Opinion Article

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The role of the anonymous voice in post-publication peer review versus traditional peer review

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Abstract: Traditional peer review (TPR) has several limitations and weaknesses. Post-publication peer review is one practical way to repair the ills of TPR and reinforce it. A literature that is marked by errors is unhealthy and should, if given the opportunity, be corrected or further improved. The anonymous voice is one source of critique and differs from the blind peer review in TPR in which the reviewer remains anonymous to the authors and/or vice versa, but the identity is known to the editor. If unregulated, the anonymous voice can pose a threat to established editorial norms in TPR, to one of the most important criteria of science publishing, i.e., transparency, and to worthwhile discussion. Yet, if the anonymous voice is not heard, then a vast and potentially valuable pool of untapped opinions may be lost, opinions that may provide valuable solutions to improving TPR.

Keywords: open peer review; traditional peer review; academic retribution, scientific vigilantism

"A person has an obligation to do the right thing if they can." Helen Hill

Anonymity in peer-review and science discussion

The concept of anonymity is in fact not that alien to science, or to scientists (Neuroskeptic, 2013). As the back-bone of the vast majority of the traditional peer review (TPR) system, single-blind, or double-blind peer review have always embraced the concept of anonymity to try and ensure that peer review is as unbiased as possible, by concealing the identities of the

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reviewers and/or the authors for single and double-blind peer reviews, respectively. An early trial (McNutt et al., 1990) showed that the quality of peer reviews was higher if it was conducted blinded to the name of authors and their institutions. A trial conducted by van Rooyen et al. (2010) gave the possibility to reviewers of making their signed report publicly available (i.e., Open Peer Review or OPR) versus regular TPR. They found that neither model affected the quality of the peer reviews, although the OPR model saw a significant reduction in the number of reviewers who wanted to participate, indicating that they preferred an anonymous form of review to an open form. A more recent survey by Vinther et al. (2012) compared blind and open review systems and found that only 28% of reviewers and 37% of authors preferred the OPR system while 38% of reviewers and 43% of authors preferred double-blind review. Similar to the findings of van Rooyen et al. (2010), the quality of the reviews was not affected by the existence or absence of anonymity. However, Vinther et al. (2012) concluded that OPR may reduce the number of reviewers. Yet, these studies all focused on the importance of anonymity in TPR, and no formal study has yet emerged on the impact of the anonymous voice in post-publication peer review (PPPR), or quantified such an impact. To decrease potential bias during TPR, Molecular Cell recently attempted triple-blind peer review, in which the authors' names were unknown to the editor during the first round of assessment (http://go.nature.com/cqkDcw; Nature Plant editorial, 2015). The difference with anonymous commenting that one may observe at PubPeer – a PPPR web-site that allows named or anonymous commenting about published manuscripts – is that in TPR, the peers are contracted and their identities are known to the editors who vet them, i.e., their identity is confidential, whereas as PubPeer, they could be anyone. However, the apparent spike in retractions in recent years may be reflecting that not all is well with TPR, and that it is not only subject to bias and subjectivity, but it is also fallible and incomplete (Teixeira da Silva and Dobránszki, 2015). Despite these weaknesses, TPR may still in fact be the best system available, but could be reinforced by open peer review (OPR), or by PPPR.

A recent editorial by Prof. Michael R. Blatt (Blatt, 2015), the editor-in-chief of *Plant Physiology*, has caused ripples in the PPPR community. The editorial has, to some extent, defined the extremes of the conversation underlying the importance of the anonymous voice in PPPR. Referring to PubPeer, Blatt states the following: "The majority of posts on PubPeer are mounted anonymously. So, while there is no danger of public embarrassment for the commenter, likewise there is no opportunity to gain from a personal exchange with the author." Blatt goes further by collectively labelling anonymous commentators, as indicated in the editorial's title, as vigilantes, claiming that their objective "often is to pillory, to do so publicly and without accountability." A vigilante, however, by definition, "is a civilian or organization that undertakes law enforcement (or actions in the pursuit of self-perceived justice) that is without legal authority" (https://en.wikipedia.org/wiki/Vigilante), calling into question the label assigned to anonymous commentators by Blatt. Curiously, Odom (2015) criticizes the abuse of peer-review protection, claiming that it "results in outcomes very similar to those of internet trolls: harmful comments can be made without recourse." Most likely referring both to TPR and PPPR, Odom further states about the anonymous voice: "everyone knows anonymity breeds contempt."

Unlike PPPR, OPR serves its purpose at the opposite pole of the anonymity scale, in which peers are clearly identified. Yet, the potential conflicts of interest (COIs) between peers that could arise from OPR most likely prevent its wide-scale implementation, simply because the vast majority of scientists who are actively researching and publishing will be somewhat reticent to offer their opinions and criticism in person, thus avoiding professional COIs and possible negative retribution. In fields of research where the number of scientists is limited, this risk increases. Bastian (2015) defines this as "a status bias problem." Yet, the very same individuals will find refuge in TPR, and would – almost ironically – be comfortable with

anonymity within the TPR framework, most likely because it is formalized and organized by editors and a publisher.

