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Editorial: citation malpractice

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Editorial: Citation malpractice

Mike Lockwood,

Editor in chief.

1. Introduction

We all have personal experience of metrics, originally designed to quantify and improve performance, having unintended consequences. In his book *The Tyranny of Metrics*, *Jerry Muller* [2018] catalogues and analyses examples in many walks of modern life. Therefore it comes as no surprise that bibliometrics in academia are open to not only unintended consequences, but also to misuse and malpractice. The more that bibliometrics are used to decide academic appointments and promotions, or to award research grants and academic prizes to individuals, or to quantify the status ("impact factor") of a journal, then the greater is the incentive to ty to manipulate those metrics to one's own advantage. You would think that academics would have the knowledge and the intelligence to know better – however, there is always somebody who thinks they can "game the system" and get away with it.

This is an issue we are very aware of at Proc. Roy Soc. A. It is also an issue that we take very seriously. Peer review, of some kind, originated in1665 with Heinrich Oldenburg [*Rix*, 1893], the Royal Societies' first secretary and the first editor of Philosophical Transactions, the journal with the longest publication sequence in the world. Over the following 200 years it evolved with the growing professionalization of science into the key mechanism by which science arrives at a consensus. It is often described as out-dated, frustrating, cumbersome, flawed, and inefficient. And it is, for sure, all of those things for sure, except – and it is a very, very important exception – out-dated. At a time when commercial and political forces see the benefit of undermining scientific consensus when and where it gets in the way of their self-interest, it is more important than it has ever been that we allow nothing to compromise the integrity of peer review and the consensus it builds. This means that "gaming" the peer review system is not a harmless bit of self-promotion, it is bringing into disrepute the central pillar of the age of reason that has brought so many and massive benefits to all mankind. Keeping the literature record "clean" is that important.

In the current issue, the paper by *Smith and Cumberledge* (2020) "Quotation Errors in General Science Journals" raises some uncomfortable concerns about malpractice in academic publication procedures. Some spectacular examples of "citation rings" (a cabal of authors who agree to cite each other's papers even where they are completely inappropriate) and of "fake reviewer accounts" (where authors create and suggest fake accounts to enable them to review their own papers) have been detected and required some spectacular corrective actions

2. Some examples of publication malpractice in science

In July 2014 SAGE announced the retraction of 60 articles implicated in a peer review and citation ring at the *Journal of Vibration and Control* (JVC). The full extent of the peer review ring was only uncovered following a 14 month SAGE-led investigation, and centred on the suspected misconduct of Peter Chen, formerly of National Pingtung University of Education,

Taiwan (NPUE) and possibly other authors at this institution and even led to the resignation of the Education Minister Chiang Wei-ling because of his links to Peter Chen. While investigating the JVC papers submitted and reviewed by Peter Chen, it was discovered that the author had created various aliases on SAGE Track, providing different email addresses to set up more than one account. Consequently, SAGE scrutinised further the co-authors of and reviewers selected for Peter Chen's papers, these names appeared to form part of a peer review ring. The investigation also revealed that on at least one occasion, the author Peter Chen reviewed his own paper under one of the aliases he had created.

Another example was reported by the monitoring website Retraction Watch in which, Hyung-In Moon, a South Korean plant compound researcher who made up email addresses in order to do his own peer review, according to, Retraction Watch which said that up to 35 papers by Moon had been retracted from various healthcare journals.

Sometimes the malpractice originates from within the journal structure and procedures (*Wilhite and Fong*, 2012). In January 2020, the editors at the *Journal of Theoretical Biology* (JTB) announced in an editorial that they had investigated and barred an unnamed editor from the board for "scientific misconduct of the highest order". The publisher, Elsevier, later confirmed that the barred editor was biophysicist Kuo-Chen Chou, who founded and ran an organization called Gordon Life Science Institute, in Boston, Massachusetts. Chou reportedly asked authors of dozens of papers he was editing to cite many of his publications, in some instances more than 50 and had even suggested that they change the titles of their papers to mention his algorithm. The investigation found that, on average, Chou had requested that the authors add an average of 35 citations, 90% of them to papers he had authored or co-authored (*Van Noorden*, 2020).

