

IN SCHOLARLY PEER-REVIEW, DISCARD BATH WATER, KEEP BABY

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'The real villains of the system, however, are the commercial publishers who exploit the altruism of the reviewers' | Photo Credit: Getty Images/iStockphoto

The chief output of scientists' labours are articles published in peer-reviewed journals. A scholar submits a manuscript to a journal of her choice, and the journal editor sends it out to scholars familiar with the subject matter of the manuscript for their expert opinion.

This peer-review often consists of a summary of the manuscript's contents, followed by a catalogue of all that is right or wrong with the manuscript, ending with a recommendation to accept or reject. If the recommendation is to accept, there are usually suggestions for revising the manuscript to make it more suitable for that journal.

Pre-publication peer-review is the bedrock of modern scientific knowledge production. Peer-reviewed articles are not flawless but being peer-reviewed is a necessary condition for the paper's contents to be considered part of the collective knowledge base. The reviewers are almost always unknown to the authors. That all authors, however senior or famous, accept judgments of their work by unknown individuals is a testimony to the democratic nature of modern science.

Reviewing is almost always voluntary, with no financial remuneration and little academic recognition. It is remarkable to have scholars willing to devote their time with no direct returns to themselves, with the knowledge that their collective efforts sustain modern science — rendered more so when we consider the magnitude of the effort.

A report published in 2015 estimated that there were some 28,100 active scholarly peer-reviewed journals in the English language, publishing some 2.5 million articles per year. That number is expected to have grown annually at about 4%-5%, but let us stick with the conservative estimate of 2.5 million.

Articles are seldom published by the first journal to which they are submitted. Very conservatively, let us say the average article is published on the second attempt. Each submission elicits two or more peer-reviews, leading to a total of more than 10 million peer-reviews. Even if a peer-review takes only about two hours (I usually take longer) of a reviewer's time, that amounts to 20 million hours of work annually by scholars for the welfare of their

community and the cause of science.

We must all cherish and nurture this rare example of collective human altruism that the peer-review system represents. Nevertheless, there are frequent grumblings about the fairness of this system and occasional ill-advised calls to dismantle it. Not surprisingly, these emanate from authors who get an unfair proportion of rejections.

There are clearly identifiable faults with the peer-review system but often with very practical solutions.

Yet, surprisingly, journals make little effort to fix the minor problems plaguing the system and sustain this mammoth effort by scholars.

Perhaps the most serious is the real or perceived bias of reviewers based on the address, reputation (or lack thereof), gender or ethnicity of the author or conflicts of interest between author and reviewer. Such bias is probably very common, but it can be easily mitigated by anonymising both the reviewer and the author. Most journals fail to implement such a double-blind peer-review system.

A second way to mitigate bias is for the editor to play a more active role in adjudicating disputes between authors and reviewers. The norm, however, is for the editor to assume the reviewer is always right and the author always wrong, even though authors and reviewers regularly exchange roles. The reviewer is erroneously called a 'referee' when it is the editor who should play the role of an unbiased referee and mediate between authors and reviewers.

Authors are also to blame for the ills of the peer-review system. It is routine practice to send articles to the most prestigious journals and have them rejected by successive journals before they find their natural home. This practice inflates the work of reviewers and journal editors and allows journals to flaunt high rejection rates as a mark of their prestige.

The root cause for this maladaptive behaviour is that scholars are usually assessed by the names of the journals in which they publish rather than the contents of their articles. It is mind-boggling that the scientific community — representing the epitome of reason and logic — can adopt such an irrational procedure to evaluate members of their community.

The peer-review system can thus be significantly reformed by adopting double-blind reviews, editors playing the role of unbiased referees and evaluations of scholars being based on reading the articles rather than admiring the covers of the journals in which they are published. It will be a shame to let the peer-review system, a rare example of human goodness, die of neglect.

The real villains of the system, however, are the commercial publishers who exploit the altruism of the reviewers (worth 20 million hours of work annually) and make large profits, shamelessly making even the reviewers pay to read the very papers they have reviewed and recommended publication.

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