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Is Peer Review Fit for Purpose? Enhancing Integrity and Professional Standards in Publications

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Abstract

Peer review is crucial for academic research, when checking manuscripts for publishing, considering proposals for research funding, and deciding which submitted contributions to include in conference programmes. Peer reviewers are tasked with assessing readability, scientific merit, accuracy, reliability, novelty, relevance, completeness and focus. Conscientious, experienced peer reviewers add considerable value to scientific manuscripts by working with authors, especially Early Career Researchers (ECRs), to help them achieve the required standards set by editors and publishers.

Given the centrality of peer review to academia, it is easy to forget that peer review is often voluntary and unpaid, requiring considerable time and resources. Without peer reviewers, editors and publishers, and conference organisers, many of whom are also voluntary and unpaid, would be tasked with reviewing submissions. This would require considerable time and diverse knowledge and skills, even when the scope of topics for submissions is narrow.

The recent substantial rise in the number of journal article retractions, affecting both large and small publishers, raises questions about why the traditional checks and balances put in place by the publishers, especially peer review, do not uncover the problems.

This paper will explore both the merits of effective peer review and root causes of problems currently being experienced, with consideration of how peer review could be improved to serve future requirements.

Introduction

The authors represent a working group of the European Network for Academic Integrity (ENAI) called Ethical Publishing and Dissemination (EPAD). The working group is concerned with promoting ethical practices and integrity in academic publishing and dissemination. This paper includes experiences shared by participants (in person and on-line) who attended a workshop on this topic at a conference hosted by University of Porto in May 2022 (ECAIP, 2022).

Academic peer review is an important method for helping to validate and improve the quality, integrity and relevance of funding applications, manuscripts and conference proposals. It is economical because most peer reviewers are unpaid volunteers. It is important, because without a team of expert peer reviewers, the workload and costs for editors, publishers, funding bodies and conference organisers would be unsustainable. However, questions continue to be raised about whether peer review remains fit for purpose (Bastian, 2021; Birukou et al., 2011; Fenske, 2021), together with proposals for alternative ways of assuring the quality of academic publications (Birukou et al., 2011; Puebla et al., 2022).

This paper will mainly focus on challenges surrounding peer review for academic publishing, while acknowledging that peer review for other purposes may face similar challenges. The authors particularly focus on the needs of Early Career Researchers (ECRs) in developing competences in academic writing and understanding ways that peer review can help them. Both positive and negative characteristics of academic publishing and associated peer review will be explored here, including examples of unethical practices and fraud, their causes and potential solutions.

Literature Review

The ENAI Glossary describes peer review as "*The process by which a piece of scientific research, such as a manuscript, a project, a grant proposal, or academic work is assessed by others – a researcher's fellow peers – who are suitably qualified and able to judge the piece of work under review in terms of novelty, soundness and significance. In general, it is a critique of submitted work*" (ENAI Glossary, n.d.).

Freely available good quality guidance on peer review from an editorial perspective can be found on the website of the Committee on Publication Ethics (COPE, n.d.). Reputable publishers and conference organisers provide specific guidance for use by editors, authors and reviewers, detailing their requirements and restrictions, including word counts, formatting, structure, referencing protocols and styling.

When it works well, peer review of academic work benefits the author, the editor, publisher and the readership, by ensuring that published material is accurate, well-written, up-to-date, novel and relevant to the target audience. However, weak or corrupted peer review can result in pseudo-/ junk-science, plagiarised or poor-quality academic papers being published, even in reputable journals (Bohannon, 2013; Retraction Watch, 2014). Publishing unfounded, unsupported or inaccurate claims can have serious consequences, especially in fields such as healthcare, medicine and engineering (Moher et al., 2017; De Vrieze, 2021).

The most common types of peer review processes are (a) double-anonymous, where the identity of both reviewers and authors are blinded; (b) single-anonymous, where reviewers' names are hidden from the authors, and (c) open peer review, where names of reviewers and authors are identified "at some point during the review or publication process" (Taylor & Francis, n.d.). None of these methods of review is perfect. Fully anonymised reviews should lead to

impartial acceptance/rejection decisions, but authors may indirectly identify themselves via self-referencing within their article. Single blinded review provides anonymity to the reviewer to critique without concerns, but, since the reviewers can see the authors' names and affiliations, there is potential for professional, gender, racial, geographical and other biases. Open peer review is entirely dependent on professionalism of both parties (Mavrogenis et al., 2020).

Open peer review can improve the quality of reviews, encouraging constructive and helpful critique (Nature, 2022). Identification of reviewers can lead to more carefully worded and considerate reviews, especially if the review is published together with the paper. In addition to being named as a reviewer, some publishers offer other forms of credit; for example, some journals offer to record and acknowledge peer review contributions.

Post-publication peer review normally includes a simple desk-check by an editorial team before the article is released online for general scrutiny (Taylor and Francis, n.d.), then, ideally, it should be published on a preprint server to signal that it has not yet been peer reviewed. Alternatively, a paper may be first reviewed by a traditional peer review process, then further reviews invited after publication (Taylor & Francis, n.d.). Preprint servers allow authors to make their research results openly available online before peer review, after editorial checks (Birukou et al., 2011; Packer, 2018; Puebla et al., 2022), which greatly speeds up dissemination. Reviews are then expected to be submitted by interested parties. Authors may submit the same paper to a traditional peer reviewed journal in parallel. Negative aspects of preprint servers and post-publication reviews include questionable reliability of initially published results and no guarantee that anyone will read or peer review the manuscripts (Birukou et al., 2011; Packer, 2018; Puebla et al., 2022).

