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A Baker's Dozen of Issues Facing Online Academic Journal Start-ups

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Abstract

The rapid upsurge in online academic journal creation, publishing, and management has challenged researchers and universities. Much of the recent flurry of activity has happened while guidelines and protocol are being created. This article outlines the nature of the increased publication of these new journals, as well as offers advice in 13 areas that journal editors and boards will face. This article is based on the findings of academics in a wide variety of academic fields, including library science, as well as the author's own experience as an online journal editor.

Introduction

Creation is, perhaps, the most human of all traits. The desire to generate a lasting creation from one's thoughts and desires can be traced back to cave drawings, and tracked forward to blogs, Facebook, and the less-glitzy trend of establishing online

academic journals. In the past decade, hundreds—nearing thousands—of such journals have appeared, some solely online, some a reflection of their print journal cousins, some partly online, with only abstracts available. Together, as a movement, these online creations and their editors have all faced a host of challenges, everything from justifying a need for the publication, defining its subject, and archiving content reliably, as well as establishing some form of a sustainable business model. And, very much like their pre-historic antecedents, the choices these new creators make have a meaningful impact on the survivability of their works.

The purpose of this research is to outline the current status of online journal publishing, and, more importantly, outline the critical challenges facing these new publishers and editors as they consider establishing new academic journals. Many researchers in various fields—library science, computer science, education, and others—have touched on several of the areas addressed by this research. This effort approaches the issues from a mass communication perspective, addressing a wider scope not previously addressed within any one work. At the same time, the author acknowledging this is by no means an exhaustive study. It does, however, reflect a comprehensive and thoughtful approach based, in part, on the author's own personal experience in establishing and managing an online journal, as well as the methods and philosophies discussed by a diverse group of researchers examining this emerging field of communication.

Online Publishing Thus Far

As is always the case with any online activity, change is constant and rapid. Starting in the mid 1990s, publishers of print journals began putting all or some limited amount of content online, available usually through subscriptions available within university library systems. The trend was dutifully tracked through the decade, and, as is generally the case with new phenomena in research, a descriptive approach was used to track the numbers of online mass communication research articles published compared to overall numbers of such research, with some discussion of the structural bases for the movement to web-based publishing (Gould 2004).

In a more comprehensive examination of all academic journals, an earlier study by the Association of Research Libraries (ARL) tracked the presence of online publications, including the method of delivery. The January 1991 edition of the ARL Directory of Electronic Journals reported 110 journals online. By 1998, that number had jumped to more than 6,000 (Mogge 1999, 17). By 2007, the ARL reported that 60% of the 20,000 peer review journals were available in some form online (Johnson and Luther 2007, 1-38). A major publisher of journals, EBSCO, noted in February 2008 that almost 18,000 of its academic journals and newsletters were available online, either through library subscriptions or open access (EBSCO 2008).

And as Johnson and Luther point out, the trend since the 1990s also includes a shift away from publishers offering both print and online access to a strictly web-based publishing system. "The users have voted—and they want the convenience of electronic" cited in (Ware 2005, 193-6). The authors go on to cite research that reinforced the notion that not only are the economics in favor of online publishing, but that users prefer

electronic to print. "Scholarship, particularly in science, is becoming increasingly born-digital and networked digitally" and younger users of library and other research sources overwhelmingly prefer electronic access to journal research compared to print (Ware 2005, 193-6). Ware notes a conversation with a librarian at a large research library: "The librarian concluded [from a study he had conducted] that on present trends, there would be little demand for print journals within five years."

A study by researchers at Drexel University showed a significant preference among graduate students, but less adoption among faculty for electronic materials over print journals (Dillon and Hahn 2002, 375-15). Two other researchers, tracking acceptance among faculty, found a much higher rate, due in large part because of the 24/7 availability of research materials.

Our in-depth interviews with faculty indicate a high degree of comfort with electronic access to journal literature. The scholars we spoke with clearly recognized the convenience of 24/7 access from home or office. Like many librarians, most faculty would prefer to retain print just in case, but when confronted with forced choices, the overwhelming majority either supported more electronic access at the cost of print retention or felt unequipped to make this choice. (Palmer and Sandler 2003, s26-3)

Two earlier significant pieces of research dug deeper than most. Hal R. Varian's "The Future of Electronic Journals," presented at a conference at Emory University in Atlanta in April 1997, addressed the future evolution of online journals. Varian proposed a supply and demand model for publishing scholarly work, concluding that, for most universities, "The ability...to attract top-flight researchers depends on the size of the collection of the library. Threats to cancel journal subscriptions are met with cries of outrage by faculty." Varian cites the costs of a quarterly, special-purpose, non-technical

academic journal publication as estimated by some researchers as roughly \$120,000 per issue, with an estimated per subscriber non-profit fee of \$200 and for-profit \$600 (Tenopir and King (1996). Add to that, he notes, the estimated annual increase in cost for this journal of between 48% and 93% projected over a ten-year period (Lesk 1997), together with an estimated per reader cost for some journal articles of \$200, and you have an economic model that is difficult to maintain.

