Approaches to Peer Review

Martyn Rittman, January 2015

Peer Review

Aims: Look at some of the issues with peer review and proposed solutions. Finally, what problem is peer review trying to solve and how can this improve our decision-making criteria?

Outline:

- A very brief history of peer review
- Current views of peer review
- Models of peer review
- What is peer review for
- Conclusion and open questions

A (very) brief history of peer review

Peer review has been around in some form since journal publishing started.

Until the 1950s most decisions were made by journal editors alone. After this point, scopes became too broad, so more independent experts were used.

Now independent peer review is expected in almost all scholarly fields. The most popular mode is single blind peer review before publication.

Since publishing has become digital, peer review has become the longest step of the publication process, and some have started to criticize it and propose alternatives.

Current Views of Peer Review

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Some recent quotes and research about peer review

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There is a problem with peer review

Medical journals fail to spot the best papers: "Kyle Siler of the University of Toronto in Canada and colleagues were able to examine the peer-review history of 1008 articles that were submitted to three elite medical journals: Annals of Internal Medicine, The BMJ, and The Lancet. In total, just 62 of the manuscripts were accepted (6.2%) ... **All 14 of the most highly cited papers in the study were rejected** by the three elite journals, and 12 of those were bounced before they could reach peer review."

NIPS conference (Eric Price): "They split the program committee down the middle, effectively forming two independent program committees. Most submitted papers were assigned to a single side, but 10% of submissions (166) were reviewed by both halves of the committee ... **57% of the papers accepted by the first committee were rejected by the second one** and vice versa. In other words, most papers at NIPS would be rejected if one reran the conference review process."

Potentially coercive **self-citation by peer reviewers**: A cross-sectional study, B.D. Thombs et al, Journal of Psychomatic Research 2014; DOI: 10.1016/j.jpsychores.2014.09.015.

Alternative approaches to peer review

"Publishing in a non-traditional journal was a mixed bag. As the current academic climate gives less credit to publications in alternative journals, I will **not be committing a substantial amount of my work** to this format in the future. However, **I do think it is a viable platform** for the dissemination of selected scholarship. I will never again let an unpublished (but publishable) manuscript get stale waiting for a sympathetic reviewer." – Brent Thoma

A Stronger **Post-Publication Culture** Is Needed for Better Science, Hilda Bastien, PLOS Medicine 2014, DOI: 10.1371/journal.pmed.1001772

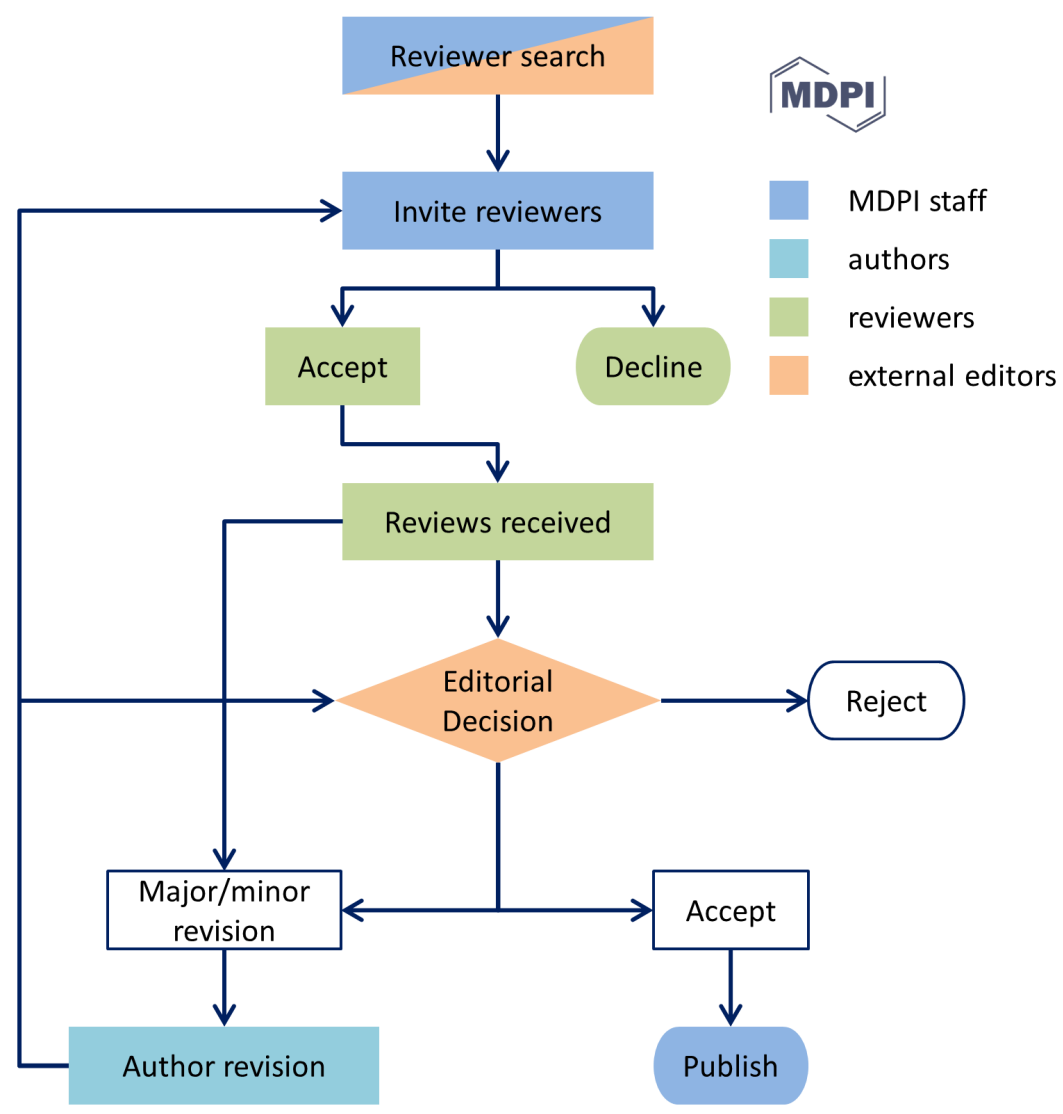
Double blind peer review option in Nature Chemistry

