Editing Practice

OPINION

Peer-review credit should be based on the quality of the reports, which should be citable and indexable

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ABSTRACT

The peer-review system in academic publishing is highly stretched to near crisis levels. Several methods, including the introduction of peer-review metrics or indexes, have been proposed to incentivize voluntary uptake of peer-review. However, these are largely based on the prolificacy of peer-review completion, but do not adequately reflect rigor or quality of the review reports. I argue that peer-review credit should also be based on the latter. As such, peer-review reports should be made citable, and these citations might constitute at least part of a comprehensive peer-review metric.

Keywords: academic publishing, peer-review, bibliometric index

BACKGROUND

Albeit much criticized,[1] peer-review remains the way by which the quality of scientific manuscripts is scrutinized prior to publication. With the dramatic increase in the number of scholarly and research manuscripts submitted, there is a general perception that the peer-review system is being overloaded to near crisis levels.[2] To an academic researcher already under pressure to publish and to meet various performance indices for career advancement, peer-reviewing might be often viewed as a burdensome and thankless distraction.[3] Empirical studies, albeit limited, have shown a steady increase in reviewer decline or refusal over the past decades.[4] Multiple strategies have been suggested or implemented to promote voluntary uptake by peer-reviewers, including the use of accolade awards or monetary incentives. However, there are doubts as to whether accolade awards are truly effective[5] and direct payment elicits both ethical and quality concerns.

Unlike publications, peer-review contributions could often be anonymous, obscured and difficult to be clearly cited as one's academic efforts or achievements. A number of authors have proposed measurement metrics that sought to quantify aspects of peer-review attributable to an individual. Bianchi and colleagues' F3-index consider aspects such as report delivery time, the length of the report and the alignment of recommendations to editorial decisions.[6] Malekzadeh's R-index characterized peer-review contribution based on the difference between the sum of review responsibilities for a researcher's publications and the number of reviews they have completed.[7] For Nassani's R^x index, R is the number of verified reviews recorded in an individual's Web of Science profile, and x is the number of journal titles the individual has reviewed for.[8]

The above indexes demonstrate a researcher's peer-review engagement, efficacy, efficiency and productiveness, and are clearly useful for recognition of peer-review reputation amongst editors, journals and the

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proximal scholarly community. However, it is unclear if any of these can be readily incorporated as generally citable and widely recognized academic credit, such as Hirsch's widely adopted h-index,[9] for a researcher's performance appraisal, career advancement or a measure of lifetime achievement.

Recently, two other peer-review indexes which appear to be more readily citable have been reported. De Souza and colleagues' Scientific Peer Review Index (SPR-index) is calculated as the product of a researcher's h-index, normalized by their number of publications, and the total number of verified peer reviews.[10] On the other hand, De Cassai and colleagues proposed the ρ-Index. Taking after the h-Index, the ρ-Index is defined as 'the number of articles reviewed by an individual that subsequently received a citation count equal or greater than ρ'.[11] The former recognizes peer-review efforts by making it part of one's citation index, while the latter allowed one's peer-review efforts to be indirectly manifested through the citations garnered by the papers which one reviewed.

INADEQUACIES OF PEER-REVIEW INDEXES

While the idea of incentivizing peer-reviewers with a numerical metric is highly commendable, the indexes proposed have some limitations. Firstly, they would only be fully effective when applied in the practice of open peer review, or to those who allow their role as reviewers to be disclosed and associated with a paper published. The work of peer reviewers who prefer to remain anonymous, while recordable and could be indexable, would not be fully visible or recognized. For the ρ-Index in particular, the published article must also be published and subsequently receive citations. Another issue for this index is that with manuscript rejection, peer-review credit due to the initial reviewers would be lost, regardless of how good the review reports were or how much effort was made in writing them. This point is important because most top journals accept only a small percentage of manuscripts after peer-review, and critical peer-review is a key to maintaining a high standard of acceptance. A good peer-review report might therefore be more likely than not to be rendered invisible together with the rejected manuscript. Secondly, and perhaps more importantly, all these indexes have a general emphasis on the prolificacy of peer-review, but do not adequately reflect rigor or quality of the reviews, if at all.

The latter point above, which concerns peer-review stringency, thus poses a dilemma for a (credit-seeking) reviewer. To score well in the Indexes, it would be desirable for a manuscript that one reviews to be eventually accepted and published (and thus becoming citable, at least for the ρ-Index). However, a reviewer's stringency in terms of providing critical if not negative feedback and elaborate suggestions for improvement would run a higher risk of the article being rejected. In other words, critical reviewers producing in-depth, high quality yet more negative peer-review reports might lose out in terms of acquiring a higher Index. On the other hand, less critical reviewers who return positive but largely superficial comments will likely have more papers under their review accepted, published and cited. We then have a somewhat ludicrous situation where slack reviews will likely garner a higher Index score. This worry would indeed hold for any peer-review metric that is based on either the number of peer-reviews performed, or the citation count of the reviewed papers.

Peer-review participation is often viewed as a social service one should voluntarily perform as a member of the academic community. However, the sharp increase in publication output is critically stressing the system and the practice. While it is true that recognition by a metric that aptly reflects both effort and quality of peer-reviewers would incentivize the practice, we cannot afford to promote populist, uncritical reviews by credit-seeking reviewers. The current peer-review indexes could thus be problematic because they depend on the quantity of reviews performed and *not* the quality of the review reports themselves. As such, these indexes could be subjected to deliberate or willful manipulation, just like how publication citations and authorships have been.[12,13] We must find better ways of quantifying both the number and quality of a researcher's peer-review contributions.

