be mute. When we asked prospective authors to take on the job to trace some of these themes and comment on their lineage and evolution over the past decades we ended up with something quite different than we had planned. To remain in the metaphor: some guests invited to the birthday party never showed up while others came unexpectedly—with surprise presents. In the end, the anniversary celebration has become predominantly a critical reflection of *Minerva's* past.

Before that background discussions of core themes in retrospect—Weinberg's criteria of scientific choice, Polanyi's claim of the unpredictability of applications from basic research and the symbolic function of the notion of 'basic research' (cf. papers by Pielke, Guston, and Hellström/Jacob)—add to the understanding of *Minerva's* particular role at the time of its inception as well as of the current state of the main discourses on science's place in society and the policies that are designed to shape it.

Niels Taubert, *Minerva's* managing editor, took on the task of a bibliometric reconstruction of *Minerva's* networks since 1962. He shows how *Minerva* has evolved in character and function: from being a journal whose authors engaged in an emergent intellectual discourse addressed to publics in both scientific journals and daily newspapers to one catering to the professional communities of STS and science policy studies.

Two articles deal with historical developments of organizations that were related to *Minerva* in specific ways, thus providing different, yet interrelated perspectives

on the journal's early history and disclosing some hitherto unknown events. Aant Elzinga's contribution deals with the rivalry between Edward Shils as editor of *Minerva* and a group of scholars that founded the International Council for Science Policy Studies (ICSPS) and ultimately launched the journal *Science Studies*. Elzinga takes the reader on a journey back into the bi-polar world of the Cold War when the field of 'social studies of science' emerges. He shows that Shils' neglect regarding this newly developing field had ideological, disciplinary and personal reasons. With respect to ideology, there is a fundamental difference between Shils and the new generation of scholars organized in the ICSPS. While the latter group aimed to build bridges between scholars on both sides of the iron curtain, Shils was far less conciliatory. *Minerva* served as a forum for the discussion of the ethos of universities and characteristics of academic professions. In contrast, science and technology studies turned away from science policy and focused more on scientific practices on a micro-level. Shils regarded the launch of *Science Studies* as an assault on a territory occupied by his journal rather than as a constructive extension of the field.

Elena Aronova, our surprise guest, deals with the somewhat mysterious aspect of *Minerva's* past as one of the siblings fostered by the Congress for Cultural Freedom, the organization only later to be revealed as being financed by and supposedly acting on behalf of the CIA. The discourse on the social consequences of science and technology on society evolved in the ideological context of the Cold War in the guise of the 'end of ideology' rhetoric. Its main tenet in view of the dramatic advances of science and technology after World War II was that these developments would result in the adoption of the same methods of socio-economic management in capitalist and socialist societies. As a consequence, the relevance of ideological movements on the left and right should decline. Edward Shils played an important part, as he organized a discussion on science policy and the politics of science, first in a permanent working group, later, in order to reach a broader public, in the newly founded journal *Minerva*.

Roger Pielke takes a look at the emergence of the term 'basic research' and the curious change of meaning it assumed with Vannevar Bush's famous report. Subsequently, it acquired a crucial symbolic function in Cold War science policy, the impact of which is still present in current debates about the adequate support for 'basic research,' its relation to applied research and its function in the overall innovation process. Among other things, the focus on the symbolic function reveals both the historical contingency as well as the surprising stability of research organization and the legitimation of funding arrangements once the institutionalization of the term was complete. Present discourses on Mode 2 research, on the relation between universities and industry, on the commodification of research, on the accountability of research and, last but not least, on the self-regulation of science all emanate from the identities, interests and ideological commitments attached to the term 'basic research.' This account, thus, provides an important backdrop for the following analyses.

David Guston discusses the problem of predicting consequences of science and technology, taking the debate between Michael Polanyi and Frederick Soddy over the atomic bomb as his case. A few weeks before the atomic bomb was dropped

over Hiroshima, Polanyi was asked about a possible practical use of Einstein's theory of relativity. Polanyi argued that science is unpredictable and therefore subsequent technical and social outcomes are even more so. The chemist Frederick Soddy represents the contrary position. Soddy had not only seen the potential of atomic energy but was driven by a comprehensive understanding of responsibility. Guston draws the link between the positions of the past to today's procedures to deal with predictions. The model of anticipatory governance aims to mediate between scientists and the public, motivating scientists to accept more responsibility for the potential consequences of their findings and motivating the public to get involved in decision making about emerging technologies before unwanted outcomes emerge. Guston gives a speculative answer to the question why Polanyi did not point to the possibility of the bomb even though he must have had some evidence for it.

Tomas Hellström's and Merle Jacob's article traces one of *Minerva's* classic topics originally introduced by Alvin Weinberg: the criteria applied in making choices about research priorities and institutional conditions for science. To what extent are Alvin Weinberg's proposals regarding the problem of allocating resources to science reflected in today's ideas and conceptions of funding science as they are articulated in science policy. The authors follow Weinberg's analytical differentiation originally elaborated in his two famous articles in *Minerva*, the justification of funding of a scientific field or program as social choice, i.e. in terms of social relevance, and as institutional choices. Clearly, the issues implied have not changed fundamentally but in view of a heightened sensitivity for the public accountability of science funding, the contradictions between different criteria become exacerbated.

The historical analyses of the political and ideological contexts of *Minerva's* birth and early years reveal both: that it preceded the advent of science and technology studies as a research field and that at the same time it missed true parenthood. Yet, 50 years later it can claim being part of the 'extended family,' albeit with a special intellectual profile, emancipated from but by no means alien to the particular concerns of its founding father. Today, *Minerva* is a 'normal' journal with a turbulent past. The 'normal' present is – if only marginally – reflected in the journal's recent celebration of a doubled impact factor (1.244 for 2011), a measure primarily of a community's communication density (editors would like to say 'authors' loyalty'). And to whom the anniversary issue is still too much oriented to the past and self-congratulatory should turn to the previous special issue (50/2) guest edited by Dan Sarewitz and Arie Rip. It deals exclusively with the future (of science policy as represented by young scholars). Originally designed to be the pre-anniversary issue, it may now be seen to balance this issue's focus on history.

On the occasion of the 50th anniversary we, editor and managing editor, have taken the liberty to edit this special issue ourselves. As the journal's custodians we thank once again *Minerva's* authors for their valuable contributions as well as their reviewers for the time they spend on giving good advice and criticism. It is primarily their respective input which determines the quality of the journal, and thus the health of the commons of communication.