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Incentives and More: Four Aspects that Every Innovation in Scholarly Communication Needs To Consider—Answer to "Kingsley/Kennan: Open access: The whipping Boy for Problems in Scholarly publishing"

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Abstract:

We discuss the scholarly publication model and the impact of the current technological change on knowledge and communication generally on the scholarly publication model. We propose that, rather than open access being the cause of the apparent and impending collapse of the scholarly publication industry, it is but one driver of a far wider change in scholarly publication. That change will have effects that extend well beyond the simple decision of whether a publication should be available by subscription or by one of the forms of open access. We also present several other changes to scholarly publication. The change is inevitable but its extent is as yet unclear.

Keywords:

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1 Introduction

In their paper, Kingsley and Kennan (2015) argue that open access (OA) publishing has received a lot of blame, such as that OA journals and publishers are predatory, that OA is too expensive, and that depositing scientific papers in OA repositories would result in the collapse of the scientific publishing system. The authors refute these accusations and point out that OA should not be made responsible as these charges are merely symptoms of the underlying publication system’s failures. After presenting their arguments, they point out some topics that the scientific community should be discussing instead of blaming OA as the scapegoat. Overall, they present a helpful summary of the ongoing discussion around OA. However, we think one important point is still missing in the discussion about OA. We address this point first. Even more fundamental, we then add four points every innovation in the system of scholarly communi¬ca¬tion needs to consider. We conclude our response with a short summary, which includes an interesting predicament.

2 Gold Open Access Might Create the Wrong Incentives

Kingsley and Kennan (2015) emphasize that OA should not be blamed for the existing scientific publishing system’s shortcomings. We agree. However, what positive changes did OA exactly have on the system of scholarly communication? Scientists are reluctant to deposit their research in green OA repositories, OA did not make the whole system less expensive, and the peer review process is still under scrutinization. In other words, OA has just created another avenue for publishing one’s research yet still makes it necessary for researchers to read and for libraries to pay for existing journals that are not or only partially OA. Kingsley and Kennan are right that gold OA on its own does not cause OA journals to accept papers of dubious quality, but it does incentivize for-profit journals to perform no or only a superficial peer review. As we argue, when in doubt, a gold OA for-profit journal would be more probable than a subscription-based journal to accept a manuscript of borderline quality if the journal’s survival is dependent on the number of accepted manuscripts. Therefore, gold OA journals whose existence is tied to and dependent on the number of accepted papers are indeed a potential threat to quality in scientific research. Therefore, one should be critical of gold OA journals that are run by for-profit organizations and that incur paper processing charges. We are also not sure whether the fact that dubious OA journals seem to attract a sufficient number of submissions can really be explained by a lack of “literacy about the scholarly communication process” or whether it is an expression of how desperate the prevailing “publish or perish” system has made us: that it is more important to have another publication on one’s curriculum vitae than having one’s research verified properly.

3 Scholarly Communication is More than Distribution

We now discuss four fundamental points regarding scholarly communication. We begin by asking what constitutes the main building blocks of the scholarly communication system. As we state above, we agree that OA cannot be blamed for any of the real problems of the existing system; however, due to its limited scope, OA cannot effect any substantial changes either. One can perceive the pre-OA system of scholarly communication as three interoperating subsystems: the production system, where scientists submit manuscripts to a journal and the manuscripts are selected and revised based on the feedback of editors and peer reviewers; the distribution system, where, in the case of electronic publications, scientists can download to the publishers’ journals; and the related financing system, where libraries purchase the access rights for a publisher’s journals. If one considers the changes introduced through OA, one will find that OA has only affected the distribution system and some parts of the financing system: regarding the distribution system, green OA journals permit authors to self-deposit their work, and gold OA journals make work freely available on their webpage; regarding the financing system, the authors themselves, or rather the authors’ institutions or funding bodies, now pay to make gold OA research available. The production system, on the other hand, especially the process of quality assurance as practiced through the peer review system, has been left unaffected by OA. In this aspect, we see one important reason why OA has failed to effect more fundamental changes in the system of scholarly communication because it has, in general terms, just created another distribution channel for scientific work.

