Open Their Eyes: How the Open Access Movement has Changed the Scholarly Publishing World for Academics

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Introduction

The scholarly publishing world is somewhat secretive and mysterious. It is especially mysterious to those who exist outside of it, but even tenured college faculty members have been confused by the process and impact of publishing. For many years there have been specific expectations and procedures for conducting research in the sciences and humanities, and even more specific policies for writing, submitting, and having one's end product accepted. Scholars must also consider the role of publishing in their career advancement, from meeting tenure requirements to being considered for merit promotion. The value of various publishing venues is discipline-specific, which can be confusing in an ever-growing interdisciplinary world. Additionally, academic scholars have had to rely on traditional impact factors (citation counts) of various journals as indicators of how likely their research would be taken forward and cited in subsequent research.

To add to the confusion, the world of scholarly publishing is undergoing significant upheaval. Cassella and Calvi (2009) identified a large set of 'disruptive forces' impacting scholarly publishing: technological, economic, distributional, geographic, interdisciplinary, social forces, and above all, the critical mass of open access content." The Open Access (OA) movement specifically has been made possible by developing technologies that allow for digital delivery of documents. Peter Suber provided a comprehensive definition: "Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions. What makes it possible is the internet and the consent of the author or copyright-holder. " (Cornwell & Suber, 2008)

While providing free access to scholarship, some aspects of publishing in OA journals have proven challenging to scholars, while other aspects of OA journals provide compelling incentives as publishing venues. Librarians act on behalf of scholars; but in addition to assisting with resources, librarians can also provide information and eye-opening insights regarding the changing landscape of scholarly publishing.

The Advent of Scholarly Publishing

Scholarly publishing officially began in 1665 when the first issue of *Philosophical Transactions* from the Royal Society of London was printed. This journal holds the distinction of being the world's oldest scientific journal in continuous publication. The function of this landmark journal, as well as the whole of academic publishing, in fact, continues to be to inform interested readers of the latest scientific discoveries and researched scholarly thought. The early principles of how research was to be disseminated and the concept of peer review were established by this journal; therefore, they have a long heritage worthy of respect. ("Philosophical Transactions of the Royal Society of London - About," 2009)

Although the first OA journals came onto the scene as early as 1987, a significant struggle for acceptance by academic scholars has been underway. (Kiernan, 2000; Sweeney, 2001) OA journals have not yet been fully embraced as a means through which researchers can disseminate their findings as well as receive recognition for tenure and promotion. The struggle has been focused on two important elements of scholarly publishing: peer review and journal impact, both of which are also experiencing significant change.

Peer Review

Scholars around the world have long considered the presence of a rigorous peer review process to be an essential factor in journal quality and importance. Review by peers confirms that a) the research methods employed are appropriate to the project and are properly controlled, and b) conclusions made by the researcher are soundly supported by the actual research conducted. The presence of a peer review/referee policy sets the stage to define a journal's quality and reliability.

Electronic publishing of scholarly journals preceded the OA movement. Opinions on electronic publishing were at best neutral and in many cases negative as compared to print publications in the late

1990s. (Speier, Palmer, Wren, & Hahn, 1999) The report noted that "faculty respondents did not perceive the electronic journals to be of as high quality as their paper counterparts." (p. 541) Responses in this survey were, however, significantly more favorable towards established, well-respected print journals that had evolved to include an electronic format. Thus, it is clear that the opinion of electronic journals at that time was based on the perceived quality of the journal itself rather than the digital format *per se*. The role of publishing in peer reviewed/refereed publications to the tenure, promotion, and merit review process was given the highest importance by survey respondents (p. 541).

While established scholarly journals expanded their publications to include the digital realm as an additional access point for print and database subscription holders, the OA movement ushered in a bevy of journals which were published exclusively online and digital and were openly available without subscription. Due to the newness of OA journal publishing, it was often unclear whether these online, freely available journals were peer reviewed or refereed. Additionally, the peer review process opened up to a variety of models.