Continuous incremental review has been advocated by Dorothy Bishop and colleagues as a means of improving reproducibility of and accountability for research (Bishop et al., 2022). This process involves one or more peer reviewers working with the research team on at least two occasions during the research project. The review process is initiated by the research team submitting a "Registered Report" to their chosen journal, in which they set out the design and methodology for the research (Centre for Open Science, n.d.). The first review is conducted at that point, which allows for feedback to the research team, before the study begins. The journal may opt to accept the Registered Report, recommend changes to the research design, or reject it, providing useful feedback. Acceptance of the report means that the full paper will be published after the research has been conducted, with at least one further review, or "continuous incremental review" throughout the stages of the research cycle. The aim is to promote accountability, openness and a strong final publication (Bishop et al., 2022; Centre for Open Science, n.d.).

The role and duties of a peer reviewer need to be clearly articulated by the publisher or editor, otherwise great disparities can arise in the quality and nature of feedback received by an author. With any type of peer review, competition between reviewers and authors may trigger unfairly hostile comments, counter arguments, unsubstantiated criticisms and delays in responses (Bastian, 2021). Although authors and reviewers should highlight conflicts of interests and editors should proactively try to assign reviewers without conflicts, biased and unfair reviews still happen (Fannelli, 2010; UKRI. & MRC., 2022). Even when there is anonymity through blinding, it has been known for editors and peer reviewers to take advantage of access to draft papers to boost their own profile, by publishing a plagiarised copy before the author's work can be published (Oransky, 2022, February 18).

If a manuscript is erroneously assigned to a reviewer who is unqualified or otherwise inappropriate, it is the responsibility of the reviewer to declare the limitations. If a peer review is conducted by someone who does not understand the subject of the manuscript, then the feedback is likely to be incomplete, unhelpful, misleading or unjustified.

Authors, particularly ECRs, can find the peer review process daunting. A rude peer reviewer who is unethical or incompetent can convince an inexperienced author that their work is worthless (Mavrogenis et al., 2020). Clearly, all authors, and especially ECRs, need to be well prepared for publishing and peer review before they encounter any harsh realities.

Understanding how to benefit from constructive feedback and having confidence to provide a measured response to unfair or unevidenced criticism can make a great difference to the process of academic writing, for all authors. For all these reasons, knowledge about academic writing, peer review and academic publishing should be essential components of training provided for all postgraduate students.

So-called predatory publishers and journals can be distinguished from reputable publishers largely because of their ineffective or absent peer review, which leads to questionable quality, lack of focus and, inevitably, publication of unscientific works (Eaton, 2018; Mills & Inouye, 2020). Disreputable journals often claim to undertake peer review, but timescales between submission and publication are usually too short to allow for a genuine review cycle (COPE, 2020; Glendinning & Eaton, 2023).

A great headache for reputable publishers and journals is the increasing prevalence of submissions of papers coming from paper mills (Christopher, 2021; COPE & STM, 2022; Retraction Watch, 2023, December 21). The term "paper mills" describes organisations that generate fake "scientific" manuscripts for submission to academic journals, in the hope that lack of vigilance by editors and peer reviewers will result in successful publication (ENAGO Academy, 2020; COPE & STM, 2022). Fake papers can be generated through various means, including plagiarising published work, translating work already published in another language, fabrication of research data and results (Christopher, 2021) and, more recently, using generative artificial intelligence tools (Gaumann & Veale, 2023 [preprint]).

Peer review fraud is a broad topic in its own right, with many examples of peer review rings (for example: Barbash, 2014; Litman, 2021; Kincaid, 2023), resulting in fake reviews recommending acceptance without due scrutiny, reviews lacking objectivity and failing to provide constructive feedback to authors. It is not uncommon for journals to ask authors to nominate peer reviewers. This can work well if the authors and reviewers can be trusted to behave ethically. However, if not appropriately managed, this open approach can lead to corruption and fraud, including reciprocity between author and reviewer – if you give me an easy time, I will do the same for your next paper (Birukou et al., 2011). In all these cases, the resulting light-touch reviews do not contribute to improving the quality of papers or help to maintain quality and standards of the journal. Ideally, to avoid such conflicts, any reviewers nominated by authors should not be asked to review the current manuscript, but instead added to the general list of reviewers for reviewing future submissions by other authors.

An unscrupulous opportunistic guest editor overseeing contributions to a special issue of a reputable journal can create another opportunity for peer review fraud. If the journal editor-in-chief is not vigilant about the peer review process and quality, the special issue may become the equivalent of a predatory journal (Oransky, 2019), leading to serious reputational damage to the journal and publisher, followed by time-consuming investigations, resulting in retractions and potential dismissal of the editor (Retraction Watch, 2023, n.d., c).

Guest and gift authorship (ENAI Glossary, n.d.), where the name of someone who did not contribute to the publication is added to a list of co-authors, are well documented unethical practices. However, authorship for sale is a relatively recent phenomenon, which is increasingly being linked to paper mills (Day, 2022 [preprint]), journal special issues (Oransky, 2019) and 'publish or perish' pressures, including misguided academic publication requirements for PhD students (Glendinning & Eaton, 2023). This scam works by the fraudsters having a paper accepted for publication, typically involving peer review fraud or plagiarised content, then advertising authorship opportunities online to anyone willing to pay (Abalkina, 2021; Chawla, 2022). There are websites openly advertising such services (ENAGO Academy, 2020).

