

Historical Assessment of Three Extinct Portable Peer Review and Cascade Peer Review Models

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ABSTRACT

Portable peer review (PPR) refers to peer review that is not conducted by a journal but instead by externally recruited peers whose reports are then made available to that journal's editors. In theory, this would alleviate a journal editor's responsibilities and potentially benefit authors by shortening the time to a decision. While the upside to this model is self-evident, PPR suffers from potential biases since knowledge by the reviewer that they will be paid may skew the outcome of peer review. In one form of PPR, cascade peer review (CPR), a rejected paper is passed down, or cascaded, often to a lower-tier journal within the same publisher's journal fleet, usually accompanied by the rejected journal's reviewer reports. CPR might be perceived as unfair to other authors who have passed a more standard route of rejection and resubmission to the same journal. For these reasons, papers that used either external PPR, or internal CPR, should transparently indicate this fact in both HTML and PDF versions of the paper so that an impression is not created that the authors, journal and publisher are concealing an important part of that paper's publication history. Three experimental paid PPR services (Rubriq, Axios Review, and Peerage of Science) that have now ceased to exist are examined in detail to appreciate their potential weaknesses, allowing academics to learn possible pitfalls in PPR and CPR models. Three reasons might explain their failure and/or lack of adoption: 1) opacity of the use and acknowledgement of such services, thus being a potential ethical infraction; 2) the creation of a two-tier system that favors only well-funded authors who are able to pay for such an exclusive service; 3) risk of peer review bias.

INTRODUCTION

Peer Review is in a Constant State of Flux and Evaluation

In general terms, traditional peer review (TPR) involves the assessment of an academic paper by individuals that a journal or editor identifies who are purported specialists in a field of research. The main "blind" models that exist are single-, double- and triple-blind (Tennant & Ross-Hellauer, 2020). However, they all operate on good faith principles, namely that all actors in the peer review process are suitably qualified, carry out their screening and feedback functions dutifully, and do not cheat in any way throughout the process. In other words, peers are expected to function with respect, integrity, and professionalism (Nicholas et al., 2015; Caputo, 2019; Nash, 2023), with their actions, knowledge and guidance forming the backbone of scientific gatekeeping (Siler, Lee & Bero, 2015; Glonti et al., 2019). Peer reviewers' responsibilities need to be in concert with editorial responsibilities, but not all ethics-related

responsibilities are in the hands of peer reviewers (Allen et al., 2019).

In single-blind peer review, the author's identity is known to the editors and peer reviewers, in double-blind peer review, the identity of the authors is known to the editors but not peer reviewers, while in triple-blind peer review, the identity of authors, editors and peer reviewers is unknown to all other parties (Tennant et al., 2017). Even though the latter model could be considered as the most unbiased among all three TPR models, it is still unable to deal effectively with cheating (by authors, editors and/or peer reviewers) or identity fraud (Mulligan, Hall & Raphael, 2013), so it fails to offer an error- and fraud-free peer review platform for journals, including the failure to detect fake peer reviews and reviewers (Rivera & Teixeira da Silva, 2021; Bell, Kingori & Mills, 2023). For these reasons, several years ago, it was suggested that a revamped and more comprehensive TPR model should include three steps, a pre-peer review stage, which could also assume the form of a preprint open to public scrutiny, TPR itself (with single-, double- or triple-blind peer review), while also accommodating the power of post-publication peer review (PPPR) (Herron, 2012; Yeo-The & Tang, 2023) to capture errors or faults that might have seeped through during TPR, as a single integrated peer review unit (Teixeira da Silva & Dobránszki, 2015; Stern & O'Shea, 2019; Dunleavy, 2021). At around the same time when that suggestion was made, two broad trends in peer review reform or transition were taking place: a greater awareness and/or use of preprints and open peer review (OPR) (Walker & Rocha da Silva, 2015). PubMed Commons was a hybrid pre-peer review and PPPR model that NCBI created, but it never gained widespread traction or use, so it was eventually shut down (Teixeira da Silva, 2018).

TPR also suffers from a lack of peer reviewer equity (Kovanis, Porcher, Ravaud & Trinquart, 2016), with an imbalance in the time and effort offered voluntarily by peers and the profit made by publishers as a result of the free professional services offered by peers, in the case of for-profit publishers (Aczel, Szaszi & Holcombe, 2021; Severin & Chataway, 2021). In the last decade, there were several experiments with peer review models (Barroga, 2020), some of which pivoted towards an OPR model, in which the identities of all parties (authors, editors and peer reviewers) are generally known (Tennant et al., 2017), or models aimed at supporting decision-making by attempting to reduce conflicts of interest and bias (Kirman et al., 2019). One such model, crowd peer review or crowd-sourced peer review, which operates as either a blind or OPR model (List, 2017; Ateş et al., 2022), has not become widely adopted, despite the relative simplicity of its functionality (Heinemann et al., 2021). One possible reason is the false assumption that all papers in this crowd-sourced model will attract suitably qualified peer reviewers (Allen et al., 2022). These peer review models also tend to be linked to post-corrective measures, via PPPR, because criticisms, errors and faults are debated openly and publicly, so their open scrutiny may subject them to corrections or retractions (Teixeira da Silva, 2022; Zheng et al., 2023).

Another issue with existing models that continue to be used widely in Committee on Publication Ethics (COPE), Directory of Open Access Journals (DOAJ), Open Access Scholarly Publishers Association (OASPA), and World Association of Medical Editors (WAME) coalition member journals, which claim to employ 16 Principles of Transparency and Best Practice in Scholarly Publishing¹, is the lack of consistency in ethical guidelines and

¹ COPE: <https://publicationethics.org/resources/guidelines-new/principles-transparency-and-best-practice-scholarly-publishing>

DOAJ: <https://blog.doaj.org/2018/01/15/principles-of-transparency-and-best-practice-in-scholarly-publishing-version-3/>

OASPA: <https://wame.org/principles-of-transparency-and-best-practice-in-scholarly-publishing>

WAME: <https://wame.org/principles-of-transparency-and-best-practice-in-scholarly-publishing>

their application among and between journals, even within the same publisher (Teixeira da Silva & Dobránszki, 2015; Tennant et al., 2017). In essence, this holds authors who submit to journals claiming to subscribe to these principles to different standards during TPR or OPR, and may thus be perceived as a skewed or unfair playing field. The wide diversity of models and terms that exist to either try and improve TPR, or offer a unique publishing “brand” to a journal or publisher (Tennant et al., 2017), make the management of standards impractical, untenable, or unsustainable, not only from a human resources point of view, but also financially (Aczel, Szaszi & Holcombe, 2021).

