



Beyond Open Access: Open Publishing and the Future of Digital Scholarship

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This concise paper reviews the research and practice of open innovations in scholarly publishing, facilitated by the dynamics of open access, Web 2.0, and social media. Compared with traditional publisher-mediated system, open publishing not only provides a vast amount of openly accessible content, but also introduces a new communication system characterized by "publish then social filter". This paper aims to theorize the defining features of open publishing innovations and their impact on future digital scholarship. It also critically discusses the challenges for the uptake of open publishing in scholarly communication. It concludes by linking open publishing with a wider open knowledge communication system including open education and open science, from which future research suggestions are derived.

Keywords: open access, digital scholarship, academic publishing, Web 2.0, social media

The Rise of Open Publishing

With the rise of open access, Web 2.0, and social media, the scholarly publishing landscape has changed dramatically (Jankowski, 2013; Stewart, Procter et al., 2013). A growing number of digital publishing initiatives are approaching scholarly communication in new ways and incorporating dynamics of openness, networking, and collaboration into their most basic functions, for example, online preprints like Nature Proceedings and arXiv, social reference management sites like Mendeley and Zotero, scholarly blog sites such as Chemical Blogspace and ChemBark, scholarly wikis like Wikibooks and OpenWetWare, open textbook initiatives like Open Text Book Registry and Boundless, the reorganization of peer review in Science Paper Online, and the adoption of alternative metrics in PLoS.

The term "open publishing" has been used to define the emerging publishing system (Danezis and Laurie, 2010; Kahn, 2013; Scanlon, 2013). In this paper, the word "open" primarily refers to the openness of access that is inherent in these approaches, which provides unrestricted online access to scholarly content, not only refereed scholarship, but also a vast amount of informal publications. More importantly, the word "open" also highlights the fact that an open communication system, which connects authors, readers, and reviewers and enables collaboration among them, is fundamental to the emergent publishing initiatives (Nikam and Babu H., 2009; Brown, 2008). As Scanlon (2013) points out, scholarly publishing "may be subject to change in two ways, due to the impact of open access publishing and the prominence of Web 2.0 technologies and social media". Both are of fundamental difference from the traditional publishing system.

This short paper critically reviews the theoretical research on open publishing and the practice of open

initiatives in scholarly publishing, which is based on a three years' PhD research project. The major research methods included multiple case studies of open publishing platforms, in-depth interviews with stakeholders, and participant observation on users' participation in the initiatives. This paper briefly discusses some findings and links them with existing literature to theorize open publishing innovations. It particularly focuses on how open publishing widens open access scholarship and reorganizes quality control mechanisms, harnessing Web 2.0 affordances and social collaboration. The impact of open publishing on future digital scholarship as well as the major challenges is also discussed. This paper concludes by understanding open publishing in wider open education contexts and suggesting future research directions accordingly.

Widening Open Access

The open access movement was primarily stimulated by the coincidence of the publishing capabilities of the web with the ongoing crises in journal affordability (Panitch and Michalak, 2005), together with a greater interest by both funders and researchers in the greater visibility and impact of more accessible research outputs (Finch, 2012; Miller, 2009; Willinsky, 2006; Harnad et al., 2004).

Open access aims to make peer reviewed literature freely available to all "curious minds"¹⁷ while open publishing focuses on both refereed publications and informally published or pre-referencing content including working papers, drafts, lab data, scholarly blogs, teaching materials, reading notes, and so forth. As such, open publishing greatly expands the scope of knowledge that is publicly accessible and makes a significant portion of previously private knowledge exchanges visible to a wider academic public (Garvey & Griffith, 1967). Open publishing also widens the access into the whole life-circle of research from original ideas, lab data, through early draft, to the latest development, and even negative results; while traditional publishing only publishes final positive research outputs.

More importantly, open publishing encourages collaboration between authors and readers and their co-development and co-creation in research and publications. As such, the publications are not solid or frozen as in the traditional publishing system; instead, they are "liquid" and updatable (Casati, Giunchiglia et al., 2007). This is transforming publication into a dialogue in scholarly and learning communities "without mediation or obstacles" (Quirós & Gherab, 2009:63), in which all members involved are inspired by discussion, debate, and even criticism.

Borgman (2007) describes the meaning of open access as follows:

Open science and the open flow of information are essential to the exchange of ideas. Sharing knowledge is the social glue that holds academic communities together, and publication is the coin of the realm.