Hijacked and cloned journals provide another way for fraudsters to make money out of unsuspecting (and sometimes knowledgeable) students, researchers and academics who need to increase their publication count (Glendinning & Eaton, 2023). These scams were devised to speed up publication by circumventing the need for rigorous peer review. Another scam is to set up a look-alike or mirror website with a similar name to a reputable journal, claiming all the reputational benefits of the original web site, but without the quality measures, especially lack

of peer review (Retraction Watch, n.d., b). After hijacking or taking over neglected reputable journals the hijackers benefit from rankings and impact factors of the original journals. After gaining control of a journal or setting up a look-alike website, the hijacker then operates as a predatory journal, taking money from authors without providing the advertised or expected quality, standards or services (Grove, 2021).

Many publishing resources are being diverted to the investigation of large-scale publication fraud (Barbash, 2014; Chawla, 2022; Kincaid, 2022). In addition "millions of dollars" of funding intended for research are being channelled into the pockets of fraudsters involved in disreputable publication and bogus academic conferences (Abalkina, 2021; Grove, 2021; Gillis, 2018).

Publishers, editors, peer reviewers and authors need to develop skills for detecting and addressing fraud, fabrication, falsification, plagiarism and other forms of deception. For example, Retraction Watch has been tracking the number of retractions and withdrawals of papers relating to COVID-19 research, which at the time of writing this paper stands at 414, with a further 18 expressions of concern (Retraction Watch, n.d., c).

It is important to understand the driving factors behind these challenges to academic publishing and peer review. Problems manifesting around academic publishing are often said to be caused by a "publish or perish" culture. This is certainly a big factor that deserves full coverage in this literature review, but it is not the only consideration.

Many institutions around the world set annual academic publications quotas, which can affect on-going employment, remuneration or promotion prospects for academics (Glendinning et al., 2019; Glendinning & Eaton, 2023). The predatory publishing industry thrives because of these initiatives, particularly when the quality of the publications is not evaluated, resulting in a massive body of journal papers of questionable quality and value that have not been subject to even superficial peer review.

Extreme forms of peer review fraud can emerge when "quality" is added to the annual publication quota; for example, financial incentives offered by some universities (Prest, 2017) depend on successful publication in high-ranking journals. The irony is that if quality, academic value and research influence of the published research are not considered, the bonus is solely based on the status and reputation of the journal. These initiatives are usually designed to boost international rankings and reputation of the institution or the national higher education sector as a whole.

Ill-conceived rules governing the award of doctoral degrees can lead ECRs and others to unethical publishing methods. In some countries, PhD candidates must publish at least one academic journal paper before they can graduate (Glendinning et al., 2022). This is a major challenge for an inexperienced researcher, in addition to completing their research and writing up their thesis, especially if a high-ranking journal publication is specified. This unreasonable demand inevitably leads to delays in doctoral degree completion and graduation. However, this scenario provides another boost in the demand for predatory and hijacked journals and encourages peer review fraud (Oransky, 2022a; Glendinning & Eaton, 2023), use of paper mills and authorship for sale (ENAGO Academy, 2020).

So-called paper mills are increasingly being used to generate large volumes of fake academic papers that are then submitted for publication. If peer review was working as intended, these papers would not get published, but, as recent retraction rates demonstrate, many of them do get published, often in reputable journals (Retraction Watch, n.d., a, and c). This means that if the fraud is not detected post-publication by vigilant readers, pseudo-science is masquerading in the literature as genuine science. When the fraud is noticed, journals are often slow to flag concerns and investigate, allowing other researchers to try to build on flawed or fake results (De Vrieze, 2021; Fenske, 2021).

The above examples showing how unworthy manuscripts can get published in quality journals can sometimes be combined with other types of fraud, such as using paper mills or generative

AI to create fake academic papers, which are then published unchallenged in a compromised, hijacked or cloned journal (Retraction Watch, n.d., b). Scams of this nature account for a large percentage of the recent huge rise in retractions by some of the big names in academic publishing (Sage: Kincaid, 2022; Springer: Oransky, 2021; Hindawi, Wiley: Kincaid, 2022) and smaller publishers (Institute of Physics: Oransky, 2022b). The main drivers for these wasteful and damaging publishing catastrophes are the unprecedented demand by academics to publish to capitalise on misplaced incentives, plus, conversely, responses to "publish or perish" threats suffered by some academics.

Methodology

At a workshop focusing on peer review held in May 2022, participants included students, academics and researchers with various levels of research and publishing experience. In advance of the conference, the Ethics Committee of the University of Porto checked and approved the workshop methodology for compliance with their ethical requirements. At the start of the workshop, the nature of the workshop was explained to participants, together with reassurances that any responses from them would be fully anonymised. All participants confirmed their informed consent.

The workshop started by highlighting positive and negative aspects of the peer review process. Next, the participants in the room were divided into two groups of 6-10 people and the on-line participants became the third group. One scribe and one facilitator, all authors of this paper, were assigned to each group.

The following questions directed the discussions in the groups:

- What positive and negative experiences have you had as a PhD student / ECR relating to peer review?

