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Case Report

For Whom the Bell Tolls: Downstream Effects of Retractions and the Bump-on Effects of Post-Publication Peer Review

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Abstract

There is ample evidence to prove that traditional peer review has failed at several levels. Failure has also been witnessed in the lack of responsibility displayed by editors and publishers in seeking to correct the literature whenever necessary. A survey conducted in 2014 indicates that almost 85% of respondents expected publishers to refund clients of literature that was retracted. To correct this dysfunctional system that is gradually widening, post-publication peer review must serve as the tool of choice to call out those who are gaming the system, or being irresponsible within it. In essence, the age of whistle-blowing has come to science, as a corrective measure. The literature needs correction. And those who have authored that literature, those who claim to have vetted it for quality, and those who are profiting from sales of corrupted literature must be held accountable.

Retractions are often the result of post-publication peer review (PPPR). Retractions may also reflect a gradual corruption of the scientific playing field [1]. At face value, readers may state that this claim is untrue. Yet, a closer evaluation of retraction notices, and multiple cases at both Retraction Watch (www.retractionwatch.com) and PubPeer (www.pubpeer.com) will indicate that it is the open and public discussion of problems in scientific papers that has often led to their demise, or what Brookes [2] euphemistically refers to as "enhanced corrective action". It is thus likely for this link between more and a greater variety of channels of discussion through PPPR analysis, and retractions, that the number of journals issuing retractions has increased [3]. Since traditional peer review is broken [4,5], including the existence of "rational cheating" in the peer review process that can bias not only the outcome of a peer review, but also the eventual literature [6], many science, technology and medicine (STM) publishers are exploring ways of increasing the number of checks and verifications to reduce the number of ways in which the system is gamed, and to minimize the balance between imperfect peer review and the importance of PPPR [7]. This increasing "militarization" of science, a neologism I have coined, can be seen by more stringent requirements and pre-requisites in the online submission systems, plagiarism detection prior to peer review, or the gradual implementation of apparently draconian measures such as a unique identifier system for scientists, ORCID® (Open Researcher and Contributor ID), as exists for papers, the DOI (digital object identifier). More and better training of editors, a peer review system that involves a three step process (pre-pub peer review, traditional peer review, and PPPR), as well as a change in mentality towards a more open peer review system that is capable of handling comments, concerns and criticisms post-publication [8] are only some of the deep-seated weaknesses that are still far from being resolved. In rare occasions will the system self-correct to develop systems that reduces the possibility of error in biomedical research [9]. But these cases are still very rare.

As the bullishness of STM publishers increases towards the confidence of their increasingly militarized system, a sector of the scientific community does not, cannot and will not agree with, or follow, such systems, veering off to the alternative publishing platforms, including the sea of "predatory" open access publishers, open peer review platforms or journals like Arxiv, PeerJ, f1000 Research, or a host of other "novelties" that claim to provide a step closer to perfection. Ultimately, however,

there are two intrinsic flaws: the human component that still needs to check for quality of manuscript content, *aka* the peers, and the mechanical component, namely the online submission systems, which remain open to being gamed, and abused, despite their draconian checks. Although one can hinder or slow down the ease with which academic fraud takes place by turning a system more draconian, one can not eliminate the fraud itself, or the fraudsters, provided that there are parameters within science publishing that can be gamed, and abused, like the impact factor. There are skeptics on both sides of the PPPR fence: those in defense of PPPR, in particular the anonymous voice of PPPR, may be referred to by some as witch hunters or "vigilantes" [10] rather than as whistle-blowers or defenders of the integrity of sciencewhile those against PPPR will call the process a witch hunt and even call it the final demise of science.

In a recent opinion piece, I have been critical of the wider base of scientists, in particular plant scientists, for not embracing PPPR as part of the new publishing model, for not being pro-active towards cleaning up the literature by retroactively exploring it through a set of independent eyes, and for not standing up to the current STM establishment and their rules – some of which are nonsensical – that help to make the pool of scientists dumbed-down and complacent [11]. This set of the scientific base represents a generation of scientists that lacks a sense of urgency, and, by ignoring or not addressing the literature's problems, represents a globalization of "scientific indifference". By progressively militarizing the publishing platform and increasing the "ethics" barrier, STM publishers hope to tone down the critical voices of the dissenting population, thus repressing discussion, distancing accountability, and thus also hindering the rapid and effective correction of the literature since one key factor is solidly in place: fear. In that opinion piece I also touch on the reticence about, if not outright resistance to, the anonymous voice during PPPR, by the wider peer pool, again as a result of fear, i.e., of not knowing the voice of the claimant, rather than listening to the message of the evidence. I also indicate that part of this dumbing-down of scientists relates to the way in which the system has been built, a ponzi-like pyramid that continues to revolve around meaningless metrics like the impact factor, which serve to corrupt the publishing platform more than elevate it [12]. While education systems and institutes continue to force their scientists to aim for journals with higher impact factors, in many cases remunerating them for this effort, there will be little effort to steer away from this cozy, yet simplistic system, a sad reality that is blind even to the creator of the impact factor, Dr. Eugene Garfield, who when challenged by me about this corrupting factor, responded "what's the beef?" A swathe of alternative metrics has emerged, but they all rely upon the ability to create something superficial out of nothing at all, all to give the journals, the publishers and the authors some sortof a sense of merit, worth and empowerment, the feel-good factor. Yet, once all of theese superficial metrics are removed, once the smoke and smog has been blown away, only a few key metrics remains when determining the importance of a scientific paper: a) its robustness; b) its reproducibility (or lack thereof; Ware and Munafò 2014); c) its applicability which are a function of a) and b). What the marketing strategies of the STM publishers try and do is to sugar-coat something which is really quite simple, and elevate it to something which can sometimes be quite unreal, all with one final objective: to attract more scientists to publish in their journals which will ensure the growth, and continuation, of their journals, and thus continued fame and profit. A separate issue that involves the increased ethicization of science, is the central role of COPE (Committee on Publication Ethics) and how its various rules and guidelines are being implementedand respected by COPE members, or not [13]. While the system is entrenched in this merry-go-round of values, it is going to be difficult to enact real change. In this power play between and among STM publishers, there will be some that will fall victim, including hijacked journals.