From this perspective, open publishing is an intrinsic expansion of open access scholarly publishing. Open publishing enlarges the overall scale of knowledge being shared, widens the access to the whole life circle of research, and makes scholarly publications open for collaboration. The emerging system suggests a transition of academic publishing from a system with priorities of authority, quality, and longevity of publications to one that values instant exchange of knowledge, interactive communication, and continuous updates and remix of content.

Publish then Social Filter

Open publishing normally employs "publish the social filter" models, which are sharply different from traditional approaches to scholarly publishing. Traditional models are "characterized by a process of selection, editing, printing and distribution of an author's content by an intermediary" (Brown, Griffiths et al. 2007:3). In such a "traditional" system, either print or digital, publishers play a dominant role as intermediaries in the publishing landscape and quality control is regarded as the most important value added by them (Thompson, 2005). However, this system is not free of controversies. Time lags between submission and dissemination slows down the overall efficiency of knowledge exchange (Nikam & Babu H., 2009). Publishers' gatekeeping, particularly minority-based pre-publication peer review is criticized for subjectivity and bias (Angell, 1993; King et al., 1997), discouraging innovation (Whitworth & Friedman, 2009), and inappropriate filtering (Hendler, 2009).

The "publish then social filter" models, on the contrary, allow researchers, teachers, students, or the general public, to freely publish and share scholarly content without traditional gatekeeping while harnessing readers'

¹⁷ <http://www.budapestopenaccessinitiative.org/read>

social collaboration and crowdsourcing to filter content and control quality. According to Correa, Hinsley et al. (2010), “being open to new experiences emerged as an important personality predictor of social media use”. In academic publishing world, a growing number of academics are open to the new experience of knowledge sharing and social collaboration.

Open publishing thus enables instant exchange of the latest research outputs and speeds up the overall communication of scholarly knowledge, particularly original research outputs. More importantly, a large amount of content that would have been considered unpublishable by traditional publishers is not only being made available, but the information that they contain is being used and built upon. The "publish then filter" models thus greatly expand the scale and scope of open access scholarly content as mentioned above. According to Cope (2009:17), “... the medium is not the whole message but ... the textual and social processes of representation nevertheless give modern knowledge its peculiar shape and form”. The dynamics and freedom of "publish then social filter" models are not only changing the publishing communication system, but also the content being published, and the overall system of publishing.

Ease of publishing does not mean that open initiatives necessarily neglect quality control or fail to value quality. Rather, working with a “publish then filter” model allows these initiatives to identify and reward quality in innovative new ways. Open publishing Initiatives like arXiv or PeerJ Preprint, employ a variety of light-touch gatekeeping before publication, e.g. preliminary editorial filtering, real name verification, or light peer review with only less than 30% rejection rate.¹⁸ Light-touch gate keeping improves the quality of publish-then-filter academic publishing by blocking unacceptably low quality content. However, the “social peer review” process that is a hallmark of these sites is carried out after content has been published and all readers and their social networks play an essential role in it. There are a variety of social filtering models. Social reference management is an increasingly important mechanism to socially distribute and filter scholarly content, harnessing readers' collaboration and crowdsourcing. Mendeley, Zotero, Connotea, and CiteULike are internationally well known platforms for social reference management. These platforms enable participative users to share, recommend, comment on, and remix scholarly publications in collaborative yet customised ways.

Based on a specialised social network of research peers with common interests and expertise, social reference management allows individual users to share personal libraries and exchange reviews, notes, and recommendations in order to find the most valuable references through the collective choices of their peers. As such, simply by looking at what peers are reading, you will be able to find the most valuable and relevant scholarly content for yourself; in the meantime, your choices also inspire your peers. Social reference management implements social filtering by crowdsourcing the inputs of readers and building a large-scale user-generated folksonomy, which is different from formal taxonomy and computational search engines. As Brown & Boulderstone (, 2008) argues, social referencing provides a more human-centric, efficient and trustworthy alternative for searching and selecting references.

The "publish then social filter" system challenges the traditional quality control, gatekeeping and certification of scholarly publishing. Open publishing believes that diversity of scholarship and an equal opportunity for every academic voice to be heard, are more important than filtering and restricting the content available for communication in advance and through minority peer review and publishers' gatekeeping processes. These emerging academic platforms trust their readers' capacity to judge the quality and value of academic content and draw on what James Surowiecki has called “the wisdom of crowds” to decide on what is the best work in scholarly contexts. As such, the emerging open system also follows the principle of “peer review”, but it tries to reorganize and democratize peer review by expanding the scale of “peers” and making it more transparent.

