

# Publish or perish: Need for bibliometric and access reform

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Editorials in *Geospatial Health* are normally utilized for discussions of scientific research results and opinions, but we consider the *Plan S* initiative for open-access publishing ([https://www.scienceurope.org/wp-content/uploads/2018/09/Plan\\_S.pdf](https://www.scienceurope.org/wp-content/uploads/2018/09/Plan_S.pdf)) to be of such overriding importance that we wish everyone to be aware of this potential change in the way published scientific articles are funded. In fact, this is the first significant administrative change in scientific publishing since 1665, when the Royal Society in London issued *Philosophical Transactions of the Royal Society*, the first periodic scientific journal and ever since a model for scientific publishing (Royal Society, 2015).

On 4 September 2018, Science Europe (<https://www.scienceurope.org/>), an association of European Research Funding Organizations (RFO) and Research Performing Organisations (RPO) based in Brussels, launched an initiative for open-access publishing entitled *Plan S*. The basic idea originated from a consortium including the European Research Council (<https://erc.europa.eu/>), national research agencies and major donors from eleven European countries. In brief, *Plan S* will require researchers benefitting from state-funded research organizations to publish their work in journals that are available to all. This initiative aims to accelerate the transition to full and immediate open-access to scientific publications and is intended to be operative in the near future. From 1 January 2020, scientific communications emanating from research funded by public grants provided by national and European research councils and funding bodies must, therefore, be published in compliant, open-access journals or on compliant open-access platforms.

Science Europe, officially instigated by its first General Assembly in Berlin in October 2011, promotes the collective interests of RFO and RPO in Europe by supporting member organizations in their efforts towards fostering a better European research community. It aspires to do so by strengthening the European Research Area (ERA) through direct engagement with key part-

ners, such as European Universities, European Academies, European Scientific Intergovernmental Organizations and, naturally, also the European Commission, in order to develop a coherent and inclusive ERA. Science Europe will thus be informed by direct representation from all scientific communities in its reflections on policies, priorities and strategies. While most may find it easy to agree that monetizing access to research results is intrinsically at odds with the ethos of science, the new brooms are not welcome everywhere. The publishers of the renowned journals *Science* and *Nature* as well as the Elsevier publishing company, which together cover about 10,000 scientific journals that earn income through paid subscriptions, oppose *Plan S* since open-access in their view will undermine the current publishing system. For example, the International Association of Scientific, Technical and Medical Publishers representing 145 publishers states that although it welcomes efforts to expand access to peer-reviewed scientific works, some sections of *Plan S* “require further careful consideration to avoid any unintended limitations on academic freedoms” (Else, 2018). Furthermore, the American Association for the Advancement of Science has reportedly said that *Plan S* would “disrupt scholarly communication, be a disservice to researchers and impinge on academic freedom” as reported by *The Economist* (2018). Thus, the final word is not yet said and *Plan S* will probably give rise to some heated discussions before any new system is put in place.

Whatever we think about the proposed change, it is clear that payment for scrutinizing manuscripts for quality and making them accessible, either online or in printed form, must come from somewhere. Journals provide a source of information that the research community cannot be without and the question is whether they should be paid from subscriptions or from research funds supporting individual researchers. As the donors are predominantly either Universities or research foundations, it could be argued that this is irrelevant since the money comes from the same pocket. Some problems persist, however, and they concern scientists in low-income and middle-income countries who are disadvantaged since they generally do not have the same access to financial support for publishing as do their peers in the industrialized world. A way must be found for them, plus active pensioners and other freelance authors, to be included in the new system.

Predatory open-access publishing, a manipulative business model involving the charging of fees without providing editorial and publishing services, is another problem altogether; this is a shady area that should be looked into without delay. Common complaints associated with this form of publishing include acceptance of articles quickly with little or no quality control, aggressively encouraging scientists to submit articles or to serve on editorial boards, mimicking names or websites of *bona fide* journals, making misleading claims about the publishing operation, and more. This type of journal, typically publishing articles within less than 3 months from submission, have increased their publication

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volumes from 53,000 papers in 2010 to an estimated 420,000 in 2014 (Shen and Björk, 2015), thereby capturing a major part of the market share.

Bibliometrics is the sector of the publishing world attempting to gauge a journal's influence in the academic field by issuing various indices. The most well-known is the impact factor (IF) based on the Journal Citation Reports (JCR) database. This has been available since 1975 via the Web of Science, which is part of the Science Citation Index (SCI) first introduced in 1960 by the Institute for Scientific Information (ISI). This establishment, acquired by Thomson Scientific & Healthcare in 1992, became the Intellectual Property & Science branch of Thomson Reuters known as Thomson ISI until 2016, when it was spun off to form Clarivate Analytics (<https://clarivate.com/>). This year, Clarivate Analytics issued impact scores for 11,655 peer-reviewed journals but from now on the company requires that this score should not be referred to as just the impact factor (IF) but the Journal Impact Factor (JIF) (<https://clarivate.com/blog/science-research-connect/the-2018-jcr-release-is-here/>). A journal's JIF is calculated as the number of citations for the two previous years divided by the number of publications for the same period. JCR also includes a five-year IF.

Other influential scoring agencies include the Google Scholar Metric (GSM) bibliometric tool, which seeks to measure both productivity and citation level of scientific journals by the application of two indicators computed for the journals included, *i.e.* the H5-index (the point where the number of citations of articles in a journal equals or exceeds the number of issues of that journal where these articles were published during the latest 5-year period) and the H5-median (the median of the citation counts in these documents). The GSM has the most comprehensible database; however, the indices provided are limited to journals having published at least 100 papers in the latest five calendar years and received at least one citation (<http://www.journal-scholar-metrics.infoec3.es/layout.php?id=about>).

While Google looks at productivity and number of citations, the SCImago Journal & Country Rank (<https://www.scimagojr.com/journalrank.php>) evaluates both quality and quantity. This metric, based on information contained in Elsevier's Scopus database, is a weighted citation index considering citations in prestigious journals be given a higher value than others. The SCImago Journal Rank (SJR) uses an algorithm similar to Google PageRank (PR) to produce a 3-year SJR based on citation data drawn from over 34,100 journals and documents from more than 5,000 international publishers and country performance metrics worldwide. SCImago also provides an H-index and a 2-year average of citations per document (abbreviated as Cites/Doc) for each journal it scores.

In conclusion, it can be said that the priority of scientific journals, be they special issues, narrow by discipline or general, is to influence thinking, change accepted wisdom and contribute to advancing scientific knowledge. There are various ways to achieve these aims and, amazingly, even more ways how they have fared. Importantly, the impact of a journal should be gauged not only by how it is perceived by the scientific community in general but also by what fellow scientists, publishing in areas similar to those covered by the journal, think. No such speciality score is as yet available and the score level more often reflects the range and scope of the journal than the quality of the papers published therein. Thus, there is still room for improvement in this area where you perish if you don't publish appropriately.

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