What causes peer review scams and how can they be prevented?

Sneha Kulkarni

S. Kulkarni

Department of Scholarly Communications, Senior Writer & Editor, Editage Insights, Editage, Cactus Communications Pvt. Ltd., 510 Shalimar Morya Park, Off Link Road, Andheri West, Mumbai, 400 053, India

ORCID: 0000-0002-9067-2366

E-mail: snehak@cactusglobal.com

Key points

• Peer review, the cornerstone of academic publishing, has come under a lot of criticism for its flaws and has been manipulated by both authors and editors.

• Lack of review transparency is a contributing factor to peer review problems.

• Pressure to publish – among authors and journals – is adding to peer review problems.

• Technology can help maintain review integrity, although editorial vigilance remains key.

Peer review is regarded as one of the mainstays of academic publishing. It is conceivably the most trusted method (Nicholas et al., 2015) to weed out invalid and suspicious research and improve the quality of published research. Therefore, journals across disciplines have adopted peer review as a core part of the publishing process to uphold academic standards of ethics, validity, and reliability.

However, peer review is not a flawless system (Benos et al., 2007); some of the criticism directed at it stems from the fact that peer review is subject to human judgment and biases, lacks transparency, and can be abused. This knowledge has prompted discussions about replacing or augmenting peer review with metric-based assessment to evaluate quality and impact of research. Nevertheless, an independent review that compared the peer review system with metric-based alternatives concluded that peer review remains the most trustworthy method of assessing quality in academic publishing and should "continue to be the 'gold standard' for research assessment " (Wilsdon et al., 2015).

However, owing to the over-reliance on peer review as the only wall between submission and publication, the peer review system has been targeted as a soft spot by authors, editors, and third-party services. There have recently been some widely publicized incidents of peer review scams and mass retractions that reveal the extent to which the peer review system has been exploited; for instance, in September 2015, Springer retracted 64 of their published papers (Retraction of articles from Springer journals, 2015) alleging fake peer reviews, while in July 2014, SAGE retracted 60 papers (Retraction notice, 2015) because a researcher had assumed multiple fabricated identities to manipulate the journal 's online submission system. These are just two examples!

In fact, fake peer reviews have been responsible for as many as 15% of retractions since 2012 (McCook, 2015). While this might seem like a small proportion of the vast number of papers published annually, the rampant instances of peer review rigging bring into question the credibility of science. This situation warrants reflection on the reasons behind these scams and ways to improve the modern publishing system. These are some of the factors I consider responsible for the rise of peer review scams.

INCREASED COMPETITION

The 'publish or perish' culture in academia places excessive emphasis on the publication record. Funding bodies and institutions consider a researcher's output while awarding tenure track positions and grants. In China, publishing in high impact factor journals is directly proportional to the incentives academics receive, such as salary hikes and promotions (Hvistendahl, 2015). The intense competition to boost the volume of publications in high impact factor journals has been strongly associated with researchers indulging in scientific misconduct, and this is especially true among young researchers (Tijdink, Verbeke, & Smulders, 2014).

LACK OF TRANSPARENCY

The lack of transparency in peer review is a system flaw that leaves room for peer review manipulation. Journals usually follow the single-blind or double-blind peer review method, where the reviewers' comments and identities are never revealed to the readers. The confidential nature of the system could offer reviewers a sort of safety net for a less than thorough peer review, and reviewers might feel less accountable to provide their complete consideration to a paper. Moreover, if the journal editors fail to observe any problems with the review, there is a seldom chance of anyone discovering it. Identifying the need to lend more lucidity to the peer review process, some journals such as BioMed Central (BioMed Central, 2016) and PeerJ (PeerJ blog, 2015) have adopted open peer review. On the other hand, some journals such as F1000Research (F1000Research, 2016) have adopted post-publication peer review to facilitate assessment of published research by the scientific community. This might help in reducing and highlighting any incidents of peer review manipulation.

AUTHOR-SUGGESTED PEER REVIEWERS

Another practice to which the increasing cases of peer review rigging have been attributed is allowing authors to suggest peer reviewers. Many journals permit authors from highly specialized fields to suggest potential peer reviewers (Ferguson, Marcus, & Oransky, 2015). While this helps in hastening the process of finding peer reviewers, it leaves the peer review system vulnerable (Wager, Parkin, & Tamber, 2006): authors can fake reviews or suggest reviewers who would provide favourable reviews. In the aforementioned case of mass retraction by SAGE, most of the peer reviewers had been nominated by authors. This reinforces the crucial role of journal editors in reviewer selection for an unbiased and genuine opinion about a manuscript.

