

PRE-PRINT PEER REVIEW

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Pre-print Peer Review (PPPR) is an online service to authors of scientific research articles. It offers, for a moderate fee, the possibility to obtain a report for a submitted manuscript, without that manuscript at the same time being considered for publication in a journal. The author can use the report in any non-peer reviewed open-access database as a proof of quality, independent of publication. The report may also be submitted along with the manuscript to any journal for publication or funding agency to accompany a grant proposal.

PPPR solves several shortcomings of the present peer review system and addresses the needs of two large target groups. If widely accepted, it is not only an innovation that benefits scientific research, but also a cost reduction to the present publishing process and an incentive for authors to use the publisher which provides the service.

1. Target groups

PPPR is aimed at two target groups.

First, established scientists, who find the current peer review process cumbersome or inadequate for their purposes.

Presently, peer review is part of the consideration of a manuscript for journal publication. Next to editing, peer review is the most important service of publishers to the readership. But for authors the most important service is the credibility of a journal reference that certifies peer review has taken place. The report obtained when a manuscript is submitted for publication however takes into account suitability for a specific journal (length, content, interest) and is not exclusively a statement about scientific quality. If a manuscript is rejected, the author has to go through the same procedure with the next journal, and the previously received reports are of no use. (Within one publishing company, some journals refer manuscripts with reports to each other, but this is the exception rather than the rule.)

For these reasons, in fields where non-peer reviewed open access databases are available (like for example the social sciences, mathematics, and physics) old-fashioned peer review is no longer the best possible option, yet it is still the best available option. The alternative of “open review,” online comments by peers, has been tried repeatedly - and failed repeatedly due to lack of participation. Open review is, at least at present, clearly not considered suitable, or worth the time, by the majority of scientists. It is in addition of questionable merit, since it opens the doors to a reinforcement of common social behaviors that can

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however be detrimental for science. Most importantly, the bulk of attention would be drawn to papers by researchers that are already well-known.

PPPR avoids the shortcomings of old-fashioned peer review while at the same time offering a smooth transition to a more innovative system. Authors receive a report independent of a manuscript's suitability for a specific journal, yet PPPR stays as close as possible to the standard peer review, thus preventing skepticism of the community. The report can be submitted along with the manuscript to a journal for publication, thus reducing an author's need to iterate the review process. A journal's editors might still want to obtain their own report, addressing suitability for the specific journal, but if PPPR becomes increasingly accepted as a reliable, independent quality assessment, editors too could save time and effort. The report can also just be used without publication in a journal or to accompany a grant proposal, in that case it might be interesting even for papers that were already published in a journal.

Second, scientists who are either not (yet) established in a research field, or people who lack scientific credibility for some reason (e.g. lack an academic title in the field).

Besides scientists who venture into the difficult area of interdisciplinary research, this part of the target group includes what we may call "amateur scientists": People who have a deep passion for science that is not matched by knowledge. Presently, they often send their manuscripts unsolicited to researchers, or submit to journals just to be rejected by the editor without peer review. That is annoying for everyone involved, but it also shows the existence of a need that is presently not served. Few scientists are willing to spend time thinking about ideas that do not meet the standard they are used to. For the same reason, editors do not want to bother scientists who are also customers. That is understandable but unfortunate, both because feedback is an educational necessity, and also because some good ideas might be thrown out with the bathwater.

PPPR can solve these problems, by providing an interface (the Peerfinder) in which everybody, for a moderate fee, can submit a manuscript and offer a payment for a report. For this fee, a manuscript will be listed for a fixed duration (e.g. 6 months). Potential reviewers, who are signed up to the system, can then browse the list and decide if they are willing to provide a review for the offered amount. These reviewers could be aspiring scientists in a field, who may use PPPR both for practice as well as to earn some money on the side. This review process again should be as close as possible to the standard peer review process, for example by allowing for up to two resubmissions and then a final report.

It is important that reviewers in this part of PPPR should be rated for reliability and quality, and that the terms of agreement clearly state what the reviewer has to provide and what the author can expect. Reviewers can choose to remain anonymous, use a pseudonym, or their real name.

2. The report

The report on a manuscript contains a text part that addresses strengths and weaknesses of the scientific content and of the presentation, as well as a standardized rating in a few categories (e.g. technically sound, creative, clearly presented, etc). Optionally, the reviewer can include which journal the manuscript might be suitable for. One may be skeptic about the current trend to use standardized metrics to assess scientific success, but as a matter of

fact these metrics are increasingly being used. A standardized rating provided by PPPR will go well with this trend.

The final report is made available to the author online, on a website that is by the author's choice either publicly available or password restricted. The author can also ask for the report's website to be deleted, yet it has to be clear that the report will remain in the database. The way of the manuscript

It will be illustrative to track the way a manuscript would take in PPPR, see Figure.