In this paper, to better inform academics of a historical chapter related to peer review, three peer review models that have now ceased to exist are critically assessed to try and offer an appreciation of why they might have failed. One objective of this exercise is that academics and/or policy makers entrusted with improving peer review and publishing standards may reflect on failed models in order to establish improved or revamped ones, as a strategy to constantly reevaluate the efficacy of peer review (Paolucci & Grimaldo, 2014; Kovanis et al., 2017). The philosophy of revising publishing standards for improving academic performance and fortifying integrity already has a rich history, such as guidelines pertaining to systematic reviews (Page et al., 2021).

Two Variants of TPR: Portable Peer Review and Cascading Peer Review

The three models that are debated in this paper might be referred to by some academics using two different terms. The first is portable peer review (PPR), which is defined in this paper as peer review that is conducted outside of a journal by peers that are not recruited by the journal, but whose reports are then made available to a journal’s editors by that intermediary peer review service. The second term is cascading peer review (CPR), or journal cascading, in which a rejected paper and its associated peer review reports are transferred, following a suggestion by the rejecting journal’s editor or publisher, to another journal (usually of a lower tier, or with a different focus or scope) within the same publisher’s journal fleet (Barroga, 2013, 2020). Not all publishers have or support such a CPR service². In this paper, the definition of CPR that is used is “the process by which a manuscript with its reviews moves from one journal to another within the same publisher”³. Consequently, based on the above definitions of PPR and CPR, one distinct difference is noted: whereas the origin of PPR is external, via a third-party service (TPS), that of CPR is primarily internal, i.e., derived from journals published or hosted by the same publisher. However, on occasion, there may be the possibility for authors to transfer a paper (and its associated peer review reports) to a journal if that paper was rejected by another publisher’s journal. In such a case, in this article, this is classified as non-TPS-associated PPR, although this form of TPR is not debated in detail even though this latter model might be perceived as unfair to other authors who have passed a standard route of peer review, not unlike the accelerated peer review model that allows a distinct class of authors to employ a privileged service (Teixeira da Silva & Yamada, 2022).

While PPR decouples peer review from the journal and thus potentially allows a paper to be independently handled (Tennant et al., 2017), much like TPR, it does not guarantee that abuses, biases or fraud do not occur. Moreover, since TPS is used, there are additional costs and possible bias towards approving papers for publication rather than rejecting them. This relies on the principle that more papers that are accepted equals greater income for TPSs and

² <https://scholarlykitchen.sspnet.org/2018/01/24/not-every-publisher-can-support-a-cascade-journal/>

³ <https://scholarlykitchen.sspnet.org/2017/09/25/portable-peer-review-rip/#comment-71175>

accumulated intellect (and also income in the form of subscriptions or article processing charges) for recipient journals, i.e., a profitable symbiosis. On the one hand, if so, many models have been proposed to reform and improve TPR (Tennant et al., 2017), then why does it continue to fail to deliver? On the other hand, if OPR is supposed to represent such an excellent and transparent peer review system that improves TPR, then why is it not being more widely adopted, including by COPE, DOAJ, OASPA, and WAME member journals which claim to follow the publishing principles noted above? One possible reason for the lack of the industry-wide adoption of OPR, even as academia pivots towards a state of open science, may be because transparency is difficult to exercise, and because openness carries with it risks and/or reputational harm (Teixeira da Silva, 2019), despite claims to the contrary, i.e., claims of OPR's benefits within a culture of open science (Bornmann, Guns, Thelwall & Wolfram, 2021).

THREE EXTINCT AND/OR DEFUNCT PORTABLE PEER REVIEW MODELS

Three experimental paid peer review TPSs (Axios Review, Peerage of Science (PoS), and Rubriq), as discussed next, were either not met with success or were not widely accepted or adopted, so these peer review experiments were short-lived. In all three cases, the general objective was for authors, editors, journals or publishers to outsource peer review—at a cost or a price—to a private company, a TPS, which would then identify suitable peer reviewers who would conduct peer review and make a judgment and decision on the paper. When this service was ordered by authors, the revised paper and peer reports would then be submitted to a journal, all in the hope of improving and/or speeding up peer review (Horbach & Halffman, 2018).

Axios Review

Axios Review, the first PPR experiment examined in this paper, started in 2013 and ended in 2017⁴, becoming a non-profit society in 2016, as was explained by its founder and Managing Editor, Tim Vines⁵. In that interview, it can be appreciated that editorial handling was imperfect⁶, while deals between Axios Review and some publishers occurred: “An arrangement with BioMed Central [BMC] journals allowed authors to deduct the \$250 Axios fee from their article processing charge (APC).” This was confirmed by the Senior Editor (Research Integrity) at BMC at that time, Elizabeth Moylan⁷. The interview by Moylan revealed that some BMC journal editors were also Axios Review members, a status that could not be confirmed on the editorial board websites. In the author's opinion, the lack of declaration of multiple editorial positions across potentially competing journals could constitute a professional and financial conflict of interest if it is not declared (Teixeira da Silva, 2021a).

In such a situation, only authors who are able to afford the APCs for publishing in BMC

⁴ <https://twitter.com/AxiosReview/status/834833930524045312>

⁵ <https://scholarlykitchen.sspnet.org/2017/03/20/wither-portable-peer-review/>

⁶ “According to Vines, about half of the manuscripts referred from Axios went out for another round of peer review. Vines concedes that this was not surprising, as many journal editors send manuscripts out for a second round of peer review after an author submits a revised manuscript. Some authors, however, were puzzled and frustrated with having their paper being re-reviewed, and Vines admits that he should have done a better job making it clear that an Axios referral does not necessarily mean that editors are simply left with the decision to accept or reject.”