Varian concludes that to reduce the cost of academic communication, the manuscript-handling process would require re-engineering. Using electronic distribution could cut costs within the editorial system by 50%. Add to this the savings in shelf space for libraries, the costs to monitor holdings, the ease of online searches, and the ability to store accompanying support documents, such as images, data sets, and, though not mentioned by Varian, audio/video files, and cost savings could be significant. "When everything is electronic," Varian notes, "publications will have much more general forms, new filtering and refereeing mechanisms will be used, [and] archiving and standardization will remain a problem"

Clarke and Kingsley suggest that this movement toward an open access model would not come without a "spirited" defense from the "For-profit corporations that have grown rich through exploitation of their multiple- and mini-monopolies" within the academic publishing world (Clarke and Kingsley 2007). The death-like grip of publishers over access to the research expected at top-ranked university library was almost complete by the end of the millennium (Loughner 1999), with prices increasing annually. University libraries at the turn of this last century consistently faced increased journal costs to just hold on to what they have, with little or no room to add new volumes.

Indeed, sit in on any faculty committee dealing with university library holdings and you will note the conversation almost always includes some discussion over what journals will be kept, added, and deleted to fit the coming year's budget. It is not a small matter for some: the number of holdings in a library is part of the rankings of academic libraries, (Stubbs 1986, 79-6) though that measure may be fading (Kyrillidou 2000, 427-9; Kyrillidou and Crowe 1998; Nisonger 2003).

Some of the issues outlined at a Stanford University Libraries colloquium in 2006 addressing the online journal movement included:

- The rise in cost of academic journals of 215 percent between 1986 and 2003, compared with a 68 percent rise in the consumer price index over the same period;
- For profit journals charged three times the per-page cost as non-for-profit journals;
- In four leading economics journals, 73 percent of all articles and 100 percent of the articles could be found for free online. (Palmer 2006)

Notably, two years before the Stanford colloquium, that university's faculty senate had passed a resolution encouraging faculty to factor in the price of a journal when considering where to publish research. The colloquium itself was described as a response to the "crisis in journal pricing." (Palmer 2006)

All this talk of creating new online journals has not go forward without some response from traditional publishers. As noted by several researchers and news organizations (Biello 2007; Chillingworth 2007; Giles 2007, 347; Howard 2007; Pennel 2007, 1), the publishing giants in early 2007 moved to hire lobbyists whose sole intent would be to discredit the open access movement, while extolling existing publishing houses as the protectors of the peer-review system. As noted, the response could be

understood within the context of a perceived monetary threat most publishers would see in online open access, as well, as a genuine fear of the unstable (perhaps “unsettled” would be better descriptor) nature of electronic archives.

But, legitimate concern do exists as to how online journals will be operated. Will they be peer reviewed in a manner consist with tradition? Will they themselves be sustainable monetarily, or subject to the whims and personal dedication of faculty and universities? As Harnad suggested in 1998, the Faustian relationship between authors and publishers is a well-tooled model not likely to give way without a fight, whether it be on the part of some academic authors or almost all “traditional” publishers, both some see as deeply entrenched in the “Scroll Era.” This trust in the author-university-publisher-research model has its merits. The large publisher has a monetary investment in ensuring a journal is held to high standards. Authors are assured full academic credit for appearing in the “right” journals. Universities can tout their researchers as “cutting edge.” Finally, perceived failure to maintain such standards might lead to an exodus of authors, and, with that, a decline in author submission and library subscriptions.

On the other hand, while this new wave of academic publishing may not be the threat some publishers believe it is, it would be a very large leap, however, to suggest that online journals face only blue sky and smooth sailing. Issues of sustainability and the very ephemeral nature of HTML itself, has worried some researchers, going back to the mid 1990s. Hitchcock, et.al., in 1997 offered what these researchers admitted were the “bare facts of this change, a simple record of a short period which may or may not, with greater analysis and hindsight, prove to be an important pivotal moment (Hitchcock, Carr, and Hall 1997, 285-13). Among the issues raised were the questionable “stability”

of online journals, and, perhaps more importantly, the ability of online journals to carry more than merely one-dimensional, written content.

...In these projects lie the clues—information filtering, agents, links, multimedia—not just to the next generation of the digital journals but to the emerging shape of the digital library. Clearly these projects will not provide all the answers or the tools, but they are good starting points from which to understand how, also why, e-journals will change.(Hitchcock, Carr, and Hall 1997, 285-13)

In a way, as hinted at by Hitchcock, et.al.(Hitchcock, Carr, and Hall 1997, 285-13), the modern online journal, free from the fetters of obscurity on dusty academic library shelves, will be truly public, accessible by millions more potential readers. The very nature of online journals is that, well, they are online, and being online, the issue of accessibility has more to do with reader access affiliation than reader locale. If a reader has some relationship with a library with access to specific databases, such as *Pro-Cite* or *Web of Science*, then this reader has access to a massive amount of information. And given the off-university access allowed by libraries, the reader need not ever step onto the grounds of any hallowed “bricks-and-mortar” institution to avail herself of physical research materials. The location of research is not important, whether in Princeton, NJ, or Manhattan, KS.

