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Peer Community In

A free process for the recommendation of unpublished scientific papers based on peer review

Thomas Guillemaud, Benoit Facon and Denis Bourguet

Introduction

- 1 Most well-known scientific journals are owned by major international publishing groups (Larivière et al. 2015) that take advantage of the needs of researchers to publish and read scientific articles. Indeed, research organizations/institutions and universities pay these groups very large sums of money each year by subscribing to their journals and paying the fees that these journals charge for publication and/or access to articles (Cour des Comptes 2013). The development of electronic tools for managing the evaluation and publication of manuscripts and the dematerialization of objects could have decreased costs, but subscription costs and fees have continued to increase in recent years (Larivière et al. 2015; Vajou 2016). The international market for scientific publications is currently worth about nine billion dollars per year (Johnson et al. 2018), the vast majority of which is paid by public research institutions. This market is highly profitable, with major publishers reporting profit margins of 30 to 40%, depending on the year (Larivière et al. 2015; Vajou 2016).
- 2 In France, these costs have been estimated at 150 millions Euros per year (Bach and Jérôme 2014) corresponding to 25% of the funding given by the “Agence National de la Recherche” (ANR), the main French agency funding project-based research by public-sector researchers, sometimes in partnership with private companies. These costs are unjustified, given the large profit margins they generate and because most of the work leading to publication is actually done by the researchers themselves: writing articles, peer review, making editorial decisions, proofreading and editing. The situation is even more complicated for researchers in developing countries. As most research institutes cannot afford such costs, even the richest library in the world (Suber 2016), the current publication system thus limits both their ability to publish and their access to scientific literature.

- 3 The current transition to open science—with initiatives such as Plan S¹ to promote this transition—will not of itself necessarily lead to a reduction in these costs. Publishers are gradually moving from a subscription system to a system in which authors are required to pay an article processing charge (APC) to ensure free access to their articles, partly because these articles are more likely to be read and cited and partly because public funding bodies, such as the NSF and the ERC (and from 2020, the funders of cOAlition S)² have moved towards general and open access to any publicly funded research. Publishers' revenues are therefore increasingly linked to the number of articles published. This has made it tempting for them to increase the proportion of articles accepted in their journals, to the detriment of their quality. This trend is not necessarily opposed by authors, who themselves have an interest (for recruitment, promotion and to attract funding for their research) in publishing large numbers of papers rapidly.
- 4 However, the problems with the current publishing system extend well beyond simple cost issues. The peer review process, responsible for ensuring the quality of articles, is generally not made public in journals (with the exception of a few scientific journals, such as *Frontiers*, for example). The readers of a scientific article do not, therefore, usually have access to the peer reviews justifying its publication. Their confidence in the validity of the article is therefore based on subjective elements disconnected from the quality of the article in question, such as the reputation of the journal, often evaluated by its impact factor (IF) (Garfield 2006). Rather than relying on such biased proxies (Seglen 1997; Alberts 2013), it would be better to publish editorial decisions, peer reviews and authors' responses (Wicherts 2016). This would provide readers with access to the material required to assess the seriousness with which each article is evaluated. It would also provide a strong incentive for evaluators (editors and reviewers) to conduct thorough and consistent reviews, as poorly written or unconstructive reports would be seen by readers of the original article.
- 5 A third major criticism of the current publication system concerns the slowness of the article publication process (Vale 2015). Between obtaining their results and publishing them, research teams may have to wait between six months and several years, due to (i) the traditional exchanges between authors, editors and reviewers to obtain an acceptable version of a manuscript for publication and (ii) "submission cycles" for articles rejected by different journals. The result is a very inefficient system: while one team is trying to publish the results it obtained months ago, other teams working on the same subject cannot benefit from these results because they are unaware of their existence. Proof of prior art is a sensitive issue in this context: How can you prove the novelty of your study when others may manage to publish similar results more rapidly due the higher standing of the authors, connections to the editorial board and editors, or publication in less well-known or reputed journals? Finally, publication time and ways of minimizing it affect the way scientists are hired, as different publication strategies can lead to very different CVs, favouring the advancement of candidates adept at playing the system.
- 6 This publication system is not the only system possible. Indeed, the internet provides free web publishing tools, making it possible to publish on a very large scale at very low cost (e.g., OJS)³. Furthermore, unrevised articles that have yet to be evaluated, known as preprints (Vale 2015), are increasingly being deposited directly and free-of-charge by researchers in open archives, such as [bioRxiv.org](https://www.biorxiv.org/), [arXiv.org](https://arxiv.org/), [Zenodo.org](https://www.zenodo.org/) or preprints.org, rendering research results rapidly and freely accessible. This immediate availability also opens up possibilities for using social networks to comment on the results, thereby