- Based on the experience of participants serving as peer reviewers, what factors make peer review useful and successful and what could be done to make it work better?

- What types of unfair practices have you encountered that relate to peer review in publishing and dissemination? How did you respond to unfair practices?

Based on the research questions, workshop participants provided suggestions for what more can be done to improve the operation of the peer review process for all stakeholders. In addition, the workshop participants were asked to consider alternatives to peer review, such as continuous incremental review throughout the lifecycle of the research (Bishop et al., 2022), described earlier, and the effectiveness of preprint servers (Birukou et al., 2011; Packer, 2018; Puebla et al., 2022).

There was a plenary discussion of all points raised both within the three groups and at the end of the workshop. The discussions are included later in this paper, following the details of participants' responses.

Analysis of Data Collected from Workshop Participants

Responses from Participants and Feedback

The authors will now share feedback and experiences of the four ECR participants who provided the most relevant and eloquent responses to the research questions. These four ECRs saw the peer review process through different lenses, factoring in their concerns and experiences.

The first respondent talked about pressures facing students when there is a requirement for them to publish articles for their degree:

> ECR 1 stated "*when there are institutional requirements to get the degree by means of articles published (not by means of theses/dissertations), results in pressure to publish in indexed journals which may lead to salami-slicing publication. There is a requirement for well-developed policies to prevent this*." [see discussion point 1 below]
>
> Note: "salami-slicing" = "*Unjustified breaking up of a study into two or more publications in order to increase the number of publications*" (ENAI Glossary, n.d.).

Two ECRs raised different points about positive and negative experiences of peer review from the perspective of being an author:

> ECR 2: "*A reviewer contributed to the development of my paper positively. As an ECR, I managed to increase the quality of my paper by the help of his/her positive feedback. However, I also experienced something negative. One reviewer rejected my paper without providing any justification. So, I did not know what was wrong with my paper. There might be contradictory feedback from the reviewers. In this case, I expect the editor to take the responsibility and guide me relating to how to progress with my paper. For example, BMC journal declares such a responsibility of the editor*." [see discussion points 5 and 6 below]
>
> ECR 3: *"As an ECR, I received contradictory feedback for a manuscript submission, too. One of the reviewers suggested minor changes whereas the other one indicated that the study was beyond the scope of the journal. This was a reputable journal with a high impact factor and I received this response after nine months that my submission was rejected because it did not fit the scope. I had no idea about what to do. Now, I know that I should have reported it to COPE*." [see discussion points 5 and 6 below]

An important point was raised by an ECR about perceived prejudices in editing and peer review:

> ECR 4: "*I sometimes feel that editors or reviewers have some prejudices considering the geographical location of the submitted manuscript*." [see discussion points 2, 3 and 4 below]

Feedback to Workshop Participants

A summary of discussion points follows. It is presented as a numbered list in response to the overlapping topics raised by the four ECRs.

1. National and institutional policies for education and research can have unintended side-effects that disadvantage doctoral students, their supervisors and ECRs. Alternative routes to doctoral qualifications, such as PhD by publication or through professional practice, can be an effective way to reward a mature researcher or lecturer, but these options can present insurmountable barriers to less experienced researchers (Ross, 2021b). As one participant suggested, requiring ECRs and doctoral students to publish one or more papers in high-ranking journals, making this a condition for promotion, or offering financial rewards for publications, can drive those affected to seek less ethical solutions, including salami-slicing, resorting to use of paper-mills and peer review fraud (Ross, 2021b). There is clear evidence that the massive global predatory publishing industry continues to grow, to satisfy these initiatives and policies (Ross, 2021b).

2. There is a clear need for reviewers to understand what is expected of them and to be courteous and constructive in their responses to authors (COPE, n.d.; ALLEA, 2023). Guidance to reviewers should remind them to allow for the diversity of authors who submit manuscripts to the journal, especially the need to support and encourage ECRs

wherever they are based. An author could be asked to declare certain characteristics (PhD student, ECR, L2 language skills) when they submit their manuscript, so that editors and reviewers can make allowances when writing their review.

3. Even under double-blind review, certain characteristics and facts can become apparent (e.g. where the research was conducted, geographical location of authors, or author identity - if the research is very specialised), which can undermine the blinding. Genuine concerns and conflicts of interest should be declared, often resulting in inviting another reviewer. Guidance for peer reviewers on the need for objectivity and fairness, together with a professional approach, can help to address these challenges and reduce biased, unfair or inappropriate reviews.

4. Reviewers and editors should provide support for the author when their first language is not the language of the journal. Support with proof-reading and grammar can help an ECR who is writing in an L2 or L3 language to transform their paper to make it publishable. Some English language publishers and journals provide guidance to peer reviewers so that grammatical errors should not be a barrier to publication. Providing such guidance can help to address disadvantages of not having English as a first language.

5. Contradictory feedback from reviewers is a common dilemma faced by editors that can challenge any author. It can be particularly difficult for an ECR to know how to respond to diverse opinions of reviewers. An alert editor will spot this problem and attempt to mediate between reviewers' viewpoints and/or provide some guidance to the author, together with the reviews, on how best to respond. If no guidance is provided, then the author should ask the journal for advice, or ask a more experienced colleague for help. Any reviewer can express their opinion, based on their preferences, experience, background, etc., but a recommendation included in a review should not be a binding requirement for the author to address. An author is at liberty to disagree with a reviewer by justifying, in their response, why they have chosen not to accept the advice. This point should be included in guidance for authors and peer reviewers.