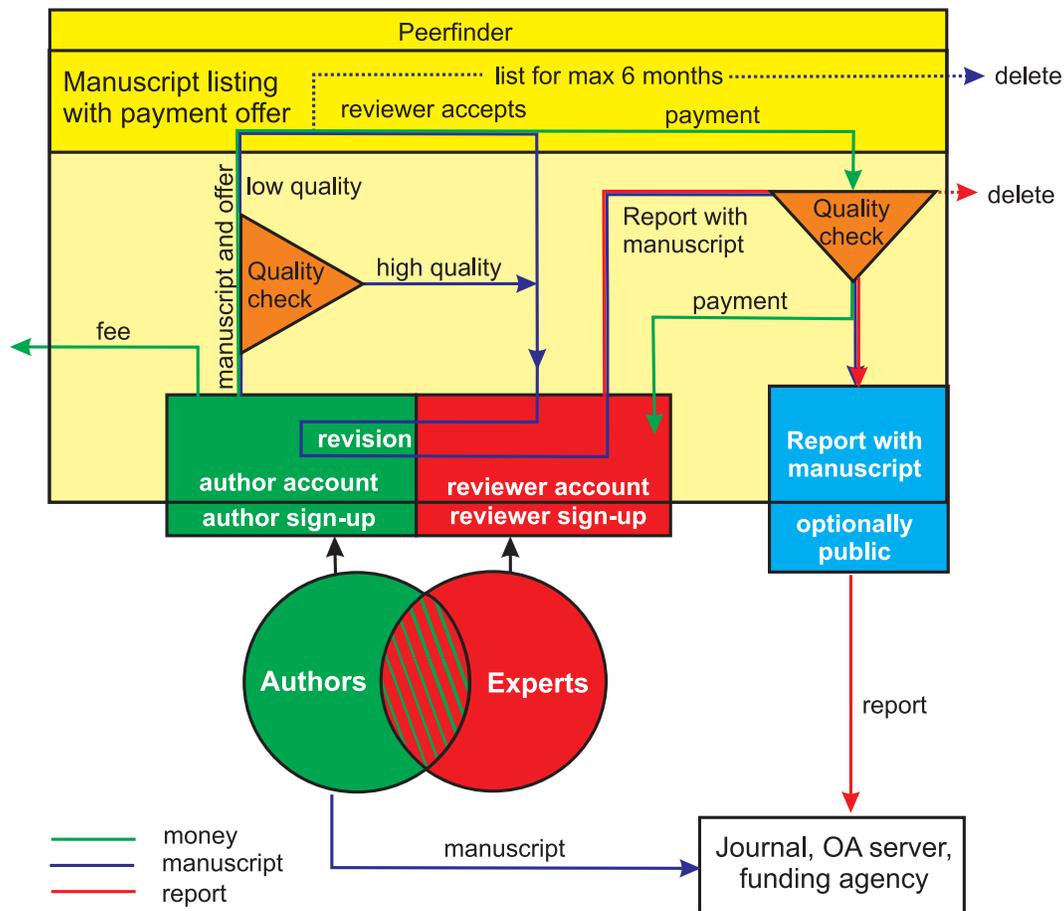


Figure 1: The way of a manuscript through pre-print peer review.

An author signs up and sets up a profile. He/she can then upload and submit a manuscript for review. Instead of uploading a file, he may also submit a reference to a journal (if the paper is already published) or an open access database that tracks manuscript versions. The format of the manuscript need not be tightly regulated since it will not get printed. Upon submission the author confirms that the content of the manuscript is his own and original work. He also adds a subject area and keywords to make the assignment of the editors easier. He may choose to directly submit the manuscript to the Peerfinder, otherwise it will be assigned by the editor to either the normal peer review process (papers that would be considered for publication) or to the Peerfinder (papers that would be rejected without

peer review). Let us first look at the way of a high quality paper.

The high quality paper gets assigned a reviewer (or several) and goes through the usual process of revision and resubmission. In that process, the reviewer can chose to remain anonymous, use a pseudonym or use his/her real name. At the end of the review, there is not a decision made about publication but a final report requested from the reviewer(s). The final version of the report is sent to the author who can decline it if the report violates the terms of service. In this case, the report and the manuscript are sent to the assigned editor for conflict resolution. If necessary, the editor may look for another reviewer. Ideally however, the editor need not intervene and the editor's only task is making the initial assignment of the manuscript. The final manuscript with the report is deposited on a website. The author can then decide whether he wants the report to be public, or password restricted. He may ask for the website to be deleted, yet the report as well as the manuscript will remain in the database. (To document the service has been delivered.) A low quality paper (that does not meet the scientific standard of a field) is submitted to the Peerfinder. The author is made aware of this assignment and can now make an offer for a report (or more than one report). The manuscript is now available for download by everybody who is signed up to the system as reviewer.

