Innovation and Market Discipline in Scholarly Publishing

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Abstract

Background: In the face of extensive, developed-world library endorsement of open access (OA) and not-for-profit publishing, large commercial journal publishers are, paradoxically, increasing market share by means of economies of scale brought about in part by ownership concentration.

Analysis: While the market success of commercial journal publishers may benefit from ownership concentration, it is argued that market-oriented innovation has also contributed to their market success. A review of the very lively state of market-oriented innovation in journal publishing and usage metrics is undertaken and three innovation proposals derived from commercial magazines are introduced.

Conclusion and implications: The adoption of reader-focused features of commercial journals and the adaptation of the mobile-oriented strategy of commercial magazine publishers that respond to the modern digital information environment and mindset are recommended as strategically sound. Partnering with low-cost promoting, OA-oriented libraries may hobble the ability of not-for-profit journals to maximize their value to researchers.

Originality/value: The weakness of OA as a constraining publishing strategy is brought forward and compared to readership building through innovation focused on usage.

Keywords: Altmetrics; Author social networks; Commercial journal publishing; Concentration of ownership; Demand-driven publishing; Economies of scale in journal publishing; Library publishing; Market discipline; Mobile mindset; Monograph distillations; Not-for-profit journal publishing; Open access; Producer-driven publishing; Publishing innovation; Responsive design; Use of visual media

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Definition of terms

In this article, the term "commercial publishing" refers to organizations (most often large) that attempt to maximize their return on investment and/or exploit the intellectual property they control, usually in pursuit of continued notability and usage by readers. In contrast "not-for-profit/public organizations" refers to journals (often small) that focus on a) serving the need of authors for publication, and b) contributing to the record of knowledge by making research public. There is, of course, a middle ground in which the commercial sector might more heartily embrace contributing in a cost-effective manner to the record of knowledge, just as not-for-profit/public organizations might be more assiduous in their efforts to serve readers.

## Economies of scale in the market for scholarly journals

On June 25, 2015, digital information strategy consultant and former scholarly publisher Michael Clarke (2015) posted an analysis of scale dynamics mainly in scientific, technical, and medical (STM)-journal publishing on *Scholarly Kitchen*. His analysis of commercial journal publishing focuses on the advantageous horizontal economies of scale that large, multi-title publishers possess. They acquire such economies by producing large numbers of the same type of product (measured in journal titles) to more customers, and achieve horizontal economies most noticeably in production, infrastructure, dissemination, and institutional sales.

These same large commercial publishers, Clarke notes, are increasing their capture of vertical economies of scale, particularly when they partner with scholarly and scientific society publishers by virtue of the societies' position as trusted, community-based operations. Vertical economies focus on selling different products to the same customer, as depicted in Clarke's accompanying image (see Figure 1). This expansion of products emanating from a periodical title and offered for sale is well known in the commercial magazine world where it is called "brand enhancement."

Clarke argues that these net horizontal and vertical economies of the commercial publishers have reached the stage where professional societies (US and international) are finding they can increase their net revenues by partnering with large commercial publishers.

Figure 1 Horizontal and vertical economies of scale
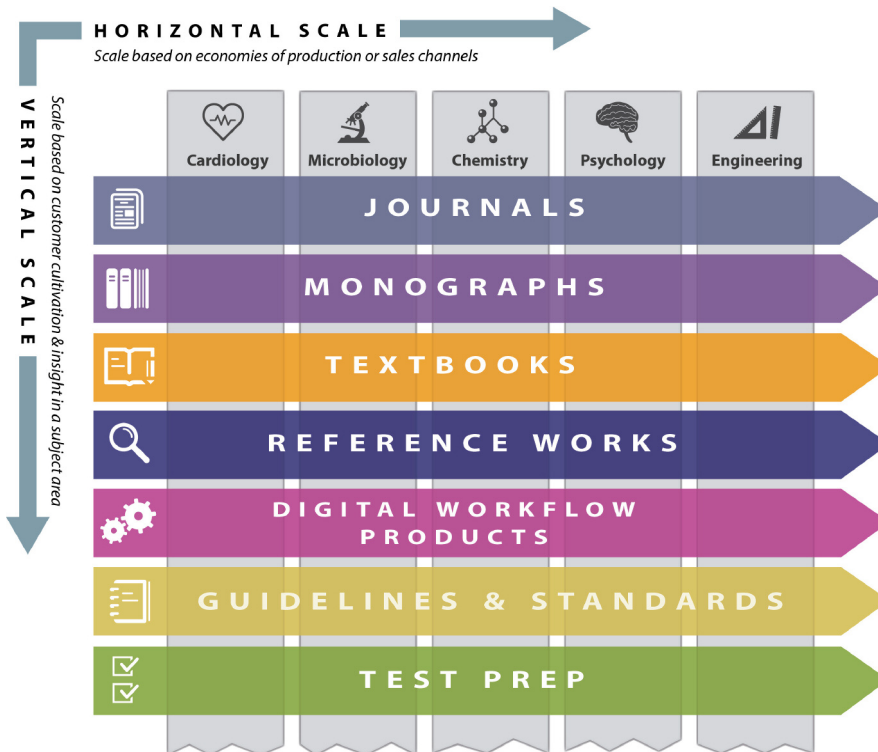
Source: Michael Clarke (2015), used with permission.

