
Improving peer review in scholarly journals

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Abstract Peer review in scholarly journals can be improved by masking of both authors' and reviewers' identities (double-blind) or by using open-to-public peer review. This essay deals with currently available options for improving peer review and offers suggestions for enhancing the quality of publications.

Keywords Confidentiality; periodicals as topic; peer review; research standards

Proponents of the traditional peer review system claim that it is an essential tool for enhancing scientific knowledge. On the other hand, critics present a range of arguments: reviewers rarely agree on suitability of a manuscript for publication, thus questioning the reliability of peer review; reviewers' recommendations are frequently based on subjective arguments and do not favour non-native English speakers; the predictive value of peer review is low, since there is a weak (if any) association between the reviewers' comments and the usefulness of the work for the scientific community, measured in terms of citations^{1,2}; peer review is time consuming and costly; and, reviewers' comments can be painful and distressing for novice authors.^{3,4}

How to improve peer review

Alternatives to peer review, such as inviting authors to write articles with a guarantee of publication and relying on the

"old boys' network" to identify up-and-coming researchers, violate the principle that research and scholarship should be evaluated and recognized on their merits, not on their social prestige or connections.⁵ Some alternatives, particularly the auction-based approach, are difficult to execute and ethically questionable. The better the submitted paper, the more scientific currency the author will be likely to bid to have it published.

The main approaches to the improvement of traditional peer review are masking the identity of both authors and reviewers (double-blind) and public peer review.

Double-blind review

In single-blind review, the most common review practice, authors do not know the identity of reviewers⁶ but are able to correctly identify reviewers in about 5% of cases.⁷ Keeping the names and affiliations of reviewers confidential encourages reviewers to be candid in their evaluations, and such confidentiality may also attract qualified scientists.⁸ Not surprisingly, reviewers also prefer to comment anonymously.⁹ Informing reviewers about the authors' identity may lead to biases related to authors' previous work, gender, and nationality.¹⁰ To avoid such biases, masking identity of the authors is recommended.¹¹⁻¹⁴

Nonetheless, double-blind review has disadvantages. Proponents believe that knowing the authors' identity

makes it easier to compare the new manuscript with previously published articles. Knowing the authors' identity encourages the reviewers to disclose conflicts of interest.^{10,15} Newcombe and Bouton noted that the reviewers unaware of the seniority of the authors provide less educational comments for the inexperienced ones.¹⁶

A survey of medical editors showed that the identity of authors is masked in only 36% of cases.¹⁷ In a survey of more than 3000 non-medical scientists, more than half supported double-blind review and only a quarter supported single-blind review. Double-blind review was primarily supported because of its objectivity and fairness.¹⁸ In contrast to editors, more authors feel that double-blinding is important. Ecologists and evolutionary biologists too preferred double-blind review,⁶ as did women and junior authors.¹⁹

A series of studies report positive findings for double-blind peer review. Budden et al found that introducing double-blind review led to an increase in submissions written by women.²⁰ Ross et al claim that blinded review negated the associations between abstract acceptance and nearly all abstract characteristics such as gender and institutional prestige.²¹ Papers published in journals with double-blind review had a higher impact, measured by the number of citations; the authors attribute this to a type I error – that is, journals using non-blinded review published low quality papers, which would not have been published in the blinded peer review system.^{22,23}

Improvements were not confirmed to large randomized trials.²⁴ Further, double-blinding is difficult to accomplish, since reviewers can identify the authors in some cases.²⁵ Clues like self-citation²⁶⁻²⁸ and citing well-known studies often disclose information about the origin of the papers.²⁹

Public peer review

With the advent of the internet and modern information technologies, open access journals switched to interactive public peer review, in which a manuscript is open to comments by any visitor to the website where it is posted. Open review has some advantages. Submissions are immediately published online as “discussion papers”. Comments on the quality and authors' responses are open.³⁰ The reviewers' arguments are available to public, and reviewers can claim authorship in some cases.³¹ This system may enhance the quality of manuscripts,³² and encourages reviewers to submit constructive and fair comments.

In *Atmospheric Chemistry and Physics*, where interactive review is established, publication has two stages.^{31,33} In the first stage, manuscripts that pass rapid pre-screening are immediately published online as “discussion papers”. Interactive public discussion is initiated, and the authors' responses to the comments are published along with the manuscript. In the second stage, revision and peer review are carried out as in traditional journals.

The disadvantages of the open system relate to the low prestige of open access journals and to the risk of acquiring “enemies” among the authors, threatening the fair attitude towards the reviewer.³⁴ Scholarly communications still operate within a relatively closed system, in which authors may later serve as reviewers and vice versa.³²

Other suggestions

Many European academics in non-anglophone countries, particularly in Italy, are marginalized because of the tendency of national journals to publish in English.³⁵ This marginalization was termed a “stigma” for non-native English speakers and has been discussed extensively by Flowerdew.³⁶

To reduce the publication gap between scholars from countries of mainstream science and from the scientific periphery, access to publications and writing/editing courses should be expanded.^{43,44} Moreover, encouraging young academics to participate in the peer review process may also have beneficial results.³⁷ As suggested by Mangelsdorf and Schlumberger in 1992³⁸ and practised in many American universities, reviewing classmates' compositions led to a more collaborative stance among students and sharpens their appraisal skills. It also helps them realize that peers' comments are instrumental for improving the readability of a text.³⁹ According to Loonen et al, acting as a reviewer is a recognition, which allows gaining knowledge and expertise, prerequisites for a good stance in the academic community.³⁹

Journal editors can benefit from shortening publication timelines by encouraging authors to follow the current science writing guidelines.⁴⁰ Shashok has published a list of linguistic markers, which could help the reviewers identify content-based or language-based errors.⁴¹ Likewise, Burrough-Boenisch points to the importance of close collaboration between linguists, copy editors, scientists/researchers, and journal editors.⁴²

Conclusion

These suggestions highlight the options for improving reliability, fairness, and predictive value of peer review. Blinding may reduce bias and may also provide fairness and better inter-reviewer agreement and predictive value. Transparency and fairness can be reached through a wider implementation of public peer review, relying on standard reviewer forms and digitization of the whole system of science editing.

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