OPEN ACCESS INITIATIVE AND ITS EFFECT ON THE QUALITY OF SCHOLARLY COMMUNICATION

Emelia A. O. Agyei and **Craig Pullen
*The, Balme Library,University of Ghana, Accra Ghana. **Email:**
eaoagyei@ug.edu.gh*

Craig Pullen
*607 Long Place Babylon, New York 11702-1212 USA. **Email:**
cpullen50@yahoo.com*

Abstract
The purpose of this paper is to provide an overview of how the Open Access (OA) Initiative affects the quality of scholarly literature. Content analysis was the methodology used to analyze information resources. Mostly peer-reviewed articles published between the years 2000-2006 that discuss the Open Access (OA) Movement and its effects on the quality of scholarly communication were used. The peer-review process was critically analyzed for the importance it plays in scholarly literature. The findings indicate that the present business model of the OA Initiative gives cause to doubt the quality of research articles published in the medium (OA). As much as advocates of the OA Movement do not approve of this opinion, they acknowledge this as a major challenge facing the movement.

Introduction

According to Hernon and Schwartz (2005), "the concept of a refereeing system for scholarly journals dates back to 1665 and the appearance of the Royal Society's *Philosophical Transactions of the Royal Society.* Since then, members of the Society Council have reviewed papers of such individuals as Isaac Newton, Charles Darwin, Michael Faraday, and William Herschel. Such a refereeing system has been widely adopted within and beyond the sciences".

Currently, the standard is that those knowledgeable about a given topic or problem being analyzed render judgment about the research. As explained by Hernon and Schwartz (2005) this includes the uniqueness of the study and its contribution to the professional literature; the adequacy of the research design and methodology; and the clarity and effectiveness of the written presentation. In a survey by Rowlands and Nicolas (2005) of 5,513 senior researchers, 96.2% of the respondents indicated that the aspect of peer-review is "very" or "quiet important". Seventy-seven percent (77%) of the respondents agreed that reviewers' comments were helpful in their last publication paper, which improved their work.

Nevertheless, Harnad (2000) had noted certain flaws about the peer-review process; he asserted that they could fail to be sufficiently expert, informed, conscientious or fair. Harnad (2000) was also of the view that current scholarly communication review process is too rigid as it works against the expression of new ideas and favors the publication of papers originating from authors in the more prestigious institutions, causing delays in publication.

In the survey by Rowlands and Nicoholas (2005) cited above, in as much as respondents support the peer-review process, their comments indicate that all is not well and that there is widespread dissatisfaction. Respondents complained about the time reviewers take over manuscripts, the evident lack of care they often exhibit, sometimes even doubting their qualifications for the task. Many critics also claim that peer-review is conservative or at least not receptive to new ideas and approaches (Hernon and Schwartz, 2005). However, in the view of Solomon, Hay and Scardin (2006) peer-review is by far the most appropriate mechanism to control scholarly literature.

Overview of Open Access (OA)
The Open Access (OA) Movement started as a response to the rising costs of scholarly journals, especially in the Science, Technology and Medicine (STM) disciplines. Institutions, especially research sponsors that adhere to the classic scholarly communication process are not only paying for the research but paying the publishers for the right to access the finished results. Both public and academic libraries have been bearing the brunt of escalating serial expenditures that have far exceeded that of employees' salaries by 200% (Kyrillidou and Young, 2000). Serial expenditures have risen on a steep curve surpassing library materials, operation costs and monographs expenditures.

OA has helped to focus attention on copyright law and research quality. In order for OA to reach its maximum potential, it must address the complexity of copyright issues (which is outside the scope of this research). Standard scholarly communication has forced the research author to transfer most of her or his right to the journal or publisher. In the past, authors accepted this sacrifice but it is however, being questioned in both peer-reviewed and non-peer-reviewed journals (Bjork, 2004).

If OA does not properly address the issue of quality, the movement will ultimately fail. One beneficial aspect of the subscription based scholarly cycle is that the journal ensures that the submitted research article is peer-reviewed (Hunter, 2005). This is a critical and necessary step to ensure not only the quality of the article but also the overall quality of the journal itself.

While the same pressures in developed countries such as the United States and the United Kingdom affect developing countries, their ability to benefit from OA is tempered by the poor state of their infrastructure. This and other issues related to scholarship in developing countries are discussed.

