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Note Article

Reviewing the review process: New Frontiers of Peer Review

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Abstract. This news article introduces a new COST Action entitled PEERE (TD1306), which stands for New Frontiers of Peer Review (PEERE). PEERE is a trans-domain proposal which brings together researchers from various different disciplines and science stakeholders for the purpose of reviewing the process of peer review. PEERE officially began in May 2014 and will end in May 2018. Thirty-one countries, including Malta, are currently participating in the Action. In order to set the context in which this COST Action was initiated, we first look very briefly at the history of the process of peer review and various models of peer review currently in use. We then share what this COST Action hopes to achieve.

sting of having a paper rejected, although these feelings can be somewhat mitigated if we feel that the paper has undergone an impartial peer-review process, and we are provided with good review comments that can help us to improve the paper for submission to the next journal on our list.

Of course, this is from our own viewpoint, as researchers. As researchers, what we sometimes forget to dwell on is the important “gatekeeper” function peer review can play (deciding which information “deserves” to be disseminated). Wrong or misleading information can have a huge impact on the daily life of people, from medical treatments to recovering from the economic crisis. Therefore, the correct functioning of the peer review process is in the interest of science and of society as a whole.

Although the need for some form of peer review (either pre- or post-publication) is acknowledged by most researchers, the system of peer review is far from perfect and there have been numerous high-profile cases of fraudulent publications that have passed the peer review process (Martin, 2012; Storbeck, 2011, July 7).

1 Introduction

As researchers, we are no doubt all too familiar with the feelings of euphoria associated with having a paper accepted for publication in a peer-reviewed journal, especially if the journal in question happens to be the top journal in our academic field, which is likely to be a journal with a high “impact factor”¹. Sadly, probably even the best among us would also have experienced the

port impact factor is a ratio between citations and recent citable items published. Thus, the impact factor of a journal is calculated by dividing the number of current year citations to the source items published in that journal during the previous two years. An Impact Factor of 1.0 means that, on average, the articles published one or two years ago have been cited one time. An Impact Factor of 2.5 means that, on average, the articles published one or two years ago have been cited two and a half times. <http://admin-apps.webofknowledge.com/JCR/help/h.impact.htm>

¹The “Impact Factor” is probably the most commonly accepted, if controversial, way of rating the quality of academic journals. It is a quantitative tool for ranking, evaluating, categorizing, and comparing journals. It is a measure of the frequency with which the “average article” in a journal has been cited in a particular year or period. The annual Journal Citation Re-

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Problems are frequently attributed to the social and subjective dimensions of the process (e.g. bias and conflict of interest; Lipworth, Kerridge, Carter & Little, 2011). Other common criticisms levied against the peer review process include unacceptable delays in publication, expense, inconsistencies, fraud/plagiarism, nepotism, and counter to innovation – and the list goes on!

2 What exactly is scientific peer review?

Peer review or refereeing is the process of subjecting an author's work, research, or ideas to the scrutiny of experts (peers) in the same field, traditionally, before the work is published in a journal.

In its most basic form, peer review is the evaluation of an author's manuscript by identified reviewers, who make recommendations to the journal's editor as to whether or not a manuscript should be accepted as is, revised prior to publication or rejected, based on the quality, originality and importance of the manuscript (Sense about Science, 2009). Peer review is one significant method by which research grants are allocated, papers published, academics promoted, and Nobel and other major prizes won (Smith, 2006).

Peer review concerns all of us. As aptly stated by The Publishers Association in response to the UK House of Commons Science and Technology Committee consultation on Peer review in scientific publications conducted in 2010–2012, peer review is “a duty and a skill, performed by researchers, for researchers. It is a system that has been developed by the academic community, for the academic community over centuries and it is established practice that professional scientists are prepared to engage in peer review as a service to the community at large and as a contribution to the progress of science” (The National Archives of the UK, 2011).

The first recorded use of peer review is ascribed to Ishaq bin Ali Al Rahwi (AD 854–931). In his book, *Ethics of the Physician*, Al Rahwi apparently encouraged doctors to keep contemporaneous notes on their patients, later to be reviewed by a jury of fellow physicians. Journal peer review followed much later, when Henry Oldenburg, editor of *Philosophical Transactions* of the Royal Society, adopted peer review in the seventeenth century (The National Archives of the UK, 2011). Since then, peer review has played an increasingly important role in scientific publishing: in 2008, 1.3 million learned articles were published in peer-reviewed journals. Peer review is now fundamental to the integration of new research findings into established knowledge, enabling other researchers to analyse or use findings and, in turn, society at large to access and interpret research claims (Sense about Science, 2009).

