

Peerage of Science: will it work?

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Peer review is the most widely used selection process for evaluating submissions of scientific publications, and yet this system is widely criticized. As an editor of *The Lancet* points out: ‘...we know that the system of peer review is biased, unjust, unaccountable, incomplete, easily fixed, often insulting, usually ignorant, occasionally foolish, and frequently wrong’ [1]. On November 1, 2011, a new service was launched, called ‘Peerage of Science’ (PoS; <http://www.peerageofscience.org>), which aims to ‘fix the woes of peer review without breaking what works’. Here, we provide an independent overview of PoS and highlight some of its advantages and disadvantages for authors and reviewers. We urge all scientists to consider thoughtfully the changes that will be brought about by PoS and to contribute to the creation of an upgraded peer review and publication process.

PoS has the ambitious aim to enhance peer-review quality, save time for authors, reviewers and editors, and money for publishers. It is designed to be an open community, but reviews can only be written by scientists who have already published a peer-reviewed scientific paper. Manuscripts are submitted through the PoS web application, which allows peers to sign up for reviewing and subsequently automatically coordinates a four-stage peer-review process (Box 1). PoS is also a company with the primary purpose of seeking the interest of peers doing science, while operating through the revenues from services offered to publishers. The PoS community is rapidly growing: only two months after the first invitations were sent out, 300 peers are already members, including many leading scientists in ecology and evolutionary biology.

PoS offers several advantages over the traditional system, but there are also downsides and unknowns. First, PoS aims to enhance the quality of reviewing by encouraging non-anonymous review, introducing ‘peer review of peer review’, providing the possibility for reviewers to publish their review as a ‘Peerage Essay’ (PE) and to build a ‘referee factor’ [2]. Previous attempts at non-anonymous review have discovered, however, that most reviewers prefer anonymity [3]. Peer review of peer review and the implementation of a referee factor are certainly good ideas, but reviewers

who want to remain anonymous would waste their time writing a PE. Additionally, it will not always be possible to have an original insight and bring new perspectives to every evaluated paper, and the PE could become outdated after manuscript revision. A solution could be to let the comments to authors be assessed by the other reviewers and make the writing of a PE optional.

Second, all submitted manuscripts can be viewed by (almost) all peers. Peers will be able to decide when it is the best time for them to review, reducing the number of reviews performed sloppily under extreme time pressure. However, open access to uploaded manuscripts may facilitate pilfering. Also ‘friends’ or ‘foes’ may flood the system by performing numerous reviews and submit overly positive or negative evaluations. It can also become problematic if the number of reviewers per paper is too high; reviewers and authors could be overwhelmed by suggestions. One possible solution is to limit the number of reviewers per paper and randomly select them from the list of peers that have signed up to review. This would also prevent a waste of resources. Using the number of peers signing up for reviewing as a measure of quality, as intended by PoS, is problematic because this number would mainly reflect current trends and author prestige; in addition, the introduction of new ideas and the emergence of new fields could be hampered.

Third, one of the most creative aspects of PoS is that peers can only submit manuscripts when they keep in balance the number of reviews performed and the number of manuscripts submitted. This will reduce parasitism of the peer-review process.

Fourth, PoS will implement a unified reviewing process, which will reduce the workload of the reviewers’ community, as manuscripts do not need to be reviewed repeatedly while descending the journal prestige ladder. Authors will also benefit as their papers need to go through the reviewing process only once. Additionally, unified reviewing may also prevent authors relying on the rule of large numbers, hoping that manuscripts will eventually be accepted owing to a lack of thorough reviewing. However, not having a specific target journal, it may be difficult for authors to focus their manuscript and for reviewers to judge how stringent to be in their assessment. Most importantly, the more centralized system implemented by PoS

Box 1. The four stages of the PoS review process**Stage 1. Manuscript submission and peer review (Figure 1)**

Authors submit their manuscript anonymously, which becomes available for peers to review. Recent collaborators, peers from the authors' institutions and peers excluded by authors cannot view the manuscript. Reviewers write a PE, which is text of up to 1000 words, written carefully enough to withstand peer review. Reviewers also write comments to authors and a categorical recommendation (ranging from 'publishable' to 'withdraw') Figure 1.

Stage 2. Peer review of peer review

Reviewers evaluate each other's PEs using a 1–5 scoring of three aspects (the merit of identifying weaknesses, identifying strengths and providing original insight). Each PE gets a quality index (PEQ) and is now a peer-reviewed text. After the entire process is complete, reviewers can decide to reveal their identity and publish their PE in a traditional journal or in *The Proceedings of Peerage of Science*, an

online journal published by PoS. Editors can send publishing offers to authors once all reviews are received.