In his analysis, Clarke notes that recent increased ownership concentration, Wiley joining with Blackwell, for example, and Springer with Macmillan, is in part a response to libraries forming buying consortia. He also notes that the pursuit of comprehensive buys, AKA "Big Deals," are swallowing more, not less, of library budgets. These Big Deals shed cancellation vulnerability off to independent titles or smaller aggregations. While Big Deals may be on the wane, it is unlikely they will disappear given that groups of smaller not-for-profit titles, such as BioOne, GeoScienceWorld, JSTOR, Project MUSE, the Independent Scholarly Publishers Group, and the ALPSP Learned Journals Collection, have formed their own alliances (consortia).

To achieve approximately the same level of scale economies, Clarke argues, single-title open access (OA) operations must process unusually large numbers of articles. For example, PLOS ONE publishes in the order of 30,000 articles per year as compared with the hundreds in reputable non-OA journals. Such a scale of operation demands a lighter peer review, lighter copyediting, and less handcrafting in the production process. To turn a glitch into a feature, large-scale OA operations promote themselves as markers of quality, speed, and efficiency, with less emphasis on matters of fit or novelty.[1]

In short, libraries may be paying less per title, but they are now forced to buy an increased number of titles to get access to the ones they need, thereby further marginalizing the acquisition of social science and humanities (SSH) journal and monograph titles. And even if, as Phil Davis (2016) – a former science librarian and publishing consultant – notes in a comment following Clarke's blog post, Clarke underplays the "diverse 3rd-party publishing services industry … [including] online platform providers, manuscript management and peer review systems, plagiarism detection and image manipulation, copy-editing, typesetting, DOI registration, digital archiving, pay-per-view/article rental, PR services, performance metrics reporting …" evolving market share speaks for itself.

Beyond economies of scale: Innovation and market discipline

Economies of scale – achieved in part through concentration of ownership and the monopoly inherent in intellectual property – can result in the domination of inferior products or products that are more costly than necessary as a result of the ineffectiveness of competition. "More costly than necessary" has been the rallying cry of libraries for more than two decades in their fight to control the acquisition costs of the products of international STM journal publishers. However, left untouched in this critique by libraries and their organizations are two other, quite positive attributes that contribute to the success of the commercial sector in increasing its market share. They are innovation and market discipline.

INNOVATION

In the face of the challenge of open access (OA), the level of innovation by commercial entities has been notable. Enhancements in the presentation of information (e.g., format, use of media, layout); author services (speed of response, editorial and journal placement services); discoverability and preservation through a digital object identifier (DOI); international marketing via sales agents and other means; the offering of OA within subscription-based journals as well as the

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development of OA titles; and the bulking up of already large firms to match the bargaining power of library consortia, are cases in point. The same level of innovation is not visible in small society-run journals.

The lack of publishing innovation in the not-for-profit sector has two roots. The first is that the effective CEOs of such journals are usually academics – who are most often selected for their subject expertise by academic governing boards of scholarly societies. As editors concerned primarily with content, quite rightly, they focus on the contribution each article makes to the development of knowledge. Editors often regard publishing details as "a headache," a viewpoint that commercial publishers promote when they are seeking new journal clients. In contrast, a publisher acting as a strategic planner determines how best to present that knowledge in the market and to disseminate knowledge as widely and profitably as possible. The publisher does so through the provision of the services of professional editors and layout artists, marketers, production managers, and innovation staff and managers. The second root of minimal publishing innovation among not-for-profit journals is the lack of sufficient retained financial resources to engage in innovation. Usually not-for-profit journals must rely on relatively modest marketplace earnings, and in some countries, such as Canada, supplemental grants acquired by demonstrating effectiveness in extending the boundaries of knowledge. In limiting income generation, both fall short in enhancing publishing innovation.