Challenges

Brown and Boulderstone (2008:302) believe “the expansion of user generated media (UGM) into scholarly publishing – the grass roots creation and dissemination of information without formal organizations structuring such interaction” will be the next big challenge for scholarly publishing communities. As open publishing leads to the “disintermediation by authors, editors and libraries” (Cuel et al., 2009) in traditional publishing value chain, some also predict that this will “remove the need for the intermediary services provided by publishers” (Earl, 2008:206).

However, much of the disruptive potential of the open architecture of the Internet remains latent in the real world of scholarly publishing. Despite the progress in open publishing, the fundamental functions of scholarly

¹⁸ <http://partiallyattended.com/2011/10/03/megajournals/>

publishing (the review and evaluation process, the precedence of authorship, the academic evaluation, and the dissemination and preservation of scientific knowledge) are less affected by the open initiatives (Campbell & Poppalardo, 2010; Camussone, Cuel & Ponte, 2011; Ponte & Simon, 2011). Ware (2009) argues that, though open technology “offers tremendous potential to enhance scholarly communication”, the absence of appropriate adoption reduces its suitability and viability.

Quality is a primary concern. Traditional “double blind” peer review is the most widely accepted means to assess and control the quality of scholarly content. Some value the power of networked communication, collective intelligence and crowdsourcing in post-publication quality control (Benkler, 2006; Potts, Hartley et al. 2008). However, the innovation of peer review harnessing social filtering mechanisms still needs to be improved and formalized in order to meet academic rigors. Ponte and Simon (2011:149) examine scholars’ attitudes toward “collaborative and Web 2.0 inspired” models, arguing that though “there is a strong positive attitude” the major challenge resides in the combination of open approaches with “robust and reliable quality control mechanisms”.

Open publishing is also challenging “scholarly legitimacy through credentialing, peer review, and citation metrics” (Maron & Smith, 2009). Legitimization of research claims has become a crucial function of traditional academic publishing, which works to formally establish a scholars’ claim to their contribution of new knowledge and an intellectual basis for scholarly prestige. As such, the number of refereed publications by the traditional academic publishing system and the impact factors of journals remain primary screening mechanisms for academic employment, appointments, grants and promotions (Katerattanakul, Han & Hong, 2003). Academics hold careerist concerns of “publish or perish” and hesitate to devote into open publishing initiatives which might not reward them practically (Ponte and Simon, 2011; Waldrop, 2008). This is a major challenge for the uptake of open publishing in scholarly communication. In other words, the development of open publishing requires a co-evolution of research impact assessments and relevant university policies. The emerging alternative metrics based on social filtering and the changing policy concerns like “assessing the wider benefits arising from university-based research”¹⁹ will help to build a supportive environment for open publishing in future.

Conclusion

Boyer’s model of scholarship includes four major categories: discovery, integration, application, and teaching, which also defines a broad domain of scholarly communication. The interactive, participative, and collaborative open publishing system is not only a medium for publication or a source of open educational resource, but an integral part of collaborative learning, open education, and open science. In the open and networked environments, they are all establishing a system based on “the co-production of knowledge goods and services” (Peters, 2010) among researchers, publishers, students, teachers, and the general public. The dynamics that drive evolutionary changes in scholarly publishing have little difference from those that transform education and science towards a more open and collaborative future. Likewise, they have similar challenges and barriers to overcome, for example, quality control in open knowledge communication, the certification/credentialing of open outputs (either open publications or open courses), the resistance from the traditional and the established institutes, and so forth. The viable innovations developed in one area are thus inspiring to others and a cooperative framework amongst them is expected to form in the near future.

As such, it will be meaningful both academically and practically to link open publishing with a wider open knowledge communication context and examine its role in the open futures of digital scholarship as well as scholarly communication. Possible research directions include two aspects. One is how to effectively use open publications and harness the dynamics of open publishing in learning and teaching, in particularly, how to address the quality issues and customize the open educational resources for specific education needs. The other is how to improve the viability and sustainability of open publishing in the wide context of digital scholarship instead of the scholarly publishing industry only. The interaction, convergence, and co-evolution between open publishing, collaborative learning, open education, and open science deserve more academic attention.

¹⁹ <http://apo.org.au/research/assessing-wider-benefits-arising-university-based-research>

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