Open Access and Peer Review

In 2003 the Directory of Open Access Journals (DOAJ) was launched by Lund University with funding from the Open Society Institute (OSI) and the Scholarly Publishing and Academic Resources Coalition (SPARC) to "increase the visibility and ease of use of open access scientific journals, therefore promoting their increased usage and impact." ("Directory of Open Access Journals - About," 2009) DOAJ was implemented in two phases: the directory itself and then a comprehensive search system for article-level content discovery. At launch DOAJ contained information on 350 OA journals and defined them as "quality controlled scientific and scholarly electronic journals that are freely available on the web." ("Directory of Open Access Journals - About," 2009) By May 2006 DOAJ titles passed the 2,000 mark ("DOAJ Titles — Pass 2,000," 2006), and recently it was announced that DOAJ now includes 4,000 journals. (Bjornshauge & Johansson, 2009)

Given the neutral-to-negative perception of digital content mentioned previously, it is not surprising, however, that scholars might miss the fact that from the start DOAJ saw their mission as representing only quality controlled electronic journals. But what does 'quality controlled' mean in the digital world? Are OA journals peer reviewed or refereed? To determine whether DOAJ's expressed 'quality control' could be easily ascertained journal by journal, I conducted a review of DOAJ titles by academic discipline (see Appendix). Data was obtained by visiting each journal's website to locate information regarding a peer review process. Due to my own personal language barriers, only journal websites which had such information presented in English were included in the statistics. A review of the data shows that the extent to which the OA journals post peer review process and policy information varies by discipline, but overall approximately 70% of them do so, thus validating DOAJ's claim to representing quality controlled OA journals.

Over time DOAJ has become a standard for libraries wishing to provide access to OA journals accessible on the open internet due to its phenomenal growth. Many academic libraries program DOAJ into their link resolvers so that researchers have access to articles published in these OA journals alongside articles published in established print journals indexed by subscription databases. Providing access to OA journal articles in this manner not only serves as endorsement of their scholarly value, but also acts as promotion of their existence. Librarians could go a step further by encouraging scholars to consider publishing in the OA venue.

With peer review being such a significant concern for academics wishing to publish, it seems warranted that **all** OA journals clearly post the policies and processes which make them 'quality controlled,' including a description of what type of peer review process is used. Hodgkinson (2007) outlined various types of open review in practice:

· Traditional – before publishing, by expert

· Open – before publishing, by expert, reviews available for readers; after publishing, comments by readers allowed (i.e., BMJ)

· Open and permissive – before publishing, at least three reviews (whether positive or negative) of editorial board members, reviews available for readers; after publishing, comments by readers allowed (i.e., Biology Direct)

· Community – manuscript is public while discussed by community (and reviewed by invited reviewers), afterwards the final version is published (i.e., Journal of Interactive Media in Education, Atmospheric Chemistry and Physics)

· Permissive, post-publication commentary – minimal criteria for acceptance of paper; after publication scientific community comments and annotates articles (i.e., PloS ONE)

· No peer review, post-publication commentary (i.e., Nature Proceedings, Philica)

Given the vast disparity in control and review methods indicated by these policies, it becomes even more important for OA journals to specify how submitted materials are reviewed and juried. Hodgkinson further stated, "I think that if there is doubt in the integrity of peer review (and there is more and more doubt), this increases the imperative for exposing pre-publication review processes." It may at times be valid for scholars to question whether publishing in OA journals will represent their authority and the importance of their research to their peers and administrators, but this need not be the case if pre-publication information is comprehensive and available.

Impact Factor

Researchers have long hoped that their findings would have an effect on both current and future intellectual inquiry. The effect or 'impact' they seek is measured by the degree to which their work is seen, read, used, built-upon, cited, and applied by other researchers in the discipline. (Harnad, 2003, p. 139) A number of proprietary international indexes (i.e., ISI Web of Science) have evolved to report the impact of individual academic journals. These indexing organizations have developed citation tracking algorithms to calculate the 'impact factor' of various journals based on the number of times articles published therein are cited in subsequent published literature. The impact factor of a journal as a whole

will determine its prestige in comparison with other journals in the discipline, and thus a hierarchy is created based on desirability for researchers' submission of work. Additionally, it should be noted that the proprietary impact factor indexes are discipline-specific and are generally not available without paid subscription, thus adding to the mystery of scholarly publishing.

