Reviewer’s report

Title: The limitations to our understanding of peer review

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Reviewer: Bahar Mehmani

Reviewer's report:

By presenting the status quo of peer review, authors are providing a road map to its future in a review article.

In general most of the topics presented in the manuscript and suggested solutions/best practices are already addressed at length in a paper written by H. Allen et.al.: https://onlinelibrary.wiley.com/doi/pdf/10.1002/leap.1222

The only new angel in the manuscript is open peer review as the potential solution to the listed issues. But without addressing its complex impact on different communities and career progress of academics in different ranks it is hard to accept this solution. The manuscript also lacks a robust argument in favor of open peer review for all disciplines. Their call to data sharing is crystallized in PEERE data sharing protocol and its manifesto at length. Most of their suggested transparency items listed as bullet points in section ‘what does peer review actually do?’ were items PRE-val used to verify for the end user of the content and showcase on the article page if it has gone through the peer review process and provides information that is vital to assessing the quality of that process. It seems the service ceased to exist after being acquired by AAAS. However, it can still be cited as the original idea.

Authors mention lack of studies on the topic of peer review but fail to first define what do they mean by peer review, and how external peer review is distinguished from editorial office and editors role. Some items briefly discussed in the manuscript such as reproducibility crisis and clear reviewer instructions fall mostly under the editorial office and editors' responsibility.

Although there is a lack of study on this subject using peer review data, there are however good survey studies showing how different academic communities define peer review and perceive its impact. Studies such as:


and


these large-scale surveys address in details both questions posed in this manuscript about the role of the peer review in the process of scholarly communication and the perception of its impact. They also show how researcher attitude towards open peer review has evolved since 2009 which
could compliment the somewhat skewed survey results presented in the manuscript (https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0189311).

Authors suggest publishing peer review as a potential solution to understand the impact of peer review. It seems they only consider the accepted paper peer review reports. It is important to notice the impact of peer review on rejected manuscripts, where peer review reports won't necessarily be available. But even in the case of accepted papers, a large-scale PEERE study of the peer review data of open peer review practices shows no significant impact of the practice on the quality of peer review reports:

G. Bravo et.al.: https://www.nature.com/articles/s41467-018-08250-2

In general the manuscript does not specifically address the rejected manuscripts and the impact of peer review or any of its suggested transparency schemes on this group of manuscripts.

It also misses the topic of bias in peer review from different perspectives such as gender or ethnicity and how their suggested road map would address it.

For example, Y. Reingewertz and C. Lautmar discuss at length the editor and editorial bias toward author affiliations (see https://doi.org/10.1016/j.joi.2017.11.006 and references therein). The manuscript is also missing the impact of author-suggested reviewer bias and it is not clear how their suggested roadmap can address the existing bias in author-suggested reviewer (see for example: https://onlinelibrary.wiley.com/doi/abs/10.1002/leap.1166)

Another missing item in the manuscript is the impact of blinding policies on quality of peer review which could complement the author's suggested transparent peer review policy but it is not present.

Authors briefly mention slow peer review is mostly working against innovation and rapid dissemination of findings based on the assumption of journals being the only possible medium of research output dissemination. They also provide example of 'Nobel-quality' research being desk-rejected. First, taking a broader perspective shows for example that Computer Sciences community have proved the opposite by choosing conferences as the medium. Second, if authors would provide a clear definition of peer review and the role of editors and editorial offices in the process they might use such examples to criticize the editorial process and not the peer reviewers. But providing examples of editors' desk-rejects as an evidence for inefficiency of peer review is a big leap.

Authors also oversee the issue of incentive mechanism in research and its impact on peer review. They briefly discuss the lack of uptake of post-publication peer review but miss to address the reason in light of pressure to publish.

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