Conversely, the impact on authors will be magnified. Rather than publishing in a small journal of little note, every author's work will have equal access to every reader. Add free access to a journal, and the publication becomes truly universal. “For authors, the answer is simple: a free online journal or archive gives their work a much larger audience, and therefore much greater impact”(Morrison and Suber 2002). Suber goes on to argue that the long-term impact of online publication will be enhanced by the ease to

which researchers can find existing research, especially free access research, thus turning more and more away from research hidden either in offline archives (libraries) or behind password locked web sites. Given that authors seek impact over monetary reward, open access journals will be seen as a path to more citations, and more citations a path to more recognition.

The online journal movement will also lengthen the “long tail” of academic research publication itself. To some extent this effect, first postulated by Chris Anderson of *Wired* in October 2004, will exaggerate the population of narrowly defined journals, given the low economic barriers (Anderson 2004). Rather than having to appeal to a large population of potential readers, the economic model of small journals will, based on this theory, result in more and more small, excruciating narrowly focused journal.

This is not to suggest that creating an online journal is little more than a selecting a web address (URL) and some editing software. It involves more than just setting up a web site and filling it with academic journal articles. It is more than putting out a call for research, editing the ensuing presumed flood of work and putting in on the web. It is more than pulling together a team of editors, reviewers, and graduate students to do the legwork. The online journal requires a careful step-wise approach that takes into account all of these elements (and many more) at the university or private foundation level. And a host of policy and technical issues must be addressed by all online journals, early or late in their development. In some respects, online journals are in the full bloom of their adolescence, with online editors feeling their way, much as early web site builders coding sites by hand did in the early 1990s.

Having established that a new publishing trend is washing over us, let us examine one possible set of criteria and the various concerns every online journal publisher and/or editor should address early in the process, rather than late. We will examine these steps within three general phases: Getting Started, Operations, and Long-Term Sustainability.

Phase One:

Getting Started

The idea for starting an online journal might well up from many sources. It could be generated from a sense of need: a particular subject is not being addressed. It might also simply satisfy the interests of a small group of individuals. And, again, it could be the result of long-term research in one particular area, or the recent funding of a new area of academic activity.

Whatever the sources of the idea, the group's first activity will be decide if the new journal will be open access, limited access, or subscription access. The first two of these are well known. It should be noted that limited access may include the title and abstract, with a subscription fee required to access the full document. It might also be full journal access through a library or institution that pays the annual subscription fee. Fees for access are but one element of the financial structure of print/limited access journals. Also to be considered include, but are not limited to, author fees, copyright owner rights, and republication rights. The economic options for online journals are described by Willinsky in more detail, in "The Nine Flavours of Open Access Scholarly Publishing" (Willinsky 2003, 263-4). Willinsky is founder of the Public Knowledge Project, which promotes its own online journal management software, Open Journal Systems

(OJS)(Anonymous2008). Other sources for guiding groups entering the online publishing arena include the Public Library of Science (PLoS). Largely focused on publishers of scientific and medical journals, PLoS provides a detailed economic and administrative structure, and advocates end-to-end electronic journal management systems, such as OJS. The detailed budgets provided includes fees for everything from a resource guide to electronic archive repository systems to fees it charges (and suggests new publishing houses charge as well) for, among other things, proofing, art manipulation, and layout(Anonymous2008). Notably, it suggest that each article eventually published in an online journal would cost, on average based on its experience, \$1,065.75. Further, it suggests an print-reflected concept that each “issue” would then cost \$10,697.50, based on a “110-page book.” The outline provided is a valuable guide for the detailed activities required to publish academic works online.

But the issues of establishing an online journal go far beyond the issues of cost and staffing. This paper will address the not only the economic issues associated with an open access journal, as compared to the other two forms, print and limited access, but also the management and other issues not touched on in any detail by Willinsky and PLoS.

Journal Subject Defined: the Long-Tail Theory in Action

Traditional print journals are driven by two fundamental economic verities: large subscription numbers and large subscription fees. The subscriber fees pay for the editorial staff, printing, and shipping/storage costs of the journals. These costs are not always expressed in the subscriber's check to the publisher: authors may pay a per-page fee, for

example. Libraries pay an access fee for limited access journals, and, for print-only journals, the costs of space and personnel time associated with storage and management. Even as access increased to more and more journals through electronic archives, many of these journals are still being printed and mailed to subscribers. It is an economic publishing model that persists, despite the challenges from the growing number of online, free access journals and the static or shrinking budgets of university libraries.