Open Access (OA) and Quality
A couple of declarations lay down very specific criteria for what OA entails. The Budapest Open Access Initiative (BOIA, 2001) states two primary vehicles for delivering OA to scholarly literature. These are Self-Archiving or Institutional Repository (where authors place their refereed articles in an open freely accessible online archive) and in OA Journals (where authors publish in OA journals that do not charge subscription or access fees to readers, nor invoke copyright restriction to material published). The Berlin declaration on OA to knowledge in the sciences and humanities launched October 22, 2003 defines OA as immediate, permanent, free online access to the full text of all refereed research journal articles (Berlin Declaration, 2003). Suber (2003), an advocate for OA, identifies pre and post print or both as components of self-archiving. The basis of OA is that scholarly literature (peer-reviewed) is disseminated legally (copyright compliant) using the appropriate technology (Internet) through a viable business model such as "author pay model" which in most cases is paid for by the sponsors. Johnson (2004) mentioned major societies that support the OA Movement including the Optical Society of America, which is one of the pioneers to launch OA in 1997.

The United States National Institute of Health (NIH) asked authors to voluntarily submit their research output (funded by the Institute) to PubMed Central (PMC) (*NIH Public Access Policy,* 2005). A related effort in the United Kingdom, the Wellcome Trust, a major research foundation also supports OA (Wellcome Trust Statement, 2006). The Wellcome Trust admonished that a copy of all manuscripts supported in part or in whole by the foundation should be deposited into PubMed after six months of publication in a peer-reviewed journal. The International Federation of Library Associations and Institutions (IFLA) in a statement on OA, supports collaborative initiatives to develop OA publishing models and facilities such as removal of contractual obstacles, for authors to make scholarly literature and research documentation available without charge (IFLA, 2004).

The Budapest Open Access Initiative (BOAI) focuses specifically on peer-review research literature (BOAI, 2006). Suber (2006, October 2) also claims OA compatibility with peer-review and that all major OA initiatives for scientific and scholarly literature insist on its importance. The Directory of Open Access Journals (DOAJ) that aims to be comprehensive and cover all OA scientific journals requires that all indexed journals exercise peer-review or editorial quality control (DOAJ, 2006). Additionally, the OA scope of definition covers peer-review journal articles and pre-prints which are put online prior to peer-review and are intended for peer-reviewed journals.
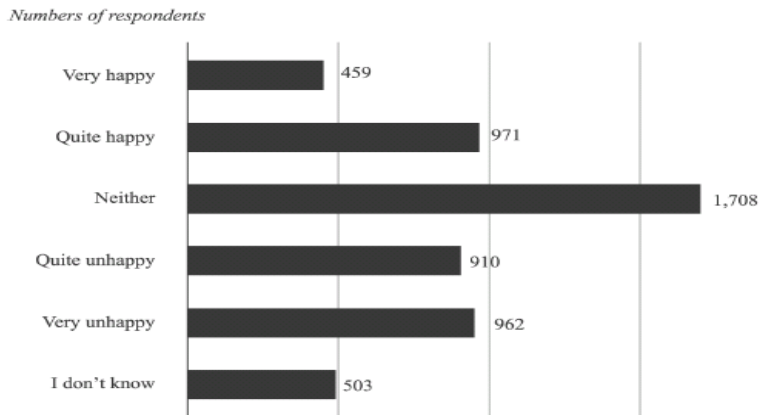
Hunter (2005) is of the view that OA journals might strive to operate systems of peer-review. That is with the author-pay model (where the author or the author's sponsor/institution pays for the publication of the article) the editor becomes financially beholden to the writer and would inevitably compromise the peer-review system. The perception is that OA journals might become the "repository of rejected papers from traditional hardcopy journals".

According to Suber (2006), quality and access are independent. He further explained that, articles first published in subscription journals and then deposited in an OA repository do not change quality. If access should affect quality, which is rare, then the OA repository would improve the quality of published research articles by promoting the productivity of the researcher, because OA makes research publications widely available, free of charge. The main factors that will affect journal quality would be the quality of authors, quality of editors and quality of referees. The author-pay model, from the *SPARC OA Newsletter* was assured not to unduly influence editors to accept or

reject manuscripts. The reason being that, it is very common for editors not to know if authors have requested a fee waive or not. The colorful vocabulary used to describe the two major OA options are the "gold" and "green" roads. This terminology emerged in a study in the United Kingdom under the name of Rights Metadata for Open Archiving (RoMEO) and now located within another project called Securing a Hybrid Environment for Research Preservation and Access(SHERPA) (*SHERPA/RoMEO,* 2006*)*.

The implication is that there is more room for improvement even after peer-review. Richardson (2005) also expressed the concern that the reader facing different versions of the same article at different stages of the publication process (including pre-prints and post-prints) might result in a real disincentive for readers of OA articles. The results of a survey conducted by Rowlands & Nicholas (2005) are shown in Figure 1. The chart reveals that there is no strong consensus among authors on the issue of allowing multiple versions of an article to be accessible. However, the chart shows there were slightly more authors who were unhappy with the issue than happy.