6. Responsibilities of editors should include the need to understand and allow for the situation and status of authors, to ensure all authors are dealt with fairly and equitably. More generally, the editor should ensure that confusing, poorly written or potentially offensive feedback from a reviewer is not sent unedited to an author (COPE, n.d.; ALLEA, 2023).

These experiences and the above feedback to participants highlight some of the problems that ECRs can face relating to academic publishing. Constructive peer review can help to support and develop academic writing skills of ECRs. The topics raised by participants also provides evidence that institutional policies and conduct of supervisors and principal investigators can profoundly influence the experiences of ECRs, positively or negatively.

Discussion

All forms of unethical publication practices can have serious and career changing consequences, especially affecting ECRs and authors with little experience or knowledge of scientific publishing. Considering the other side of the process, dealing with systemised publication fraud is a serious waste of time and money for publishers and journals of all sizes. This leads to the question, what can be done to address the drivers of unethical practices and fraud in publishing and peer review?

Journal impact factors (JIF) are viewed by many people as part of the problem behind corruption and malpractice in academic publishing (Wouters et al., 2019); therefore, this is a good place

to start when considering ways to address this. Wouters and colleagues argue that the JIF is no longer fit for purpose as it is based on citations, but citation counts do not fully reflect the purpose of academic publishing (Wouters et al., 2019). It is easy for a disreputable journal to falsely claim a high JIF score, or to invent their own index, to entrap naïve authors into paying to publish. Another deceitful approach is to inflate a journal's JIF score by paying authors to include citations to specific journal articles (Marcus, 2012).

Improving peer review or considering alternative approaches for assuring the quality of academic publications (Birukou et al., 2011; Packer, 2018) and the underlying research (Bishop et al., 2022), are worth considering. Peer review was originally seen as a form of critical friendship between gentlemen to check the accuracy of scientific claims and improve the clarity of their communication (House of Commons, 2011; 2018). Today the scale of academic publishing is incomparable to those days and the nature and subjects of journal papers have greatly diversified. The reasons people publish are no longer confined to sharing new scientific knowledge. The readership for academic publications is far broader and much more diverse than it was a century ago. Academic peer review relies on a vast army of very busy unpaid volunteers. All these reasons contribute to the conclusions that peer review is not always effective at delivering on the objectives for which it was designed (Bastian, 2021).

Open reviews, whereby there is a dialogue between authors and reviewers throughout the writing process, provide an effective alternative to blind reviews. The combination of Registered Reports and continuous incremental review, promises both good science and effective communication of the results (Bishop et al., 2022; Centre for Open Science, n.d.), if more publishers subscribe to this approach. If done constructively, the ensuing conversations between author and reviewers can result in a vastly improved final publication and a more positive experience altogether for all parties. Nature Communications has been encouraging transparent peer review since 2016 (Nature, 2022); the editorial explains that this involves making public the (blinded) dialogue between authors and peer reviewers that led to the final version of the journal paper, so that other scholars can see how the manuscript developed and input from the reviewers (Nature, 2022). Adopting transparency or openness aims to improve accountability of peer reviewers, resulting in fairer, more balanced feedback than reviews that hide behind the veil of anonymity.

Post-publication peer review and preprint servers (Packer, 2018) are an alternative way forward, providing rapid dissemination, but several concerns remain about quality (Ross, 2021a). Unlike post-publication review, preprint articles are often submitted in parallel to a journal for traditional peer review. The parallel submission process can mislead some publishers into desk rejecting papers, accusing authors of duplication or self-plagiarism. During the interim review phase, both these models carry similar down-sides in that potentially unreliable results are available for other researchers to cite and build on (Ross, 2021a).

Irrespective of the publishing and review model, training and guidance/education, combined with carefully designed policies, are essential elements for ensuring that all components of academic publishing operate as intended, and deliver high quality, relevant and accessible scholarly publications. National and international decision-making bodies for education and research, educational institutions and the academic publishing industry have a part to play in delivering this.

As heard from participants in this study, guidance and support provided to ECRs, from their supervisors and from external agents, including peer reviewers, can help them to navigate their journey through academic publishing. All these actors need to be included in the design and development of policies and have access to guidance and training on all aspects of the academic publishing process (Glendinning & Eaton, 2023). However, education as a strategy will only work if there is a culture devoid of other pressures that encourage or compel students, researchers and academics to publish, irrespective of quality.

The rapid expansion of the academic publishing industry in the last decade has resulted in a serious decline in the quality and merit of academic publications and the effectiveness of peer review as a means of regulating quality and standards. Misplaced national initiatives, such as

financial incentives to academics for publishing in any journal, can only be addressed if those countries appreciate and address the unintended negative side effects arising from their policies. Removing unrealistic publication requirements and demands affecting ECRs, PhD candidates and poorly remunerated adjunct or casual academic staff, can only be achieved if those responsible for the policies understand and act on their mistakes.

Lack of regulation of academic publishing means that anyone can establish themself as a publisher (either academic or for other purposes) by setting up a website, using an original design or by cloning another website, and promoting a range of services. However, given that academic publishing is a global industry, it is difficult to know what forms of regulation and types of bodies could be established to provide the necessary level of oversight, as highlighted by Ivan Oransky, co-founder of Retraction Watch, Jeffrey Beall, founder of Beall's list and Chris Graf, then working for Wiley (Glendinning et al., 2019, pp. 34-36).

