



Producers and Consumers of Peer Review—A Possible Publisher Metric

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For one week last month, 21 organizations came together to celebrate academic peer review and recognize the valuable contribution of the people who make it happen. This was the second year of international Peer Review Week, founded in 2015 by Sense About Science, ORCID, ScienceOpen, and Wiley-Blackwell to highlight the importance of peer review in the global knowledge economy. That first week in turn was founded on the back of efforts from the scholarly community to get the contributions of peer reviewers meaningfully recognized by funding bodies. In July 2012, a group of early career researchers in the United Kingdom calling themselves the Voice of Young Science wrote an [open letter](#) to the Higher Education Funding Council to recognize reviewing within the Research Excellence Framework; two years later, a [similar letter](#) was sent by Australian academics to the Australian Research Council.

This time round the Week focused specifically on reviewer recognition (as explained in a [Scholarly Kitchen post](#) from Alice Meadows, chair of the Peer Review Week planning committee) and was coordinated by the cross-sector initiatives ORCID and COPE, along with organisations providing publishing services, professional associations in publishing (including ISTME), a handful of scholarly associations, and a couple of initiatives specifically focused around peer review. The [coordinating group](#) also included one journal (*eLife*) and Sense about Science—a campaigning charity working to challenge the misrepresentation of science in public life. The largest group by some margin, and representing seven organizations, comprised scholarly publishers.

It seems that for now Peer Review Week still has the most resonance for publishers, given

that the academic sector is unaware of—or perhaps unconvinced by—the campaign. This is significant given that peer review has only been widely institutionalized since the 1960s,¹ the *Proceedings of the National Academy of Sciences* only introducing direct submissions with standard peer review as recently as 1995.² But while the role of publishers in systematically organizing peer review may be relatively recent, scholarly publishers have become key players in the peer review process, investing significantly in reducing the burden for academics and better coordinating and professionalizing the service peer reviewers provide. This has involved many initiatives including introducing innovative processing systems, providing dedicated support and editorial staff, as well as training in academic publishing, brokering discounts for authors with editorial services, and developing new ways to help editors find suitable reviewers.

This quality control function—along with the cross-publisher publishing ethics body, COPE—throws up the question of whether publishers are en route to becoming something akin to a regulating body for the quality of scholarly publications, and potentially of research quality itself. It's unlikely, though, that this is what either publishers or academics actually want, but it's the logical outcome of publishers being perceived as responsible for quality control. Like all scholarly societies that publish journals,

- 1 Larsen PO, von Ins M. The rate of growth in scientific publication and the decline in coverage provided by Science Citation Index. *Scientometrics*. 2010;84(3):575–603. [CrossRef](#)
- 2 Aldhous P. Scientific publishing: the inside track. *Nature*. 2014;510(7505):330–2. [CrossRef](#)

both as a means to disseminate quality scientific content and as a source of funding for our charitable investment in science, the Federation of Microbiological Societies (FEMS) sees the impact of this issue equally from both sides. On the one hand peer review is regarded as valuable to the academic community in improving the quality of the published body of knowledge available for researchers to consult, on the other it is perceived as a growing burden on the very community it serves.

This perception of a burden is supported by a recent survey of our community—the preliminary results of which were published during Peer Review Week³—that found that 76% of respondents had seen an increase in requests to peer review over the last 10 years. Moreover a total of 45%, providing free-text comments on recent changes in peer review, cited trends such as the requirement for faster reviews, and submissions of more, and sometimes poorer quality, papers. What's certain is that the increased publication of “sound science” in mega-journals such as *PLOS One* and *Scientific Reports*, and the growing scientific investment in fast-growing knowledge economies of Asia and Latin America (as chronicled in the *STM Report*), is generating higher volumes of content requiring review.

Our survey also revealed that while researchers see the benefits of peer review as both authors and reviewers, where peer review is not designated a “core” activity by university administrators or funders, it is becoming increasingly difficult to accept invitations to review. This is an issue raised by the UK House of Commons Science and Technology Committee during its [discussions on peer review](#) some years ago. In testimony before that committee regarding the burden of peer review to the academic community, Professor Rick Rylance, from Research Councils UK, noted that “Peer review should be part of professional development for researchers... [i]t is quite important that their employers

recognise quite how much labour is put into it and how important it is in terms of not just their personal but their general benefit.” This sentiment was supported by the British Medical Association, who suggested some system of professional recognition for peer review. In some cases this is already done, the Royal Society of Chemistry's Robert Parker noting that refereeing is often used as a criterion for tenure in the United States. But this is not the same across all institutions or all countries, and for many academics their contributions as a reviewer do not really “count.”

Logically the solution seems quite simple: peer review should be made to count. This was the key message from the Australian researchers to the Australian Research Council in their 2014 open letter, requesting that they be set review targets by their institutions alongside the publication targets already in place. There are precedents to suggest that this should be feasible, as demonstrated by both the adoption of journal Impact Factors in assessing the scientists behind submitted funding proposals, and the recent rise of Open Access publishing. In both cases it was research funders that led the way, and in both cases the availability of a single simple measure—be it the Impact Factor or the adoption of a particular publication license—that helped to implement the change.

A similarly simple measure for peer review—used at the country, institutional, or some other level—could feasibly be based on the numbers of reviews generated (manuscripts submitted and rounds of revisions) as a function of the number of reviews provided. This principle of net consumers and producers of peer review is illustrated in Figure 1. And while this example is purely illustrative, a cross-sector measure generated from publishers' collective data could potentially identify, at various scales, the net producers or net consumers of reviews.