Several different types of peer review process are now available (see Box 1). It is an evolving process, with

continuous attempts being made to find better, more effective models of peer review. The peer review process has also been complicated by the increasing use of institutional repositories, self-archiving, data sharing, social media, and other tools. However, the underlying assumption in all situations is that, since peer review is based on human labour and judgement, it is unlikely that a perfect system can ever be found.

3 Why PEERE?

This COST Action aims to improve the peer review process, potentially increasing the credibility of science in Europe in an era of increasing scandals and public concern. The main objectives of the Action are given in Box 2.

In order to achieve these objectives, three working groups (WG) have been created. They will be working in the following areas:

- WG1: Theory, analysis and models of peer review (Analysing peer review by integrating qualitative and quantitative research and incorporating advanced computational and experimental investigation; Testing implications of different peer review models).
- WG2: Data sharing and testing (Establishing standards and appropriate Information and Communications Technology (ICT) applications to treat, manage and share data on peer review between stakeholders; Providing guidelines and protocols for data sharing; Developing quality and efficiency indicators and monitoring measures to evaluate the potential impact of new models).
- WG3: Research and implementation agenda (Defining and monitoring challenges and prospects for an evidence-based evolution of peer review; Leveraging existing resources and identifying new opportunities for collaboration and research).

4 Opportunities for Malta

As this is a new COST Action, Malta currently has only one representative on the Management Committee. The Action currently includes researchers from diverse disciplines such as computational sociology, economics, basic sciences, etc. Some members have experience as journal editors. Important stakeholders such as the publishers Elsevier, Springer and Wiley, and partners from the US, Canada and Brazil are also included. Whatever your research background, you may have ideas that can help to improve the process of peer review, which is (arguably) the cornerstone of science! If you are interested in joining this Action, please contact Prof. Janet Mifsud (janet.mifsud@um.edu.mt), COST Malta Country National Contact. More information on the Action is

available at: http://www.cost.eu/COST_Actions/tdp/TD1306 and from <http://peere.org/>.

Box 1: Types of peer review

“Single blind” peer review: The author’s name and institution is known to the reviewer, but not vice versa. This is the most common form of peer review, especially in the sciences.

“Double blind” peer review: This system is fully anonymised i.e. the authors are unaware of the identity of the reviewers, and vice versa. This is more common in the social sciences.

“Open” peer review: In which the authors’ and reviewers’ names are revealed to each other. This is not too common, but is used in some biomedical journals, such as BioMedCentral journals and the British Medical Journal (BMJ).

Post-peer review or post-publication peer review: Different models can be found under this title, for example, Review by formally invited reviewers, after publication of the un-reviewed article; Review by volunteer reviewers, after publication of the un-reviewed article; and Comments on blogs or third party sites, independent of any formal peer review that may have already occurred on the article. Post-publication peer review can be named or anonymous, and reviews can in some cases be written by uninvited reviewers who may not necessarily be literal “peers” in the field (Amsen, 2014).

Cascading peer review (or cascading reviews between linked journals): This is a system whereby a publishing house redirects rejected manuscripts to related journals that have lower rejection rates, in the same field. Advantages to the publisher are reduced cost and higher efficiency, while the advantages to the author is faster publishing (Davis, 2010).

Pre-print servers such as the arXiv repository of electronic preprints (<http://arxiv.org/>), where the e-prints are commented on by the community, and can later be submitted to a journal and published. Some of the benefits of the arXiv system are that it “allows the scientists to publish research quickly and get informal feedback and identify any weaknesses. This is then followed by formal peer review in a journal” (The National Archives of the UK, 2011).

The main objective of the Action is to improve efficiency, transparency and accountability of peer review through a trans-disciplinary, cross-sectorial collaboration. This is will be achieved through:

- analysing peer review by integrating qualitative and quantitative research and incorporating advanced computational and experimental investigation;
- testing implications of different peer review models (e.g., open vs. anonymous, pre vs. post publication) and different scientific publishing systems (e.g., open vs. subscription based publication systems) for the rigour and quality of peer review;
- discussing present reward structures, rules and measures and exploring new solutions to improve collaboration in all stages of the peer review process; and
- developing a coherent peer review framework (e.g. principles, guidelines, indicators and monitoring activities) for stakeholders that truly represents the complexity of research in various fields.

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Box 2: Objectives of PEERE

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