Potential reviewers sign up and can accept to report on a manuscript in Peerfinder for the offered amount. They have to choose a pseudonym, but their real name may remain hidden. To make sure the reviewer has sufficient knowledge, it is advisable that the first two reports are to be delivered without payment. Requirements for the final report are stated, most importantly that no scientifically invalid arguments are being made (e.g. ad hominem, ad populum, appeal to authority, just to name the most common ones). If omission of standard knowledge is pointed out, it should be accompanied by references to suitable literature. Reviewers can rate upon each other's reports and the reports can also be rated by the authors. (The Physics Stack Exchange¹ and the Physics Forums² have shown that physicists with expert knowledge are willing to answer questions even when unpaid.)

In the Peerfinder too, the manuscript can be revised a certain number of times and eventually a final report is requested. The author is sent the final report and has the option to decline it if it seems in conflict with the terms of service. If so, the editor has to intervene and clarify whether the reviewer has delivered a satisfactory report. If the report is satisfactory, the author's payment is transferred to the reviewer (for example via PayPal). The report is then treated in the same way as the report of a high quality paper.

The publicly available reports need not be organized in any particular form, since the aim is not to build another online database for manuscripts. If a 3rd party reference (link to journal or open access database) is available, the manuscript need not even be stored.

3. Finances

The single most important factor for the profitability of PPPR is the acceptance of reports by the community. For this reason, it is ideal if PPPR is run by an already established institution. Still, it will take time for scientists to overcome skepticism.

¹physics.stackexchange.com

²www.physicsforums.com

To test the potential of PPPR, a cost-free trial should be initiated, preferably for a community in which online services and pre-print sharing of manuscripts is already widely accepted. Given the leading role of the arXiv, the fields served by the arXiv are a good starting point. (This includes the parts of theoretical physics and mathematics that attract amateur scientists.) The trial phase is necessary because for Peerfinder to work, a sufficiently large number of reviewers need to have signed up and check the list regularly.

After the trial phase - provided it shows promise - authors pay a moderate service fee to submit a manuscript. This fee should be low enough so scientists would be able and willing to pay it privately even without having to touch institutional funding. One can also offer flatrates for institutions as incentives for adaption of the service. Taking into account that most scientists do not write many papers per year, and statistically most papers have several authors, a fee of approximately 25 Euro seems reasonable and will in the following be used as an estimate. (The fee may be waived for authors residing in low income countries. They do not normally constitute a statistically large fraction.)

To get PPPR started, a databased website is necessary, as well as marketing and publicity. Since the PPPR services do not require development of actually new software but just adaption of existing software, which requires an initial investment.

To run PPPR, technical assistance must be available, as well as editors whose tasks are mainly quality control and conflict resolution. Ideally, the role of the editor is only the assignment of the initial paper either to Peerfinder or to peers for review. Editors are recruited from the community that is being served and are paid for each manuscript that was guided from submission to completion. A working number may be 10 Euro per completed report.

For the trial phase, let us consider that we need a project manager and a technical assistant as full time staff, which would be expenses of about EUR 9,000/month. For that to come back in, one needs more than 600 submissions per month. At that rate, one would also have about 6000 Euro per months for the editors, so 6 editors that complete 100 each submissions per month would be paid with 1000 Euro each.

The monthly submission rate on the arXiv³ is presently about 6000. More than half of the submissions are in the areas mathematics, astrophysics, condensed matter, and high energy physics. Thus, if about one out of ten new arXiv papers is submitted to PPPR, the service would run at zero cost. This does not include authors that have not obtained an arXiv endorsement, some of which submit papers to an expat version of arXiv, called vixra⁴, that presently counts about 30 submissions per month. It also does not include older papers that an author might submit because they were not published or because they were published in a little known journal.

PPPR is clearly not a very profitable business on its own. But running close at the non-profit margin will contribute to the acceptance in the community.

Because of the benefits of PPPR for the scientific community at large, it is possible to apply for funding support with research agencies.

³arxiv.org/show_monthly_submissions

⁴vixra.org

4. Summary of Benefits

The main emphasis of PPPR is not on itself being profitable in the first place, but on reducing cost and effort in the present publication process, drawing upon new target groups, as well as providing a new service to a community that is tiring of the old-fashion peer review to the disadvantage of publishers. The community is served by reducing the time peer review (both for publication and proposals) takes up in scientists' schedules and by making the use of reports flexible. PPPR reduces cost and effort by avoiding unnecessary repeated peer review. New authors are drawn because PPPR can be easily integrated with journal publication within one publisher by forwarding a manuscript with report to a recommended journal. For these reasons, PPPR may attract public funding, but it is also of interest for commercial reasons.