Over the last decade, scientists, institutions, publishers and funding agencies have made tremendous strides in the way scientific research output is disseminated and accessed. With the increase of open-access journals, the increasing availability of articles on PubMed Central, arXiv.org and in general on the Internet, larger quantities of scientific information are available than ever before. However, the increasing interdisciplinary nature of research, the limited set of peer-reviewers assigned to an article, and the limited availability of expert reviewers has resulted in increased variability in the quality of available information. This has led to an even greater importance being placed on which journal publishes an article rather than on the content itself. The aim of this paper is to identify potential problems with the current review system and to propose an alternate open evaluation framework for post-publication peer review.

In an ideal world, science should be collaborative, open, repeatable and efficient. The intent of the current “peer review” system is to enhance the collaborative aspect of science by improving the quality of submitted manuscript through constructive judgment of one’s peers. However, given the massive influx of articles and limited time of reviewers, there is a tremendous pressure to retain only the very “best” for a given journal. We propose that in this technological age with instant access to information and social networks, scientific publishing can draw from the ideas, experience and the technology available for code review in open source projects.

First, reviews need not be restricted to a select few reviewers, but rather encourage a distributed review process. In any complex software project, there are specialists who focus on certain components of the software. However, code review is not limited to the specialists. Having multiple eyes look at the code improves it and also encourages reviewers themselves to write better code. Opening up scientific reviews to the community will ensure that the people most interested and knowledgeable in the topic review it. Second, there is a fair bit of open communication and discussion over code review before major code changes get accepted. Although certain journals have an interactive discussion before a paper is accepted, the discussion is still behind closed doors and limited to a small set of reviewers. The interdisciplinary papers today require more than two to three reviewers to adequately spot problems. Finally, having an open review and recording it ensures that there is a timestamp on the work that has been done, an acknowledgement of who performed the research and the possibility of capturing errors early on in the process.

It is in everybody’s scientific interest that every article is the best that it can be. Having an open review process allows for scientific discourse which appears to be significantly reduced in today’s publish or perish mentality. Such scientific discourse or contributions could itself be seen as a quantitative assessment of the worth of the research.