The functions of PPPR, and its potential benefits and dangers

TPR, OPR and PPPR are, in terms of anonymity and effectiveness, complementary concepts. PPPR appears to have established itself as one of the most robust tool to avoid COIs and serves as a mechanism to correct already published literature, as its primary function (Teixeira da Silva 2013, 2015a, 2015b, 2015c). PPPR also has other functions: expanding the scientific discussion, including analysis, commentary and criticism (Pontille and Torny, 2015). PPPR allows for the public discussion of the merits or issues related to errors in the literature, including negative instances of duplicate data, plagiarism, or image manipulation, by a pool of peers or experts that extends beyond the limited number of individuals in the TPR model assigned to complete the task of quality control. This publisher-independent peer pool is able to critically evaluate, with a set of potentially unbiased eyes, the published literature that was approved for publication by a limited number of individuals.

Despite this, PPPR has some inherent flaws and weaknesses. The broader concern is that anonymous commentators can hide their identities (Nature Plant editorial, 2015; Blatt, 2015). The problem then does not necessarily lie with the importance of the anonymous voice, but rather how it can or should be moderated or regulated (Blatt, 2015). Papers with serious errors are more likely to be retracted when they are discussed publicly as a direct function of PPPR (Van Noorden, 2014). Cases at PubPeer have sown that the anonymous voice has played its concrete part (e.g., sixth retraction that emerged for Olivier Voinnet as a result of mostly anonymous commenting at PubPeer; Keith, 2015).

Although Bastian (2014) correctly points out that science can only benefit from the implementation of PPPR, she fails to recognize that part of the success of PPPR has already depended on the anonymous voice. In a recent blog, Bastian gave full credit to the importance of the anonymous voice in TPR but still failed to openly concede its importance in PPPR (Bastian, 2015), even though her own paper was critically evaluated by anonymous voices on PubPeer (2015). Despite this form of denial, reticence (Nature Plants editorial, 2015), or fear (Blatt, 2015), greater recognition of the importance of the anonymous voice is now being formally given (Teixeira da Silva, 2015d). Many scientists would fear the repercussions of calling out errors in their peers' papers, and that concern or fear of professional retribution is perfectly valid in fields of science that have a narrow peer base, where the same peers review each other's papers. In the OPR setting, constant knowledge of knowing the identity of the reviewer would place an unprecedented stress on the authors, and also on the peer reviewer. This stress arises from the need to maintain civility, a tool used to mute criticism and differences of opinion (Bruenig, 2014). A different stress on authors emerges from sites like PubPeer where criticisms may be valid, or not, insignificant or large, and in the case of anonymous reviewers, there is concern about their lack of accountability (Neuroskeptic, 2013). For this reason, PubMed Commons, another PPPR tool, does not permit anonymous comments.

Can anonymity in PPPR be effective?

To achieve effective PPPR, two important ingredients are required. The first is a base of scientists that is receptive to the notion that PPPR is now an integral part of the publishing landscape. The second is a structure in place by publishers that allows comments to be

received by editors, i.e., comments that are inputted from beyond their own controlled editor and peer pools. These comments would point out actual or perceived errors or problems.
The Committee on Publication Ethics (COPE)'s Code of Conduct (2011) states clearly that "Editors should have systems to ensure that peer reviewers' identities are protected unless they use an open review system that is declared to authors and reviewers." In TPR, the editor selects the reviewers (editors' tasks include: "monitoring the performance of peer reviewers and taking steps to ensure this is of high standard" (COPE, 2011)) but in PPPR it is voluntary, and if anonymous, then unknown. Thus, a key question then emerges: who is suitable or qualified enough to be engaged in PPPR? This facet might not really be important because there are different levels of PPPR, i.e. novice or experienced readers might perceive errors in a published paper in different ways, or might detect a range of different problems. Consequently, scanning papers for errors such as duplicated figures, does not require a special set of skills, i.e., it does not require a peer *per se*. In contrast, in-depth analysis of the scientific content, methodology used, or conclusions drawn would require topic-specific and specialized peers (Teixeira da Silva and Dobránszki, 2015).
The ideal PPPR structure would accommodate anonymous comments, which would be sifted and moderated by a voluntary publicly regulated editor board. Whereas ORP and TRP are organized, PPPR is least organized, and this lack of centralized control can be anarchic, or cause damage if unregulated. However, without a pro-active base of scientists, and an equivalent receptive editor-journal-publisher triage, PPPR cannot function effectively. The lethargy with which publishers are adapting to PPPR – aptly termed "publication-pollution denialism" by Caplan (2015) – does not appear to be accompanying the speed at which the literature is being produced. The adoption of PPPR is limited by overburdened peers and editors. Moderation would then be the key to solving the importance of the anonymous voice in PPPR such as PubPeer since a criticism remains valid, independent of the voice pronouncing it (Neuroskeptic, 2013; Blatt, 2015). However, moderation is a tricky and prickly issue since issues such as false accusations, libelous claims and sock-puppetry need to be taken into account, i.e., a sensitive balance between commenting, civility, regulation and moderation (Yong et al., 2013). This issue, as well as the ethics of the anonymous voice, needs greater discussion.

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