⁷ <http://blogs.biomedcentral.com/bmcblog/2015/05/27/axios-review-different-route-peer-review/>

journals would be able to participate, thereby skewing the potential candidate author pool. Rather than placing blame on the business model and the potential for the peer review system to be corruptible, Vines instead passed the blame onto academics' shoulders: "I blame the lack of uptake on a deep inertia in the researcher community in adopting new workflows, particularly one that cost them even a small amount of money." Curiously, that interview also included the opinions of representatives from Rubriq and PoS. Even though authors were charged US\$250 for the Axios Review service, Vines lamented that despite the submission of several hundred papers per year, that "this was not sufficient to run a company and pay its single employee (Tim Vines)." Such an opinion might be viewed by some academics negatively or interpreted as a lack of sensitivity to authors' inability or desire to pay for such services, or greed⁸. In fact, that interview at the Scholarly Kitchen provides ample evidence to suggest that the for-profit publishing industry was, at that time, seeking to monetize at least some portion of peer review, as a service, and thus further exploit the peer reviewer pool. When this bifurcation of voluntary versus paid peer review services is used by the common pool of COPE, DOAJ, OASPA and WAME members, despite their "best" publishing practices, then one possible outcome may be the abuse of the system by a portion of the author, editor or publisher pool for unscholarly gains.

Assuming that several hundred papers per year were externally handled by Axios Review, and finally published in ranked and metricized journals, it would be safe to assume that several hundred, possibly even thousands, of papers that used Axios Review should have declared the use of this TPS in their acknowledgements. Should such papers fail to carry an acknowledgement to this service, or other similar TPSs, it would in essence constitute an ethical infraction (Kendall et al., 2016; Teixeira da Silva, 2021b). This becomes even more ethically problematic if Axios Review partnered with Cactus Communications' Editage⁹, an editing firm and thus another TPS, to process any portion of papers or associated services. Did papers that used Axios Review and/or Editage declare this in their acknowledgements? A thorough PPPR scrutiny of these papers is needed, so journals and publishers that published papers that used either of these services need to openly and transparently provide a public list of these papers, and need to work in concert with authors to correct this literature (i.e., issue corrections) accordingly to accurately reflect the use of these TPSs. Vines is currently the Founder and Project Lead of another experiment, DataSeerAI, based in Canada, providing paid support services for the open data movement¹⁰.

Oddly, the Axios Review Twitter (now X) account continued (at least in early 2022) to exist, and had used wording ("is") that suggested that the service was still active (Fig. 1)¹¹. This should have been corrected to clearly indicate to academics and the public that its service terminated in 2017 and that it was no longer functional, otherwise it may contribute to misleading information on social media, specifically X, which faced challenges with medical mis- and disinformation throughout the COVID-19 pandemic (Jamison et al., 2020).

An archived version of the now-defunct Axios Review website claimed an 85% acceptance rate, but it is unclear if the journals that used Axios Review (Fig. 1C) clearly

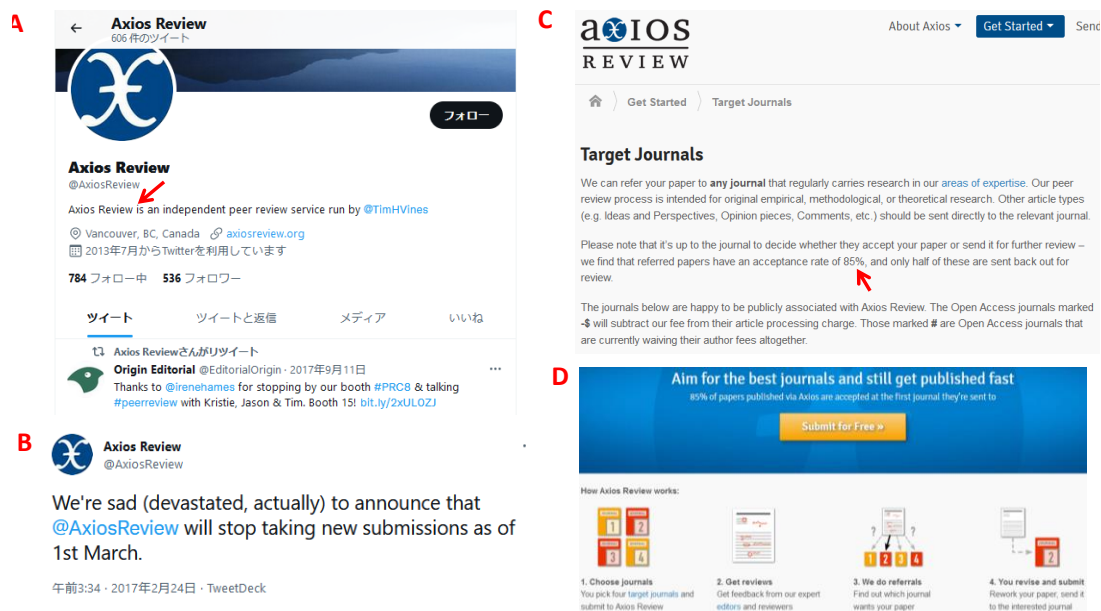
⁸ Disclaimer: the author voiced his discontent with Axios Review at The Scholarly Kitchen: <https://scholarlykitchen.sspnet.org/2017/03/20/wither-portable-peer-review/#comment-66720>

⁹ <https://www.editage.com/about-us/2016/editage-and-axios-review-collaborate-to-offer-high-quality-editing-and-peer-review-services-for-authors.html>

<https://www.editage.com/insights/axios-review-solving-the-submit-reject-resubmit-problem-for-authors>

¹⁰ <https://dataseer.ai/2021/12/15/dataseer-launches-partnership-with-asap/>

¹¹ <https://twitter.com/AxiosReview/>



(A) The Twitter account claims that the service is still function or operational, as evidenced by the verb tense “is” (red arrow).

(B) The sudden announcement, by Tim Vines, that Axios Review was terminating.