[Insert Long-Tail Theory Chart]

Traditional print journals, such as *Journalism and Mass Communication Quarterly (JMCQ)*, fall into the left side of the Long Tail Theory (Anderson 2004). They have many subscribers and a very general subject area. This general subject approach is necessary, as previously mentioned, to sustain the economics that require a broad readership. But, logically, if a researcher is interested in only one area of research, and perhaps only a small topic within that area, such as “online journal production and management,” such omnibus journals as *JMCQ* may generate a very high cost per reader for libraries. That is, if a journal costs \$500 annually for a library to provide access (print or limited) to researchers, and five researchers at a particular university access the journal during a year, then the cost per reader is \$100. Another journal may cost \$1,000 and, with only 100 researchers accessing it, would generate a \$10 per reader rate. Of course, this all just a matter of tossing numbers around. But, as was noted earlier, some universities are looking carefully at not only the reputation of journals, but also their cost, weighing the value of each journal in terms of library budgets as much as in resulting tenure for professors.

A strong argument can be made that online journals of the future will live in the right area of the Long Tail. They will be exquisitely defined to meet the needs of a very narrow academic population, such as, possibly, *The Journal of Nineteenth Century Rural Newspapers*. Such a journal need not match the content of *JMCQ*, in either the number of articles published annually or in the size of its readership. It would address a well-defined populace. The ability to define such a narrow readership may be the driving energy behind the current online journal phenomena. Of course, the cost to produce such small journals is an issue, given they have no subscriptions. This will be address later in this article.

The focus of a proposed new journal may be based upon the desires of a non-university sponsor, or it may be simply be a natural result of a grant funding new research, such as bio-security. Whatever the chosen subject, a mission statement that clearly defines the nature of the publication will help in the next step, establishing the editorial structure.

Editors and Editorial Boards

Depending on the size of its budget and the intended scope, amount, and depth of its publishing, the journal may require more than one editor, plus additional support staff, such as copywriters, web managers, and staff to handle reviewer relations. However, it is just as likely that in its first year, only an editor and a graduate student will be required. The editor and student will be expected to have some web skills, since almost all of the activity of the journal's maintenance will be online. In addition, some familiarity with the subject of the journal would be expected of the editor, at least.

One of the first actions by the editor will be to recruit members of the journal's editorial or policy board. These individuals should be leaders in their fields—academic or private—as well as exhibiting interest in the project. These individuals may come from the core group that started the project. They, also, may be recommended by that group. This is very important step. One of the measures of the strength of a new online journal, given that subscription rates are irrelevant and rejection rates dubious, is its editorial board. A new journal needs a strong board to support its credibility as a journal. It may also look to other factors, such as citation rates of its articles in other journals. However, such citation rates can only occur, of course, only after the publication is underway. A strong, nationally recognized editorial board, will attract submissions and aid in the recruitment of reviewers.

Pulling together such a board might start with a small group of interested researchers within the field or within a university. Using a snowball method, each member of the small group could recommend other potential editors board members. And these new board members could recommend others, and so on.

The role of the board would be largely to provide reviews of papers submitted. But such a board might also be called on for advice on special issues, staff changes/new hires, and other management issues. A new journal would be wise to create as large a board as possible to ensure a low annual review rate for each member. Large boards also push back any belief that the journal is exclusively for the benefit of only a few researchers. This is not to suggest that very narrowly defined subject areas might result in very narrowly defined editorial boards, of perhaps as few as five members. However, such a narrowly defined journal would approach the nature of a small academic commons,

rather than an online journal. The definitions and delineations of an online academic journal versus an academic commons are interesting and certainly worthy of future research.

Reviewers and Publication Schedules

It has been widely known and discussed that the peer-review process within traditional academic journals often results in long delays from submission to publication (Gidez 1991, 75-10; Kraft 1999, 301; Natriello 1999; Szenberg 1994, 303-13). The new online journal should use technology and gentle prodding by editors to avoid this. The technology is email/web site depositories combined with either Portable Document Files (PDFs) or Rich Text Format (RTF) word processing files. The advantage of the former is permanence of the document itself: PDF are not easily changed. They also tend to be smaller files. With a built in PDF Reader web reference in the download coding, reviewers can read the document inside their web browser window or print a copy for offline reading. This electronic delivery should save several days of communication both directions between the journal editor and the reviewer.

This, however, does not directly address the issue of reviewer delays. To avoid weeks of no response, little can be suggested beyond a gentle prodding by the journal editor, combined with a deadline. Reviewers can be reminded that the online nature of the publication should engender quicker replies on their part, and that reviewing an article once or twice year was an understanding to their being on the editorial board. Making timely publication a part of the mission statement of a journal can also help create a culture of responsive, timely reviews.

Review times may be managed with monetary compensation. The economics of print/limited access journals allows for some honorarium to be built into the review process. This is less likely for open access online journals, the funding of which is likely in the form of small grants, university support, or author fees similar to those presently used mainly in some science journals.

The review process is, ultimately, tied into the publication pattern of an online journal. The very nature of online publishing depends more upon editors realizing their journals are not mirrors of offline print publishing. For example, online journals need not publish on artificial, calendar-driven publishing dates. Such timetables may make sense for reader-driven online publications, such as magazines. Readers want to read the entire publication: accessing it at one time makes more sense in that case. But for research that is typically searched on an as-needed basis, there exists a higher necessity to publish immediately, rather than wait for some number of journal articles to be “packaged” into an issue. Thus, rather than creating even more delays, journal editors could publish research when it has been edited and properly formatted for the web.