The nature and extent of commercial journal innovation are worthy of attention. Elsevier's (2016) *Article of the Future* website illustrates the nature of the large

Figure 2: The Altmetric badge

Source: Altmetric, 2011a

publisher innovation and planning that has been taking place in the commercial sector. While the presentation is a little dated (it was made public in 2013), it is notable both for its content, the development of the three-part journal page featuring dynamic interaction with graphical and other information to obtain the level of detail the user/reader desires, and for its list of over 80 collaborating academics from around the world, including two from Canada.

Complementary to these journal-publishing developments are innovations in measuring the usage of scholarly content. Here, Digital Science, a company wholly owned by the STM journal publisher Holtzbrinck, describes its Altmetric services as "extracting, disambiguating and collating mentions of scholarly content online" (Altmetric, 2011a). In simpler words, it crawls (explores) a wide variety of likely sources that make mention of research and provides a depiction of impact or attention based on their frequency and character. The Altmetric service measures access to tables, figures, datasets; anything for which there is a digital object identifier (DOI), including ORCID IDs for authors (Altmetric, 2011a). It has created a dynamic Altmetric badge (see Figure 2) that signifies the use of the service, plus it provides a score measuring the nature and extent of the attention the work has received. It is worth noting that a variety of large commercial publishers have partnered with Altmetric, including Elsevier's Scopus indexing service in its assessment of research dissemination. For the record, Plum Analytics (2016) provides some of the same services.

Two additional services of Digital Science are designed to enhance content and provide feedback on usage. Figshare allows any dataset with a DOI to be uploaded to a Digital Science database and its usage to be tracked. Figshare can also provide a visual depiction of submitted data rather than require it to be generated by the researcher. ReadCube is a service for researchers that provides a variety of enhancements in line with Elsevier's (2016) depiction of the "article of the future." The service includes enhancements of PDFs, including clickable references and author searches; figure browsers; customizable interfaces; a full-text searchable library of content collected by the researcher; downloading of articles from the web with a single click; a highlighting and comment function; a reformatting function to transform articles into an appropriate journal style; and a learning function based on usage.

Elsevier and Digital Science are far from the only commercial firms active in innovation in scholarly publishing. Jeroen Bosman and Bianca Kramer (2015a) created a visualization of 101 different commercial and open software initiatives oriented to increasing the impact of journal articles (see Figure 3). (The diagram can be rotated when the source PDF from Figshare is downloaded.) No sooner had they done that than they set aside the visualization and created a database of over 400 innovative tools for journal publishing, an easier-to-digest presentation of a host of initiatives (Bosman & Kramer, 2015b).

Innovation in usage metrics
A particularly noteworthy area of innovation in which, to some extent, Digital Science's ReadCube competes, is "author social networking," services that focus on reporting to authors the usage of their research articles. The companies providing that service also

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Figure 3: "Innovation – Science is in transition. This poster gives an impression of the exploratory phase of a project aiming to chart innovation in scholarly information and communication flows from evolutionary and network perspectives."

101 Innovative tools and sites in 6 research workflow phases
(< 2000 - 2015)

Source: Bosman and Kramer, 2015a

add other services such as job postings and, when possible, the actual names of colleagues using the research. Currently, the two dominant English-language author social networking services are Academia.edu and ResearchGate. A sense of their operations can be gained by reviewing their websites.

On its about page, Academia.edu (2016) promotes itself as follows:

> Academics use Academia.edu to share their research, monitor deep analytics around the impact of their research, and track the research of academics they follow. 27,929,283 academics have signed up to Academia.edu, adding 7,590,167 papers and 1,752,128 research interests. Academia.edu attracts over 36 million unique visitors a month.

ResearchGate parallels academia.edu. Its most important service is informing authors, on a weekly basis, of the attention their articles are receiving, including the number of "reads," the number of citations, and the number of profile views. It provides authors with a calculation of what it calls "impact points," the average impact per publication and the number of citations the articles registered with ResearchGate have received. In

the manner of Academia.edu, it searches out articles that are openly accessible and includes them in its database. It also provides authors with the names of articles that are published in subscription journals that support open access and it encourages researchers to submit the final submitted version (before editing by the journal) to ResearchGate. It also provides authors with the number of people from their home institution who are members and their names. These services have value, especially when tenure committees are evaluating the contribution to knowledge of a researcher, or when a research unit is applying for grants or donations.

Innovation in consumer magazines

The innovations in author networking are in keeping with innovation and transformation in the general marketplace for periodicals. The plans and actions of consumer magazines are a case in point.

