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Technology Innovations in Publishing: New Directions in Academic and Cultural Communication

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Abstract: Over time, publishing technologies have not only influenced how people read, but also how knowledge is evaluated and authority is established. Social and mobile technologies represent relatively recent developments that have transformed the trade publishing world, but the extent to which they have affected academic publishing remains an open question. This article examines the rapid and disruptive transformations in the trade and digital publishing world, discusses how these developments have already intersected with the work of academics and considers how these changes might continue to transform the dissemination of academic research in the future.

Keywords: E-publishing, Academic Publishing, Cultural Communication

Introduction

The roles of authors, publishers, reviewers, and readers are changing and overlapping as alternatives to traditional publishing channels emerge in the digital world. Content creation, review and publication, dissemination and distribution, and response, all steps in the publication process, have new digitally based alternatives which are causing disruptions in the publishing world. Books and journals are no longer issued primarily in paper formats. Established trade and academic publishers aren’t the only means through which intellectual and creative works can be disseminated to a wide readership. Influential reviews take the form of long essays in Kirkus or the New York Times Book Review as well as anonymous website comments or tweets. Finally, many authors, both popular and academic, are employing various modes of self-publishing.

The academic system of tenure and promotion, tied to traditional academic publishing models, is inherently conservative. Nevertheless, some academics have been at the forefront of developing innovative channels of creation, dissemination, and review of their work. At the same time, innovations in digital publishing, particularly in the creation of application software for mobile devices, self-publishing, and alternative pricing models, continue to bring about enormous changes to the broader publishing landscape. In this article, the authors will provide examples of rapid and disruptive transformations in the trade and digital publishing world, discuss how these developments have already intersected with the work of academics and finally consider how these changes might continue to transform the dissemination of academic research in the future.

Peer Review and New Forms of Scholarship

For academics, publishing in peer-reviewed journals and with respected academic presses has long been a signifier of engagement and achievement and is typically a weighty factor in tenure and promotion decisions. Although it had much earlier antecedents, the process of peer review became widespread in academia in the mid twentieth century as a way to make evaluation of research more objective and less dependent upon the expertise and interests of a small editorial board. Today, it is often criticized as lacking transparency and slowing down the dissemination of new ideas (Townsend 2010). A 2002 issue of the Journal of the American Medical
Association (JAMA) dedicated to the question of peer review includes a study designed to evaluate its effectiveness. After analyzing the quality of papers that had undergone peer review, the authors argue that peer review lacks proper objectives and is used inconsistently across journals. They found that “the term peer review is used to describe a number of processes, most commonly gathering opinions from external experts, but also review by in-house editors, and that it may not always be possible to make a clear distinction between peer review and technical editing” (Jefferson et al, 2787-8). Writing over ten years ago, they were hopeful that “the growth of electronic publishing has increased the urgency of establishing an effective and efficient system for evaluating scientific information but may also offer opportunities to explore alternatives to the current peer-review system” (Jefferson et al, 2789). Although such a system has yet to be fully realized, several initiatives to improve scientific peer review are discussed below.

Despite its flaws, peer review continues to be viewed by academics as a reliable method of assessing the quality of scholarly research and writing. A 2007 study of the academic values and publishing practices of several disciplines concluded that:

Peer review is the coin of the realm. It is the value system supporting assessment and the perceived quality of research. It is commonly viewed as the primary mechanism through which research quality is nurtured, and through which research is made both effective and efficient. There was also a strong perception that peer review provides an excellent quality filter for the proliferating mass of scholarly information available on the Web. (Harley et al 2007)

Interestingly, this conclusion implies that while the web makes possible new and more transparent forms of evaluation, it also increases the perceived need for ways to filter and assess the information that it makes available.