Such malpractice can crop up in any discipline and in any part of the world. As topical editor and reviewer, Artemi Cerdà handled 82 manuscripts for two journals of the European Geophysical Union (EGU), *Solid Earth* and *SOIL*. The EGU investigation found that for half of these manuscripts, he suggested that authors add an astonishing total of 622 additional references. In one case, he suggested that an author add 53 references to a manuscript. The report found that the authors complied with 399 of these citation requests (64%). In his role as reviewer, Cerdà also suggested that authors add another 423 additional references. EGU concluded: "From our analysis it appears that only one editor, Artemi Cerdà, violated our ethical rule that "any manipulation of citations (e.g. including citations not contributing to a manuscript's scientific content, citations solely aiming at increasing an author's or a journal's citations) is regarded as scientific malpractice."

These examples were brazen and greedy as well as immoral but the results of *Smith and Cumberledge* suggests that we need to be aware of the potential for subtler malpractice at a lower level that is much less easy to detect. These authors show that an alarming number of "misquotations" - that is citations that do not show what is claimed of them. Of course these can arise from typographical errors, or from authors mis-remembering which paper contains which evidence or perhaps even just misunderstanding the cited paper. However, it is also the most likely sign that a citation ring is at work. *Smith and Cumberledge* make the point that spotting misquotations requires expert knowledge and this is a general problem with attempts to develop algorithms to automate detection of citation rings (*Fister et al*., 2016, *Asatani et al.* 2018). As a result, *Smith and Cumberledge* only reviewed papers in areas

where they had, or had access to, the required expertise. This means their results cannot be taken as an overall indication of the level of the problem, as results are very likely to vary with the discipline. However, they are enough to raise the alarm.

We worry about this for the sake of science in general but also for the journal itself. Thomson Reuters suspended *Applied Clinical Informatics (ACI)* for its role in distorting the citation performance of *Methods of Information in Medicine (MIM)*. Both journals are published by Schattauer Publishers in Germany. They found that 39% of 2015 citations to *MIM* came from *ACI*. More importantly, 86% of these citations were directed to the previous two years of publication — the years that count toward the journal's Impact Factor. Thomson Reuters purposefully avoided using the term "citation cartel," which implies a deliberate attempt to cheat, and used the more ambiguous term "citation stacking" to describe the pattern, but the existence of the pattern alone was enough to cause them to suspend the journal.

3. What are we doing to guard against malpractice?

At Proc Roy Soc. A we take these issues very seriously indeed, for the sake of the honest authors who publish with us, for the sake of the reputation of the journal and the Society, and for the sake of science in general. We continue to monitor the development of automated algorithms to detect malpractice and will implement them as soon as they are sufficiently effective and reliable. Meanwhile we have to rely on expertise. We have investigated a number of worrying patterns, in some cases challenging individuals to explain them, and we maintain a watching brief on any area that has given rise to concern in the past. But we are also revising our guidelines so that reviewers and authors can help the editorial board to detect patterns that may need investigation.

Mixed in with attempts to deal with this is the phenomenon of "self-citation". Excessive self-citation by authors is a common problem and sometimes arises out of the fact that the author knows his/her own work better than he/she knows more appropriate literature that is also published. This is not usually malpractice but neither is it acceptable and, given the ever-growing volume of modern publication, this is very likely to be on the rise. However, it is relatively easy to detect and most reviewers are well aware of the potential for this to occur and can, and do request other papers be cited (even if it is one of their own which, given the cases discussed above, editors unfortunately have to now check is a valid request). We will ask referees and editors to suggest alternative or additional citations where they consider them appropriate, but in future these must be listed separately at the end of a review and these will be kept in a database that will be searched for worrying patterns. Authors will be at liberty to ignore any suggested additional citations that are not listed this way. We will also remind authors that they are at liberty to alert us if they feel they are being coerced into citing inappropriate publications.

To stress the key point, gaming the publication system for one's own benefit is an attack on the very fabric of science and really does endanger the massive societal, health and economic benefits that come from science. Sadly, a large and growing factor in how the politics of the world now operates is the Dunning-Kruger effect (*Dunning and Kruger*, 1999) and many seek to cherry-pick the science and dismiss science that is inconvenient to them and search the literature with confirmation bias (e.g., *Tappin et al.*, 2017), especially in areas such as climate change (e.g., *Yang et al.*, 2020) and the COVID-19 pandemic (e.g., *Oehmen et al.,*

2020) where science has urgent and vital implications for policies. Hence evidence of malpractice in just one paper in a journal can - and so will - be used to disparage inconvenient science in a perfectly valid paper in the same journal. If mankind is to continue to enjoy the massive benefits of the age of reason, we must not allow this to happen and we must stamp out even hints of publication malpractice.

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