On the whole, scholar- and society-managed scholarly journals see themselves as author-driven – as serving their authors and the field of inquiry in general by selecting those authors who they deem most worthy of being included under their imprimatur. Their tacit purpose and mission is "Publish well and they shall read!" Their authors are their first customers: their product is publishing services that generate the output that they then make freely available or sell by means of subscriptions to their second market, the scholarly community. While many members of the academic community would say that "Publish well and they shall read" is a fully warranted, even highly desirable, perspective in that it maintains acceptance standards and it is the scholar/reader's responsibility to be in full command of the relevant literature, ironically, many high-impact journals, such as *Nature*, the *New England Journal of Medicine*, *Science, Cell*, are unabashedly readership-driven rather than author-driven. They publish articles with content they believe will command a wide readership and they add value in their editorial, graphic interpretation and design, adoption of publishing technology, and marketing.

Consumer magazines are also readership-driven and define themselves in terms of their contributions to the development and cohesion of their reading communities (Lorimer, 2008, 2015). The latest thinking about the future of consumer magazine publishing is that it can best contribute to the cohesion and development of reading communities by embracing "mobile." That embrace is not focused on devices but rather on

> a completely different set of audience expectations … requir[ing] a completely different set of editorial, advertising, and ecommerce tools and mindsets. … The [mobile mind shift] is the [user] expectation that any desired information or service is available, on any appropriate device, in context, at your moment of need. (Señor, Wilpers, & Giner, 2015, p. 13)

Their central notion is that they strive to attain "user delight" in gaining access to information that is so well designed that its form becomes invisible and the resulting insight builds readership and engagement. Superimposed on delight is constancy: the largest consumer titles, *National Geographic* for instance, believe that they must provide a constant stream of delightful moments rather than periodical hits of satisfaction; hence the slogan of the industry, "From months to moments."

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According to Cory Bergman, general manager of *Breaking News*:

> Content isn't just published to be consumed, but created to help us unlock new value, save time, and live better lives. (Señor, Wilpers, & Giner, 2015, p. 16)

Clearly these statements speak to a different writing and reading reality than that of the reporting and interpretation of research. But given an appropriate and/or motivated reader, it is not at all far-fetched to imagine a modern-day Archimedes, rising from his/her bath and taking to the streets in a swirl of delighted insight gained from clear and concise reporting of groundbreaking research.

While the role of mobile in scholarly publishing has been investigated to a limited extent, three studies and a comment are relevant. In 2013, Karen McKrane (2013) pointed out that the need to serve mobile-only internet users, some of whom are students, has not been taken into account. As of 2015, accessing research literature with mobile devices did not appear as a major use (Anderson, 2015). A more recent study, published in March 2016, explores how faculty and students use their mobile devices to coordinate their research activities (Tancheva, Gessner, Tang, Eldermire, Furnas, Branchini, Steinhart, & Foster, 2016). All three studies suggest access using mobile devices may be peripheral. However, in a global, rather than American, context, that may not be the case. Toby Green, publisher at the Organisation for Economic Co-operation and Development (OECD), offered the following comment in response to a recent blog post by Michael Clarke (2016) on *Scholarly Kitchen*[2] about dealing with how difficult it was to access articles on a mobile device:

> Last year we recorded 200,000 accesses to our Read editions from cellphones, 112% higher than 2014. A small proportion of all users, but still, 200k is a lot of people and it's clearly growing. (Clarke, n.p.)

Market discipline and innovation

The innovation that has been introduced by commercial journal publishers has attracted both journal clients (journals that contract with commercial publishers to provide publishing services) and author submissions. Innovation has clearly extended the accessibility and understandability of research. The driving force behind the happy choice of innovative features by commercial publishers has not been luck, an excess of cleverness, or, purely, the availability of resources to fund innovation, but rather their attention to the marketplace.

The concept of marketplace discipline is not a convenient, misleading subterfuge dreamed up by champions of capitalism. It is a concrete reality of survival in an open marketplace where there is competition. In the case of scholarly journals, it is competition among journals for content. Once won, the quality of content, including its presentation, provides a foundation for publishers to compete for readership via sales to readers' proxy purchasers, library acquisitions departments.

Readership is the bread and butter of commercial journals, and, without a doubt, it is generated by noteworthy content. But increasingly, readership is also driven by presentation features plus metadata and its organization. Features that allow easier and more memorable understanding are key. Also key is proper and thorough tagging of

articles set in XML and converted to HTML and PDF display, the strategic use of keywords in their own right and in titles and abstracts, and other techniques such as DOI.

