

# Peer review in today's world

## Editorial

For well over a century Peer Review has played an important role in scientific publishing. A common definition is “Scholarly peer review (also known as refereeing) is the process of subjecting an author’s scholarly work, research, or ideas to the scrutiny of others who are experts in the same field, before a paper describing this work is published in a journal or as a book,” Richard Smith, the former editor of the British Medical Journal, described the role of Peer Review this way: “Peer Review is supposed to be the quality assurance system for science, weeding out the scientifically unreliable and reassuring readers of journals that they can trust what they are reading.”

As scientific publishing became more wide spread, and the interest in and importance of scientific exchange expanded, Peer Review became the recognized standard for responsible science journalism. By improving the quality of scientific communication Peer Review enjoyed an important role in the facilitation of information.

Having been on the editorial boards of several journals, and now serve as the Editor-In-Chief of this journal, I have had a front row seat on the Peer Review process. In the present case we are honored to have a large and diverse group of experts who make up our editorial board. As with any journal, the editorial board is the engine of the review process. Thoughtful, careful and insightful reviews, completed within relatively tight timeframe are an editor’s delight.

In recent years an increasing number of “problem papers” have festered in a wide range of journals. These are papers that misrepresent data, offer inappropriate analysis of data, fail to disclose conflicts of interest or even present entirely false data. Often, but certainly not in every case, the issues are discovered and the paper may be retracted. Such instances of abuse of the system often lead to finger pointing, and those fingers are most often pointed at the Peer Review system. Why, we are often asked, can’t these problems be found during the review process. Some have gone so far as to label the Peer Review system as “toothless,” an “academic lottery” not mention slow, inefficient and often prone to bias.

To the last three we must plead guilty (at least sometimes!). Authors often are critical of the time it takes for a manuscript to be reviewed, but fail to take into account that the number of manuscripts being submitted continues to grow, while the number of qualified individuals who are willing to take significant time away from their own work to be unpaid reviewers has remained static at best. Bias is a problem in any system that uses human reviewers. Although reviews are conducted in a blind manner it is often possible for reviewers to discern the authors or at least their organization and its possible for bias to creep into the process. It should be noted that this problem is also periodically claimed for grant reviews. But editors and reviewers alike take the problem of bias very seriously. It is sometimes difficult to determine when a complaint of bias is justified and when it is just sour grapes.

One reason for the current concerns about Peer Review is certainly the expanded expectations within the scientific community about it can and should accomplish. It may be helpful to understand what Peer Review cannot do. The following list includes items recently

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identified in the “Stat News.com blog ([www.statnes.com/2016.04/14/peer-review-watchdog](http://www.statnes.com/2016.04/14/peer-review-watchdog))”.

## Police responsible publication practices by authors

There are a variety of unacceptable practices that out of the scope of Peer Review, such as the presentation of data in the public domain as the author’s own, submitting multiple papers with essentially identical content to several publications or submitting a paper that has previously been published in another language without reference to the original.

## Detect fraud

Fraud is the most serious concern of most authors, editors and readers. While reviewers must be aware of the potential for fraud in scientific publishing, they are not forensic experts. Misinformation, presented by a clever miscreant is likely to be undetected.

## Detect plagiarism

Unless the plagiarism is outrageous it is very unlikely to be detected by reviewers, even those in the same field with a strong familiarity with publications on the topic. Algorithms to detect plagiarism are available but their accuracy, particularly in arcane subjects is not well established, potentially leading to false positive findings, accusation of wrong doing and perhaps even civil litigation. The use of such software would be an additional step in the review process, increasing review times, adding another hurdle to efficient processing of manuscripts and adding costs.

## Identify questionable statistical findings

Reviewers, in most cases are not statisticians, so their review of statistical findings reported in most papers is limited to considering the relevance of the statistical findings to clinical applications and similar concerns. When complex clinical trial reports involve pivotal statistical findings a statistician may be assigned as a reviewer, but even in that case it is rare that the reviewer would, or could, check all of the datasets, or re-run calculations of statistical significance. Typical the statistician reviewer will review and evaluate the methodologies applied to the analysis and perhaps sample some data.

Clearly there the current process of Peer Review is not perfect.

To that end, publishers and editors need to move forward to increase the transparency of the review process, identify clear guidelines to avoid the appearance of reviewer bias, and reviewers need to be rigorous in their scrutiny of the manuscripts they evaluate. When research reporting “breakthrough” clinical findings which are likely to alter patterns of practice or recommended clinical practice it may be appropriate to have more intensive statistical review of the data.

Peer Review alone cannot prevent the publication of “problem papers” in every case, but editors and reviewers remain the best

alternative available to facilitate scientific communication in today's world.

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### Conflict of interest

The author declares no conflict of interest.