(C) The journals that indicated their association with this PPR service need to declare publicly those papers that used this service, so that those papers’ acknowledgements can be scrutinized; Axios Review claimed that papers that used their service had an unrealistic (85%) acceptance rate at first acceptance (red arrow).

(D) Axios Review also claimed “fast” peer review, although no data seems to exist to support this claim, nor against which other peer review model.

Sources: Screenshot date: March 14, 2022. Screenshot URL (under fair-use policy):

(A) <https://twitter.com/AxiosReview/>

(B) <https://twitter.com/AxiosReview/status/834833930524045312> (February 24, 2017)

(C) <https://web.archive.org/web/20170129072312/https://axiosreview.org/get-started/target-journals/> (January 29, 2017)

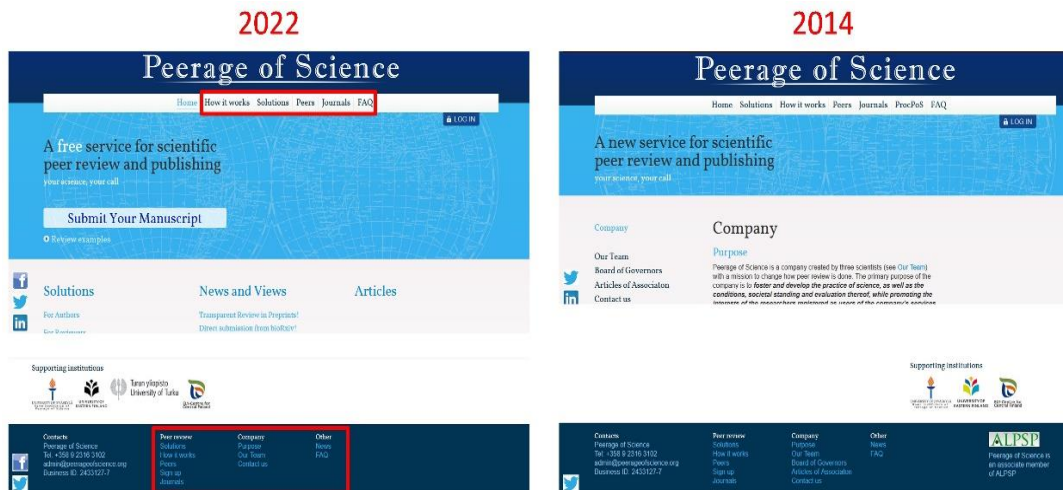
(D) <https://web.archive.org/web/20170216120718/http://axiosreview.org/> (February 16, 2017)

Figure 1. An overview of Axios Review, and its demise

indicated this fact on their websites and in the acknowledgements of papers that used this PPR service¹². The most recently listed paper (Bailie et al., 2016) did not acknowledge Axios Review in the acknowledgements, raising an ethical red flag, so a careful analysis is thus required for all papers, especially their acknowledgements. Axios Review was a paying COPE member. Even though the current list of COPE members¹³ does not indicate Axios Review as a current member, this fact should be indicated as part of the history of COPE membership, so COPE is advised to employ a dual DOI-based system to record the history of its past membership lists, on a yearly basis, for public academic transparency and sustained community trust (Teixeira da Silva & Nazarovets, 2022a). One striking weakness of both

¹² <https://web.archive.org/web/20170129144320/http://axiosreview.org/about-axios/published-papers/>

¹³ <https://publicationethics.org/members>



There are many dysfunctional pages on the Peerage of Science (PoS) website, indicated by red blocks in 2022. Although the general structure and style are similar between the current (2022) website, and the website observed in 2014, there are also some distinct and notable differences: PoS is no longer an ALPSP associate member, there is no Board of Governors, and the Articles of Association have disappeared (like most of the linTTks’ functionality). Currently, four Finnish institutions are indicated as being “Supporting institutions”, but it is unclear what financial, structural, technical or other support is being provided by these institutions for them to merit this status.

Sources: Screenshot date: February 14, 2022. Screenshot URL (September 18, 2014; under fair-use policy):

- <http://www.peerageofscience.org/>
- <https://web.archive.org/web/20140918051735/>
- <http://www.peerageofscience.org/company/>

Figure 2. Dysfunctional pages on the Peerage of Science website

Axios Review’s author¹⁴ and peer reviewer¹⁵ guidelines was their superficiality. A TPS for peer review should have the obligation of ensuring more rigorous guidelines related to the quality of peer reports, performance, confidentiality, and conflicts of interest. This lax set of guidelines gives an impression that they were written and/or devised by individuals related to marketing rather than by publishing-related academics.

Finally, and most importantly, Axios Review not only claimed a suspiciously high acceptance rate of papers—most academics rarely experience 85% acceptance at first submission—and rapid service, although no publicly verifiable data existed to support any of those claims (Fig. 1D).

Peerage of Science

PoS¹⁶ still had, in early 2022, linkable, but dysfunctional website. It was a peer-to-peer(P2P) model in which there was interaction between peers. PoS existed for under a decade. In this model, an author purportedly had their paper reviewed by another peer registered at PoS, and peer-reviewed papers and their reports were submitted to journals that subscribed to PoS, or by authors to other journals (Baykoucheva, 2015). Kumar (2014) stated the following about

¹⁴ <https://web.archive.org/web/20170130150726/http://axiosreview.org/get-started/author-guidelines/>

¹⁵ <https://web.archive.org/web/20170130150731/http://axiosreview.org/get-started/reviewer-guidelines/>

¹⁶ <http://www.peerageofscience.org/>

the service: “Authors set the deadline for return of reviews and ‘peer review of peer view’ is applied to improve the quality of reviewers. Journal publishers who solicit the services of the agency are made to pay \$500 for each accepted manuscript.” In 2013, one of the co-founders of PoS, Janne-Tuomas Seppänen, provided an interview about PoS, explaining several details of the decoupled peer review and business model¹⁷. That interview indicated that “BioMed Central, Pensoft Publishers, PeerJ [...] PLOS [...] a number of journals from Wiley, Springer, and some societies” had used PoS, as was also confirmed by a 2016 website in Finnish¹⁸, which also indicated PeerJ and *Frontiers in Zoology* as clients. Seppänen also revealed that PoS had already been employed since 2012 (Seppänen et al., 2012).