However, there may be aturning point in the implementation of PPPR as a solid part of the STM publishing model: money. At the end of the day, publishers would ultimately like to see profits being generated from solid science whose quality has been truly verified. As the number of retractions increases, and the number of cases of papers that do not have the supposed quality that was promised by the publisher, the same publisher will take several direct and indirect hits: a) its fame will slump; b) its reputation for quality will slump; c) ridicule and criticism will increase; d) costs will increase to support an imperfect system. The last aspect, the financial loss being suffered as a direct consequence of retractions [14,15] will impact scientists, publishers and research institutes. Thus, the lack of a visionary model that embraces PPPR and the anonymous voice of critics into the current publishing structure will doom science publishing, reducing it, as Murphy et al. [16] put it, "merely an (expensive) exercise in futility." One way of making the system more credible, but also (sadly) simultaneously further militarizing it, is by making a requirement that scientists publish their data sets in an open access format, although such compulsory requirements could fuel new concerns with data security, which appears to be an unexplored possibilty as far as open access supplementary data sets are concerned [17]. Another way is to ensure that scientists make their full curriculum vitae open to the public, for scrutiny and verification, by other scientists, or by journals or publishers, thus making scientists more accountable and thus making the publishing process more transparent. Two random examples are by Jonathan Jones (http://www.tsl.ac.uk/staff/jonathan-jones/) and Arturo Casadevall (http://www.einstein.yu.edu/labs/arturo-casadevall/page.aspx?id=39552). However, issues like how such a system might be implemented for scientists in developing

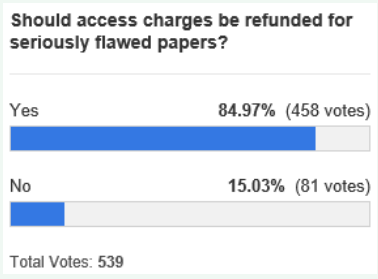

Figure 1 Screenshot from Retraction Watch of an informal survey conducted in 2014 to assess whether publishers should remunerate readers who had paid for access to seriously flawed manuscripts. http://retractionwatch.com/2014/02/26/should-readers-get-a-refund-when-they-pay-to-access-seriously-flawed-papers/

Figure 2 Screenshot of a retracted paper (http://link.springer.com/article/10.1007/s11240-011-0077-6) whose PDF file is being charged for, in direct contravention of the COPE guidelines for retractions (http://publicationethics.org/files/retraction%20guidelines.pdf).

nations, or how to verify whether the full set of published manuscripts has been described, including the indication of errata, corrigenda, expressions of concern and retractions, remains an issue that might be difficult – if not impossible – to implement on a global scale.

A study by Roberts and St. John [18] on misconduct by UK biological scientists concludes that as much as 68% of papers have inappropriate authorship, yet the root causes are not explored. A fine-scale analysis of the clauses underlying the definitions of authorship across multiple STM publishers will reveal deep-seated inconsistencies [19], begging the question, whose rule should scientists follow, and why?

Given this crisis of trust in science and science publishing, and a growing uncertainty about the robustness of the STM publishers' peer review systems, and thus the validity and quality of published papers, should those who have paid money to access questionable research, or imperfect studies, be refunded? This includes individual scientists, or more importantly, research institutes that pay for subscription packages. An informal online survey conducted on this topic at Retraction Watch in early 2014 indicated that the vast majority (~85%) of 539 respondents felt that a refund was deemed appropriate (Figure 1). If so, then this could spell great trouble for commercial, for-profit STM publishers who may have been charging money for subscriptions to science that has errors, flaws, imperfections, or inaccuracies. Within the same vein, and on a similar issue, should publishers charge for PDF files of manuscripts that have been retracted (Figure 2) [20]. The ethics of this for-profit model needs to be examined, and debated, especially considering that, in this case, Springer-Nature, is a COPE member (http://publicationethics.org/members).

PPPR is an inevitable corner-stone of the future STM publishing model and a solid road-map as to how it could serve as an effective tool has already been proposed [21]. Those who fail to incorporate this vision may be doomed to irrelevance and shame. PPPR thus involves not only a close examination of the published papers, but also of the publishing process, and its component parts and individual players, including the peers, editors and publishers [22].

CONFLICTS OF INTEREST

The author declares no conflicts of interest. Copyrighted images in screen-shots used under the fair use agreement: http://en.wikipedia.org/wiki/Fair_use.

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