Although the commercial sector leads, and commercial STM journal publishers are innovating most quickly, commercial SSH scholarly publishers are trailing behind. About the most a current reader can expect from an SSH publisher is a structured abstract, extensive keywords, the sharing of usage statistics, the use of DOIs, and well laid out figures and tables. This level of metadata provision is miserly in comparison with the usage information that e-book services collect and use. E-book services collect, but do not make public, time spent reading, hour of the day, sections read, gender and age of reader, places where readers leave off, titles that are acquired but not read, and so forth. These metadata all can be derived in an online environment and, if not made public, they can at least be used to improve reader understanding and engagement. Tracking usage dynamics in a robust manner can unlock the secrets of reader preferences, contribute both to reader understanding and satisfaction, increase dissemination, enhance conceptual access to knowledge, and help to ensure the survival of a journal. While commercial journals will move eventually to collecting such data when market pressure requires it, not-for-profit journals could easily take a lead in implementing the collection and use of such data.

The actions of author networking services are another good example of market discipline at work. In an age in which researchers, research funders, governments, and universities place increased emphasis on engaging the public with research and academic analysis, two groups of academics saw an obvious market opportunity to which, for some reason, both commercial and not-for-profit journals were blind. The networking services that ResearchGate and Academia.edu provide are clearly valuable as evidenced by the number of users. Both organizations are set up to build a user base and then be sold to a larger commercial entity. Once purchased by a publisher, if it were structured as a service organization similar to Holtzbrinck's Digital Science, these services could cease using author submissions in favour of using final published products. In doing so, this would further entrench commercial publishers as key players in scholarly communication.

To capture the essence of market discipline in a nutshell, for-profit initiatives are demand driven, even if they have to create that demand. Not-for-profit academic initiatives, more often than not, are curiosity driven. As a stimulus for exploration, discovery, and the development of a proof of concept, curiosity is an effective mechanism – witness Academia.edu, ResearchGate, or even Open Journal Systems (OJS). But as a foundation for the administration of a service, curiosity amounts to being producer or supply driven: it is driven by the ideas of those in control rather than the realities of the market. By focusing on marketable services, demand-driven initiatives establish themselves in the marketplace and often create derivative markets thereby further consolidating their market position. If their early steps show promise, they attract financial resources (investment and/or customers) that help them consolidate their position through service refinement, thereby keeping them a step ahead of competitors in their service to users. In the case of author social networking services, they promote voluntary submission of citation and readership information to

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tenure and promotion committees by providing statistics on article usage. By doing so, these authors lay the groundwork for those same committees requesting it and/or rewarding those who provide it. In short, the market consolidation of services is achieved through the ambitions of their target market, the scholarly authors, who bring on board the administrative apparatus of academe. Thus do marketable services grow, consolidate, and become profitable. The trick for the academic community is to encourage sufficient competition to keep costs reasonable.

Public sector initiatives need hardheaded representation of the demand interests of user/readers. Rarely is such representation put in place. For example, at a 2016 meeting of the Open Scholarship Initiative (OSI), those in attendance noted the absence of researchers – the very group that scholarly publishing serves (Mudditt, 2016) – and hence, expressions of their interests. This absence is common in OA-driven meetings. Often the only researchers that are present are OA proselytizers. In spite of its long-term existence, OJS has no formal governance structure that includes journal representation. The drive for low-cost alternatives by libraries subsidized in part by research funding is an inadequate foundation for the ongoing provision of competitive not-for-profit publishing services. The absence of a need and desire to better others in the reader services marketplace misleads and stifles innovation and development.

COMMERCIAL ADVANTAGE BEYOND INNOVATION AND MARKET DISCIPLINE

Free markets allow anyone who cares to participate as a producer to do so in whatever way they might wish[3] – all they need is customers. Not only can any entity initiate a start-up but the well capitalized can also purchase successful not-for-profits, as Elsevier did with Mendeley and SSRN, as of May 17, 2016, and as Holtzbrinck did with the British BioMed Central some years ago.[4] Acquisitions by commercial behemoths of not-for-profit entities appear only to require a large cheque and a silver tongue. This is not to denigrate the sellers. Every day, academics hand over their intellectual property to commercial publishers that provide them with publishing services. Why, once a publishing initiative has proven successful and hence the intellectual point made, should it not be turned over to commercial publishers who will apply their commercial creativity to tapping world markets and collecting money from users rather than from the general public purse, as in OA?[5] This is the norm in capitalist societies. Again, the interests of consumers are best represented in a marketplace with plenty of competition, not by central planning. The task of the academic community, including scholars and libraries, is to use consumer power to create a competitive market in which producers with reasonable pricing win out over those whose prices are unreasonable.

A competitive strategy for small not-for-profit journals

Against the background of market trends, the structural analysis provided in this article suggests that innovation in the context of market discipline best serves the interests of researchers and journals. Such an approach is most likely to lead to maximum internet discoverability and readability because it will take place within the context of maximizing readership, even delighting readers. As argued, market success can be sought by attending to both innovation and market discipline, which, when combined, amount to professionalization. The achievement of market success does not

demand converting to a for-profit operation; rather, it requires taking on the commercial mantel of serving consumer demand.

