

Book reviews

The scientific journal: authorship and the politics of knowledge in the nineteenth century

Alex Csiszar, *University of Chicago Press, 2018, ISBN 9780226553238*

Making Nature: The History of a Scientific Journal

Melinda Baldwin, *University of Chicago Press, 2015, ISBN 9780226261454*

“Their power is immense. They make and break the careers of researchers. They are used to classify countries, universities or individuals. They generate juicy profits. These are the scientific journals.”

As described in the introduction to a series of articles on scientific publishing in the French newspaper *Le Monde* recently¹, the scientific journal has become the marker of the scientific expertise. But this has not always been the case. At the end of the 18th century, academies and learned societies dominated the study of the natural world by a scientific elite. Academic journals were a relatively marginal element of this world, and sometimes even an object of pure and simple suspicion.

Starting with the premise that publications associated with elite and professional science have largely escaped historical scrutiny, two historians of science (Alex Csiszar and Melinda Baldwin) tell us how things have changed. They advocate the idea that journals have never been a passive vessel rather, they have been a site where the rules of science themselves were debated and developed. Although they follow different paths, both books propose a genealogy of the editorial forms of science, and of the specific genre of the scientific journal (a new serial format). They complement each other; put together, they cover almost five centuries.



In *The Scientific Journal. Authorship and the Politics of Knowledge in the Nineteenth Century* Alex Csiszar, Associate Professor at Harvard University, follows men of science, as the gender mainly in a position to practice at that time, throughout the 19th century. Alternating between Britain and France he charts their struggles to reshape scientific life in the light of rapidly changing political

mores, technological advances and the growing importance of the general press in public life. The scientific journal did not appear to be a natural solution to the problem of communicating scientific discoveries. On the contrary, its domination is, as Csiszar shows, a hard-won compromise, born of political and trade demands, changing epistemic

values, and debates on intellectual property. Many of the problems and tensions that affect scientific publishing today, Csiszar argues, are rooted in this long and complex historical process.

Csiszar starts from the following paradox: although the means of communicating science have been (and still are) extremely diverse, the article acquired a privileged status in scientific life at the end of the 19th century. The author relies on a very extensive corpus of archives (see the long list p 293-95) enriched with reproductions, which makes reading pleasant and is a plus for the French-speaking reader. Considering the scientific journal as an “aggregate of ideas and functions from the broader landscape of institutions and media that make up the social world of scientific practitioners” (p 17), he shows that the 19th century attempts to manage and develop the scientific journal were not so much a response to the overabundance of information but a deliberate strategy to differentiate and defend a specialized form from other less considered genres. With Germany, Britain and France as the industrial powers of the time; the latter two had notably established central institutions (The French Academy of Sciences and the Royal Society) that had long claimed to embody legitimate authority and judgement in natural philosophy, which makes these two countries interesting locations for the study of the politics of knowledge. Using a comparative approach (hopping from one country to another), Csiszar convincingly demonstrates that the modern scientific journal is largely a creation of the 19th century (p 4). More importantly, the ascendancy of both scientific journal and scientific authorship indirectly reconfigured scientific authority around periodical authorship and reading.

The book consists of six chapters, conceived as a series of “episodes that illuminate a particular aspect of the changing role that periodicals have played in scientific literature.” (p 16). Each chapter focuses as much on the journals themselves as on the other genres, formats or sites² that have helped to define the meaning and character of the modern scientific journal, either by incorporation, opposition or (most often) both. The author underlines how the path towards standardization has always been tense with a strong heterogeneity (p 18).

Chapter 1 opens with the question of what kinds, formats and regimes of judgments were developed by the first academies and learned societies, and how they led to the emergence of scholarly journals. It offers a “digest” of

the history of scientific publishing from its beginnings to the end of the 18th century. Far from the myth of the heroic inventor (Henry Oldenburg, founder of the *Philosophical Transactions* in 1665), Csiszar describes how journals were associated with public acts of criticism (p 37), while academies had become “courts of discovery and invention” (Lavoisier cited by Csiszar, p 29) whose authority was seen as deriving mainly from political privileges. At the beginning of the 19th century, the reading public came to be seen as a literary market to which writers could turn to prove their reputation as authors, rather than through their association with aristocratic patrons. Following the French revolution, journals devoted to science were increasingly presented as offering alternative conceptions of the legitimate publication of scientific knowledge, which put pressure on academies and societies.