PEER-REVIEW CREDIT BASED ALSO ON THE RIGOR AND QUALITY OF REVIEW REPORTS

It would be prudent to therefore consider the notion that quality of peer review should take some priority over sheer numbers, and that peer-review reports should be directly credited for their scholarly content and quality. After all, it is the quality of peer-review that matters[14] to a reviewed paper's improvement, subsequent acceptance/publication, as well as consequent contribution to the literature and advancement in our collective knowledge. The quality of a peer-review report should thus be judged and credited based on its own merit, i.e. on its criticality in pointing out errors or deficiencies, its constructiveness in proposing new directions, experiments or interpretations, its appreciation for novelty and advances made, and its overall contribution to improving the reviewed manuscript. In other words, the review report itself should be the one that is cited and indexed based on

citation.

While many peer-review reports are still anonymous and invisible, there is considerable current impetus for the practice of open peer review,[15] which has already been implemented with some success (for example, the *Nature* family of journals[16] and others such as *Royal Society Open Science* and *eLife*). One possibility to allow peer-review reports to be cited would be for these to be published alongside the reviewer manuscript but with a separate digital object identifier (DOI). Peer-review reports of substantial quality and contribution towards the reviewed manuscript's eventual improvement might be highlighted by the editors and thus cited, at the first instance, in accompanying editorials. The reviewers, often invited to write accompanying short pieces of 'News and Views' or 'Highlight' articles, might also cite these peer-review reports. Readers and authors at large might also cite such peer-review reports in various relevant contexts of research reporting and manuscript writing, perhaps principally in perspectives and review articles, but also in research articles.

Citations of peer-review reports could then potentially contribute towards a peer-reviewer's total citation count. These could, for example, separately from the h-index, constitute an *r-Index*, defined simply as the number of peer-review reports by an individual that subsequently received a citation count equal or greater than r. As such, a more comprehensive peer review index should ideally have two components: Rn, a normalized quantification of peer-review completion, and r, a citation index of peer-review reports. Rn could be a raw count of number as recorded in one's Web of Science researcher profile, or normalized in some manner, for example ratioed with one's publication number,[7] or with the number of different journals reviewed for.[8] r could either be a standalone index or used as a modifier for Rn, i.e. as a multiplier or exponent (Rn raise to the power of r).

CAVEATS AND OBJECTIONS

There are several notable caveats associated with an r-index (or component) as proposed. First and foremost, the feasibility of citable peer-review reports would depend on widespread changes in the editorial practices of many journals towards open peer-review. This could be a strong barrier because some reviewers would be uncomfortable in revealing their identity to the authors (or to other reviewers), even if exchanges can remain anonymized until the stage of acceptance and publication. Of course, any procedural optimization of open peer review cannot prevent the loss of good peer-review reports from public view or citation should the reviewed manuscript be eventually rejected. Peer-review reports like such can be captured at best as 'completed' without further details. In view of the above concerns, a comprehensive metric for peer-review should thus also have a review completion-counting component, as stated above. With regards to the caveat of good peer-review reports not ultimately becoming visible and citable, more recent developments such as the Reviews Commons platform (https://www.reviewcommons.org/) would be helpful. In practices whereby the reviews for one journal can be readily transferable to another journal for editorial considerations, the need and burden of recurring fresh rounds of reviewer solicitation would be reduced and the chances of good peer-review reports eventually becoming visible and citable would be increased.

Another obvious objection for implementing the r-index as a citation index, thus equating it with the h-index, would be that peer review reports are not by themselves also subjected to peer-review, and as such might be lacking in expert endorsement of rigor and quality. If peer-review remains the gold standard for academic publishing, then peer review reports would at best be equivalent to preprints and not papers. However, preprints are citable and could indeed contribute to a researcher's h-index. Also, when peer-review reports are open, readily accessible and citable, they could be subjected to post-publication peer-review[17] by the readers, and their citation by the latter would represent an endorsement of quality. As such, citable and indexable peer-review reports can be a permanent archive in the literature.

CONCLUDING REMARKS

Academic peer-review faces mounting challenges and uncertainties. Other than the quantitative aspect of massive workload and reduced voluntary undertaking, peer-review quality might also be deteriorating due partly to the above, as well as other factors such as the potential (if not already widespread) use of artificial intelligence tools by reviewers.[18] Good and rigorous peer-review, however, remains an effective and desirable process that would serve to ensure scholarly merit and veracity in quality gatekeeping of published works.

To effectively incentivize peer-reviewers, peer-review must become an academic activity that, when one excels in, can credibly count towards one's career achievement and advancement. When it comes to academic excellence, quality should take priority over sheer numbers. The San Francisco Declaration on Research Assessment (DORA),[19] for example, stipulates that academic excellence should go beyond a simple counting of one's publication numbers and associated impact factors, but with more emphasis placed on the academic rigor and quality of one's papers. The same should then apply to

any measure of excellence in peer-review. Making the peer-review reports themselves visible and citable is perhaps a more effective way to make peer-review activities truly count.

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