

Crowdsourcing Peer Review in the Digital Humanities?

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ABSTRACT

We propose an alternative approach to the standard peer review activity that aims to exploit the otherwise lost opinions of readers of publications which is called Readersourcing, originally proposed by Mizzaro [1]. Such an approach can be formalized by means of different models which share the same general principles. These models should be able to define a way, to measure the overall quality of a publication as well the reputation of a reader as an assessor; moreover, from these measures it should be possible to derive the reputation of a scholar as an author. We describe an ecosystem called Readersourcing 2.0 which provides an implementation for two Readersourcing models [2, 3] by outlining its goals and requirements. Readersourcing 2.0 will be used in the future to gather fresh data to analyze and validate.

KEYWORDS

Crowdsourcing, Peer Review, Scholarly Publishing.

1. INTRODUCTION

Peer review is at the basis of the scholarly publishing process, the main mechanism to spread scientific knowledge. In it, a scientific article written by some authors is judged and rated by colleagues of the same degree of competence.

Although peer review is a well-established and useful a priori mechanism to ensure the quality of scientific publications, it is not free from problems, related to the process itself and to the malicious behavior of some stakeholders. In some cases reviewers cannot correctly evaluate a publication, e.g., when the paper reports data from an experiment which is long and complex and, therefore, not replicable by the reviewer itself; thus, an act of faith (that the author is honest) is sometimes required [4]. According to a recent article published in *The Economist* [8] there are some journals where the peer review activity is not performed, in contrast with what stated by their publishers. This leads researchers and scholars to “inflate” the list of their publications with articles that, probably, would not pass the peer review filter. There are several discussions related to this phenomenon. One of the main causes (although it is not the only one) is to be found in the change of the business model that allows publishers to get a profit. In recent years those publishers have gone from monetization through the resale of subscriptions to readers to a payment request of a publication fee to the authors of articles. These articles can subsequently be read without any payment according to the open access model. This model, therefore, promotes the dissemination of knowledge but, at the same time, risks corrupting it. The article goes on by describing different malicious behaviors adopted by publishers of at least questionable periodicals to appear respectable and trustworthy when in the reality it is not like that at all. All this is also caused by the institutions of the scientific world which seem to worry less about where the financed research is published. Another issue is discussed by Mizzaro [1] who, also taking into account several of the flaws of peer review that are widely analyzed in the literature, conjectures that reviewers of scientific publications can be seen as a scarce resource which is being exhausted. To support such a thesis Mizzaro describes in detail ten different factors that contribute to it.

Our main goal in this paper is to start a discussion on exploiting Crowdsourcing techniques in the peer review activity, with a focus on the field of digital humanities, even if we are aware that this field may be characterized by further difficulties compared to others. This paper is structured as follows: we briefly describe an alternative approach to the standard peer review activity called Readersourcing (Section 2) along with the main features of its models (Section 3). We also introduce our Readersourcing 2.0 software ecosystem (Section 4), which allows to take advantage of this alternative approach. Section 5 concludes the paper.

2. THE READERSOURCING APPROACH

As a solution to the scarcity of reviewers, as well as to other issues of peer review, Mizzaro [1] proposes to take advantage of readers' opinions by outsourcing the peer review activity to the scholarly community and calls this approach *Readersourcing*, as a portmanteau for “crowdsourcing” and “readers”. As hypothesized by other researchers, it can be assumed that readers are a resource of which there is no shortage: they are many more than the reviewers, so if their opinions can be gathered, they might allow to rate publications quality. Although this might seem a radical solution, it is important to remark that: (i) the effectiveness of crowdsourcing has been demonstrated in several cases [9]; (ii) the usage of crowdsourcing in scholarly publishing is being proposed and analyzed for even more radical approaches, for example to outsource some steps of writing

of scientific publications [7]; and (iii) similar approaches, suggesting variants and changes to peer review including collaborative reviews and/or a more distributed peer review practice, have already been proposed in the past [5, 6].

A crucial aspect of the Readersourcing approach that must necessarily be addressed consists in providing a mechanism for which being a “good” reviewer is gratifying, in order to encourage readers to express “good” ratings. As a related issue, some stakeholder of the scholarly publishing process can have a malicious behavior. This is reported from multiple sources and it can be caused by different factors. In this paper we do not aim to provide an exhaustive description of all those behaviours and their causes, but some examples may be mentioned.

This approach is not free from problems itself (e.g., lobbies, lazy readers) [3]; although these need to be taken into consideration, we do not have the space to discuss them.

3. READERSOURCING MODELS

To outsource the peer review activity to readers, a model of some kind is useful. Different proposals [2, 3] are available in the literature, and share the same general principles. Every publication is characterized by one or more numerical rating, each one provided by a reader, and these ratings are the input data for such models. From these data the model should define a way to measure the overall quality of a publication as well as the reputation of a reader as an assessor; moreover, from these measures it should be possible to derive the reputation of a scholar as an author.