promoting contact between science and the public. However, on the downside, preprints are not evaluated and validated by the scientific community, and their quality and validity cannot, therefore, be guaranteed.

The “Peer Community in” project

- 7 We launched the “Peer Community In” (PCI) project⁴ to overcome the many problems associated with the current publication system and the lack of evaluation of preprints. The aim of this project is to establish communities of researchers evaluating and recommending articles in their own scientific field. This initiative is based primarily on the deposition of preprints in open archives.
- 8 The authors of a preprint deposited in these open archives may then submit the preprint to a competent PCI, Peer Community in Evolutionary Biology (PCI Evol Biol) for example, to request its evaluation. The only condition for its evaluation is that it is not already published or under evaluation by a journal. If a PCI editor finds the preprint interesting, he/she can then decide to take responsibility for its evaluation. At least two reviewers are then found, and, based on their reports, the preprint (or a revised version, if the reviewers consider modifications necessary) may be recommended. The decisions, peer-reviews, recommendation text, and digital identifiers (DOIs) of the successive and corrected versions of the preprint, and all correspondence with the authors, is made available, free-of-charge, to readers via the website of the PCI concerned. The recommendations themselves have a DOI and can be cited.
- 9 This new system bears certain similarities to overlay journals (e.g. epi-revues),⁵ because it is based on open archives. However, unlike these overlay journals, the various PCIs are not intended to be journals that publish scientific articles. They will publish only recommendation texts and critical reviews of articles deposited in open archives (although some PCIs will also, on rare occasions, publish recommendation texts for articles already published in journals). Unlike overlay journals, PCI is not in competition with current scientific journals, which should increase its chances of success. Indeed, most journals now accept the submission of articles previously deposited as preprints in open archives.⁶ They should therefore accept and consider the preprints recommended by PCI. The recommendation of a preprint by a PCI will not prevent its subsequent submission for publication in a journal. Hence, leading journals (e.g. *Ecology Letters*, *Trends in Ecology and Evolution*, *PLoS Biology*, *Evolution*, *Molecular Ecology*, *Oikos*, etc. in the field of ecology and evolutionary biology)⁷ have indicated not only that they will accept the submission of preprints recommended by PCI, but also that they will take into account the reviews and recommendation texts, if appropriate, with a view to accelerating, improving and complementing their existing evaluation processes.
- 10 In summary, the PCI system is based on the publication of critical evaluations and recommendations of articles not yet published, but deposited—and freely accessible—in electronic form in an open archive available via the Internet. These evaluations and recommendations are performed by researchers acting on a voluntary basis, with no links to private publishers.
- 11 The emergence of PCIs heralds a major change in the publication system. Costs are very limited (see below) and can be covered by research institutions themselves, and this system validates and distributes the articles submitted free-of-charge, and thus at no cost

to authors or readers. The time lag to publication is eliminated, as the scientific articles evaluated are deposited in an open archive as soon as they are written. Furthermore, the publication of opinions, editorial decisions, authors' responses and recommendations on the PCI of the scientific community concerned renders the entire system transparent.