4 Scholarly Communication Needs to Ensure the Quality of Published Results

The increase in scientific output reflected by the rising number of OA journals puts even more pressure on the peer review system, which, although central to the institution of science, has been criticized as "ineffective, slow, and expensive" (Tite & Schroter, 2007). Although OA has made the access to scientific research more open, it has not systematically opened up the peer review process to make it more inclusive. As Kingsley and Kennan (2015) mention, open peer review and open peer commentary can increase the pool of potential reviewers to the whole population of scientists. We like to suggest two other approaches that might improve the effectiveness of the peer review process and make it more scalable to cope with an increasing number of submissions. First, we propose that intelligent algorithms and appropriate data structures, embedded in electronic journal submission and tracking systems, that are able to provide support for peer reviewing manuscripts. Algorithms could automatically point out potential issues with a paper, some of which are: has supporting data been submitted? Does the data seem to have been manipulated? Are all indicators reported that are relevant to an analysis? Have substantial parts of the paper already been published before? Has the dataset been used for another paper? Does the paper reference papers or studies that have later been retracted? Are there any potential conflicts of interest? Such automatic checks could substantially free up reviewers' resources and conduct certain checks reliably with consistent quality. Second, this approach would benefit from discussing the minimum standards that a scientific paper has to fulfill to be considered scientifically sound, which Seglen (1997, p. 502) has emphasized: "Much can be done, however, to improve and standardize the principles, procedures, and criteria used in evaluation, and the scientific community would be well served if efforts could be concentrated on this". By establishing criteria for research's quality, scientists would have a yardstick against which to hold both OA and traditional journals accountable.

5 Scholarly Communication should Reduce Scientists' information Overload

In times when scientific journals were solely print journals, there were physical restrictions regarding the number of pages and how many papers they could publish. With the rise of the Internet and the emergence of new OA journals that are usually only Web-based, scientists now face an unprecedented amount of publications that could be of potential importance and relevance. Even before OA's emergence, scientists' faced the challenge of selecting what papers to read, and this challenge has grown with every new journal on the market. A more open form of scientific publishing, which implicitly takes the perspective of the scientists as a "producer" of research outputs, has to consider that a scientist is at the same time a "consumer" (i.e. reader) of scientific research. Although the prestige and the impact factor of a journal provide guidance to some extent, research has shown that the prestige and impact factor of a journal are not good at predicting the impact and relevance of an individual paper. With a growing number of journals, the likelihood of missing an "important" paper that is not published in a high-profile one increases. However, it is difficult to judge the importance of an individual paper in advance because the common measure of impact, the number of citations, takes some time to build up. Different altmetrics (Priem, Taraborelli, Groth, & Neylon, 2010) have been proposed that assess the importance of research at the level of individual papers. Research has shown that the number of a publication's downloads (Brody, Harnad, & Carr, 2006), tweets (Eysenbach, 2011), or indicators in other social Web services (Thelwall, Haustein, Larivière, & Sugimoto, 2013) correlate with the number of a publication's citations. Although clearly more research is needed in this area, the findings indicate the appropriateness of such early indicators in assessing an individual piece of research's impact. Another approach of pointing out important papers that may have not appeared in "top journals" is already practiced by the "Faculty of 1000" (Hunter, 2012). In its offering "F1000Prime", scientists in the biological and medical field evaluate and recommend papers that have already been published. Papers are also tagged by criteria such as "good for teaching" or "refutation". In addition, "hidden jewels" are pointed out: interesting papers that appeared in specialist journals that a scientist might have missed otherwise (Faculty of 1000, n.d.). Services like these, which can be regarded as complementary and from a short-term perspective, may be more effective than our first suggestion, can serve as a filter to deal with an increasing number of publications and relieve scientists of the pressure to read as many papers as possible.