Self-regulation of the academic publishing industry is the most popular approach advocated by specialists in this field (Glendinning et al., 2019). Publisher Hindawi, a subsidiary of publishing giant Wiley, explained the methods they have used to track down and retract over 8,000 published articles in one calendar year that they believed were generated by essay mills (Retraction Watch, 2023), together with a list of factors used to identify them, including compromised peer review. However, as Retraction Watch explains, there are outstanding questions about how many more journal articles published by Hindawi, and other publishers, are equally flawed (Retraction Watch, 2023).

In addition to actions taken by the publishers themselves, established bodies such as COPE, Retraction Watch, PubPeer, indexing by Scopus, and Web of Science, the Directory of Open Access Journals (DOAJ), together provide information and guidance about reputable and disreputable academic publishing options and practices. However, although they respond to the symptoms, none of the available services has any major influence on reducing the negative drivers that are currently undermining academic publishing.

Conclusions

The evidence shared in this paper demonstrates how complicated academic publishing has become. Many factors now influence decisions taken by authors on where, why and what to publish, which do not always lead to ethical actions by authors, editors, publishers and peer reviewers. The importance of having effective measures for assuring the quality of academic publications cannot be overstated.

When it works as intended, peer review is still an effective way to improve, verify and prepare an academic manuscript for publication. For it to work well, all stakeholders in the peer review process need to be on the same page. The editor needs to strike a good balance on what review content to send to authors and what would cause offence. They need to know how to manage differences of opinion expressed by reviewers, to ensure that authors are suitably guided. Authors must be prepared to accept reasonable, sometimes strong critique of their writing and ideas, be open to suggestions and be willing to modify or reshape their work based on the recommendations provided.

Reviewers should not accept to undertake a review if their knowledge and competences are not aligned with the content and focus of the manuscript, if they do not have sufficient time for a thorough review, or if there are any conflicts of interest that could affect their judgement. The reviewer should be altruistic, providing constructive criticism: to guide the editor to ensure that only relevant, good quality, accurate research gets published; to help authors to improve their writing and present ideas and findings that are complete, accessible and readable. However, the evidence here demonstrates that peer review cannot always be relied upon to ensure that academic publications are based on good science. Alternative approaches, such as open and transparent and systematic review, are worth trying.

Education, training and guidance for all parties is essential for helping to raise awareness of dangers and threats underlying academic publishing. Introducing ECRs to peer review at the earliest opportunity, as both author and reviewer, will help to prepare them for immediate and future career demands.

There is an urgent need to address current problems with peer review: predatory publishing, fake academic conferences, hijacked and cloned journals, paper mills, peer review fraud, authorship for sale, and similar bogus money-making ventures. The success of these scams is driven by the high demand by students, academics and researchers to get something published as quickly as possible in an academic journal. This demand arises from unintended side effects from misplaced and poorly designed incentives and pressures, often coming from national and regional governments. Far from improving scholarship and scientific outputs, these schemes are adding unnecessary barriers to progress, both for ECRs and more experienced researchers. There are now vast quantities of worthless publications; huge amounts of research funding are routinely diverted into the hands of fraudsters; and publishers are faced with processing large numbers of retractions. Unless action is taken to remove these drivers, high quality peer reviewing and academic publishing as we know it will not remain viable.

References

Abalkina, A. (2021). *Unethical Practices in Research and Publishing: Evidence from Russia*. The Scholarly Kitchen, 4th February 2021. Retrieved on April 20th 2022 from https://scholarlykitchen.sspnet.org/2021/02/04/guest-post-unethical-practices-in-research-and-publishing-evidence-from-russia/?informz=1

ALLEA (2023). *European Code of Conduct for Research Integrity*. All European Academies, Berlin 2017. https://allea.org/code-of-conduct/

Barbash, F. (2014). Scholarly journal retracts 60 articles, smashes 'peer review ring'. The Washington Post, July 10, 2014. https://www.washingtonpost.com/news/morning-mix/wp/2014/07/10/scholarly-journal-retracts-60-articles-smashes-peer-review-ring/

Bastian, H. (2021). 5 things we learned about journal peer review in 2021. LPLOS Blogs December 31, 2021. https://absolutelymaybe.plos.org/2021/12/31/5-things-we-learned-about-journal-peer-review-in-2021/

Birukou, A., Wakeling, J. R., Bartolini, C., Casati, F., Marchese, M., Mirylenka, K., Osman, N., Ragone, A., Sierra, C., & Wasseg, A. (2011). Alternatives to peer review: Novel approaches for research evaluation. Frontiers in Computational Neuroscience, 5. https://doi.org/10.3389/fncom.2011.00056

Bishop, D., Bates, T., Loryman, C., Kolstoe, S., & Taylor, M. (2022). What can be done to improve research integrity? Times Higher Education January 20th 2022. https://www.timeshighereducation.com/depth/what-can-be-done-improve-research-integrity

Bohannon, J. (2013). Who's afraid of peer review? Science, 342(6154), 60-65. https://doi.org/10.1126/science.2013.342.6154.342_60