- 12 The transparency of article evaluations promoted by PCI should improve practices, as the critical evaluation of articles is more effective when made public (Wicherts 2016; McKiernan et al. 2019). This system should certainly result in fewer conflict of interest issues during the evaluation process. Indeed, situations in which there is a conflict of interest are prohibited in PCIs (recommendations/revisers and reviewers must declare that they have no conflict of interest with the authors or the content of the preprint they are processing or reviewing), recommendation texts are signed and we encourage reviewers to sign their critical evaluations. This mode of operation should curb any desire for “cronyism” or retaliation on the part of evaluators (see system criticisms below).
- 13 In addition, PCIs will not evaluate all the articles submitted to them. Evaluations are based on the voluntary work of editors appointed by each PCI, who select the articles they consider relevant. This will limit the number of meaningless “sliced” articles intended to “inflate” the authors' publication lists.
- 14 A first PCI community was launched in January 2017: PCI Evol Biol. PCI Evol Biol currently brings together 400 of the most eminent researchers in evolutionary biology as editors. Peer Community in Paleontology (PCI Paleo, 80 editors) and Peer Community in Ecology (PCI Ecol, 320 editors) were launched in January 2018.
- 15 These three PCIs have already received 170 submissions, 60 of which have been recommended. The median time between submission and first editorial decision (rejection, request for revision or recommendation of the article) ranges from 44 to 63 days, a time lag similar to that for peer review in the journals to which articles have traditionally be submitted.
- 16 Our objective is a rapid increase in the number of new PCIs, to cover a much broader range of scientific topics. Hence, Peer Community in Entomology (PCI Entomol), Peer Community in Animal Science (PCI Anim Sci) and Peer Community in Circuit Neuroscience (PCI Circuit Neuro) will be launched in 2019. The creation of a number of other PCIs—PCI Genomics, PCI Ecotoxicology, PCI Mathematical and Computational Biology, for example—is under discussion.
- 17 There will undoubtedly be considerable heterogeneity in the size and scope of future PCIs. Some PCIs will be highly specialized and narrow in scope, whereas others will be multidisciplinary, with a broad readership.

Criticisms relating to PCIs

- 18 The first criticism of PCI concerns the originality and newness of the PCI initiative and the absence of an impact factor. PCI remains relatively unknown and researchers, funding agencies, evaluation committees and research institutes still tend to rely heavily on traditional scientific journals and related impact factors when making judgements (McKiernan et al. 2019; Schimansky and Alperin 2018; Else 2019). Furthermore, as the recruitment of researchers depends heavily on their publication record, it is understandable that they are reluctant to use this new system.

- 19 Indeed, PCI is not a publishing medium and therefore has no impact factor.⁸ Consequently, authors are wary of submitting their manuscripts to a system that cannot directly boost their careers (by increasing the likelihood of recruitment, promotion, funding). The simplest response to this criticism is that impact factors do not measure the quality of the scientific work published, but the reputation of the medium in which it is published, which is very different (Seglen 1997; Alberts 2013). Just because the impact factor of the journal is high, it does not necessarily mean that a particular article published in that journal is of high-quality. However, it is possible to determine the number of citations of articles recommended by a PCI, and Google Scholar, for example, tracks all citations of preprints. It should also be noted that authors of an article recommended by a PCI can then submit their article to a journal with an impact factor. It is therefore not impossible to be “assigned an impact factor” after receiving a recommendation from a PCI. Last but not least, researchers and committees evaluating scientists’ projects and careers may eventually decide to consider articles recommended by the PCI as being of equal value to “classic” articles published in journals. This change is currently underway. For example, in Finland, PCI *Evol Biol* appears in the Publication Forum, a classification of publication channels created by the Finnish scientific community to support assessments of the quality of academic research.⁹ *PCI Evol Biol* is also listed in the “Nordic List” of journals, a list concatenating the national lists for Norway, Finland and Denmark of journals that can be used for evaluation.¹⁰ A similar shift in attitudes is also visible in several evaluation committees in France (e.g. the National Council of Universities, the National Committee for Scientific Research (CoNRS), the National Institute for Agricultural Research, The French National Research Institute for Development).
- 20 The second major criticism of PCI is that the various PCIs created may not be able to deal with a large number of submissions because this initiative has too small a budget and no editorial director. This criticism is unjustified, for several reasons: 1) Editors do not review all the submitted articles. Only the articles submitted to the PCI considered interesting by an editor are evaluated by peer review. Articles requiring a large amount of work on the part of an editor, because they are poorly written, poorly presented, or poorly formatted are unlikely to be selected for review by a PCI editor. 2) As PCI does not publish recommended articles (articles remain in open archives), the authors are responsible for the formatting and, more generally, for the aesthetic quality of their article. The PCI performs no correction or formatting work, instead focusing solely on the science, and this considerably reduces the workload, making a management editor unnecessary. 3) Each PCI has a large number of editors. This makes it possible to edit large numbers of manuscripts without overburdening any particular editor, contrasting strongly with the situation in traditional journals. This large number of editors ensures that interesting high-quality items are processed and checked. We estimate that PCI will require a full-time managing editor when it has grown to the extent that it publishes 500 recommendations (corresponding to 800 to 1,000 submissions) per year. Each managing editor could be shared by several PCIs, and this would represent the main cost of running the various PCIs. Taking all the other costs (hosting and developing websites, etc.) into account, we estimate that each recommended preprint will cost between 100 and 150 Euros to publish, corresponding to about a 20th the current mean cost of publishing an article. As for some diamond open journals (e.g. Scipost Physics, Discrete Analysis), this cost could be covered by research institutions and universities who support PCI.