Other peer review issues

What does an editor do? "However you make a journal, there is still a need for filtering, selection, refinement, and finalization for the creation of an end product which a respected brand endorses implicitly and pledges to monitor on an ongoing basis."—Kent Anderson

Recognition for reviewers A letter from 40 Australian Researchers in which they argue that **review and editing of scholarly papers is a critical element of academics work** and should be recognized as such by their institutions and funding bodies—via Scholarly Kitchen

MDPI Single Blind Review



This summarizes the MDPI approach to peer review.

Single blind: reviewers know authors, but authors never find out the identity of the reviewers.

Single blind review

Our approach can be summarised as follows:

	Author knows reviewer	Reviewer knows author	Reviews are confidential
Prior to publication	no	yes	yes
Post publication	no	yes	yes

Open review

One MDPI title, *Life*, operates open review.

Authors can choose that review reports are published.
Reviewers can choose to sign their review—identify themselves (upon publication).

	Author knows reviewer	Reviewer knows author	Reviews are confidential
Prior to publication	no	yes	yes
Post publication	reviewer choice	yes	author choice

Open review—BMJ

Another model of open peer review, pioneered by the British Medical Journal (BMJ) gives anonymity to no parties during the review process. Reviewer names and review reports are published with the published articles. See the editorial here.

	Author knows reviewer	Reviewer knows author	Reviews are confidential
Prior to publication	yes	yes	yes
Post publication	yes	yes	no

Double-blind peer review

In business journals, double-blind peer review is very common. MDPI plans to implement this in 2015 for some journals and, as mentioned above, journals in other fields are also considering it.

The main argument is that double-blinding reduces bias against minorities and junior scholars. However, studies about this are inconclusive and reviewers can often correctly identify the authors.

	Author knows reviewer	Reviewer knows author	Reviews are confidential
Prior to publication	no	no	yes
Post publication	no	yes	yes

Other types of peer review

No review Prepublication sites such as arxiv, bioarxiv and SSRN are popular in some fields. This allows fast dissemination, although not all work here is eventually published, or even submitted for publication.

Post-publication peer review Sites such as pubpeer and pubmed commons encourage review after publication, but takeup is low and most articles have no comments.

EMBO Review is a discussion between reviewers and editors and a summary report is published with the paper.

F1000 Papers have a quality pre-check and are published within a few days, then formal reviewing takes place with recommendations and revisions published as they are received.

What is Peer Review For?

What should peer review achieve?

What is Peer Review For?

The aim of peer review is difficult to articulate precisely. Usually thought of in terms of a balance of:

- Quality (is it correct?)
- Impact (is it important?)
- Novelty (has it been done before?)

but the first two can be problematic...

The Purpose of Peer Review—Quality

- What level of quality is sufficient?
- Peer review cannot check every detail
- Partially correct or speculative papers can be useful for discussion and drive innovation
- Correct papers can be boring and incremental

The Purpose of Peer Review—Impact

- It's not always easy to tell what will have impact when it's published
- Impact is a bigger issue for print journals with limited space, less so in the digital age
- Has been taken out of the equation by many online/open access journals

The Purpose of Peer Review—The Scientific Process

Peer Review should support the scientific process of discovery

- Check that conclusions are supported
- Encourage novelty
- Ask ‘will this research lead to other interesting discoveries’

Conclusion

The models presented above all use the same underlying process to achieve the same end, which relies on independent review and the judgment of editors.

The differences are in openness, process accountability, and time to publication.

A fair system should take account of the needs of authors, reviewers, editors, and readers.

Open questions

- What is the most frustrating aspect of conventional peer review? Can any of the other models solve this?
- Can review happen faster while maintaining quality?
- What can be done to motivate and recognise reviewer contribution?