

## Scientific quality assurance II: Peer review – technical and organizational issues

Breakout Group 6, 16.15 – 18.15, Thursday 19<sup>th</sup> April 2007

Chair

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We were told that the idea of a ‘breakout group’ was for people to chat, debate, and listen, but not necessarily hear a ‘lecture’ or ‘presentation’. With so many different people in the room, with different backgrounds, experiences, and insights, the first step was to identify what we would cover.

The participants wanted lots of different things. Some wanted to understand what peer review was, others wanted to hear experiences of double-blind peer review, and others wanted the nuts and bolts of how to run a peer review system. I concluded that we needed a 3-day seminar to really cover all the topics mentioned (!), and so we agreed to take a step back and think unhindered about what peer review really is, why it matters, and then think again about how it could be conducted to the wider benefit of the research community.

Unbeknownst to me at the start of the session, we had a fair sprinkling of humanities academics, as well as biomedics, chemists (I think), and physicists. Academic banter was rife, which added some spice to proceedings, although, to be more serious, it became clear that ‘peer review’ – and attitudes towards peer review – within different disciplines is appreciably different.

### **So what is this “peer review” malarkey?**

My background is medicine, and we medics have a self-selected body called the International Committee of Medical Journal Editors (ICMJE) who try to set standards and guidelines for editors. They do a pretty good job, and define peer review as: “the critical assessment of manuscripts submitted to journals by experts who are not part of the editorial staff.” Interestingly, however, within the same paragraph, they also add: “The number and kind of manuscripts sent for review, the number of reviewers, the reviewing procedures, and the use made of the reviewers’ opinions may vary.”

Clearly with so much possibility for variation, it’s impossible to even agree a definition of “peer review”. Let’s take a step back.

Who’s a peer? The usual answer is to say an expert in the same field of research as the focus of the article. But some medical journals are increasingly using statisticians and methodologists – experts in statistics and methodology, but not necessarily experts in the overall field, whether it be cardiology, nephrology or whatever. The group were also quick to point out that using experts in the same field opened one up to the possibility of bias from competitors and friends of the author. Oh, how tricky it is to work with humans.

So, what does review mean? An unstructured comment, a detailed, structured comment, a chat over a beer, a numerical rating, a combination of all (the beer being optional, of course), or a selection of some? It depends – on the article type, the academic field, the whim (yes, the whim) of the editor, and, even, the publisher (more detailed forms of peer review can be more time-consuming, and so may cost more to run). It's difficult to debate something that eludes an agreed definition.

### **The inconvenient truth about peer review**

Amidst all this uncertainty, we despaired at two quotes from leaders in peer review research:

- Peer review is "expensive, slow, prone to bias, open to abuse, possibly anti-innovatory, and unable to detect fraud ... We also know that the published papers that emerge from the process are often grossly deficient." (Richard Smith, Former Editor of the *British Medical Journal*)
- "It's a lousy system but it's the best one we have." (Liz Wager, Publications Consultant)

Much laughter ensued, but there were also many nods, especially from those directly involved in peer review as reviewers or editors.

So what the heck are we chatting about? The system clearly doesn't work so why waste time debating it? Let's start afresh.

Well, no, hold on. As Wager said, it's the best system we have at the moment. But that moment is intimately linked to the systems we employ to run peer review. And, as with all things in life, we can become enslaved to our systems, forgetting our ultimate goals. The arrival of the Internet (although it has been with us for some time now, let's face it) gives us the opportunity to think up new systems and see how they fare.

We then went on to look at three courageous experiments, the third of which is my favourite.

#### **Courageous Experiment 1: *Atmospheric Chemistry and Physics***

<http://www.copernicus.org/EGU/acp/>

This journal invites authors to post their articles online prior to formal submission in order to invite comment from the wider community. The article stays within their 'discussion' area for 8 weeks, collecting comments that are publicly visible but not always named. In 2005, 1 in 4 of the articles in their discussion area received comments, the average length of which was 0.45 pages. The article is then formally submitted to the journal, peer review is conducted (traditional and anonymous, I believe), and, if accepted, the final manuscript goes into the main journal, together with the comments collected in the discussion area (but not the peer review reports, I believe).

It's an interesting experiment and the journal is certainly doing well in its field (it's ranked 12 out of 169 and was launched in only 2001), although that is probably partly because it is free to access online. Some of the group already knew the journal but in discussion we questioned why the formal peer review reports were not also made available with the final version of the article.

#### **Courageous Experiment 2: *PLoS One***

<http://www.plosone.org/>

The Public Library of Science (PLoS) publishes this journal that has a "low barrier" to publication. Their rationale is that any sound science should be made public so that the wider community can not only see it but also comment on it. The journal has an online commenting function that aims to

enrich the reader's experience of the article by enabling readers to offer their comments and alternative insights, linked directly to the relevant part of the text.

Again, it's an interesting experiment. Other publishers have experimented with having low barriers to publication (notably BioMed Central's *BMC* series of journals) but not with having comments linked directly to specific areas of text. The group agreed that the main challenge was whether the wider community would really have the time to enrich the articles in the way envisaged by PLoS.

### **Courageous Experiment 3: *Biology Direct***

<http://www.biology-direct.com/>

This journal, published by BioMed Central, employs "author-guided peer review" for articles in genomics, bioinformatics, systems biology, and immunology. When submitting their manuscripts, authors choose three of the journal's editorial board members as reviewers. It is up to the authors to request the review, and chase late reviewers. When the review process is complete, assuming the reviewers believe the manuscript to be worth of publication, the final version of the article, together with the reports from the reviewers and the author's responses, is published.

Most editors are horrified by the idea that authors get to choose their own reviewers uninhibited, but there are some caveats. For instance, no author can publish with the same three reviewers more than twice in a year, and no author-reviewer pairing can occur more than four times per year.

I openly admit that I biased any discussion of this journal because I think it's the most courageous experiment with peer review to date (at least that I know of). Most publishers are considering online commenting, it would seem, but *Biology Direct* goes some way to explore how the process could be run by academia, with the publisher 'merely' providing an agnostic publishing platform. Why not? What else does a publisher do except provide a 'system'?

### **A conclusion, if possible**

I hope this report goes some way to represent the discussion in the group, and provide some new insights on peer review. If I am allowed to conclude – even though much of the magic of the session was provided by the wonderful delegates – I would suggest that if we were honest with ourselves we would say that peer review, as practiced within current systems, is a mess, and that it is our responsibility to think *carte blanche* about the systems that have imprisoned our practices and perhaps our minds. And on that inflammatory note, I leave you. What are the chances that anyone will ever read this? Drop me a line if you do.

**My credentials:** I am a former Editorial Director at BioMed Central, a former Senior Editor at the *BMJ*, and am now the Secretary of the World Association of Medical Editors (WAME), a Council Member of the Committee on Publication Ethics (COPE), and the Managing Director of Medicine Reports Ltd, the company that produces *Faculty of 1000 Medicine*.

**My competing interests:** See my credentials.