As noted earlier in this article, not-for-profit journals would be well advised to adopt the evolving features of their commercial counterparts, some or many of which may be achievable through open source technology. But there is no need for not-for-profit journals to stop there. Practices of commercial magazines or other publishers that go beyond the state of the art in journal publishing can also be adopted. Cognizance of the changing mindset in information seeking by the general public and researchers is a first step. The greater use of audio and visual media is also key, and exploring new publishing formats that respond to the evolving mindset of readers may breathe greater life into low-use scholarly forms.

THREE ACTIONABLE INNOVATION PROPOSALS

Responsive design

The commercial magazine community is well ahead of scholarly journals through its use of responsive design, that is, graphic design that is appropriate for a user's screen. A phone user sees a different page from that of a laptop user or even a tablet user, one that is designed to appeal to the likely mindset of the phone user: a quick bite of information readily understood and memorable. A tablet user would likely expect and would receive more elaborate, sophisticated, and nuanced content led, perhaps, by visuals and sound. A laptop or desktop user would expect a more traditional article, perhaps with increased visuals as suggested below. Figure 4 suggests what components might be presented to various users, bearing in mind that a user could always be directed to the full-format article accessible on a laptop or desktop computer.
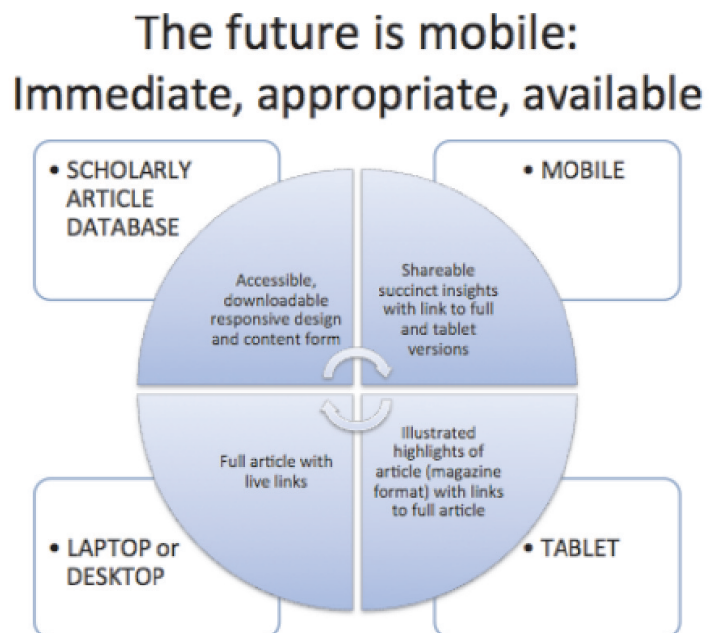
If journals are going to take seriously a desire to appeal to all possible users, responsive design is a given. However, the full cost of scholarly journals implementing responsive design may be prohibitive at this time, and perhaps not as useful as it is in the magazine world. Nevertheless, it is a way of thinking that is worthy of the attention of the journal community and is a framework for thinking about the following two examples and the derivation of others.

The following two proposals are in the spirit of responsive design, but are more feasible and can be more simply implemented.

Insightful visuals (IVs)

Small-scale journal and monograph publishers could begin to offer both authors and readers the opportunity to augment a work with visual, or for that matter, audio content – as in speech and music – as a complement to or commentary on the textual

**Figure 4: Device-responsive content in scholarly article publishing**

Source: Lorimer © 2016

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content. Authors might be encouraged to submit visuals or other augmentations with their work in the same way they include tables and figures. The acceptance of a submission by an author could trigger a professionalization process, that is, contact with an image/sound editor to work out what should be included and how. The central idea would be to enhance information and understanding by making reading easier, potentially more insight producing, and/or more involving and memorable.