Since academics rely on peer review as the tool for evaluating their work, they may be less likely to engage in forms of scholarship that less easily lends itself to traditional peer review. A later study by the Center for Studies in Higher Education found that faculty in academic continue to follow traditional publishing practices, preferring peer reviewed journals and academic presses to new modes of publishing and social media (Harley et al 2010, 3). The study also found that although most institutions counted non-text activities, such as contributing to data sets, creating websites, performances, etc. in tenure and promotion decisions, these forms of scholarly engagement were not valued as highly as traditional forms of publishing. Not surprisingly, the 2013 NMC Horizon Report points to the failure of academic institutions to adequately assess new, digital modes of authoring, publishing, and research as a major impediment to more fully engaging technology in scholarly pursuits:

Traditional approaches to scholarly evaluation such as citation-based metrics, for example, are often hard to apply to research that is disseminated or conducted via social media. New forms of peer review and approval, such as reader ratings, inclusion in and mention by influential blogs, tagging, incoming links, and retweeting, are arising from the natural actions of the global community of educators with increasingly relevant and interesting results. These forms of scholarly corroboration are not yet well understood by mainstream faculty and academic decision makers, creating a gap between what is possible and what is acceptable. (9)

Academics are no different from the general population in gravitating toward social media for finding and sharing information. However, since academic institutions have been slow to find ways to assess and evaluate digital scholarly activity, younger, less established academics may be reluctant to pursue digital scholarship.
Evaluating Scholarship 2.0

In the early years of the web, content was primarily delivered in a single direction—from institutional or commercial websites to readers. By the mid-2000’s Web 2.0, characterized by platforms that enabled non-programmers to publish their own content and mechanisms for users to comment, made it possible for nearly anyone to publish and disseminate their writing from a desktop computer or smartphone. Scholars have been important contributors to Web 2.0, establishing blogs and Twitter accounts for the purpose of communicating with colleagues in their disciplines. In a discussion of social media and academia, Jessie Daniels and Joe R. Feagin describe how the Internet has expanded the reach of academics:

> Academic bloggers have embraced Internet technologies in ways that broaden the scope of their research work beyond college walls and in ways reaching beyond old disciplinary silos. This is partly about reaching audiences in disparate geographic locations, but more importantly it is about connecting with multiple publics with a shared interest across institutional and other social boundaries. (2011)

Universities such as the City University of New York, have recognized the value of connecting faculty, staff, and students across institutions and have established academic social networks (for example, the Academic Commons at CUNY- http://commons.gc.cuny.edu/). Likewise, scholarly societies and academic publishers are present on Facebook and Twitter. Although tweeting, blogging, and posting to Facebook don’t fit into a traditional definition of scholarly communication, they can enhance and support traditional scholarship by increasing author visibility, providing a network for scholars across disciplines, and creating an opportunity for informal pre-publication review.

These networks support scholarship in emerging digital fields (digital humanities, media studies, digital music, etc.), but they do not begin to overcome obstacles faced by digital scholars attempting to gain validation within academia. Collaborative, digitally focused scholarship is often misunderstood or not fully appreciated by evaluators in academic institutions: “[T]he proper evaluation of work in new media by tenured and tenure-track academics lies in appreciation of collaborative development practices in the digital humanities and in formal recognition of the collective modes of authorship this activity often implies” (Nowviskie 2011, 170). In other fields, such as physics, pre-print repositories are gaining in importance over scholarly journals. Cope and Kalantzis argue that in these disciplines, “[i]nformal pre–publication is eroding the significance of the post–publication text as both authors and readers find the immediacy of open discipline–based repositories more powerful and relevant than eventual publication” (2009). Finally, as an alternative to assessing scholarly work through the impact-factor of a journal, which by definition places a premium on publishing articles in established journals, many digitally inclined scholars favor the idea of altmetrics, “—short for alternative metrics—aims to measure Web-driven scholarly interactions, such as how often research is tweeted, blogged about, or bookmarked” (Howard 2012). As new forms of scholarship emerge, and as the universe of scholarly publishing moves beyond traditional journals and monographs, it is clear that new methods of evaluation are necessary to judge the quality and value of scholarship across academic disciplines.
Academic Publishing Adapts and Innovates

The following examples attest to thriving, well-respected academic presses that adhere closely to traditional, peer review publication models, while incorporating social media practices, such as feedback and discussion. They stand out in their fields because of their alternative pricing models that include end user open access. E-publishing initiatives in the humanities, where book publishing predominates, and where tools in the digital humanities are opening up new avenues of scholarly investigation, are less likely to look like web-enhanced, open access online journals, and more likely to look like content management driven websites.

One of the newest initiatives in Science, Technology, Engineering, and Mathematics (STEM) publishing is PeerJ (https://peerj.com), a new open access journal in biology, medicine and health sciences. It continuously publishes articles which are open access. It generates revenue by asking authors to become lifetime members and pay a membership fee. Membership levels are based on the number of publications authors submit each year, and membership does not guarantee acceptance. In spring 2013, PeerJ plans to launch its pre-print service where authors can submit drafts or incomplete work to establish precedence and get feedback.