Fig. 1 Author Attitude to Version Control Issues

Numbers of respondents

Attitude	Number
Very happy	459
Quite happy	971
Neither	1,708
Quite unhappy	910
Very unhappy	962
I don't know	503

Note: n = 5,513

Source: Rowlands and Nicholas, 2005.

Guédon (2004) asserted that the "green" and "gold" strategies are generally treated as parallel approaches by advocates of each option. In addition, he entreats OA promoters to design strategies that will make use of both approaches simultaneously. By this means, researchers will know that collections such as pre-prints are incomplete; however, they will also know that they are rich and, therefore, quite valuable and useful.

Bank (2004) doubts the statement by Suber (2003) that the OA model removes the barrier of price and not the filter of quality control. The major concern is whether the current OA model would provide the financial resources needed to enable a typical association journal to conduct effective peer-review. Suber (2003) writes that, "the clerical operations are steadily being taken over by software, including open-source software, and the price of the infrastructure to support the donated editorial expertise is steadily decreasing". For Banks (2004) this is an underestimation of effective peer-review operation. Moreover, the software to prompt reviewers and authors does not eliminate the need for editorial assistance. Association and society journals have a rejection rate of 60-75%. If Public Library of Science (*PLoS)*, which charges authors $1,500 per published article, but doesn't charge for article submission, should embark on such rigorous peer-review, it makes one wonder how it would offset the cost of reviewing rejected manuscripts in its OA environment.

In a survey by Nicholas, Huntington and Rowlands (2005), OA was found to be a minority activity with only about one in ten of the authors surveyed saying they have published in OA journals. In addition, a majority of respondents (74%) declined publishing in OA journals. Harris (2005) criticized the study for being nebulous; that it only portrayed OA as journals containing papers that had not been peer-reviewed, or for which the peer-review was not stringent. According to him, this is not true and it is a challenge facing the OA movement. On the other hand, Sir Crispin Davis, the chief executive of *Reed Elsevier* has branded institutional repository, the "green road" to OA, as "daft" (Wray, 2004).

In a study by Hedlund, Gustassson and Bjork (2004) to find out about characteristics of OA journals, they found that the typical OA journal is mainly produced as a single journal by an editor or publisher and mostly funded by the editor's or publisher's institution. It also found that the proportion of OA journals in a comprehensive journal database like Ulrich was only 1.5%. This is an indication of the smaller number of articles published per year that are OA

journal articles, compared to articles in major scientific journals. However, the rate of acceptance, which is a qualitative measure, was 50%.

Online Publishing and Credibility

A close observation of the literature reveals that new journals, especially online publishing journals even when excellent from birth, take time for their prestige to catch up with their quality (Bjork, 2004). OA by its nature is an online publishing method. Clark and Scherlen (2005) with their experience in publishing an OA journal, *American Communication Journal (ACJ)* identified journal credibility as an audience construct which requires conscious efforts by publishers to build and maintain. An initial struggle is also needed to obtain quality submissions. Online journals have to both fit the traditional audience expectation for the academic journals as well as the innovative audience expectation for online materials. For this reason, the *ACJ* was designed for its issue's index page to look more like the index page of a print journal. An additional task includes regular checking of links, graphics, and other elements to help maintain a high level of professionalism.

Clark and Scherlen (2005) observed that in year 2000, most tenured faculty published exclusively in print journals. Anderson (2004) asserted that it is completely reasonable to expect a higher trash-to-treasure ratio in the online realm than in the print one, for it is easier to publish online than to publish in print. Anderson (2004) concluded that academia presently perceived online publication as less professionally impressive than print publication.

Indexing Services and Standards

Commercial indexing services are generally perceived as indexing high-quality publications (Bjork, 2004; Greco, Wharton, Estelami and Jones 2006; Hedlund, Gustafsson and Bjork, 2004; Lamb, 2004). In analyzing barriers to change, Bjork (2004) identified one of the major drawbacks of open access journals as that they are rarely indexed in commercial indexing services. Indexing journals in the commercial indexing services alone for the prestige could help market journals and their content. For this reason, journals indexed in these services could lead in attracting more and higher quality submissions of manuscripts (Bjork 2004).

Guédon (2001) asserted that scientific excellence has somewhat morphed into scientific elitism, where the academic community are not so much paying for information as they are paying for evaluation. According to him, the linking of articles of the world's scientific literature by commercial indexing services such as Institute of Scientific Information (ISI) has helped bring the citation-tracking problem down. This has collapsed the entire set of little specialty "core" into one big "scientific core". Unfortunately, the number of core journals has been confined to a small percentage of the world's scientific journals, which is growing at a very slow pace. By this means, publishers have "branded" the core journals which have become the "must have" titles for libraries at all cost, creating an inelastic demand for them (Lamb, 2004).