It is easy to understand that Readersourcing models need to define some specific components: (i) how to aggregate the individual ratings that the assessed entity (i.e., a publication) receives into a single index of quality; (ii) from that index, how to compute a single index of reputation for each assessor (i.e., reader); (iii) eventually, how to compute a single index of how much an author is “skilled”. Moreover, this aggregation must be carried out by taking into consideration that not all ratings are equal and that each of them has an intrinsic adequacy (i.e., a measure of how much truthful and unbiased it is). In other words, it has to be possible to distinguish adequate from inadequate ratings and, then, good from bad assessors and, again, skilled from unskilled authors. Readersourcing models face these issues by exploiting *co-determination algorithms*. In these algorithms the quality of the assessed entities (i.e., publications) is used to estimate the corresponding reputation/ability of the assessors (i.e., readers). A key point of this characterization is that it allows to exploit the Readersourcing approach as a pre-publication replacement or as a post-publication addition to standard peer review activity.

4. THE READERSOURCING 2.0 ECOSYSTEM

We are currently refining a software ecosystem called *Readersourcing 2.0*. Our ecosystem exploits modern ICT tools and complies with four main requirements: (i) to provide the reader with a way to rate a publication by expressing a numerical rating in a seamless and effortless way; (ii) to allow readers to review publications in a way which is independent from the used device (hardware or software); (iii) to be able to aggregate the ratings received by a publication according to different Readersourcing models; (iv) to be general, extensible, and easily adaptable to more models.

Our Readersourcing 2.0 ecosystem, currently in alpha release, is composed of three main applications. A first application allows readers to effectively rate the publications. A second one gathers and aggregates all the ratings given by readers. Those two applications are supported by a third one which has the task of carrying out some technical processing not described in this paper. Figure 1 shows part of the interface of the application used by readers to effectively rate publications within our ecosystem.

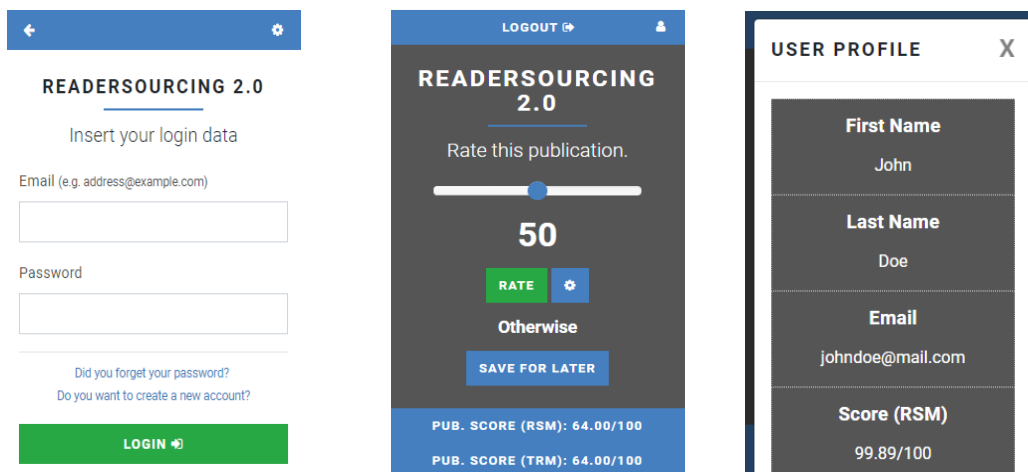


Figure 1: Part of the main user interface used by readers to rate publications within Readersourcing 2.0.

5. CONCLUSIONS

Crowdsourcing is a well-established technique which is used in various fields and proposals for its application to peer review already exist. We believe that the Readersourcing approach outlined in Sections 2 and implemented by our Readersourcing 2.0 ecosystem presented in Section 4 can be an interesting alternative, or supplement, to standard peer review activity since it exploits an otherwise lost resource, namely the opinions of readers which can provide a useful contribution. Even if in the field of digital humanities there may be some further specific difficulties due to the more subjective nature of publication quality, it will be interesting to validate our Readersourcing 2.0 ecosystem on gathered fresh data. The results of these analyses will be the subject of future work.

6. REFERENCES

- [1] S. Mizzaro, Readersourcing - A manifesto, *Journal of the American Society for Information Science and Technology*, vol. 63, no. 8, pp. 1666-1672, 2012.
- [2] L. De Alfaro and M. Faella, TrueReview: A Proposal for Post-Publication Peer Review (White Paper), *Computing Research Repository*, 2016.
- [3] S. Mizzaro, Quality Control in Scholarly Publishing: A New Proposal, *Journal of the American Society for Information Science and Technology*, vol. 54, no. 11, pp. 989-1005, 2003.
- [4] W. Y. Arms, What are the alternatives to peer review? *Quality Control in Scholarly Publishing on the Web*, *The Journal of Electronic Publishing*, vol. 8, no. 1, 2002.
- [5] J. Akst, I Hate Your Paper. Many say the peer review system is broken. Here's how some journals are trying to fix it, *The Scientist*, vol. 24, no. 8, p. 36+, 2010.
- [6] B. Meyers, Fixing the Process of Computer Science Refereeing, 2010. [Online]. Available: <https://cacm.acm.org/blogs/blog-cacm/100030-fixing-the-process-of-computer-science-refereeing/fulltext>.
- [7] Y. Sun, P. Cheng, S. Wang, H. Lyu, M. Lease, I. Marshall and B. C. Wallace, "Crowdsourcing Information Extraction for Biomedical Systematic Reviews," pp. 1-3, 2016.
- [8] The Economist, Some science journals that claim to peer review papers do not do so, *The Economist*, vol. 2018, no. 23.06, 6 2018.
- [9] J. Howe, The Rise of Crowdsourcing, *Wired Magazine*, vol. 14, no. 6, pp. 1-4, 2006.