Perhaps the most established and well known open access, scientific journal, PLoS ONE (http://www.plosone.org), one of a group of Public Library of Science journals, began publication in 2006. A fee based, open access journal that publishes papers across the sciences. Its open approach to publication welcomes participation from many disciplines and its pricing structure is designed to encourage international submissions. PLoS ONE is rigorously peer reviewed and highly respected. It maintains metrics that gauge use, article sharing, and citations.

An alternative to academic journals as a means of communication for scholars, VIVO (http://vivoweb.org/), launched at Cornell University, is an online platform that enables scientists at participating institutions to share information and find others with similar research interests across disciplines. UPenn, which inaugurated VIVO in January 2013, describes it as “an open source semantic web platform that reveals research and scholarship through linked profiles of people and other research-related information.” None of these alternatives to traditional publishing in the sciences put in question peer review or the medium of the academic journal as a means of scholarly output. However, they are examples of how technology can connect scholars across countries, institutions and disciplines.

Academic literature in the humanities differs in many important ways from its scientific counterparts. Monograph literature, mostly from university presses, continues to be a significant form of scholarly communication. The examples taken from the humanities are more likely to take forms other than electronic journals. For example, Media Commons Press (http://mediacommons.futureofthebook.org/mcpress) is an e-publishing initiative that provides a publishing platform for article to book length works. It is open access and has a commenting feature. It has been used to receive comments about and publish the full length monograph Planned Obsolescence: Publishing, Technology and the Future of the Academy by Kathleen Fitzpatrick, which is also available in print at NYU Press, and a special, open peer reviewed issue of the journal Shakespeare Quarterly. These examples represent trials rather than full-blown alternatives to academic publishing.

Digital Humanities Now (http://digitalhumanitiesnow.org/) is an example of an online resource published outside of a university that evaluates and makes available scholarship in the digital humanities. Although it is not a traditional publisher, it is a hub of information and dissemination for academics and researchers. It also publishes the peer reviewed, open access Journal of Digital Humanities. Finally the academic commons, which are starting to proliferate across universities, although not publishing platforms, are tools that offer the potential for pre-publication review and post-publication comment and informal review (Gould, 442).These online publishing initiatives are highly respected in their fields and represent hybrid forms of publishing
that employ both peer review and new platforms, new pricing models, and accept new kinds of content beyond the journal article.

Although many academics tend to value the authority of established academic publishers, the following example of a medical journal, aimed at practitioners rather than academics, takes advantage of technology in the service of dissemination and review. Cureus (http://www.cureus.com/), launched in late 2012, aims to promote “medical research by offering tools that better serve and highlight the people who create it, resulting in better research, faster publication and easier access for everyone.” It is supported by an extensive editorial board from respected institutions worldwide. Moreover, authors can publish posters and articles are scored by registered users. It remains to be seen whether the most radical departures from more traditional forms of peer review will gain wide acceptance as a form of academic publishing. However, publishing models, both within and outside of academia, are reflecting evolving technology and reader expectations regarding access and feedback.

The role of scholarly publications as venues for knowledge creation and refinement can certainly be enhanced through technology that enables readers and researchers to interact. In their work on the potential for change in scholarly journals, Cope and Kalantzis (2009) describe a possible future for peer review that harnesses the potential of social media:

Reviews could be dialogical, with or without the reviewer’s identity declared, instead of the unidirectional finality of an accept/reject/rewrite judgment. The referee could be reviewed — by authors, or moderators, or other third-party referees, and their reviews weighted for their accumulated, community-ascribed value as a referee. And whether review texts and decision dialogues are on the public record or not, they should be open to independent audit for abuses of positional power.

While they present significant attempts to redefine traditional academic journal publishing, the initiatives described above fall short of this dynamic vision of comment and review. What follows is a discussion of developments in the non-academic publishing market, some of which may point to future directions in academic publishing and the expectations of future generations of readers.

