A World Without Referees

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Our current peer review is an authoritarian system resembling a priesthood or a guild. It made sense in the 1600's when it was invented. Over 300 years later we are still using the same system. It is time to modernize and democratize our approach to scientific publishing.

1 Introduction

The peer review system that we use was invented by Henry Oldenburg, the first editor of the *Philosophical Transactions of the Royal Society*, in 1665 (see `http://en.wikipedia.org/wiki/Peer_review`). We are using a refereeing system that is almost 350 years old. If we used the same printing methods as we did in 1665 it would be considered laughable. And yet few question our ancient refereeing process.

In this essay I argue that our current peer review process is bad and should be eliminated.

2 The Problem With Peer Review

The refereeing process is very noisy, time consuming and arbitrary. We should be disseminating our research as widely as possible. Instead, we let two or three referees stand in between our work and the rest of our field. I think that most people are so used to our system, that they reflexively defend it when it is criticized. The purpose of doing research is to create new knowledge. This knowledge is useless unless it is disseminated. Refereeing is an impediment to dissemination.

Every experienced researcher that I know has many stories about having papers rejected because of unfair referee reports. Some of this can be written off as sour grapes, but not all of it. In the last 24 years I have been an author, referee, associate editor and editor. I have seen many cases where one referee rejected a paper and another equally qualified referee accepted it. I am quite sure that if I had sent the paper to two other referees, anything could have happened. Referee reports are strongly affected by the personality, mood and disposition of the referee. Is it fair that you work hard on something for two years only to

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have it casually dismissed by a couple of people who might happen to be in a bad mood or who feel they have to be critical for the sake of being critical?

Some will argue that refereeing provides quality control. This is an illusion. Plenty of bad papers get published and plenty of good papers get rejected. Many think that the stamp of approval by having a paper accepted by the refereeing process is crucial for maintaining the integrity of the field. This attitude treats a field as if it is a priesthood with a set of infallible, wise elders deciding what is good and what is bad. It is also like a guild, which protects itself by making it harder for outsiders to compete with insiders.

We should think about our field like a marketplace of ideas. Everyone should be free to put their ideas out there. There is no need for referees. Good ideas will get recognized, used and cited. Bad ideas will be ignored. This process will be imperfect. But is it really better to have two or three people decide the fate of your work?

Imagine a world without refereeing. Imagine the time and money saved by not having journals, by not having editors, associated editors and imagine never having to referee a paper again. It's easy if you try.

3 A World Without Referees

Young statisticians (and some of us not so young ones) put our papers on the preprint server arXiv (www.arXiv.org). This is the best and easiest way to disseminate research. If you don't check arXiv for new papers every day, then you are really missing out.

So a simple idea is just to post your papers on arxiv. If the paper is good, people will read it. If they find mistakes, you can thank them a post a revision. Pretty simple.

Walter Noll is a Professor Mathematics at Carnegie Mellon. He suggests that we all just post our papers on our own websites. Here is a quote from his paper *The Future of Scientific Publication* (see `http://www.math.cmu.edu/~wn0g`):

> 1) Every author should put an invitation like the following on his or her website: Any comments, reviews, critiques, or objections are invited and should be sent to the author by e-mail. (I have this on my website.) The author should reply to any response and initiate a discussion.
>
> 2) Every author should notify his or her worldwide colleagues as soon as a new paper has been published on the website.
>
> 3) The traditional review journals (e.g. Mathematical reviews and Zentralblatt), or perhaps a new online journal, should invite the appropriate public to submit reviews, counter-reviews, and discussions of papers on websites and publish them with only minor editing.

4) Promotion committees in universities should give credit to faculty members for writing reviews.

The "publish on your own website" model can be used in concert with the arXiv model.

4 Questions and Answers

Question: Won't we be deluged by papers? I rely on referees to filter out the bad papers.

Answer: I hope we are deluged with papers. That would be great. But I doubt it will be a problem. Math and Physics, who rely heavily on the arXiv model, have done just fine.

If you rely on referees to filter papers for you then I think you are making a huge error. Do you really want referees deciding what papers you get to read? Would like two referees to decide what wines can be sold at the winestore? Isn't the overwhelming selection of wine a positive rather than a negative? Wouldn't you prefer having a wide selection so you can decide yourself? Do you really want your choices limited by others? Anyway, if there does end up being a flood of papers then smart, enterprising people will respond by creating websites and blogs that tell you what's out there, review papers, etc. That's a much more open, democratic approach.

Question: What is the role of journals in a world without referees?

Answer: The same as the role of punch cards.

Question: How about grants?

Answer: I think we still do need referees here. (Although flying 20 people to Washington for a panel review is ludicrous and unnecessary, but that's another story.)

Question: How about bad papers?

Answer: Ignore them or critique them. But don't suppress them.

Question: How about promotion cases?

Answer: Every promotion case includes a few letter writers who know the area and will be able to write substantial letters. They don't need the approval of a journal to tell them whether the papers are good. But there will also be some letter writers who are less familiar with the candidate or the field. Sometimes these people just count papers in big journals. But you can always just look at their CV and quickly peruse a few of the candidate's papers. That doesn't take much time and is certainly no worse than paper counting.

Question: How about medical research?

Answer: There is arguably danger in bad medical papers. But again, I think the answer is to critique rather than suppress. However, I am mainly focusing on areas I am more familiar with, like statistics, computer science etc.

5 Conclusion

When I criticize the peer review process I find that people are quick to agree with me. But when I suggest getting rid of it, I usually find that people rush to defend it. Is it because the system is good or is it because we are so used to it that we just assume it has to be this way?

In three years we will reach the 350th birthday of the peer review system. Let's hope we can come up with better ideas before then. At the very least we can have a discussion about it.