Chapter 2 focuses on a crucial form of this pressure: the publicity that journalists gave to meetings of learned societies and academies. Finally, academies and private companies compete by launching their own journals based on these new business models. Cheap commercial scientific journals such as the *Philosophical Magazine* were launched in the first decades of the 18th century.

In Britain, the subject of Chapter 3, reformist agitation in the late 1820s reached the scientific elite who considered authorship as a key criterion to distinguish active researchers from amateurs and aristocratic contenders. In response, the Royal Society undertook several reforms that invested scientific reading with new importance, including the empowerment of a new type of reader - the referee - who was to be an agent for conferring rewards and publicity on deserving authors (p 19). While the referee emerged as a prominent figure in Victorian periodicals, his status and roles changed several times over. By focusing precisely on the first half of the 19th century and listing the arguments used as the practice of referring evolved (for instance, what kind of person was the referee? p 153) Csiszar paved the way for new historical work on the development of peer review.

Authorship was another significant issue. In the early 18th century, some authors wrote under pseudonyms (this would later be a problem for the constitution of the *Catalogue of Scientific Papers*, see below). It was only much later that the identity of the authors appeared, and that the article came to be regarded as a research contribution and no longer as an expression of an opinion.

Chapter 4 examines changing conceptions of scientific discovery and its relationship to the media landscape of early nineteenth-century scientific life. It focuses on particular on François Arago³ and others' efforts to use historical and legal precedents in the field of intellectual property to propose competing visions of the future of science.

Chapter 5 focuses on the central paradox underlying the development of scientific journals: the idea that a well-defined genre (the journal, which will become the legitimate forum for scientific exchanges) has been able to establish itself in an increasingly fluid and diversified landscape of print media. Csiszar argues the publication of the *Catalogue of Scientific Papers* by the Royal Society beginning of 1867 is among the most significant moment

in the history of scientific publishing. This colossal work consisted of indexing the contents, arranged by authors' names, of numerous periodicals and in many languages published since 1800. By focusing on scientific papers (and deciding what kind of objects that category ought to encompass), the editors of the *Catalogue* privileged a specific notion of what constitutes science. “Nothing did more to fix a conception of scientific periodicals as collections of original papers attributed to original authors” says Csiszar (p 238). Although it was conceived as a tool for searching the literature, it founded other kinds of use and became quite quickly a technology of evaluation.

Chapter 6 takes place in the final decades of the 19th century. After the Franco-Prussian war ended in 1871, savants in Western Europe embarked on public campaigns arguing for the centrality of scientific activity to national welfare. In this period, scientific periodicals were well-established: as imagined entities, they were considered as “simultaneously a virtual storehouse of discoveries and a system of efficient and public information” (p 19). But journals developed so numerous that they were seen as a threat “to the progress of knowledge” (p 243). The scientific literature was then perceived as being in need of fixing. In Britain, the problem was perceived in terms of systemic organizational inefficiencies as much as informational inequalities. The answers provided by both countries was in the development of bibliographic indexing systems, whose forms varied according to national context.

This last chapter also highlights the contingent and contextual nature of the development of scientific journals. Britain is the country of birth of the journal *Nature*. In “Making *Nature*. The History of a Scientific Journal”, Melinda Baldwin, Senior Editor at *Physics Today* (a magazine published by the American Institute of Physics), traces the rich history of the journal from its first issue in 1869 until 1995, when John Maddox, only the seventh editor in 146 years, retired. Like Csiszar, Baldwin starts from an enigma: how did *Nature* magazine become such an essential institution? How did it move from a journal that might publish anything to one that rejects 92% of submissions (p 229)? *Nature* was founded at the same time as the scientific community was consolidating the status of the scientific journal as the “principal site for the representation, certification and registration of scientific knowledge” (Csiszar, p. x). That makes it an interesting case study to develop.

Based on a thesis defended in 2013, Baldwin's monograph focuses mainly on the trajectory of editors-in-chief, whose story shows us that they are much more than gatekeepers (p 241). Unlike other periodicals, such as those run by the Royal Society, *Nature* was not managed by any committee or institution. Like other commercial journals of the time, *Nature* was the personal project of dynamic editors (in fact press entrepreneurs) who felt qualified to evaluate any contributions sent to the journal. With the financial backing of the publishing house, Macmillan and Company, editors had the opportunity to implement their visions of what a periodical should be.