The proprietary indexes register and calculate citations for a rolling two year period after initial article publication; thus new journals, regardless of format, are inherently handicapped. This has made it extremely difficult for new journals, whether digital or print, to enter the high-stakes game of publishing important research by eminent academics. Since OA journals were all inherently new on the scholarly publishing scene early in the game, this more severely affected their ability to compete and become accepted by scholars based on traditional impact factors.

In regard to the impact factor of new OA journals, it is interesting to note that entire editorial boards of print journals resigned and established OA journals in protest against high prices and limited online access policies. Suber (2008) compiled a list of journal declarations of independence which began as early as 1989, and SPARC published "Declaring Independence" in 2001 to offer information and assistance to scientists wishing to exercise control of their journals. One would think that these experienced editorial boards would guarantee the high quality of any newly established OA journals immediately, but I'm unsure whether this was indeed the case.

New ways of looking at the research impact of OA journals have been and continue to be explored. (Armbruster, 2009; Banks & Dellavalle, 2008; Harnad & Brody, 2004; Saxby, Creaser, Nicholas, Huntington, & Jamali, 2006) Lawrence (2001) presented the first major findings regarding the increased impact effect of online journal articles (not specifically OA journals), and Harnad (2003) clearly explained that the true research impact of open access was vastly superior to that of the classic impact for print journals. Understanding that new research builds on existing research, as indeed all creative works build

on the past, the level of **access** to research is important in calculating the **impact** it can have. Harnad contended that the *limited access* of subscription-based print journals caused *limited research impact*. The complete cycle for print publications takes 12 to 18 months, not counting the length of time actually conducting research. Along with costly subscription requirements, the research-to-publication cycle plays a part in limiting the research impact of print journals. *Unlimited access*, Harnad further stated, leads to *greater research impact.* Compared to print journals, electronic and OA journals have a much shorter research-to-publication cycle, thus making findings available more quickly in addition to being freely available without costly subscription. Several studies reviewed by Harnad in 2003 indicated that for equivalent articles available by open-access (including self-archiving in OA repositories) compared to subscription access, the impact was increased on average 336%. More recently Bhat (2009) looked at the influence of peer review on citations in the OA environment and found that refereed articles were cited twice as often as (non-refereed) working papers.

An excellent resource for following the impact factors of scholarly publications in the sciences is maintained by The Open Citation Project located at http://opcit.eprints.org. ("The effect of open access and downloads ('hits') on citation impact: a bibliography of studies," 2009) Another excellent resource on impact factors is Eigenfactor.org. In addition to covering both natural and social sciences, thus being more interdisciplinary, Eigenfactor metrics take into account the entire network of scholarly publishing by weighing not only the number of citations but also where they come from (i.e., being cited in a prominent journal carries more weight than being cited in a less prominent journal). ("Eigenfactor.org - Ranking and mapping scientific journals," 2009) These resources should be promoted to faculty by academic libraries to open the eyes of scholars regarding the growing access to new and improved impact factors for journals, including OA journals.

Academic Tenure and Promotion

Academic tenure, promotion, and merit policies include an analysis of research, publication, and presentation as important indicators of faculty activity beyond course development and classroom instruction. In the past, educational institutions, especially research-based universities, have looked at which specific journals a scholar has been published in to determine merit. Over the years this practice has caused scholars to carefully select the journals to which they submit, often ruling out OA journals due to a perception of lesser quality which could negatively impact their bid for tenure or academic promotion.

Webber (2005) stated that "It was obvious to me that the universities' review procedures for tenure and promotion, or at least committee members' perceptions of the review procedures, were created during an era when print journals were the primary publication venue for refereed articles." (p. 8) Since electronic journals are forcing a reconceptualization of academic publishing, it may be time to determine exactly what aspects of traditional print publishing continue to warrant consideration for tenure and promotion, and then balance those aspects with the new possibilities inherent in digital publishing. Options available in electronic publications may allow for manuscripts to move beyond text to utilize more dynamic communication tools such as sound, video, and animation; hence increasing their value. Webber proposed a framework for assessing electronic journals and print journals that takes into account an article's level of academic quality together with its projected level of impact. (p. 9)

More recently Mercieca and Macauley (2008) stated that "academic promotion processes may be in conflict with increasing support for open access modes of publication," noting that promotion, tenure and funding allocations are often linked to publication in a few, leading, refereed journals. (p. 244) In an effort to expand the scope of academic publication, the Excellence in Research for Australia (ERA) initiative drafted a list of 19,533 peer reviewed journals with four tiers of quality rankings based on how each compares with other journals instead of its relevance or importance in a particular discipline. (p.