The PoS website was examined in detail to appreciate the validity of those descriptions. On the website’s footer, the “Purpose”, “Our Team” and “Contact Us” pages all resulted in error messages. There are no longer any “Board of Governors” or “Articles of Association [sic]” web pages¹⁹. This dysfunctionality portrays a negative image of PoS, even more so because PoS won the prestigious 2012 Association of Learned and Professional Society Publishers Publishing Innovation Award²⁰. Even the PoS website that supposedly provides information about this part of the company’s history is also dysfunctional. Fortunately, the Internet Archive has archived versions (Fig. 2)²¹. Although a *Science* article indicated that peer reports, for those peers that agreed to this PPR service, would be published in OA format (i.e., OPR) in *Proceedings of Peerage of Science*²², no such publication could be found. Seppänen, the Co-Founder and Managing Director of PoS, Team Leader of the Open Science Centre, University of Jyväskylä, in Finland, and associated with the Nature and Game Management Trust, Degerby, Finland, the former two confirmed via a LinkedIn profile²³, was contacted in February and March, 2022, to provide an opportunity to clarify these aspects, but no response was ever received.

When essential information pertaining to current operations, including peer review and business, are not operational and are thus opaque, this management practice is in violation of several of the COPE, DOAJ, OASPA, and WAME “best” publication principles. These principles would also apply to PoS and its journal, *Proceedings of Peerage of Science*. Finally, there is no public guarantee that all of the journals and publishers that paid for peer reviews outsourced to PoS acknowledged this essential aspect in their papers, for example in the acknowledgement section. A sample of one paper (Heger et al., 2013) did acknowledge PoS in the acknowledgements but an analysis is required for all papers. If not, as was argued earlier on in this paper, then there may be an ethical violation in those papers, even more so since several PoS clients were COPE, DOAJ, and/or OASPA members. Moreover, there is no indication what happens when fraud, unethical or bad science were detected during PoS-managed peer review and what responsibilities the PoS-entrusted peer reviewers had. Since

¹⁷ <https://scholarlykitchen.sspnet.org/2013/11/06/an-interview-with-janne-tuomas-seppanen-co-founder-of-peerage-of-science/>

¹⁸ <https://www.jyu.fi/ajankohtaista/arkisto/2016/02/tiedote-2018-02-28-10-55-15-005769>

¹⁹ <https://web.archive.org/web/20140918051735/https://www.peerageofscience.org/company/>
<https://web.archive.org/web/20140919093709/http://www.peerageofscience.org/company/our-team/>
<https://web.archive.org/web/20140919093658/http://www.peerageofscience.org/company/board-of-governors/>
<https://web.archive.org/web/20140919093653/http://www.peerageofscience.org/company/articles-of-association/>
<https://web.archive.org/web/20140919093704/http://www.peerageofscience.org/company/contact-us/>

²⁰ <https://blog.alpsp.org/2013/09/janne-tuomas-seppanen-how-to-improve.html>

²¹ https://web.archive.org/web/*/https://www.peerageofscience.org/winner-of-alpsp-award-for-publishing-innovation/

²² <https://www.science.org/content/article/online-social-network-seeks-overhaul-peer-review-scientific-publishing>

²³ <https://fi.linkedin.com/in/janne-tuomas-sepp%C3%A4nen-23858123>

the PoS website indicates no ethical guidelines for authors, reviewers or clients (i.e., the journals or publishers that used this service), this could be considered, at least according to some criteria, as not being “best practices” (COPE, DOAJ, OASPA, and WAME) or even being potentially predatory publishing practices (e.g., according to Cabells²⁴).

In hindsight, PoS’ Seppänen might also reflect on how such positivity in 2017 eventually led to a failed experiment²⁵.

Rubriq

Several earlier literatures that discussed Rubriq²⁶, an outsourced TPS launched in 2012 that claimed to guarantee peer review within two weeks, tend to describe it in supportive terms, but without any critical analysis. For example, Baykoucheva (2015) described Rubriq as “a new form of peer review, which prescreens papers that are submitted for publication before they enter the publication process. It is used by some publishers as the only peer-review evaluation.” The mega OA journal, *Scientific Reports*, published by Springer Nature, employed Rubriq as a trial²⁷, noting that the price (US\$750) would be fully refundable if the paper was rejected. However, at least in theory, this might bias reviewers into accepting papers and offering positive reviews in the knowledge that accepted papers would allow them to be paid. A *Scientific Reports* editor (Mark Maslin²⁸) resigned in protest (Bohannon, 2015; Cressey, 2015) because he believed that it would create a two-tier system in which only well-funded researchers or laboratories would be able to pay for this service whereas underfunded or poorly funded researchers or laboratories would not, an argument that is also made for the paid PPR services described above. In essence, introducing any system with two or more tiers in which authors are treated differently, or are provided different opportunities, such as paid-for accelerated peer review models (Teixeira da Silva & Yamada, 2022), carries an ethical component, and may be a violation of the rights of those authors who are unable to pay for such a service, and who are thus not offered the same opportunities as their privileged able-to-pay counterparts. Following Maslin’s resignation, amplified by concerns by other *Scientific Reports* editors that such a service would do more harm than good to peer review integrity²⁹, Rubriq appears to have been abandoned. Two news articles (Bohannon, 2015; Cressey, 2015) also revealed that the service was provided by US (Durham, Carolina)-based Research Square, which owns the preprint server and platform, Research Square³⁰. Research Square emerged as one of the main preprint servers in the COVID-19 era, claiming to have published, to date (25 October 2023), just over 261,000 preprints³¹. Research Square appears to continue to provide paid pre-submission peer review services³², but it is not labeled as Rubriq. For that

²⁴ <https://www2.cabells.com/predatory-criteria>

²⁵ <https://scholarlykitchen.sspnet.org/2017/09/25/portable-peer-review-rip/#comment-71184>

²⁶ Rubriq claimed: “Rubriq is Research Square’s rigorous, rapid peer review system, developed in conjunction with publishers, journal editors, and researchers to save effort and speed up the publishing process. With years of experience and thousands of papers completed, our standardized Rubriq report and reviewer matching system allow us to provide top-quality peer review from highly qualified researchers in just two weeks.”