JOURNALS PREFERRING QUANTITY OVER QUALITY

Ultimately, the responsibility of ensuring fair peer review falls to publishers and journal editors. However, with the volume of research output growing, journals too face the coercion to publish as many papers as possible in the least possible time. The pressure to select appropriate manuscripts, coupled with the responsibility of maximizing the impact factor and revenue of the journal, may influence the decision-making process (Gupta, 2015). In such cases, the editors may make poor choices in selecting peer reviewers or skip verifying the reviewers, thus exposing the journal to the risk of peer review manipulation. Attempts have been made by some researchers to expose the peer review system's vulnerability. In an extensively publicized sting operation, John Bohannon, a biologist and science journalist based at Harvard University, submitted a majorly flawed paper on a new anti-cancer compound to around 300 open access journals, and his paper was accepted by more than half of the journals that failed to identify the paper's serious problems. It is noteworthy that

of the journals that rejected the paper, PLOS ONE rejected it for its ethical problems and substandard scientific quality, despite being one of the largest open access mega journals (Bohannon, 2013). This indicates that large submission volumes should not come in the way of thorough manuscript screening and assessment. Despite the time and revenue pressures, journals should consider the far-reaching implications of publishing bad science and refrain from lowering their quality standards.

While authors have been generally blamed for gaming the peer review process, there have been instances where editors have been guilty oflowering the standards of peer review in an attempt to publish path-breaking studies and boost the journal's impact factor (Eisen, 2015). Disconcertingly, editors have also been found to indulge in peer review manipulation. In July 2015, Hindawi Publishing Corporation announced that it had found three ofits editors guilty of abusing the peer review system by creating fake identities to publish 32 papers (Hindawi Publishing Corporation, 2015).

ROLE OF EDITORS AND PUBLISHERS IN PREVENTING PEER REVIEW MANIPULATION

The pressure to publish papers is as true for journals as it is for authors. Nevertheless, editors play a pivotal role in the publishing system, and they should not compromise the depth of their editorial assessments because of time and work pressures. To prevent the manipulation of the review system, editors should be careful while selecting peer reviewers. Creating a pool of qualified peer reviewers who are known to the editors and the community would reduce the pressure on editors to identify reliable reviewers, ensuring fewer loopholes in the peer review system. Even if editors ask authors to suggest reviewers, which is sometimes a necessary practice, editors themselves should be directly involved in screening and appointing peer reviewers. Taking a step in this direction, some journals such as DNA and Cell Biology do not consider suggestions for reviewers with non-institutional e-mail addresses (McCook, 2016). Arguably, the lack of an institutional address should not be the sole basis for ruling out a potential reviewer; however, a thorough background check should be conducted before considering a reviewer without an institutional address. Editors can ensure fair evaluation of a manuscript by appointing a maximum of one author-suggested reviewer in the reviewer panel (Burns, 2016). Moreover, after the reviewers provide their comments on a paper, editors should evaluate those to ensure that the suggestions are well-balanced and unbiased.

Apart from vigilance, journals should safeguard themselves from authors with fake identities entering their system. Editors can insist on selecting reviewers who have an ORCID record or a ResearcherID as a precaution against fraudulent authors who create fake identities and pose as reviewers. In addition, to protect their online submission systems, publishers should give password management due importance – practices such as sending passwords in plain text to a user who has forgotten it or providing passwords without verification leave journals' online system vulnerable (Ferguson et al., 2015).

To fortify the peer review process, publishers can opt for online peer review platforms that provide additional security against

manipulation. Some of these platforms allow for the insertion of a 'deep link' that is embedded in an e-mail invitation to review. Apart from acting as a direct link, which eliminates the need to provide a username and password, a 'deep link' becomes inactive ifforwarded; this could be a strong deterrent to fraudulent authors posing as reviewers (Burns, 2016). Furthermore, screening the journal 's user database and user activities on the system at pre-determined intervals could help editors identify any suspicious activity in a timely manner (Reller, 2016). Over and above this, editors should remain ever vigilant, even through the mundane aspects of submission management, and flag any case where manipulation is suspected.

CONCLUSION

Peer review rigging is a persistent problem affecting the academic publishing industry, and it threatens to call into question the integrity of both scholarly journals and science at large. However, editors can prevent such incidents by exercising caution and prudence when selecting reviewers. Moreover, journals should encourage the use of open peer review to maintain transparency in the process. Enhancing the security of the online submission system should also be a focal point ofjournals to ensure that it is not manipulated by authors. Finally, pre-publication peer review should not be regarded as the end of the scientific evaluation process. Journals should allow for their papers to be scrutinized and discussed openly post publication as well so that any errors in published works or the publishing process can be spotted in a timely manner. Editors play one of the most crucial roles in deciding the fate of a manuscript – from initial assessment to choosing reviewers and making the final decision. Hence, their vigilance and discretion is vital in safeguarding journals from peer review manipulation. While the role of peer review in scholarly publishing remains largely unchallenged, the scholarly publishing community needs to awaken to the challenges that the peer review system is facing. Journal editors, publishers, and authors have to work together to tackle this problem to ratify and strengthen the culture of academia.

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