6 Scholarly Communication Needs to be Aligned with Appropriate Reward Structures

Of course, the system of scholarly communication's main purpose is to advance science and add to society's stock of knowledge. However, this system also builds on the mechanism that rewards scientists who are the first to publish scientific results: both the number of publications and citations are the best predictors of scientists successfully seeking promotion, tenure, or funding (Squazzoni, Bravo, & Takács, 2013; Stephan, 1996). This reward system has also contributed to the so-called system of "publish or perish". However, not all publications are created equal in the existing system. In many disciplines, the system of scholarly communication has developed a tiered system of journals, and scientists reap reputational gains especially by publishing in the field's "top journals", which would be the Senior Scholars' basket of eight journals (http://www.vvenkatesh.com/isranking) in information systems research. As long as publishing in these journals can be regarded as one of highest academic accolades, OA will continue to make scientific publishing more expensive rather than cheaper because it just adds more publication outlets on top of the existing ones without replacing any of them. Many of the field's top journals, which are still not fully OA and are likely to be found in any research university's library, have become the ultimate goal for scientists to publish their work in. We doubt that scientists will refrain from submitting their best work to these outlets merely because they support the OA movement. As prior research has shown, many scientists are skeptical of securing promotion and tenure by publishing their findings in OA journals (Mann, von Walter, Hess, & Wigand, 2009). The benefits of submitting to a traditionally top journal seem to clearly outweigh the benefits of making the work openly available in a less prestigious journal. We are also doubtful that scientists will rationally weigh paper processing charges when deciding on which journal to submit their paper to. Or, to say it in economic terms, we assume many of the established top journals to have become quasi-monopolies, and the price elasticity of demand tends to be quite inelastic.

Scientists are also not rewarded to make their research available as green OA papers in institutional or subject-oriented online repositories or on personal websites. Otherwise, how can one explain that less than 20 percent of research papers, as Kingsley and Kennan (2015) point out, are actually deposited in repositories? We deem that scientists currently have no incentives to make their works available as green OA. Once a paper is accepted, there is a plethora of other publication projects waiting, and even uploading a version seems to be too much of an effort. Of course, there could be negative incentives in the form of institutions punishing scientists that do not post their research in OA repositories or by putting OA clauses into scientists' contracts. However, we deem that positive incentives might be more appropriate: we suggest an altmetric that calculates researchers' openness factor that would indicate what percentage of a scientist's research is available OA. This factor could also be the basis for institution-sponsored grants that reward OA publishing. Of course, other existing altmetrics should be drawn on that are likely to benefit from OA, such as the number of downloads or the perception of research in social media. In addition, libraries should make data on their expenses for scholarly journals available to their institutions' scientists. Librarians and scientists should then work together on a plan of how these costs can be reduced (e.g., by cancelling subscriptions to bundles that are no longer necessary or for journals that are openly available online). The savings should then be split evenly. For libraries, the savings should be used towards OA projects. For the researchers, the money should be spent on research-related expenses so that scientists benefit directly by helping their institutions cut library-related costs.

7 Conclusion and an Interesting Predicament

In summary, we start our response by pointing out that gold OA has indeed created a system that incentivizes for-profit gold OA publishers to take shortcuts when it comes to conducting thorough peer review. We then point out four areas that every innovation in the system of scholarly communication needs to address to have a fundamental impact. In detail, we point out that scholarly communication is more than mere distribution, that it needs to ensure the quality of published results, that it should reduce readers' information overload, and that it needs to be aligned with appropriate reward structures. The points that we raise make it obvious that fundamental changes in the system of scholarly communication cannot be merely technology based. Rather, these technological changes have to be combined with institutional changes at the level funding bodies, promotion and tenure committees, and the editorial boards of scientific journals. This situation results in an interesting predicament: while, in general, younger scientists generally tend to be more open and innovative regarding technological changes in the system of scholarly communication, it is more experienced scientists that are in charge at the institutional level. However, as younger scientists are dependent on the existing reward structures, we think that scientists

who have already managed to establish themselves in the scientific community are required to take the lead both by adopting innovations in scholarly communication and by being supportive of younger scientists who are courageous enough to pursue innovations that are off the established system of scholarly communication's beaten track.

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