<https://rubriq.com/> (now defunct): https://web.archive.org/web/*/http://rubriq.com

²⁷ <http://blogs.nature.com/ofschemesandmemes/2015/03/27/further-experiments-in-peer-review>

²⁸ <https://twitter.com/ProfMarkMaslin/status/581171535236431872>

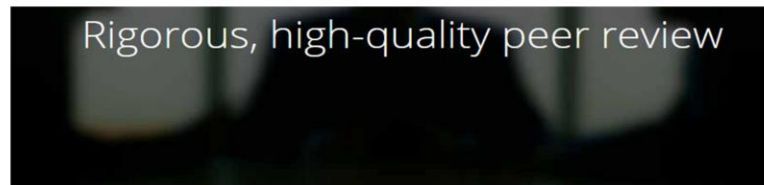
<https://www.geog.ucl.ac.uk/people/academic-staff/mark-maslin>

²⁹ https://web.archive.org/web/20150715221932/http://allariz.uc3m.es/~anxosanchez/.transfer/letter_Sci_Rep_paid_fast-track_review.pdf

³⁰ <https://www.researchsquare.com/>

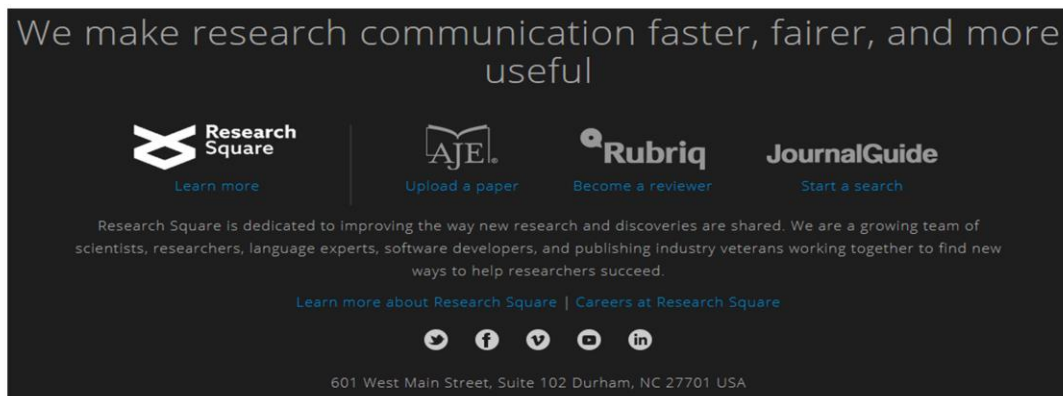
³¹ <https://www.researchsquare.com/browse>

³² <https://www.researchsquare.com/publishers/editorial-services>



Who we are

Rubriq is Research Square's rigorous, rapid peer review system, developed in conjunction with publishers, journal editors, and researchers to save effort and speed up the publishing process. With years of experience and thousands of papers completed, our standardized Rubriq report and reviewer matching system allow us to provide top-quality peer review from highly qualified researchers in just two weeks. More information about Rubriq is now available [on the Research Square site](#) as part of our array of solutions for publishers.



Research Square's Rubriq, which is now defunct (service and website) claimed "rigorous, high-quality peer review", and "faster, fairer, and more useful" research communication. If so, why then did Springer Nature's *Scientific Reports* editors quit the editor board in protest when that journal used this service (Bohannon, 2015)?

Source: Screenshot date: February 5, 2022. Screenshot URL (June 28, 2017; under fair-use policy): <https://web.archive.org/web/20170628021844/https://www.rubriq.com/>

Figure 3. Research Square's Rubriq (Defunct)

reason, an example of a Rubriq scorecard was archived³³.

The Research Square CEO at that time, Shashi Mudunuri, explained that "the company has about 1400 active reviewers who have scored 920 papers. The company pulled in \$20 million in revenue last year" (Bohannon, 2015). This suggests that this was a profitable, but opaque³⁴, business model. However, Rubriq provided some transparent insight into its operations on its blog, which, curiously, was still operational in 2022³⁵. Rubriq was also associated with the editing service American Journal Editors (AJE)³⁶, sharing the same parent company, Research Square (Fig. 3)³⁷. It is unclear if Rubriq used reviewers in its AJE cadre of

³³ <https://web.archive.org/web/20150403203338/>

<https://secure.rubriq.com/author/submission/report/id/SAMPLE11>

³⁴ "Mudunuri declined to name the other publishers with which the company has cut deals." (Bohannon, 2015). However, Van Noorden (2013) indicated a few: "Public Library of Science (PLOS), Karger, F1000Research and Wiley"

³⁵ <https://rubriqblog.wordpress.com/>

³⁶ <https://www.aje.com/>

³⁷ <https://scholarlykitchen.sspnet.org/2013/02/22/rewarding-reviewers-money-prestige-or-some-of-both/#comment-48243>

experts, or if it recruited the services of experts beyond AJE. A list of papers that were published using the Rubriq service could not be identified, nor could papers that acknowledged the use of this service be identified on Elsevier's ScienceDirect, Springer Nature's Springerlink, or on PubMed, even though Publons³⁸ recorded 25 papers associated with Rubriq. There were concerns with this opacity at Publons—following its purchase by Clarivate—as an innovator of academic and scholarly peer review (Teixeira da Silva, 2020; Teixeira da Silva & Al-Khatib, 2021). Publons as a service and brand has now ceased to exist, having been fused into the Web of Science in the later half of 2022 (Teixeira da Silva & Nazarovets, 2022b). As for Axios Review and PoS, this suggests that authors who used Rubriq or AJE, both paid TPSs, without acknowledging these services, may have engaged in unethical behavior, at least according to established COPE and ICMJE recommendations³⁹, namely the failure to acknowledge the use of TPSs (Kendall et al., 2016; Teixeira da Silva, 2021b). An industry-wide investigation is needed to appreciate the extent of use of “ghost” TPSs. This is one risk of outsourcing peer review via the subcontract of professional opinions (Pontille & Torny, 2015).