Stage 3. Revision of manuscript

Authors revise the manuscript based on the reviews that it received. If the authors incorporate suggestions made by the reviewers, they are encouraged to give credit to reviewers by citing the PE.

Stage 4. Final evaluation of manuscript

When the revised manuscript is received by PoS, reviewers are asked to evaluate the final version using a 1–5 scoring of seven aspects (breadth, impact, originality, data, methods, inference and literature coverage) and a brief verbal justification of the scoring. When all reviewers have uploaded their evaluation, a quality index is calculated for the manuscript, and authors and reviewers, if not yet contacted by journal editors, can send referrals to them.

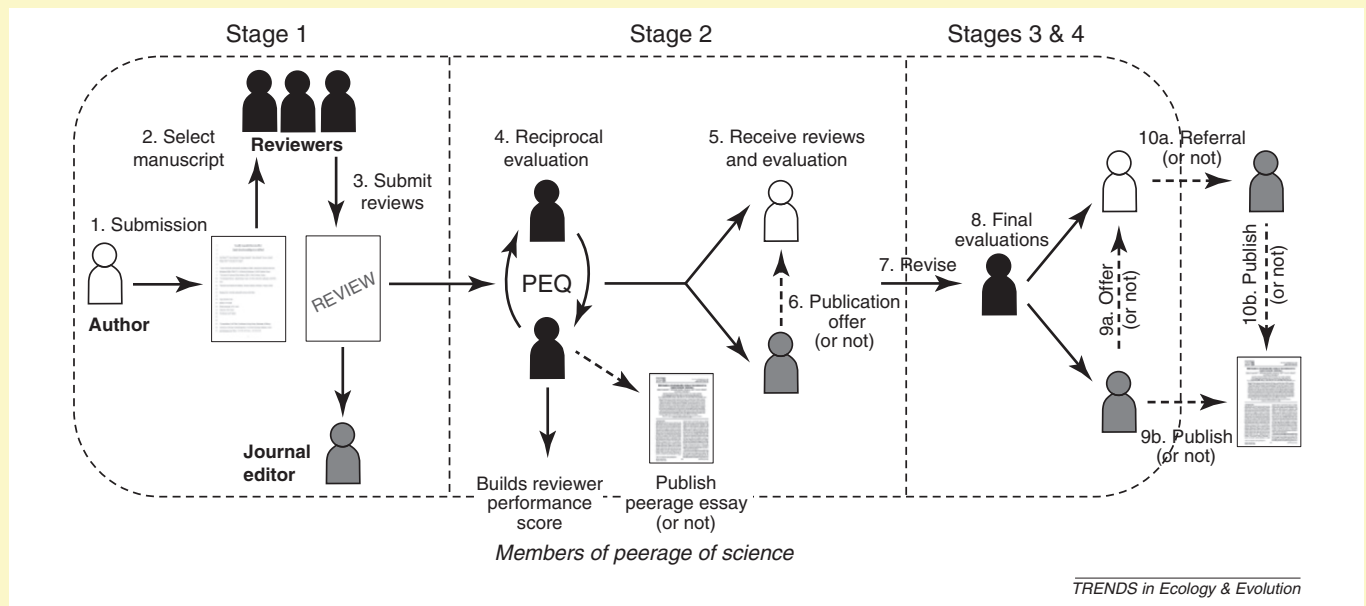


Figure 1. The process from submission to publication in the Peerage of Science system. Abbreviation: PEQ, peerage essay quality index.

may incapacitate the mechanisms that are present in the traditional peer-review system owing to decentralization and that currently protect it effectively from abuse. For example, if PoS becomes successful, it may obtain a monopoly of the reviewers' community. Who would watch the watchers?

In summary, we applaud the efforts of PoS, but improving the traditional peer-review process while keeping what works will require an open and dynamic process, especially as it is unclear how one can obtain the benefits of centralization, while keeping critical features of decentralization. One should take the chance now and contribute to the development of an improved peer-review process. After all,

it is in everyone's interest that selection before publication functions optimally.

References

- Horton, R. (2000) Genetically modified food: consternation, confusion, and crack-up. *Med. J. Aust.* 172, 148–149
- Wilson, R. (2006) 'Referee factor' would reward a vital contribution. *Nature* 441, 812
- Liu, S.V. (2007) Why are people reluctant to join in open review? *Nature* 447, 1052