Readers, also, could be invited to submit visual or other-than-solely-textual material with a focus on significant insight they gained and which they believe they can share using other media as well as text. The pinnacle toward which they would be encouraged to strive would be the communication of a dramatically changed understanding that they achieved as a result of reading an article, part or whole of a textbook, or part or whole of a monograph: a shareable insight or aha moment. They would be invited to use sound, image, and video, the shorter the better for video. This would promote the recognition of the impact of knowledge, assist the scholarly community in gaining literacy in a variety of media appropriate to scholarship, and
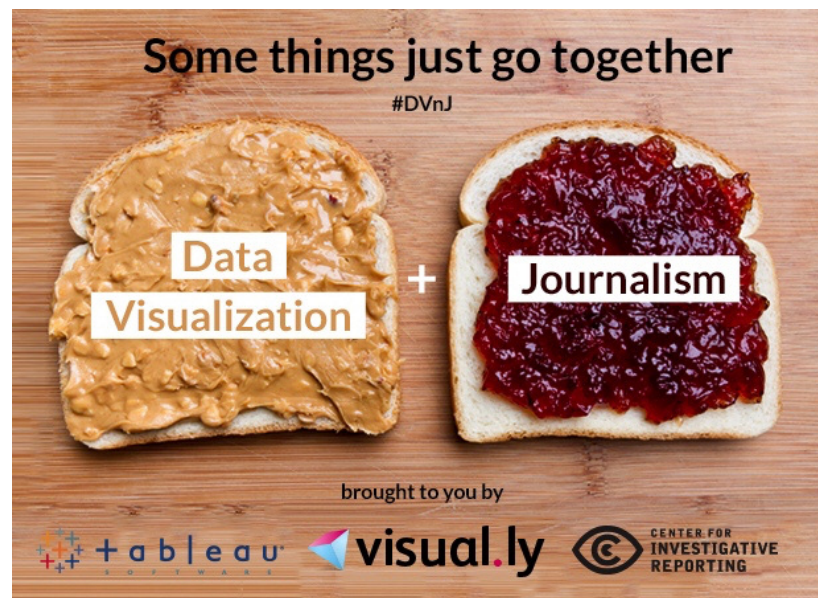
Source: Peanut butter and jam ©

increase the dissemination of scholarly research. Relevant professionals could be hired to participate as advisor/producers.

With respect to visuals, recent research done by Po-shen Lee, Jevin D. West, and Bill Howe (2016) at the University of Washington suggests that articles with greater visual content gain a greater number of citations. Whether that finding is an immutable rule or a contingent finding, it is certainly worth exploring.

Monograph distillations

In a world of soundbites and flashing images, to say nothing of the growth of article-publishing opportunities, readership for scholarly monographs is diminishing. It has been pointed out that scholarly monographs lack abstracts, thereby making it difficult

for readers to quickly assess the relevance of the content and the time investment needed to read the whole work. This lack is unnecessary. After all, reports universally come with executive summaries.

Monograph publishers could address this lack directly simply by requiring authors to produce a précis of their work either at the time of submission, which might help the author focus on the main elements of his or her work, or following acceptance but before publication. Here again media other than text could be encouraged. Somewhat in parallel to the IVs (insightful visuals), journals could provide monograph readers, that is to say, students and faculty, with the opportunity to provide descriptive distillations of monographs, especially already published ones. (The illustration is an explicit promotion of monograph distillation and simultaneously a meta or implicit promotion of the inclusion of visual innovation. As well, please think of

Source: Lorimer ©, 2016

distillation in the context of cognac rather than water.) In some cases, to build in reader response, reader contributions could be published as augmentations to recently published works: the back-cover blurb made serious! Again, such efforts would likely build both readership and community interaction. Seed funding could be sought to encourage the establishment and acceptance of this mode of publishing.

In general terms, there is every possibility of giving new life to reporting research findings in an enriched information environment. Taking a page from the magazine world, journals could shorten titles by eliminating colons and euphemisms. Equally, they could target a larger reading market by simplifying the language in the abstract at the very least. They could emphasize the breadth of possible relevance by using ordinary language and presenting possible implications. They could structure abstracts to address perceived user needs, and use them to track and assess success. They could increase their attention to metadata by expanding the number of keywords in order to reach out to surrounding research communities. They could increase the readership data they supply to authors. They could increase reader engagement by encouraging sharing by featuring the sharing icon, keeping the process simple. They could also highlight popular articles to readers and bring them increased attention. There is a world of possibilities.

An alternative future: Libraries, OA, and the future of small journals

For some time, libraries around the world have been attempting to encourage the not-for-profit journal publishing sector to partner with them. They have offered their support in the form of distributing OA materials. In some cases within their control, they have persuaded their parent institutions to relocate journals (and university

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presses) administratively within the library. By providing hosting services and easing access to software, they have become key contributors to journal operations. Many have encouraged the founding of new OA journals as alternatives to subscription-based journals. The promotion of OA suffuses this participation in journal production. Interestingly, however, it turns out that many U.S. librarians rarely publish in OA journals. This fact and a discussion of it emerged on the Scholcomm blog (see website list) in early 2016. It led to rancor that almost shut the blog down. Currently in Canada, libraries are promoting a possible partnership with journals. The following brief structural analysis suggests that journals should focus on innovation and professionalism and seek to maintain their independence from libraries.