This debate surrounding Rubriq, AJE, and Research Square is extremely pertinent, even today. This is because Springer Nature, the world's largest academic publisher based on journal volume (Nishikawa-Pacher, 2022), purchased Research Square at the end of 2022⁴⁰, so full transparency about these business and peer review operations during the time of Rubriq should be forthcoming.

Another publisher, Hamad bin Khalifa University Press (HBKU Press)⁴¹, employed Rubriq for 15 of its journals, but that announcement website has become defunct, and the publisher's name appears to have transitioned from the Bloomsbury Qatar Foundation to HBKU Press since then⁴². HBKU Press is a COPE member publisher⁴³. Extending the concern expressed above, it is unclear if the papers published in these 15 HBKU Press journals properly acknowledged the use of Rubriq. Although a more comprehensive analysis is required, a spot check (17 September 2023) of the acknowledgement section of 50 papers between 2014 and 2016, when the service would presumably have been employed, in select journals of HBKU Press that were publishing at that time (*Avicenna, Engineering Education Letters, Innovations in Global Medical and Health Education, International Review of Law, Journal of Local and Global Health Science, QScience Connect*), revealed no acknowledgements to Rubriq. Several of those titles appear to have ceased publication.

Rubriq, despite being a commercial venture and product, was promoted as an “academic paper” by AJE / Research Square LLC employees in an academic journal, *Learned Publishing* (Stemmler & Collier, 2013), which is published by the Association of Learned and Professional Society Publishers in collaboration with the Society for Scholarly Publishing, and hosted on the Wiley platform. The author does not agree to this use of academic journals to advertise TPSs. Binfield (2014) described Rubriq as a disaggregated author-pays pre-submission peer review service. Tennant et al. (2017) referred to Rubriq as a PPR service, while Patel (2014) characterized it as an insourced or outsourced accelerated peer review

³⁸ <https://publons.com/journal/23865/rubriq/>

³⁹ <https://www.icmje.org/recommendations/>

⁴⁰ <https://group.springernature.com/jp/group/media/press-releases/springer-nature-completes-acquisition-of-research-square-company/23768186>

⁴¹ <https://www.qscience.com/>

⁴² <https://blog.rubriq.com/2014/02/18/qscience-selects-rubriq-to-provide-peer-review/>

⁴³ <https://publicationethics.org/category/publisher/hbku-press-0> (This COPE website now indicates that only 8 journals are COPE members; these are presumably titles that are still actively publishing.)

service, or “decoupled” peer review. Independent of the term used by different academics, what the Rubriq experiment also indicates is that authors and their intellect (i.e., papers) were also being used as experiments, often labelled as “trials”, but that failed.

DISCUSSION

It has been argued that peer review, specifically TPR, is in a crisis (Gropp et al., 2017; Kovanis et al., 2017; Parrish, 2022). As a result, or by association, science might also find itself in a crisis because peer review forms the bedrock of the quality, integrity and reliability of the scientific literature. For this reason, any novel approaches that could fortify the integrity of TPR, or peer review more generally (Kaltenbrunner et al., 2022), are welcomed by the academic community. Evidently, as with any experimental business model, if the model fails to gather sufficient traction, adherence, or clients, it will fail and cease to exist. Therefore, the measure of the success of a novel model, proposal or solution lies somewhat in its ability to survive, flourish and continue to remain operational. Within a purely historical context of TPR, this paper brings to the attention of academics and readers three paid peer review support models, or PPR and CPR models (Axios Review, PoS and Rubriq), that emerged in approximately the last decade, that showed enthusiastic entrepreneurship and even receptivity by the peer community and the publishing industry, in some cases having been adopted by some leading journals and publishers, at least as classified by established industry ethics standards (COPE, DOAJ, OASPA, and WAME). Using a modeling approach, Kovanis et al. (2017) found that, relative to TPR, PPR and CPR performed equally well, or even outperformed TPR, in terms of peer-review efficiency, reviewer effort and scientific dissemination metrics. If so, then why did these three TPR support models fail, and then cease to exist? Three possible reasons might explain their failure or lack of adoption: 1) the use of such services might not have been transparently declared in academic papers by authors who used these services, in such cases being in ethical violation of publishing ethics standards (COPE and ICMJE); 2) another ethical component is the creation of a two-tier system in which only authors who are able to pay for such peer review services can benefit from them, whereas all other authors might not have access to this opportunity; 3) the risk of bias or even peer review fraud, namely reviewers, knowing that they would be paid on a per-paper basis, might be tempted to accept more papers more readily than if they were not paid, i.e., there is no incentive to reject papers, only a financial incentive to accept them.

There are other issues that might undermine the reliability or integrity of PPR. Even if journals subscribing to this model would somehow be able to “demand” that authors submit their papers with the “rejection” reason and editorial or reviewer reports from prior submissions to other journals (Cals et al., 2013), there would be insurmountable issues plaguing this model. First, this would be a fundamental challenge to authors’ academic freedom (Al-Khatib & Teixeira da Silva, 2017) because it would challenge their right of choice of whether they might wish to submit such reports, or not. Second, the risk of unflattering reports or peer reviewer bias would be immeasurable, i.e., the risk of a new peer reviewer rejecting the paper if they have knowledge of negative comments from prior reports might be higher than if they did not have access to such reports, i.e., access to prior reports might not make their assessment impartial or neutral. In other words, PPR risks tampering with the objectivity of peer review by leaning peers’ decisions towards a more subjective decision (Park et al., 2014). Third, there is the issue of report ownership and copyright. Who owns the reports of rejected papers, the editors and reviewers of the journal that rejected the paper, or the authors? That legality might limit the ability to disseminate such reports, if they

are copyrighted, to TPSs, in this case, new reviewers following PPR. That risk might be lower in CPR if copyright is held by the publisher. This topic merits greater scrutiny. Fourth, if PPR operates opaquely, how is it possible to assess whether authors and the peers that assess their work are in the same network (Dondio et al., 2019)? Finally, PPR ignores the possibility that with each rejection, authors might reflect on the reasons for rejection, and then improve their papers prior to resubmission. In other words, contrary to arguments that claim that PPR and CPR would tax the peer pool with “recycled” work, this would not be the case where papers have been improved with each rejection step, in which case new reviewers would be exposed to—at least in theory—a better or fortified copy of that work.