As we move into a discussion of online journal operations, decisions such as this might be decided prior to an online journal's launch. But they can just as easily be adopted later, as has been the case with some online journals, such as the *Web Journal of Mass Communication Research (WJMCR)* that started with print-styled issues, and ten years later abandoned that format:

Because we publish online, we have come to realize that it is not necessary to adhere to the conventional quarterly scheme required of printed academic journals that depend on the U.S. Postal Service for their circulation. (Stempel and Stewart 2008)

Phase Two:***Operations***

Having established a team (or individual) to run the journal, as well as the editorial board to assist in reviews and policy, the next phase in online publishing focuses on working out the protocol of operations. This addresses how articles are received, reviewed and published, as well as, stored, and updated.

One of the more time consuming elements of online journal management is keeping track of submissions, papers out for review, and those accepted/rejected for publication. Given the expected low amount of funds available per journal living in right side of the Long Tail, software assistance is almost a given. Attempting to do the task without software support in anything but a low-traffic (few submissions) environment would be more than a single editor might fairly be expected to take on. Since 1998, the Public Knowledge Project (PKP) has been one of the leaders in supporting academic journal publishing. Software created by PKP provides a free, open access solution to online journal management(Anonymous2008).

Software Platform

Keying into the growing demand for journal publishing, software packages have been designed to make the operation easier and more manageable. More than two dozen are listed, with short descriptions, at SPARC, a division of the Association of Research Libraries (http://www.arl.org/sparc/publisher/journal_management.shtml). Among these, a few are free (open access) software packages, including ePress, published by the University of Surrey (<http://www.epress.ac.uk>); Open Journal Software, published by the

Public Knowledge Project (<http://pkp.sfu.ca/?q=ojs>); and Zope (<http://www.zope.org/>); as well as several others.

As do many of these open source software packages, Online Journal Software (OJS), offers substantial support to editors in the way of file management and work flow coordination.

Open Journal Systems (OJS) is a journal management and publishing system that has been developed by the Public Knowledge Project through its federally funded efforts to expand and improve access to research.

OJS Features

1. OJS is installed locally and locally controlled.
2. Editors configure requirements, sections, review process, etc.
3. Online submission and management of all content.
4. Subscription module with delayed open access options.
5. Comprehensive indexing of content part of global system.
6. Reading Tools for content, based on field and editors' choice.
7. Email notification and commenting ability for readers.
8. Complete context-sensitive online Help support. (Willinsky 2003, 263-4)

These relatively new—most created within the past decade—software solutions literally have changed the publishing landscape. The cost to create an online journal, in terms of both online and offline management, are significantly reduced. The software provides tracking of submissions, reviewers, and publishing, all within an online environment. The need to print, mail, re-mail, and ultimately mail revised manuscripts to authors is moved to a secure web area. This provides easy downloads, uploads, and extremely valuable tracking of the entire process. No team considering launching a new online journal should overlook the massive impact these systems will have on their operations.

Finding Space for Electronic Archives

The decision of where a journal will be hosted—on whose server the files will reside—can be driven by network capacity, cost or prestige.

Many universities, having seen their web networks evolve in fits and starts over the past 15 years, may be reticent or simply unable to provide a secure and off-campus accessible web area. With hundreds, possibly thousands of sub-network servers operating within a university domain, the ability to provide authentication—the ability to provide authorization via passwords to incoming visitors to the journal site and contents—can be a very large challenge. Editorial boards for new journals may encounter significant resistance from university technology professionals to server hosting within a university.

However, many university libraries are attempting to install D-Space servers intended to store faculty research. In fact, the recent directives from the National Institute of Science (NIH) to require public access to funded research is a significant impetus for these libraries and universities (Anonymous 2008b, 1). It is a small, though significant, step for a library to go from D-Space to journal publishing.

Another factor to consider in deciding where to store these files is the university bandwidth: how fast do files, especially large ones, move to and from school sites. The overtaxed bandwidth within some universities may offer slow downloads of even moderately large articles. As noted by Fritz in a discussion regarding video files, “some university network administrators see it [these files] as a potential network ‘killer’” (Fritz 2008). Editorial boards of proposed new journals may find themselves looking elsewhere for hosting.

Stanford's HighWire Press, in operation since 1995, has expanded into the largest repository of online journals, with more than 1,100 available. This publisher provides the option to journals it is hosting to charge for access by article or by subscription, or to provide open access (Anonymous2008a, 1). HighWire, and other such publishers, provide a solution to potential journal boards facing a lack of sufficient staff technical support.

The storage issue could be solved by providing storing journal files at off campus storage providers such as Box.net, FlipDrive, Xdrive, Storegate, and GlobalDrive. Charges for storage space through these providers as of May 20, 2008, ran roughly \$1 per gigabyte per month. Services provided include

- Remote Access

- Mobile Access

- Private File Sharing

- Public File Sharing

- Scheduled Backup

- File Search

- Drag-and-Drop

The "front-end" of the journal might be within a university, foundation, or non-profit, with the actual location of the academic articles at one of these secure off-campus providers.