Such a simple measure might provide the ability to track and balance the number of reviews generated or provided at national or institutional levels, or to identify centres of excellence with notable peer review expertise. This in itself

3 Cotton C, Bowater L, Bowater R. Microbiology survey shows authors have most to gain from peer review. *FEMS Microbiol Lett.* 2016; in press. [Crossref](#)

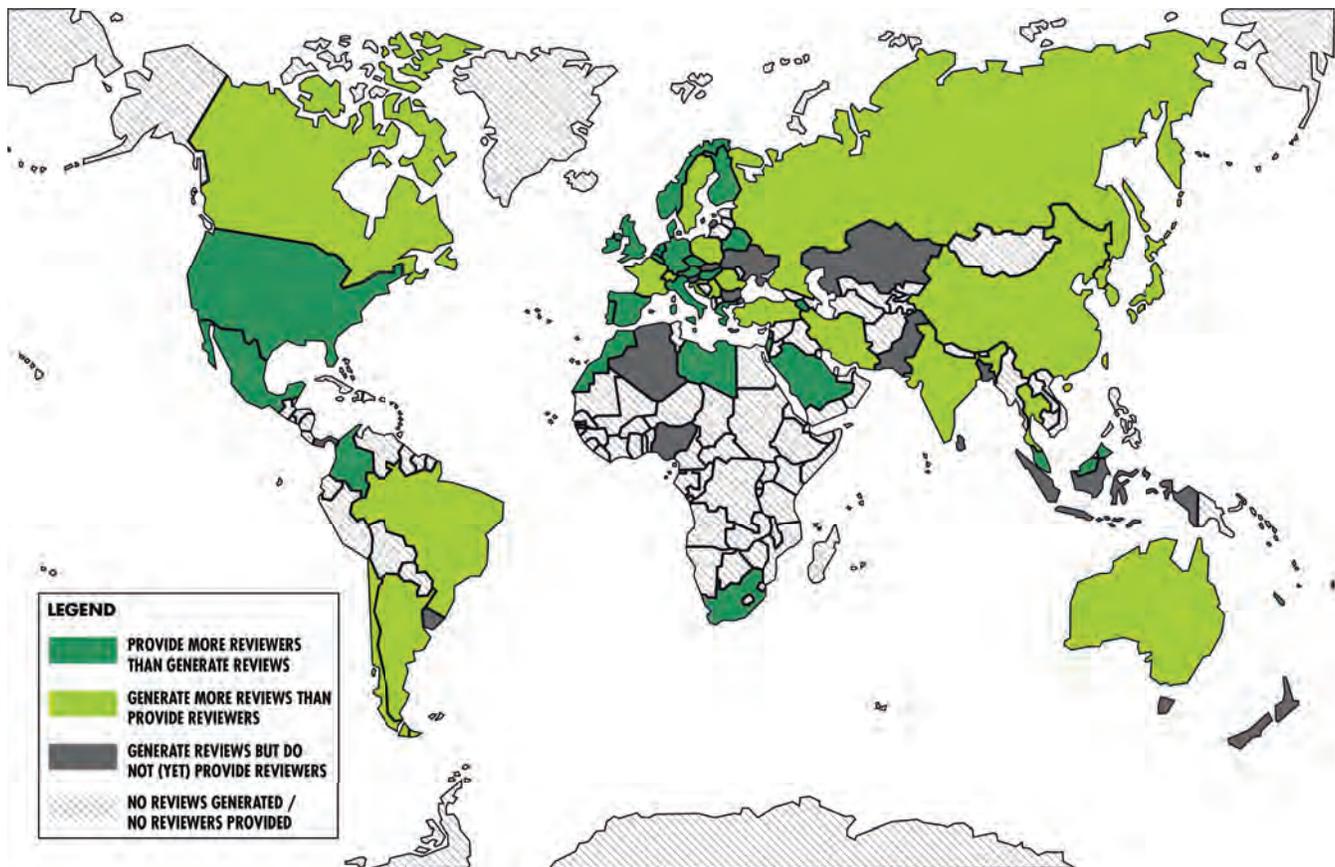


Figure 1. “Net consumers and producers” of peer review. Based on peer review statistics for a 6-month period for one FEMS journal, this map compares the number of reviews generated (original submissions plus revisions), by country. This dataset is too small to make any meaningful statements about national production and consumption levels, but it suggests how this measure—developed across publishers—could provide a useful view of where attention might best be focused (on a regional, national or institutional level) to help close the widening “peer review gap.”

might be interesting given that an earlier [Wiley-Blackwell survey](#) reported that 77% of researchers express an interest in peer review training. A more recent survey conducted by PRE (Peer Review Evaluation) a program of the AAAS—published during Peer Review Week 2016—takes this a step further, exploring how such training might be implemented: What would it consist of? Who would pay for it? And how would it be delivered? A simple measure of net peer review could go at least some way to identifying relative gaps and expertise in peer review provision, and help to target where future initiatives would have most effect.

However last month’s peer review activities play out in the future, our hope is that by building up on the events of the Week, and by continuing to look for simple, realistic solutions, this critical issue can start to attract the same kind of attention from funding bodies and national governments that the Impact Factor and Open Access have in the past. The goal would be to establish proper recognition for the contribution of peer review, meaningful professional development consequences for its delivery, and the long-term sustainability of the key quality control process in the growth of the global body of knowledge.