

## When creativity and inventiveness go bad: problems with peer review

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In one of the many entertaining moments in his introduction to the philosophy of science, [Chalmers \(2013; pp. 27–28\)](#) referred to a problem from his own experience in physics research where gases released from components of the apparatus were compromising an experiment. Rival researchers in the USA found that gold-plating the electrodes in the apparatus solved the problem. Lacking the financial resources to do this, Chalmers' team developed a carbon solvent (named aquadag – it must have looked revolting) that worked nearly as well. One has to admire their creativity and inventiveness, not to mention the wry humour in the name 'aquadag'.

Unfortunately, scientists' creativity and inventiveness can sometimes be applied dishonestly, which is being illustrated at the moment in the unfolding of scandals related to fraud in the peer review process that exploit the common practice of journals asking authors to suggest peer reviewers for their papers ([Ferguson \*et al.\* 2014](#); [Haug 2015](#)). Some authors respond by naming a prominent researcher but then provide a fake email address, so that the request for review goes to the author or a colleague of the author who is in on the game. A fraudulent, favourable review is then provided. In other cases, authors fabricate a false identity to achieve the same result. A false identity may not even be needed – there is at least one documented case of an author using her maiden name as a suggested reviewer so that she could review her own paper ([Ferguson \*et al.\* 2014](#)). In some cases, authors are not even implicated in the fraud. Some agencies that assist authors in writing and presenting their papers (for example, in cases where the authors are not native English speakers) suggest fake reviewers on the authors' behalf, generate mainly favourable reviews with some changes required, and then bill the authors for assistance in responding to the reviews. A final case is where sub-editors themselves arrange fraudulent reviews ([Haug 2015](#)).

The problem may not be common, but it is widespread. Googling 'peer review fraud retraction' generates numerous hits including statements from major publishers and some academic studies. Publishers are following the recommendations of the Committee on Publication Ethics ([COPE 2017](#)), which require retraction of articles where fraudulent review is identified, and notification of all authors and their institutions if fraudulent review is discovered, irrespective of whether or not the paper was accepted for publication. High profile casualties even included a Taiwanese Minister of Education, who was named

as a guest author on several manuscripts that were published after fraudulent reviews. He resigned on principle, despite having no knowledge of either being named or of the fraud ([Ferguson \*et al.\* 2014](#)). This is a clear case of the dangers of another questionable practice, the inclusion of 'guest' or 'gift' authors who have had no involvement in the paper or the research it describes, who may not even know of the paper, but are then implicated in any adverse findings about the work ([Albert and Wager 2004](#); [Smith 2004](#)).

Reasons for fraud in peer review arise from the pressures to publish in modern science and from vulnerabilities in the electronic management of journals ([Ferguson \*et al.\* 2014](#); [Haug 2015](#)). Scientists are under relentless pressure from their employers to publish, so anything that increases the chance of publication success or speed aids in keeping a job or in career advancement. Editors and sub-editors at journals are under pressure too to process manuscripts swiftly, especially in an environment where good reviewers are often too busy to help or the sheer breadth of the international literature makes it difficult to choose an expert known to the editor. This can lead to lax checking of the reviewers recommended by authors because of pressure to reach a rapid decision. Several authors have written about the deleterious consequences for science, scientists and society under such unrealistic expectations of authors and editors (e.g. [Lawrence 2002, 2007](#); [Calver 2015](#); and included references). The almost universal use of journal management software can compound these human failings, because there are potential vulnerabilities in the software that may compromise password security ([Haug 2015](#)). They were exploited in one of the most egregious cases of large scale reviewer fraud identified, as well as more restricted cases where an editor's account was hacked ([Ferguson \*et al.\* 2014](#)).

Attention is now focused on how to prevent corruption of the peer review process. [Ferguson \*et al.\* \(2014\)](#), [COPE \(2017\)](#) and [Cury \(2017\)](#) suggest examples of good practice for journals and editors, including:

- verifying the email addresses of authors' suggested reviewers. Institutional email addresses are likely the safest (but can still be compromised), while non-institutional addresses are a warning sign (but can still be legitimate)
- checking the publication records of authors' suggested reviewers to confirm that they have a suitable background to assess the submission

- using authors' suggested reviewers as a last resort, while striving to always include at least one reviewer chosen by the editor
- requiring a specific reviewer ID (ORCID is widely recommended), although this in turn focuses attention on how these IDs might be hacked or compromised
- investigating fast reviews, especially if they are favourable. This needs discipline from editors, because a fast review is normally a relief for everyone
- seeking fresh opinions if all reviews are superficial and favourable
- insisting on strong passwords for editorial boards, plus secure measures around login and submission of reviews to prevent hacking of editors' accounts.

These measures should be complemented by a careful examination by managers of the pressures placed on researchers to publish frequently or achieve other strict research metrics, because these may lead to many unfortunate consequences (Buela-Casal 2014; Parr 2014) and are described by Lawrence (2016; p. 11) as having contributed to '... an insidious corruption of the practice of research'. While journals should take measures to guard against peer review fraud and individuals are responsible for their own actions, managers should also consider the culture of their workplaces and the potential 'perverse incentives' that can arise from shallow subservience to metrics.

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