- 21 A third criticism of PCI is that it could end up resembling a closed club in which cronyism thrives. We have strived to prevent this situation by insisting that editors and reviewers sign an ethical charter that prohibits cronyism, limits non-financial conflicts of interest and prohibits any financial conflicts of interest. In addition, each PCI has a managing board responsible, among other things, for checking for the absence of such conflicts of interest. Finally, transparency through the publication of editorial decisions (signed) and reviews (possibly signed) makes it possible to detect cases of cronyism and should help prevent such situations arising. PCIs will also inevitably end up more open than traditional journals, because the number of editors is much larger (essentially unlimited for each PCI). Only a lack of expertise can prohibit the nomination of a researcher as a PCI editor.

Conclusion

- 22 We hope to sustain the current momentum and ensure the effective management of these PCIs by obtaining moral and financial support from both research organisations (universities, institutions, major research institutes and funding agencies) and learned societies, at the international level. PCI has already received the support of several international learned societies and, in the French system, the support of several universities and institutions.¹¹ These organisations have agreed (i) to consider the PCI system as a legitimate means of evaluating and validating scientific results, (ii) to treat articles recommended by PCIs in the same way as articles published in traditional peer-reviewed journals and (iii) to encourage their members/colleagues/students to use PCI as a research outlet (as readers, authors, reviewers and/or editors). Through this recognition by increasing numbers of organisations, we expect to promote change in the habits of hiring, promotion and funding committees, with a shift towards reading PCI recommendations—in line with the San Francisco Declaration on Research Assessment¹² (DORA) (Curry 2018)—rather than just considering the impact factors of the journals in which articles are published.

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NOTES

1. <https://www.coalition-s.org>
 2. “What is cOALition S?” <https://www.coalition-s.org/about/>
 3. (Willinsky 2005)
 4. <https://peercommunityin.org/>; <https://youtu.be/4PZhpnc8ww0>
 5. www.ccsd.cnrs.fr/epi-revues
 6. <http://www.sherpa.ac.uk/romeo/index.php>
 7. See the full list here: <https://peercommunityin.org/pci-friendly-journals/>
 8. <https://peercommunityin.org/2018/12/17/pci-and-impact-factors/>
 9. <https://www.tsv.fi/julkaisufoorumi/haku.php?lang=en>
 10. <https://librisbloggen.kb.se/2017/12/13/the-nordic-list/>
 11. See the list here: <https://peercommunityin.org/who-supports-peer-community-in/>
 12. <https://sfdora.org/>
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ABSTRACT

The current system of scientific publication is faced with several serious problems: its cost and lack of transparency and the long time from the obtainment of scientific results to their publication. We also believe that the economic model on which the current publishing system is based perverts the system. We have created Peer Community In (PCI)—<https://peercommunityin.org/> ; <https://youtu.be/4PZhpnc8ww0>—to tackle all these problems. This project is based on the publication of critical evaluations and recommendations of articles that have not yet been published, but are freely available in electronic form from open archives on the Internet, in which they have been deposited. These evaluations and recommendations are performed by researchers acting on a voluntary basis with no links to private publishers.

Publication costs disappear: PCI validates, distributes and allows consultation of the articles submitted free of charge. The time lag to information access is eliminated: the scientific articles evaluated are deposited in open archives as soon as they are written. The system becomes transparent: reviews, editorial decisions, authors' responses and recommendations are published on the website of the scientific community concerned (e.g. PCI Evolutionary Biology, PCI Ecology, PCI Paleontology...)

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