245) OA journals were not fully represented in the ERA list, but further work is being done to increase the number of OA journals on the list due to new understandings of the research impact of open access articles.

As stated earlier, journal impact factors have been used to identify whether a scholar has published in a prestigious venue, and this ranking can affect committee decisions on granting tenure and/or promotion. Banks and Dellavalle (2008) identified emerging alternatives to the traditional impact factor which could be used as new measures of scholarly merit for tenure and promotion. These alternatives can be applied to OA journals as well as traditional print publications, thus leveling the playing field for OA journals.

A growing number of major universities have committed to supporting OA publishing – the worldwide tally of Open Access mandatory policies reaching 100 with the University of Salford (UK) announcement in October 2009. ("100th Open Access Mandate Reached!," 2009) Additionally five major US universities have signed a compact to give institutional support for OA journals by underwriting journal processing fees. (Hadro, 2009) With the growth in administrative support for digital publishing, there is no doubt that scholars will take another look at the emerging OA venue. However, additional work is being done by the Modern Language Association to encourage tenure committees to be more open to scholarship that differs from the traditional norms. (Jaschik, 2009) Rutgers and other universities are beginning to rewrite their academic promotion policies to include equal weight to electronic publication ("Academic Reappointments/Promotions," 2009), which gives indication that eyes are beginning to be opened to the new role of electronic scholarship.

Conclusion

The perception of OA journals by scholars and academic institutions has developed into a growing, although still early and hesitant, acceptance. Librarians can play a crucial role in opening eyes to the expanding horizons publishing in Open Access journals can offer scholars. Educational efforts can include announcing the new and exciting advances in direct access to OA journal articles through library subscription database searches, providing information on peer review policies and the resulting quality control of OA journals, linking to emerging metrics for impact factors that take into consideration how increased access improves research impact, and encouraging new directions in administrative support for the free flow of information via OA repositories and electronic publishing which will surely affect tenure and promotion committee attitudes towards digital scholarship.

Appendix

DOAJ DIRECTORY OF OPEN ACCESS JOURNALS

Selected subjects:	Info in English	%	Peer-Review Policies Posted	%
Arts (31 journals)	22	71.0%	20	90.9%
Performing Arts (17 journals)	15	88.2%	7	46.7%
Visual Arts (7 journals)	4	57.1%	3	75.0%
Business and Management (93 journals)	70	75.3%	38	54.3%
General Works				
Multidisciplinary (57 journals)	41	71.9%	34	82.9%
Health Sciences				
Nursing (28 journals)	12	42.9%	11	91.7%
Public Health (127 journals)	98	77.2%	69	70.4%
History and Archaeology				
Archaeology (22 journals)	14	63.6%	5	35.7%
History (127 journals)	60	47.2%	40	66.7%
Languages and Literatures				
Languages and Literatures (158 journals)	80	50.6%	53	66.3%
Linguistics (115 journals)	70	60.9%	42	60.0%
Mathematics (139 journals)	128	92.1%	90	70.3%
Political Science (116 journals)	77	66.4%	47	61.0%
Sciences				
Genetics (34 journals)	33	97.1%	27	81.8%
Microbiology (35 journals)	30	85.7%	22	73.3%
Physiology (28 journals)	28	100.0%	23	82.1%
Biochemistry (34 journals)	28	82.4%	21	75.0%
Biotechnology (27 journals)	24	88.9%	20	83.3%
Chemistry (General) (70 journals)	59	84.3%	34	57.6%
Environmental Sciences (77 journals)	58	75.3%	46	79.3%
Social Sciences				
Education (299 journals)	182	60.9%	147	80.8%
Library and Information Science (96 journals)	40	41.7%	31	77.5%
Psychology (106 journals)	58	54.7%	43	74.1%
Sociology (76 journals)	39	51.3%	27	69.2%
	1270		900	70.9%

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