Finally, the need for a university to present itself as a leader in a particular area of research, such as oceanography, may create a sense of mission dedicated to solving the network and cost issues presented in the publishing of an online journal. If the journal is

seen as part of the mission of the university to excel in biosciences, for example, the funds to support that online publication can be built into the grants for other funding vehicles. This trends in the area of politics, which, while vital to any publication within a university, is outside the scope of this article. This is not to minimize in any way the importance of publishing boards to address the political issues of territorialism that are a part of all universities, in one form or another.

Link Rot

It is an old story, but probably true that within seconds of the first web site being launched, someone somewhere bookmarked that site's URL. Bookmarking was such a popular activity in the 1990s that some journal articles addressed everything from how to organize their rampant numbers (Wallach 1998, 34-3), to what to do when a browser encountered "link rot" (Sherman 1999, 54-7). Link rot, or dead bookmarks, usually occurred when a web page's name or location was changed. The bookmark was directed to the infamous Error 404 page, or something similar, but rarely to the new location of the information. Losing a link to a page came to be seen as an insulting act on the part of a web manager. It was a "maddening habit of Web page authors to unthinkingly change the URL (address) of their pages, rendering a bookmark worthless" (Sherman 1999, 54-7). Of course, it also generated some humorous responses, such as that now famous version of a 404 Error page to be found at Ibiblio.org (<http://www.ibiblio.org/abc.html>). Perhaps one of the most massive incidents of link rot occurred on January 20, 2001, when the change in administration at the White House resulted in the website,

www.whitehouse.gov being wiped clean of its content. At least 170,000 links to content in the site were instantly broken(Wiggins 2001, 12-4).

However, bookmarking is not the only, and may not be the most critical content issue facing academic journals regarding broken links. As more and more research relies upon online sources of information, the citations in they use are essential elements of that research. It is a simple issue of showing where a particular bit of information came from. Prior to online journals, these citations were subject to author or typesetting errors, of course; but rarely did a particular cited print work simply cease to exist. Online, citations do cease to work, and, as a team of Nebraska researchers measured, at a predictable rate. Links used in syllabi had a "half-life" of 55 months. That is, half the links used in the syllabi were broken in a little more than 4 years. Following this, another half of the links were broken in 55 more months. (Markwell and Brooks 2002, 105-3). Others have suggested that link half lives fall between 2 and 6 years (Harter and Kim 1996; Koelher 1999, 162-18; Koelher 2003; Lawrence et al. 2001, 26-5; Markwell and Brooks 2002, 105-3; McCown et al. 2005; Nelson and Allen 2002; Spinellis 2003, 71-6). Researchers also have found, at least within communication journals, that the half-life of links is longer for publications with .org (non-profits) or .gov (government) domain name extensions(Dimitrova and Bugeja 2006, 269-15). The researchers also found that overall 37% of the links had rotted over a four year period, a finding consistent with that of previously cited researchers.

The question of how to deal with broken links with online journal article does not render a simple answer. Some online journals resist changing any element of a published work, even if that change is intended to correct a broken link(Natriello and Rennick

2006). At the same time, efforts are well underway to assist researchers find a particular “lost” web site or web page. The Online Computer Library Center’s (<http://www.oclc.org>) Persistent Uniform resource Locator (PURL) project uses a “resolver” that associates the sought web site with one already known, essentially “correcting” the bad address. As of June 3, 2003, almost three-quarters of a million PURLs had been created, with more than 5 billion resolutions.

Editorial boards of online journals must weight the sanctity of the author’s research as written, compared to the desires of the reader to access references in deciding whether to attempt to update broken links. If it decides to attempt to correct link rot, it might use its own staff to search for a suitable substitute, such as finding a new location for a journal article. Or, the staff might chose to contact the author and request a correction or other options. Also, the journal web site could include special coding that would automatically notify the editorial staff that a link is broken within an article. Such a link could be labeled as broken, the link coding removed, and, thus, left uncorrected.

HTML sustainability: Is PDF the (only) answer?

Visit the World Wide Web Consortium’s web site (<http://www.w3.org>) and spend any time wandering through the site, it is possible to encounter three forms of HTML coding for an emdash(Gould 2006). Gould’s point in the article was that HTML, through all of its changes, may not be the best home for information over the long haul. With the changes in the “accepted” HTML standards by the Consortium itself, rendering something as innocuous as a long dash symbol poses a real challenge for browsers. Of course, other characters present challenges, such as quote marks. Ultimately, the question

of readability over time can generate a very real uneasiness among online journal publishers and researchers, online or not.