First and foremost, libraries are proxy consumers and custodians of knowledge. As consumers of journals, they have no special expertise in the development and maintenance of journals reflecting communities of knowledge other than their own. Contrast their current desire to assist journals that operate on an OA model while continually cutting back on subscriptions. This intervention runs contrary to the founding of and the accumulated experience of scholarly societies dating back to the model that emerged out of the British Royal Society and its Philosophical Transactions (in 1662) and is largely still in place. In a modern context, as Kent Anderson (2016) has pointed out, society journals are community institutions that build and develop communities of scholars. Libraries are an administrative arm of academic institutions rather than representatives of academically free communities of researchers.

The use of financial influence by libraries is a major, historically significant realignment of the dynamics surrounding the generation of knowledge. It takes a certain amount of control out of the hands of the research community and places it in the hands of consuming institutions. It is easy to understand how support for such a realignment has gained momentum. In the face of multimillion-dollar annual invoices payable to the large STM journal publishers, libraries have persuaded many administrator academics of the wisdom of their intentions, in part by casting the matter as unnecessary outsourcing of the fine tuning of intellectual property. Brought within the academy, they claim, massive savings can accrue. Other knowledgeable commentators have argued the opposite (Esposito, 2016). Given their fiduciary responsibilities, few senior administrators are likely to consider the dynamics of the free inquiry they benefitted from in their earlier lives as researchers ahead of, or in competition with, the annual bleeding of resources in paying for journal subscriptions of the large STM publishers. Banded together, in a social movement, which open access has become, the libraries represent a monopsony, a single buyer of the goods of a producer. Monopsonies, in the manner of monopolies, are market inefficient.

In contrast, the power base of independent journals derives from the common interest that academics across all disciplines have in unfettered inquiry, a perspective that is known and accepted but off the explicit agendas of university administrators. It is also an interest that is muddied by the practices of the large commercial journal community in accumulating what appear to be excess profits. Journals exist as pockets of academics working outside university administrative structures. (The relationship universities have to their eponymous presses is slightly different.)

Given the dynamically evolving information environment in which everything from cars and buildings to toothbrushes and clothing is information processing, and sometimes an autonomously acting object (e.g., self-driving cars), subjecting knowledge producers to the preferences of budget-challenged consumers is unwise. Now more than ever, investment is needed within journals to facilitate innovation in such matters as reader appeal, understandability, search-engine optimization, multimedia representation, international marketing, and the modern mindset. Without that investment, the diversity of ideas and information available will shrink and with it the dynamism of our knowledge-driven communities and economies. Said differently, without market-disciplined publishing innovation, the opportunity for content innovation will wither. Market-oriented innovation and increased professionalism by not-for-profit journals, encompassing a greater awareness and adoption of technical and organizational developments, as well as a general mindset, will help to ensure continuing sustenance for the thousands of not-for-profit journals that contribute significantly to the record of world knowledge.

Notes

1. While PLOS ONE may represent a significant open access publisher by processing as many articles as it does, each for a set (low) fee, as Clarke argues, it is generally vulnerable on questions of quality. In "Image manipulation: Cleaning up the scholarly record," on *Scholarly Kitchen*, Davis (2016) notes that in a preprint in bioRxiv, a preprint server for biology, Elizabeth M. Bik, Arturo Casadevall, and Ferric Fang (2016) visually screened 20,621 scientific papers published in 40 scientific journals from 1995 to 2014. The researchers detected 782 papers (3.8%) that included at least one figure containing an inappropriate image manipulation. The vast majority of these images were found published in PLOS ONE.

2. The post was an account of a 50-step process Clarke (2016) went through to locate an article that was mentioned by a colleague. (Site editors redacted a certain number of steps to avoid excessive profanity.) Green also outlined a four-step process for accessing an OECD-published article or report starting, as Clarke did, with a Google search.

3. Hence we have predatory publishers.

4. The ability of not-for-profit operations to sell themselves to commercial entities is interesting. If they were formal, registered not-for-profits, in Canada at least, such a transition would be difficult. It may be, as is the case with journals, that they operate as informal not-for-profits.

5. It should be noted that the assumption of responsibility for journal publishing by libraries would result in non-transparency of costs. While journal-hosting rates are known, the actual cost of their management, inclusive of salaries and space, is completely unknown and such costs would customarily not be reported.

Websites

Academia.edu, https://www.academia.edu/
figshare, https://figshare.com/
readcube, https://www.readcube.com/
Open Journal Systems, https://pkp.sfu.ca/ojs/

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