The book contains 8 chapters presented in roughly chronological order, in which the author studies the shifting audiences and contributors. It is mainly based on secondary sources and some interviews. We regret that original archives are not (or could not have been⁴) used more systematically. The book may therefore seem rather hagiographical and presents a story of men accompanied by their secretaries.



It is nevertheless full of interesting elements.

First, Baldwin shows us that *Nature*'s establishment as a central institution of British science in the late nineteenth century was linked to the rise of a new generation of British men of science (those born in the 1840s and later). Chapter 2 describes the changing of Britain's scientific guard: younger contributors were more interested in debating scientific theories,

announcing a forthcoming paper and writing pieces for their "peers" than the older generation (p 54-55).

Second, the story relates the late internationalization of *Nature*. For the first 50 years of its existence, the journal was primarily British, with mainly British contributors and editorials on British issues. In the early twentieth century, *Nature* was far from alone in its national orientation: researchers tend to submit their work preferentially to the most prominent journals in their home nation (p 120). It was only in the 1930s that contributions became more and more geographically dispersed (p 131).

Third, it highlights a series of trials and errors. Successive editors very often used comparison with other scientific journals and were guided by what worked elsewhere. For instance, Lockyer's inspiration⁵ for *Nature*'s format appears to have been *Chemical News*, a publication founded in 1859, but this was not his only model. Obviously, the issues addressed by the editor and his staff were not only scientific: Baldwin reports discussions about formats (and the role of short items in *Nature*'s success) and emphasizes that a today's print issue of *Nature* shares many similarities with *Nature* under Lockyer (p 234). With the growth of contributions, the problem of backlogs had to be addressed. The book reports also failures: in periods of crisis such as 1971, *Nature* was split into three journals, characterized as satellites (p 179) but which did not have their own editorial lines. Appointed editor in 1966, John Maddox was excluded due to financial losses at the end of 1972. By 1979, Maddox was brought back after a seven-year absence.

The book also sheds light on the evolution of the notion of "scientific community". Scientists who submit articles are not passive nodes (p 241). *Nature*, as Baldwin demonstrates, has helped to define what science is and what it means to be a scientist.

Work on the emergence of disciplines or research fields often uses journals, as well as conferences, as reflections of scientific activity. In these instances journals are seen as historical sources rather than historical phenomena in their own right. The existence of periodicals is taken for granted, without their existence being seen as requiring explanation (Secord⁶ 2009: 444). These two books are notable and recent exceptions⁷. They strongly argue that a better understanding of the journal's past is crucial to imagining future forms of knowledge expression and organization, as we seek to give meaning to our own moment of intense period of experimentation in alternative publishing platforms, peer reviewing and information preservation. Consequently, they provide an undoubtedly valuable account for anyone who considers the learned journal as cultural artefact.

Marianne Noel

Laboratoire Interdisciplinaire Sciences Innovations Société,
Marne-la-Vallée, France
noel@ifris.org

Notes

- 1 https://www.lemonde.fr/festival/article/2019/07/16/nature-la-prestigieuse-revue-que-les-chercheurs-adorent-detester_5489786_4415198.html
- 2 These include scientific meetings, newspapers, catalogs, historical treatises, correspondence, abstracts, patents, pamphlets, offprints and index cards. (p 17)
- 3 In 1835, Arago created the Comptes Rendus Hebdomadaires des Séances de l'Académie des sciences, the French Academy of Sciences' weekly journal.
- 4 As signaled by Baldwin, "Unfortunately, Macmillan and Company and the Nature offices did not preserve much official correspondence before 1990" (p. 9)
- 5 Norman Lockyer (1836-1920) was an English scientist and an astronomer, who created *Nature* in 1869. His biography and the early years of the journal are presented in Chapter 1.
- 6 Jim Secord, "Science, technology and mathematics", in David McKitterick (ed.), *The Cambridge history of the book in Britain, vi: 1830-1914* (Cambridge, 2009), 443-74.
- 7 A new research stream on the history of scientific journals is currently developing, that includes, for example, the work of Aileen Fyfe and colleagues in UK or Valérie Tesnière and colleagues in France