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Editorial

Reviewers: The ultimate resource for scientific publishing

“Did the stone age end because we ran out of stones?” this rhetorical question points out that however scarce physical resources may be, the real issue is not materials but immaterial resources such as knowledge, culture, technology, governance and the like. Without the technology for producing bronze from copper and tin ores, the Stone Age would not have been followed by the Bronze Age. Today, the know-how of the waste community broadens our physical resource base tremendously by enabling effective recycling schemes and thus prolonging the lifetime of resources.

What are the main resources in publishing, a highly immaterial task? First and foremost, it requires authors who submit manuscripts, second, editors to separate the good from the bad and assign referees, third, reviewers who judge the quality of the manuscripts, and fourth, publishers to manage the whole process by marketing and distributing the final products, the journals.

To date, this scheme has proved to be a reliable system to validate research, circulate the findings, and to advance scientific knowledge.

However, this consolidated system is marked by creaks and afflictions that are becoming increasingly evident throughout.

Authors

The publication of a paper should represent the completion of a journey of which originality, innovation, scientific relevance, and quality are essential characteristics. Accordingly, the career of a member of the academic community depends – among other things – on his or her capacity to publish successfully. The phrase “publish or perish” might be outdated and over the top, but contains a ring of truth.

In several areas of the world however, particularly those with a more recent scientific tradition, this need is assuming an increasingly paroxysmic outline (Cossu, 2013). In numerous countries, the number of publications and relevance of bibliometric indices are closely involved in obtaining a PhD, and gaining tenure and academic promotion, thus eliciting an intense rush to publish as many scientific articles as possible. As a consequence, thousands of PhD students and young scientists are striving to publish as extensively as they can.

More and more, this necessity produces and promotes unethical behaviors: the number of authors included on each paper is progressively increasing, listing authorships of convenience; citation relationships are being set up in which authors agree to cite each other on a mutual basis in order to increase their individual citation index; too many papers are “more of the same”, the fraction of truly novel papers published is small; the same manuscript

may be published in more than one journal, and plagiarism is more common than one might think.

Reviewers

Considering that some academic institutions expect you to publish two to three papers per year and assuming a rejection rate of two thirds of all papers submitted, an author would need to submit six to nine papers per year. These six to nine manuscripts are not just quite a burden for the author but also a challenge for the editors who have to find reviewers to judge the quality of these papers. If three reviewers are required per manuscript, it takes 18–27 reviewers to review the manuscripts that finally result in two to three papers published! Hence, annually approximately nine reviewers are needed to identify one successful printable manuscript. If the paper is written by two authors, this number is halved, although the pressure to be the first author may negate this. If we consider the set of authors as being identical with the set of reviewers, each author is required to review close to 20–30 manuscripts per year! Fortunately, some researchers publish less, and thus the need for reviewers is in reality a bit less.

It is in the primary interest of the academic community to have only first class, genuine papers to read, and not to lose time with low quality or second hand information. In order to ensure – and hopefully improve – the quality of publishing, excellent, impartial, and willing reviewers are of the utmost importance. The number of these reviewers is however rather limited. Assuming that a good review requires approximately half a day's work, it is reasonable to expect a member of the scientific community to review about 10 papers per year. But not 30, which leads to questionable behavior, with frequently hastily written and inaccurate reviews. Further, to obtain the appropriate reviewers, the editor managing the manuscript must invite three or more times the number of required reviewers, consequently delaying the entire peer review process.

Publishers

Many new publishing companies have been and continue to enter onto the market, changing the field of scientific dissemination of research results. In particular, the open access concept where authors are asked to pay for the publication of their manuscripts, giving the readers free access, has dramatically changed the market trend in the publishing business. Indeed, with the open access model the market and business opportunities have been transferred from libraries to the authors themselves. Readers appreciate the new free market, and authors enjoy getting control

over their work, particularly if science foundations pay the costs for open access. But there are two sides to the coin: easy gain for the publishers, and easy publication of papers for the authors may ultimately contribute to unethical or fraudulent actions. This is all facilitated by the fact that, compared to the past, the management of open-access journals is conducted entirely on line, thus implying a low business risk. As a consequence of the above, new journals are on the rise in all fields. On one hand, this opens up new opportunities for authors to submit their work. Particularly young and inexperienced authors are tempted to publish in new emerging journals, despite the fact that impact factors and other publication metrics are missing or quite low. Some of the new journals are merely commercially oriented, and do not serve an academic or professional society. Proper, qualified quality control is sometimes not in place. Hence, today's academic publishing world experiences severe problems such as: good peer reviewing eroding away, too many papers of little significance and low quality ("new wine in old wine skins"), publishing the same manuscript in more than one journal, too many self-citations, selection of reviewers based on suggestions (culminating in the case of a pharmacologist inventing referees and systematically reviewing his own manuscripts until his practice was discovered after 20 self-reviews); and others.

The main problem of the rapidly growing number of new journals is not that they sometimes use the same or very similar names and other unethical tricks, but the simple fact that we shall run out of reviewers. There are just not enough researchers around to judge all the manuscripts that are thrown on the market if the number of journals doubles. The result of this will be journals trying to snatch away reviewers, too many reviewing assignments, and a corresponding lack of quality in future papers. This cannot be the intention of the academic community. As stated above, we need excellence in publication in order to attract a large readership. This requires publishing smaller numbers of high quality papers comprising genuine novelties that go way beyond the present status quo.

A series of measures should be adopted for producing excellent publications that meet high scientific standards, some of which are listed below:

- Authors are encouraged to submit genuine, novel manuscripts of relevant new research work that has not been published previously. The number of authors on a manuscript should be restricted to those who have contributed substantially to the paper. It has become standard in reputable journals to include in the acknowledgements a clear description of the contributions of each individual author to the paper.
- Editors and reviewers should enforce a strict policy with regard to submissions that do not represent a significant progress in the field.
- Publishers must acknowledge that for the sake of academic progress, the number of manuscripts is of secondary importance compared to the originality and quality of the papers. This challenge will separate the wheat from the chaff because it conflicts with the economic interest of those journals that are solely commercially oriented. Quality criteria are required to evaluate the fast increasing number of publishing companies and new journals, particularly in the field of open access. Authors need guidance in selecting proper journals, particularly those aiming at the new journals that have not yet achieved an impact factor or other qualifications.
- The academic system is setting the pace by defining criteria for promotion of its members. It is important to realize that a quantitative approach of "papers per year" is prone to fail in the long run. Instead, academia has to develop and implement strong incentives for the production of high quality papers. If authors are evaluated by their originality, quality, and impact, readers will enjoy better and more relevant papers. Also, reviewer activity should be taken into account when assessing an academic career, e.g. for the purpose of promotion or tenure. Some journals keep excellent records of the performance of their reviewers. Such information could be instrumental for the introduction of a Reviewing Index.

If the above measures are implemented, papers will be read again by people other than the authors. This is in open contrast to what occurs today, where the publication process is often driven by authors, editors and publishers, and where readers are becoming a rather scarce minority (for the skeptics, read Martin Anderson, 1992). It really is time to rethink the way we manage academic information for the benefit of both authors and society.

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