However, while the most common formatting option, other than HTML, is the Portable Document File (pdf) format, owned by Adobe, Inc., even here publishers face issues. Two of the most obvious are those of storing any research within a proprietary software format and the larger, potentially browser-crashing file sizes. Some commercial web reviewers, such as those at UseIt.com and pass4press.com, list far more issues, such as image resolution, font embedding, page sizing, compression, as well as browser crashes (Anonymous Top 10 Problems with PDFs, 1; Anonymous Top 10 Problems with PDFs, 1; Nielsen 2003, 1). But just focusing on the ownership and file size, it is of note that the International Organization for Standardization (ISO) has adopted a form of PDF (PDF/A) that it believes represents the best choice for long-term electronic archiving.

The feature-rich nature of PDF can create difficulties in preserving information over the long-term, and some useful features of the PDF file format are incompatible with the demands of long-term preservation. For example, PDF documents are not necessarily self-contained, drawing on system fonts and other content stored external to the original file. As time passes, and especially as technology changes, these external connections can be broken, and the dependencies cause information to be lost. Additionally, because of the lack of standardization among the many PDF development tools on the market, there is inconsistency in the implementation of the file format. This lack of standardization could be chaotic for the information managers of the future, especially as it would be difficult (if not impossible) for them to “get under the hood” of the PDF files unless a format specification were put in place that specifically addressed long-term preservation needs. (Anonymous 2006)

The ISO does not address the issue of using proprietary software. Storing research long-term within a proprietary software environment raises issues of access, software availability, and a host of other potential challenges. What if the very basis of Adobe's

PDF software changes, or is significantly modified in such a way that accessing past journal research is only possible with forms of the software no longer supported? What if some online virus is spread that affects only the readers, but, by doing so, threatens access to archived research? While these and other similar challenges are beyond the scope of this research, it is worthy of further discussion.

Phase Three:

Long-Term Sustainability

As is the case with some projects within academia, it is the driving force of one professor or a small group that is behind the creation of a new online journal. This entrepreneurial spirit is the fire necessary to get a project off the ground, establish guidelines, and attract necessary support. Long term, however, the entrepreneur is not a sustainable model. As noted by Wright, without an understanding of the role of the entrepreneur in the academic community in terms of a reduced academic scholarship performance, the faculty member busy creating and sustaining the journal may be penalized (Wright 2007, 791).

A major challenge is the resolution of the dilemma that faculty required to contribute to the development of spin-offs may need to have considerably more practical experience than typical business school academics and as a result may be less able to contribute to academic research. Policy therefore needs to address the career structure and integration of faculty in business schools whose role is to promote academic entrepreneurship. (Wright 2007, 791)

Funding/Sponsorship/Value to the Institution

Models might include buy outs of university faculty to act as journal editors, funding of graduate students to act as editorial assistants, and funding through libraries and schools of library science.

The level of necessary financial support may depend upon the nature of the operations structure of the journal. And, to some extent, the operations structure of the journal may reflect the scope. Broadly defined subject areas likely will require more staffing than narrow topics. For example, the journal, *Journalism Monographs*, would require minimal staff, given the frequency of publication and the nature of the articles published. Should *JMCQ* choose to go online as an open access journal, the staff would need to be significantly larger, given that it publishes roughly 40 articles a year. Of course, the decision of how many articles to publish online would no longer be dictated by available space, in some cases. And, some models have been proposed, as mentioned earlier, that generate “rating” for submitted work, rather than accept/reject standards.

Hosting

As mentioned earlier, the cost of server space within a university is minimal. However, while storage media costs have fallen dramatically in recent years, universities often struggle with a far more challenging issue: access speed. In fact, the demands placed on a university system to accommodate one particular activity, such as the downloading of PDS from an online journal hosted with the university network, can cause other users to experience significant reduction in their online downloads and uploads. In the case of San Jose State University, the popular use of Skype was banned

because of, largely, bandwidth “hogging” by users. “Citing concerns regarding security and consumption of bandwidth, school administrators feel that the service is an unnecessary and potentially illegal waste of resources. The University of California--Santa Barbara and California State University--Dominguez Hills have also recently banned the popular [Voice IP] service” (Paul 2006).

The impact of a new and popular journal on a university's already stressed bandwidth should be assessed before the journal is launched.

Tenure/Academic Ratings

In the middle of 2006, this author was contacted by a handful of journalism schools seeking guidance on how to evaluate the importance of online publication. The “old” model of rejection rates and the “reputation” of a journal seemed remote to these school committees in terms of evaluating online publishing. Given the likelihood of academics gravitating more and more toward open access publications to find research to support their works, citation rates of less-than-fully open research articles are likely to fall (Palmer 2006).

When it was suggested that editorial boards and citation rates might be the future, some expressed concern over the ephemeral nature of online publishing. Indeed, the very nature of journals themselves should rightly cause academic departments to pause. Take, for example, the possibility that all academic research may, at some point, be published within a university's own D-Space. That is, rather than sending research to a journal outside of the university, what if, instead, the article was made available online through a

university's own servers? The role of the journal would be reduced to that of a movie critic, giving its blessing to some and rejecting others.