**Born Digital: The Changing Nature of Publishing**

In the last decade, technology changed the way many readers accessed publications, moving textual works from print to online. Publishing is moving once again, this time in the direction of mobile apps (small applications designed to run on mobile devices, including smartphones and tablets). A recent report published by Lee Rainie and Maeve Duggan of the Pew Internet and American Life Project (2012) found that “[i]n the past year, the number of those who read e-books increased from 16% of all Americans ages 16 and older to 23%.” Likewise, e-book reader or tablet ownership among Americans has increased from 3% in 2010 to 33% in late 2012. When Apple Newsstand launched in October 2011, many magazine and newspaper publishers who offered their content through Newsstand, saw increases in their readerships. Both changes, first to the web, and now to mobile devices, have each had an impact on the culture of reading and writing, including scholarly works.

Another interesting development in publishing is the rise of self-published monographs. With hopes of finding new streams of revenue, traditional publishers are working more readily with authors who want to self-publish their work, often so that the author maintains more control over the publishing process (arguably at the expense of the “prestige” lost by not having work accepted by the traditional publishers). For example, the respected trade publishers such as Simon & Schuster has a self-publishing service called Archway Publishing which includes e-book formatting (with the EPUB format) and includes the option for children’s book authors to publish content for mobile apps. Daniels and Feagin argue that “[s]elf-publishing on the web and
other web-publishing mostly leaves out critical editorial revising and copyediting. For the billions of publications soon to be e-published, new software and vetting websites will be required to edit and polish publications for academic writers and to evaluate these new epublications for quality for academic readers” (2011). Although it may be some time before self-publishing affects the work of academics, it points to destabilization of a process that was previously controlled by publishers.

The publishing industry was permanently changed when the earliest web browsers brought text, hypertext, and images to unlimited numbers of readers and authors began to publish their work online. Web 2.0 enabled readers to become commenters and reviewers, and created platforms for online authorship. More recently, mobile technology has again transformed publishing as e-books and apps have made mobile reading easy and convenient. These changes, along with ability of authors to circumvent traditional barriers to publishing and disseminating their work, will inevitably affect the way academic work is read and published.

Future Directions for Digital Publications

In addition to ways of creating mobile versions of online publishing and dissemination platforms, new companies are emerging to make it easier for non-programmers to create “born mobile” content. Tactilize (http://tactilize.com/) describes itself as “the world’s first iPad self-publishing app and content network.” A TechCrunch article recognizes that creating content for mobile apps generally requires more technological expertise than writing for the web, and explains how “Tactilize wants to make it significantly easier for writers, photographers, videographers and anybody else who produces interesting content to feature – and monetize – their works on the iPad” (Lardinois, 2012). In their model, users create a content network consisting of “cards, each composed of text, video, photos that are created either using a web-based application or by using the Tactilize app. Their goal is to create a simple mobile publishing tool that takes advantage of multimedia capabilities of tablets and allows users to create content to share, sell, or embed in websites.

Micropublishing is a niche activity in the traditional print publishing world that used to be limited by the constraints of paper. For example, print zine and chapbooks, despite their limited but devoted readership, earned far too little per copy to make them profitable for large publishing companies. Distributing (by mail) small numbers of zines was time-consuming and expensive. The rise of mobile devices, and tablets in particular, are revitalizing this genre. In a 2012 article in Pando Daily, Hamish McKenzie describes a new app, The Periodical Co (http://theperi.co/) that enables “people to simultaneously push content to a website, a mobile website, and Apple’s Newsstand without any coding skills required”. This allows authors of small serial publications the ability to create and distribute mobile content. This may seem a far cry from activities of respected, established academic publishers, but it is possible that more widespread self-publishing, self-dissemination, and review and comment via social media may disrupt business as usual in academic publishing.

Although web design has established rules for navigation and usability, similar rules and best practices for content created expressly for mobile devices continues to evolve. In a November 2012 blog post, designer Craig Mod published a “Subcompact Manifesto” describing the qualities of subcompact publishing “tools and editorial ethos.” The manifesto attests to the fact that more mobile apps are being created for serial publications. Mod outlines essential characteristics of subcompact publishing tools: small issue size, small file sizes, digital-aware subscription prices, fluid publishing schedule, scrolling, clear navigation, HTML(ish) based, touching the open web. Although most of these characteristics relate to an app and its contents’ design, and in this way are specific to born-mobile serials, some characteristics align those in the born-print world.
As readers and writers spend more time with works derived from subcompact publishing, it is likely the characteristics they value in serial publications may change, or at minimum, become more flexible. It is also possible that readers of both app-based serials and print serials may start blending the criteria they use to evaluate each medium. Five key characteristics of micro-published serials: price, publishing schedule, comments and feedback, currency, and ease of access align in interesting ways academics determine the “value” of a publication. Moreover, as expectations around the experience of reading, the ability to provide and view feedback, and how content is made and disseminated change among readers in general, it is important to consider to what extent these changes will affect an academic audience, and ultimately whether the criteria regarding authority and value may change. Initiatives such as the Digital Humanities Now and VIVO, non-traditional publishing platforms with robust systems of comment and feedback, may provide clues.