Since OA is still undergoing development, given a choice of publishing in an OA venture or by a well-recognized commercial publisher, authors will not forego publishing in *Nature* to publish in an OA venue (Bosch, 2005). Anderson (2004) stated categorically that an author knows s/he will gain more prestige publishing in *Nature* than in *PLoS*. *Nature* has almost 140 years of publishing history, by which it has built its reputation. Secondly, *Nature* being a primarily print journal has an advantage over *PLoS* as an only online journal.

Open Access repositories or the green road is seen as a basic listing of articles that do not cumulate the list to form structured information services, cataloging and description of the repositories. In addition, the repositories do not have clear information on their policies regarding tagging peer-reviewed/non peer-reviewed materials, etc. (*OpenDOAR or Directory of Open Access Repositories,* 2005).

"The academic reward system is designed to encourage scholarship, learning and the creation of new knowledge consistent with the mission of institutions of higher education" (Nowick and Jenda, 2004). Publications are one of the most tangible measures used in tenure and promotion decisions, as well as for merit raises (*Guidelines for appointments*, 2005). The quality of scholarly publications produced by faculty is measured by the quality of the journal. The tenure system naturally puts academics (and in particular the younger ones) in a situation where primary publishing of their best work in relatively unknown OA journals is a very low priority (Bjork, 2004).

Quality of OA Articles

Peer-review, which is generally accepted as the control measure of scientific and scholarly literature, is well observed in both OA and subscription based journals (Hunter, 2005 and Suber, 2003). Critics of OA, however, perceive flaws in the OA peer-review mechanism due to its author-pay business model. As explained, editors could unduly be influenced by authors in accepting low quality articles to offset cost of reviewing manuscripts (Banks, 2004). OA advocates acknowledge the issue of quality as a challenge that mostly serves as a barrier to the overall objective of OA (Bjork, 2004). According to Guédon (2001) the acclaimed issues of excellence of subscription journals may rather be elitism, where for financial gains, publishers have "branded" a few journals as "core" in scholarly communication.

OA journals that used the "gold" road are born digital, and with few exceptions, are solely online publications, which is a disadvantage by itself. Print journals are perceived as having a higher quality than online journals due to the difficulty or ease of publication in each medium respectively (Anderson, 2004).

The criteria for inclusion in a major indexing system favour long-standing journals that have acquired reputation over the years. OA journals are relatively new in the publication industry and may find it difficult to be indexed in the major indexing systems (Greco, Wharton, Estelami, and Jones 2006; Hedlund, Gustafsson and Bjork, 2004).

The "green" road to OA is criticized for a poor indexing service that does not catalogue articles, as well as not providing for other vital information (*OpenDOAR or Directory of Open Access Repositories,* 2005). The long established commercial publishing journals are more favoured than relatively new OA journals in the academic reward system (Bjork, 2004).

As OA journals exist as "online only" and are relatively new compared to other long-standing subscription based journals, they are at a definite disadvantage. Subscription journals have gained reputation, (a major factor for choosing where to publish), which has allowed them to command the best submissions (Rowlands and Nicholas, 2005). However, where publishers have allowed the green RoMEO archiving policy, the best articles published in subscription-based journals could be deposited in OA repositories.

Conclusion

The conclusion to the above debate revolves around the answers to the question that follows; what is the quality of OA articles compared to subscription based journals? There might not be any significant difference between the quality of OA and subscription based journals. However, there is a consensus among OA advocates that one challenge for the OA initiative is to correct the perception that OA is of lower quality than subscription based literature.

The publisher copyright policies and self-archiving indicated that majority of publishers (62%) allow some form of self-archiving (SHERPA/RoMEO, 2006). The implication is that, of all research papers published in subscription-based journals, 62% of them have been self-archived (green road) by their authors. This is equivalent in quality to subscription-based journals.

The recommendation is that, institutional repositories should go beyond the basic listing of research papers, by cumulating lists to a more structured information service, which will best describe the repositories to enhance quality. In addition, publishers and author sponsors are to be encouraged and enforced respectively so that articles published are deposited in Institutional Repositories either immediately or after a limited period.

The foregoing indicates quite clearly that the present status of OA publishing is not as valued in academia as conventional publishing. Moreover, the feasibility of the current OA business model (author-pay) is challenged for being an avenue for vanity publishing. Although OA has advantages such as providing free access to the public for research funded by their taxes, and for increasing research impact, OA should prove itself viable enough to realize this advantage.

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