Varian suggested in 1998 his own publication system for an online journal that starts with a board of editors reviewing papers and ranking them 1 to 5. All submitted articles, in this system, are published (with author permission), with readers able to scan the holdings looking for those that meet their particular level (say, 3). Add to this the ability of readers to comment on published work, and you have, according to Varian, a “model...unlike the conventional publishing model, but [one that] addresses many of the same design considerations.” Tenure committee would be able to track these publications, just as readers would, and accept publications based on rating standards acceptable for their institutions. Authors would be able to update their work, and, presumably, expect another round of reviews. The entire model outlined by Varian is fluid, interactive, and eliminates the economic barriers and potential biases inherent in the far more expensive, far slower to respond traditional print publishing model (Varian 1998).

Cites and InfoLinking

Differentiated from our discussion of “Link Rot” above, the challenge here is formatting, both of hyperlinks to research footnotes and of those meant to link to additional information sources outside of the journal itself, what we might call infolinks. The linking to footnotes has a few options.

1. Linking to footnote references located at the end of the article, with links from the cited footnote back to the original position in the article;

2. Linking to a pop-up window;
3. Linking to a frame page that exist outside the frame in which the article resides.

Other options are generally variations of these. Each of these come with their own drawbacks. Linking to footnotes below the article is troublesome if the citation is from an author name (as in Chicago Style). If the cited author appears more than once in the work, the link back to the original reader's spot in the article is difficult, if not impossible to create. However, if the editors use a style that links numerical citation, such as that common with legal citations, the link back can be presented precisely. Of course, in this case, the actual footnote section can be greatly increased, which could affect download speeds.

Linking to a pop-up window is a dicey option, given that many browsers are specifically set to block pop-up windows in order to avoid undesired advertising pitches. In a similar vein, framed web sites—a rare phenomena these days—may create issues of improper linking from search engines that may produce in a search one frame, but not both. Special care must be taken to ensure that readers are directed to the proper bi-framed page.

Infolinks are a separate challenge. As Thelwall noted in 2003, “Web links represent both anarchy and order.” Too few may miss the point of using these links to enrich in depth and breathe a research article. Too many can cause confusion with readers that borders on an annoyance. Yet, as fundamentally educators, researchers are born with the desire to enhance and deepen the learning experience (we would hope) that is part of academia. As Thelwall goes on to suggest:

In many disciplines, education includes pointing students to a range of information sources for assimilation or evaluation. Given the importance of the Web as an information source, there *is* a necessity in general terms to identify relevant online information and point students towards it, whether this is achieved by URLs in printed handouts or links online in course Web pages.(Thelwall 2003)

The challenge for the journal editors is whether to choose to work with the author to enhance the research by suggesting specific infolinks, or to merely publish in a hands-off mode.

Conclusion

This discussion outlines a few major challenges facing new publishers of online academic research. Each of these challenges requires careful consideration. Whether it is defining a subject, establishing an editorial board (and policy), or merely determining its publication schedule, online journals offer a wide variety of options. Subject can be exquisitely narrow, boards can be singularly refined, and publication can be determined by the value of each article, rather than an artificial seasonal publication pattern.

New online journals and their access policies and editorial procedures have not even come close to establishing “industry standards,” and it may be they never will. Each may choose its own path, appealing to its own readers, publishing its own preferred works. The challenges such “anarchy” poses to the academic community and to the corpus of research is not part of this discussion, but obvious should be the focal point of future research. For instance, what if research journals are supplanted as actual “publishers,” and evolve into review boards. Such a model does exist within the movie

industry: critics do not create films, but evaluate their worthiness as creative artifacts. Future “online journals” may be simply a grouping of respected researchers commenting on and supplying links to research already available online. This activity may mimic existing online portals that assist researchers find appropriate and relevant research for use in their teaching and publishing. Such “online journal portals” (OJP) may provide collections of excerpts from various pertinent research articles that could be used in classrooms (versus what is now a printed textbook). Such OJPs may provide guidance in connecting researchers to grant providers (or vice-versa).

But perhaps of greatest value, these OJPs could be very narrowly defined within the right side of the Long Tail, serving only a very small, narrowly focused group of researchers. And within this “commons”, as in some cases in the previous century, a few scholars might dominate the research landscape within a small number of articles addressing only a very carefully defined issue, as noted by Pasadeos, et. al. in 1999 (Pasadeos and Hanily 1999, 29-13). If this sounds familiar to some, it might be because the nature of these OJPs might be very close to what we are already seeing within university-sponsored “research commons.” These portals are providing areas of discussion, access to online tools, and areas of storage, activities that are all consistent with the past and existing missions of print research journals.

The nature of academic publishing has changed. Much as newspapers and television struggle to come to grips with a world where they are the creators, but not the distributors, of information, so are academic publishers slowly waking to a new world that may no longer need what they have to offer. The questions facing academics in this new world may not fall into the where to publish categories, but rather purely what to

publish. The issues facing new online journals dealt with in this article may be as ephemeral as those challenging print publishing, and, may at some point not to far in the future be as moot. We are in a time of transition, moving from print to online to OJPs. As uncomfortable as this may feel, it cannot to denied or slowed.

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