For years, digital content created for general readers was generally freely available on the web. However, “the ‘content free-to-all’ era is slowly ending as pay walls cautiously go up” (Sabatier 2011, 221). For a long time, online subscription models were limited to websites of organizations that also offered paid print counterparts, including some popular magazines and newspapers. Likewise, library vendors have always charged institutional pricing for online content. For many years, free content or content that was subsidized by advertisements was not considered as authoritative by readers than content that came at a price. The question of price and authority is further complicated by the rise of open access publishing. Established academic publishers as well as new ventures such as PeerJ are coming up with new pricing models that makes content free for consumers.

One of the advantages of digital content is that it can be updated continuously. News websites and blogs are updated to reflect and reinforce the notion of a 24 hours news cycle. The formerly no cost New York Times website and countless other respected online publishers have gotten readers used to the idea that volumes and issues, and regular, known publication frequency no longer signal authority and reputation. In the world of academic publishing pre-print distribution has become widespread, and many scientists would rather disseminate the results of their research rather than way for the relatively time-consuming process of peer review to run its course.

Similarly, academic and news publishers have opened up their websites to feedback from their readership, and have adopted more dynamic forms of social media, like Twitter, which provides an important “current awareness” service to consumers of academic content. Authors of monographs rely on positive comments and sales rankings on sites like Amazon, or positive reviews on sites like Goodreads.com. Even library catalogues provide patrons the option to comment on books, thus giving authors and a community of readers yet another opportunity for feedback. Whereas in the traditional process of peer review, authors receive feedback from a limited number of peers asked to review their work, online publishing and social media enables the potential for feedback from peers, but also students, amateurs, and the general public. Whether this level of feedback turns out to be helpful or whether it blurs the line between quality and popularity remains an open question.

Although many tenets of Mod’s manifesto relate to design and ease of navigation, it also evokes values that continue to be important to authors in general—currency, ease of use, common-sense pricing. However, more than anything, what it points to is a sign of growing maturity in the self-publishing app world. People read using mobile devices more frequently, and it is becoming easier for authors to publish on their own. As a result, best practices are being established and expectations are being formed around self-publishing and mobile reading. For now, mobile reading tends to be informal or social. However, like everyone else, academics are increasingly communicating through social networks and sharing and reading information using mobile devices. For many reasons, values associated with mobile authorship and reading are
slow to permeate academic culture. However, ultimately, these shifts will have an impact on how all content, even academic content, is published, evaluated and disseminated.

**Conclusion: Academic Authority Revisited**

Digital publishing and mobile reading have already had far reaching impacts in the trade publishing marketplace. Academic publishing, although slower to change, is also being transformed by new publishing technologies, new pricing structures, and new expectations on the part of readers. Several successful academic publishing initiatives in the sciences and humanities exemplify new approaches to seriality, pricing, and presenting user feedback. However, academics continue to face challenges. For instance, as new forms of publishing open up opportunities for new modes of knowledge creation and dissemination, the last ten years have also witnessed a rapid consolidation of publishers in the humanities, academic and university presses accompanied by a huge increase in the number of academic journals published (Cope and Kalantzis 2009).

Although the culture of online publishing may be subtly changing what readers and researchers value in a publication, including how authority and prestige are measured, guidelines for tenure and promotion in academia generally continue to value academic monographs and peer-reviewed articles published in authoritative journals. Humanities scholars and other academics are starting to argue for establishing alternatives to traditional guidelines for evaluating the work of scholars involved in digital scholarship. However, even though most new faculty still consider publishing in peer-reviewed journals the surest way to tenure and promotion, some disciplines are tentatively moving in the direction of changing evaluation criteria to support alternative forms of publishing. Mobile reading, self-publishing, and ubiquitous user feedback, among other innovations, are changing habits and expectations of not only the general reading public, but also of students, researchers and other academics.
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