Centre for Open Science (n.d.). Registered Reports: Peer review before results are known to align with scientific values and practices. https://www.cos.io/initiatives/registered-reports

Chawla, D.S. (2022). Russian site peddles paper authorship in reputable journals for up to $5000 a pop. Science, 6th April, 2022. https://www.science.org/content/article/russian-website-peddles-authorships-linked-reputable-journals

Christopher, J. (2021). The raw truth about paper mills. 21st June 2021 FEBS Letters. https://doi.org/10.1002/1873-3468.14143

COPE (n.d.). Publication Guidelines. Committee on Publication Ethics. https://publicationethics.org/guidance/Guidelines

COPE (2020). Discussion document: Predatory Publishing. https://publicationethics.org/news/predatory-publishing-new-discussion-document

COPE & STM (2022). Paper Mills – research report from COPE and STM. https://publicationethics.org/node/55256

Day, A. (2022). Exploratory analysis of text duplication in peer-review reveals peer-review fraud and paper mills. Sage Publishing arxiv.org, Preprint. https://arxiv.org/ftp/arxiv/papers/2202/2202.03310.pdf

De Vrieze, J. (2021). An unpublished COVID-19 paper alarmed this scientist - but he had to keep silent. Science Insider September 3, 2021. https://www.science.org/content/article/unpublished-covid-19-paper-alarmed-scientist-he-had-keep-silent

Eaton, S. E. (2018). Avoiding predatory journals and questionable conferences: a resource guide. University of Calgary. http://hdl.handle.net/1880/106227

ECAIP (2022). European Conference on Academic Integrity and Plagiarism, University of Porto and ENAI, 4th-6th May 2022. https://www.academicintegrity.eu/wp/past-events/

ENAGO Academy (2020). Scientific misconduct authorships for sale. May 21, 2020. https://www.enago.com/academy/scientific-misconduct-authorships-for-sale/

ENAI Glossary (n.d.). Glossary for Academic Integrity. https://www.academicintegrity.eu/wp/glossary/

EPAD (n.d.). Ethical Publishing and Dissemination Working Group. European Network of Academic Integrity. https://www.academicintegrity.eu/wp/ethical-publishing-and-dissemination-working-group/

Fenske, J. (2021). Unreliable science in media as peer-review breaks down. The Click December 30, 2021. https://theclick.news/unreliable-science-in-media/

Gaumann, N., Veale, M. (2023). AI as Criminal Essay Mills? Large Language Models meet Contract Cheating Law. SocArXiv Preprint server. https://doi.org/10.31235/osf.io/cpbfd

Gillis, A. (2018) Poor-Quality, Predatory conferences prey on academics. UA/AU 5th March 2018. https://www.universityaffairs.ca/news/news-article/poor-quality-predatory-conferences-prey-academics/

Glendinning, I., Orim, S., King, A. (2019). *Policies and Actions of Accreditation and Quality Assurance Bodies to Counter Corruption in Higher Education*, published by CHEA / CIQG 2019. Executive summary, full report and media coverage: https://www.chea.org/quality-assurance-combatting-academic-corruption-resources

Glendinning, I., Foltýnek, T., Dlabolová, D., Jana Dannhoferová, J., Králíková, V., Michalska, A., Orim, S., Turčínek, P. (2022). *Project on Academic Integrity in Armenia, Azerbaijan, Georgia, Kazakhstan and Turkey,* Council of Europe: http://www.plagiarism.cz/paickt ISBN 978-92-871-9111-3

Glendinning, I., Eaton, S.E., (2023). Understanding and addressing drivers of corruption in academic publishing. *Eaton, S.E, (Ed). Handbook of Academic Integrity, 2nd Edition*, Springer, DOI: 10.1007/978-981-287-079-7_146-1 , print copy, Vol II, Part VIII, chapter 83, pp. 1403-1422. https://www.researchgate.net/publication/371736725_Understanding_and_Addressing_Drivers_of_Corruption_in_Academic_Publishing#fullTextFileContent

Grove, J. (2021). Hijacked Journals 'siphon millions of dollars' from research. Times Higher Education, 30th August 2021. https://www.timeshighereducation.com/news/hijacked-journals-siphon-millions-dollars-research

House of Commons (2011). Peer review in scientific publications, Volume 1, 28th July 2011. https://publications.parliament.uk/pa/cm201012/cmselect/cmsctech/856/856.pdf

House of Commons (2018). Science and Technology Committee: Research integrity: Report, and formal minutes relating to the report. https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/350/350.pdf

Kincaid, E. (2022). Exclusive: Hindawi and Wiley to retract over 500 papers linked to peer review rings. Retraction Watch, 28th September, 2022. https://retractionwatch.com/2022/09/28/exclusive-hindawi-and-wiley-to-retract-over-500-papers-linked-to-peer-review-rings/

Kincaid, E. (2023). Sage retracts more than 200 papers from journal for compromised peer review. Retraction Watch, 2nd November 2023. https://retractionwatch.com/2023/11/02/sage-retracts-more-than-200-papers-from-journal-for-compromised-peer-review/

Marcus, A. (2012). Publisher offers cash for citations. Retraction Watch, Aug 13st, 2021. https://retractionwatch.com/2021/08/31/publisher-offers-cash-for-citations/

Mavrogenis, A. F., Quaile, A., & Scarlat, M. M. (2020). The good, the bad and the rude peer-review. International Orthopaedics, 44(3), 413-415. https://doi.org/10.1007/s00264-020-04504-1

