

# How journals shape science and academia

June 1 2015, by Anna Gielas

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Anna Gielas traces the history of the journal, and its essential role in research and scholarship. Credit: Tom Blackwell, Flickr

No matter whether you study medicine or biology, law or art, neuroscience or history—there is one instrument that we all share: the journal. Learned journals play a pivotal role in science and academia. Publishing in scholarly periodicals disseminates our insights and bolsters scientific communities. It propels careers and fosters knowledge. And if this knowledge can be applied practically, then the academic journal renders a service to society.

But why does all this happen specifically through the [journal](#)? Why not through newspapers, newsletters, catalogues, tables, graphs, a collection of abstracts, private correspondence, pamphlets or monographs? When I pose these questions to academics of different disciplines and career

stages, I usually receive the same answer: "Probably because the journal has been more efficient than these alternatives." But who has made it more efficient and how? Who has deemed it more efficient and why? In short: how did the academic journal become such an essential part of our professional lives? The answer is simple: we do not know. At the core of our scientific and scholarly endeavor we find the journal—and we cannot explain why.

The history of the academic journal is tricky. I already need to be careful when using the term "academic journal": at the time when first learned periodicals appeared, the pursuit of insight and knowledge took place in a fundamentally different framework than it does today. Back then, the periodical had but a few links to universities. If we want to understand the historical development of the journal, we need to understand the development of science and academia—and a myriad of other elements such as the evolution of publishing technology and postal services.

## **The saintly approach**

Historians of science have already disentangled some parts of the journal's history and established several milestones. We know, for example, that the earliest learned periodicals appeared in the second half of the seventeenth century. They were not celebrated as helpful innovation. Instead they met some skepticism, both within and without scholarly communities. The German journal [Acta Eruditorum](#) (1682 – 1782), for example, ended up on the Catholic Church's Index of Prohibited Books.

To appease ecclesiastical authorities, some of Acta's avid proponents argued that scientific editing had commenced with Saint Photios the Great (c. 810 – c. 893). As the leader of the Eastern Orthodox Church and a central thinker of the Byzantine Renaissance, Photios I seemed the

common denominator between the men of church and the men of science. But the Germans had little luck with their claim: Acta appeared on the Index for (at least) 72 consecutive years.

Despite clerical disapproval, Acta's editors established a fine balance. On the one hand, they selected content that would prompt neither ecclesiastical nor secular powers to forbid the publication for good. On the other hand, they managed to make the contents so worthwhile that men of science throughout Europe would laud the publication.

We could assume that once the learned journal was introduced, its popularity would slowly increase. But for almost 100 years there was not much interest to publish more such periodicals. The interplay of reasons causing this apparent hiatus have not been established yet. There is currently also no explanation for why journals started to burgeon in the 1770s—and have, apart from some minor interruptions, been doing so ever since.

We are currently learning more and more about the peer review, which was formally introduced in the 1830s. It became a required gateway for the Philosophical Transactions, the oldest science journal still in print (f.1665). We cannot rule out the possibility that some editors used [peer review](#) at an earlier point. But we can say for sure that this practice did not commence with the first journals in the seventeenth century. Every procedure surrounding the scientific periodical and each of its elements—including the articles, footnotes, reviews, and abstracts—evolved over time.

## **Into the unknown**

The [scientific journal](#) has been—like every other invention—a malleable instrument whose development is marked by trial and error. These errors could mean financial ruin and devastation. During 300 years since the

first science journals came out, merely a few commercial editors made notable wins instead of losses. Periodicals that, in turn, were edited by learned societies—like the Philosophical Transactions published by the Royal Society—tended to be in the red. Oftentimes these journals were not supposed to bring in profit but prestige. By publishing the most important findings and announcing inventions, a society could assert its central role in the scientific endeavor. Other editors had different incentives. Editing a journal could for example secure the attention of a future patron, someone who would finance the editor's research. Or, as was the case in eighteenth-century Germany, authorities took notice of learned [periodicals](#) and recruited their editors for civil service.

Since then, some reasons for editing [academic journals](#) have changed drastically, while some motives have remained unaltered. One of the latter is the wish to contribute to science. Last year, more than [90,000 PLOS volunteers reviewed 33,000 articles](#). *PLOS* currently publishes seven journals. To put things in perspective: these are seven out of 30,000 peer-reviewed journals world-wide. I wish to learn how we have created this unique and intricate communication system—and why we have endowed it with so much power.

**More information:** William Clark: "Academic Charisma and the Origins of the Research University." University of Chicago Press, 2007.

Aileen Fyfe: *Journals and Periodicals. A Companion to the History of Science*, edited by Bernard Lightman, Wiley/Blackwell, 2015.

David Kronick: *History of Scientific and Technical Periodicals: The Origins and Development of the Scientific and Technical Press, 1665-1790*, Scarecrow Press, 1962.

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