There is a potential upside to PPR, however, namely that if peers are paid, there might be a greater motivation to provide higher-quality reports than if they are not paid, although peer motivation might not correspond to authors’ motivations for providing higher-quality work (Righi & Takács, 2017), i.e., there may be a disconnect in reciprocity and expectations by authors of peer reviewers or *vice versa* in PPR, not unlike in TPR (Squazzoni & Gandelli, 2013; Bianchi et al., 2018). This disconnect may be one underlying reason of reviewer fatigue (Fox et al., 2017). Moreover, it is impossible to distinguish a paid reviewer’s motivation to increase papers’ scientific quality or their own financial income.

It was recently argued that one way to avoid the abuse of reviewers, not only in TPR but also in PPR and CPR, would be to initiate an international program in which peer reviewers are paid, but they must first pass through a training course, and receive appropriate accreditation and certification (Teixeira da Silva, 2023a, 2023b). In that situation, journals would only employ peer reviewers who are suitably qualified (Patel, 2014), unlike the current state of affairs in which a wide range of peer reviewers, with different (and unquantified, sometimes unqualified) qualifications, might be used. This suggestion may divide the community because the model will not work across the board initially, so it is merely an initial suggestion to resolve a qualitative problem in the ongoing peer review crisis. Evidently, the transition to this form of TPR, which employs paid peer reviewers, would take time to adopt, and would also need an industry and peer-wide change in culture, beginning with acceptance. In some ways, the Axios Review, PoS and Rubriq PPR and CPR models may have represented an effort to move in this direction, but were either met with resistance, or the lack of industry- or peer-wide support.

CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH FOCI

In this paper, in the face of an emerging peer review crisis that has resulted from an inequitable use of the available peer pool, it was argued that PPR and CPR models could be useful tools or models to fortify TPR if they are handled with rigor and transparency. However, like any other peer review model, they may eventually succumb to lax measures, exceptionalism or abuses. Based on available evidence, the lack of trust, perceptions of opacity, lack of robust quality control and/or weak P2P measures may have cumulatively led to the collapse of the three experimental peer review models that were established to support TPR and examined in this paper, i.e., Axios Review, PoS and Rubriq. For this reason, despite the unfortunate outcome of these models, had the quality checks in place been stricter and rigorously implemented, and had there been complete transparency about their use by authors, then they may have served authors, editors, publishers and the scientific community well. However, good intentions in themselves are not enough, and readers would do well to heed the words of Vines: “By fooling themselves that peer review costs almost nothing, these new peer review initiatives are setting themselves up to collapse just when they start to attract

hundreds of submissions. Falling flat is always a risk with innovation. Falling flat because you neglected to have a business model is a major disservice to everyone who put in volunteer hours along the way.”⁴⁴ A follow-up paper plans to examine extant cases of PPR and CPR that are still functional to gain an appreciation as to why they might be surviving unlike the three failed models discussed in this paper. Provisionally, and serving as the hypotheses for a future analysis, some of those models have been widely adopted either due to successful branding, useful functionality, or the employment of more transparent forms of communication with peers. Their success will be measured against the failure of the three models outlined in this paper.

As limitations to this paper, there may very well be more experimental PPR and CPR models that started, then ceased to exist, but only three, which garnered considerable academic, industry and media attention, and even temporary adherence, were considered in this paper. As a post-publication exercise, it is important to appreciate which authors and papers employed TPSs such as PPR and CPR, and whether editors and publishers whose journals (or authors publishing in those journals) that formally employed such TPSs, including Axios Review, PoS and Rubriq, verified whether their use was transparently declared in papers. Associated with this ethical issue of the failure to disclose the use of such services, there is also the need to assess whether there is agreement between ethics mandates in theory and practice. In other words, a future analysis needs to appreciate whether journals’ requests for authors to declare the use of TPSs like these PPR and CPR models in their instructions for authors or ethical guidelines, which may or may not be optional (Teixeira da Silva, 2023c), are compatible with the commercial ventures of publishers who employ such services as part of their business model. One notable case is that of Springer Nature, Research Square and AJE, which has now become a single collective venture. There is merit in future research that attempts to address these limitations and gaps in knowledge pertaining to peer review (Ioannidis, 2018; Hug, 2022), including OPR, given that research of peer review has itself now become an established field of research (Batagelj, Ferligoj & Squazzoni, 2017).

Ultimately, every editor and journal are now asking themselves, especially journals that see a high level of submissions and that claim to be peer-reviewed, who and how they will be able to identify and recruit a sufficient number of peers to deal with their volume of submissions. However, the answer to these questions (and the topics themselves) is beyond the scope of this paper, which aimed primarily to take a look back—from a historical prism—at three PPR and CPR models that did not thrive. This paper does not provide a solution for peer reviews’ quantitative demands, nor does the author have any plausible solutions about how this could be achieved at the moment, but this is a key issue that needs to be urgently debated and resolved. Given that the issue of peer review revolves around human resources and their use, abuse or exploitation, this debate, i.e., whether peers should be remunerated or not, may predictably never end. However, a future paper that examines all existing arguments for and against this possibility is merited.

CONFLICTS OF INTEREST

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⁴⁴ <https://scholarlykitchen.sspnet.org/2018/03/07/curious-blindness-among-peer-review-initiatives/>

AUTHOR'S CONTRIBUTIONS

The author contributed to the intellectual discussion underlying this paper, literature exploration, writing, reviews, and editing, and accepts responsibility for the content of this paper.

NOTE REGARDING WEBSITES

The last access date to most websites related to the three PPR/CPR models was between 10 February and 14 March 2022. Wherever possible, websites were archived at the Internet Archive.

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