Mills, D., & Inouye, K. (2020). Problematizing 'predatory publishing': A systematic review of factors shaping publishing motives, decisions, and experiences. Learned Publishing. Published online 23rd August. https://doi.org/10.1002/leap.1325

Moher, D., Galipeau, J., Alam, S. Barbour, V. Bartolomeos, K., Baskin, P., Bell-Syer, S., Cobey, K. D., Chan, L., Clark, J., Deek, J., Flanagin, A., Garner, P., Glenny, A. M., Groves, T., Gurusamy, K., Habibzadeh, F., Jewell-Thomas, S., Kelsall, D., … Zhaori, G. (2017). Core competencies for scientific editors of biomedical journals: consensus statement. BMC Medicine, 15, 167. https://doi.org/10.1186/s12916-017-0927-0

Nature (2022). Nature is trialling transparent peer review - the early results are promising. Nature Editorial 1st March 2022. https://www.nature.com/articles/d41586-022-00493-w

Oransky, I. (2019). Disbelief: Researchers, watch out for this new scam involving journal special issues. Retraction Watch, 27th Dec, 2019. https://retractionwatch.com/2019/12/27/disbelief-researchers-watch-out-for-this-new-scam-involving-journal-special-issues/

Oransky, I. (2021). Springer Nature slaps more than 400 papers with expressions of concern all at once. Retraction Watch, 28th September 2021. https://retractionwatch.com/2021/09/28/springer-nature-slaps-more-than-400-papers-with-expressions-of-concern-all-at-once/

Oransky, I. (2022b). Publisher retracts 350 papers at once. Retraction Watch, February 23rd, 2022). https://retractionwatch.com/2022/02/23/publisher-retracts-350-papers-at-once/

Oransky, I. (2022a). 'I needed a publication in order to submit my thesis': Author admits to stealing manuscript. Retraction Watch. https://retractionwatch.com/2022/02/18/i-needed-a-publication-in-order-to-submit-my-thesis-author-admits-to-stealing-a-manuscript/

Packer, M. (2018). Overdue: Civilised post-publication peer review. Medpage Today, 20th June 2018. https://www.medpagetoday.com/blogs/revolutionandrevelation/73587

Prest, K. (2017). Analysis of Chinese universities' financial incentives for academic publications. British Council, 24th July 2017. https://opportunities-insight.britishcouncil.org//insights-blog/analysis-of-chinese-universities%E2%80%99-financial-incentives-academic-publications

Puebla, I., Polka, J., & Rieger, O. Y. (2022). Preprints: Their evolving role in science communication. Fulcrum, Charleston Briefings Series. https://doi.org/10.3998/mpub.12412508

Retraction Watch (2014). SAGE Publications busts "peer review and citation ring," 60 papers retracted. Retraction Watch, July 8, 2014. https://retractionwatch.com/2014/07/08/sage-publications-busts-peer-review-and-citation-ring-60-papers-retracted/

Retraction Watch (2018). In unusual move, gov't database delists 14 journals from one publisher. Retraction Watch April 2, 2018. https://retractionwatch.com/2018/04/02/in-unusual-move-free-govt-database-removes-14-journals-from-one-publisher/

Retraction Watch (2023). Hindawi reveals process for retracting more than 8.000 paper mill articles. Retraction Watch, December 21, 2023. https://retractionwatch.com/2023/12/19/hindawi-reveals-process-for-retracting-more-than-8000-paper-mill-articles/

Retraction Watch (n.d., a). Retraction Watch Leaderboard. https://retractionwatch.com/the-retraction-watch-leaderboard/

Retraction Watch (n.d., b). Retraction Watch Hijacked Journals Checker https://docs.google.com/spreadsheets/d/1ak985WGOgGbJRJbZFanoktAN_UFeExpE/edit#gid=5255084

Retraction Watch (n.d., c) Retracted coronavirus (COVID-19) papers. https://retractionwatch.com/retracted-coronavirus-covid-19-papers/

Ross, J. (2021a). Journalists 'gloss over' preprints' unreliability. Times Higher Education February 4, 2021. https://www.timeshighereducation.com/news/journalists-gloss-over-preprints-unreliability

Ross, J. (2021b). Predatory journals undermining PhD publication route. Times Higher Education July 7, 2021. https://www.timeshighereducation.com/news/predatory-journals-undermining-phd-publication-route?utm_source=newsletter&utm_medium=email&utm_campaign=editorial-daily&mc_cid=338c294cae&mc_eid=c2653b0064

Taylor and Francis (n.d.). Author Services: What are the different types of peer review? https://authorservices.taylorandfrancis.com/publishing-your-research/peer-review/types-peer-review/

UKRI. & MRC. (2022). Tackling Bias in Peer Review. Guidance for Peer Reviewers. UK Research Integrity Office and Medical Research Council, 2022. https://www.ukri.org/wp-content/uploads/2022/08/MRC-240822-TacklingBiasInPeerReviewGuidanceForPeerReviewers.pdf

Wouters, P., Sugimoto, C.S., Larivière, V., McVeigh, M.E., Pulverer, B. de Rijcke, S., Waltman, L. (2019). Rethinking impact factors: better ways to judge a journal, Springer Nature Publishing AG. https://www.nature.com/articles/d41586-019-01643-3?WT.ec_i