

Funding Open-Access Journals:
If not the User, Who Pays?

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People have been getting ideas for a very long time, and have wanted to share these ideas for almost as long. Scholars, in particular, have felt it important to spread word of their findings—so they could take credit for them, to help others make new discoveries based upon their work, and to know that the work would be available permanently. In the seventeenth century, scholars began circulating ideas in bound, printed collections, which allowed a more effective distribution than individual letters had. These were the first journals, and their ancestors are still with us as the dominant form of scholarly communication today. This paper begins with a brief overview of the scholarly publishing crisis which has driven the discussion of and move toward open-access publishing and the current state of affairs, then makes an examination of possible funding approaches to support a model of communication under which the end user bears no direct costs for access to scholarly information.

Since the 1665, when the Royal Society of London founded *Philosophical Transactions*, publication has been the chief means of communication between scholars (Morton). As it is traditionally understood, scholarly publication is the formal release of an idea into the community for discussion, achieved through a journal which allows distribution and provides credibility to the conclusions through a peer-review process. These scholarly journals were initially the product of scholarly organizations, developed specifically to share findings with other members of the field; however, as the number of working scholars grew through the second half of the 20th Century, the work they produced became too much for these organizations to publish. Commercial publishers took up the

difference, creating new journals to accommodate the overflow and to represent new fields. Accordingly, the number of available journals has risen.

Prices for these journals, especially those from commercial publishers, have also risen at a much higher rate than inflation in general (Morton). With rising prices and simultaneous losses from academic library budgets, it became apparent in the 1990s that the present model was not working. Yet publication remains an essential piece of the academic process, something all scholars must undertake as part of their careers.

Meanwhile, technological advances have made 'desktop publishing' both simple and convenient, creating hope for a new paradigm which will be both less costly and more equitable, but scholarly publishing's move into the electronic age must still address the basic issues confronted by any academic publisher. Specifically, questions of cost structure, academic credibility, copyright, distribution and long-term archiving must be resolved before electronic publishing can fully replace the current paper-based journal system. Meanwhile, as Stevan Harnard reiterates, this discussion is limited strictly to the esoteric articles that are only of interest to a few initiates in any given field who would desire an audience more than remuneration (Ginsparg).

Framing the Issue

This debate has been ongoing, in some form, since the 1960s, when the internet was being developed for military and academic use. The first major academic 'publishing' effort was Paul Ginsparg's high-energy particle theory database, on the Los Alamos National Laboratory servers, which posted abstracts of pre-publication papers for review and comment (Ginsparg). The movement truly took hold, however, in the late 1990s, as the World Wide Web became ubiquitous.

Bruce Morton (1997) opens the discussion with an examination of current, paper, publishing, which is undertaken to achieve wide dissemination, timely distribution, assurance of academic integrity, and peer recognition. He concludes that the system is broken, as demonstrated by both reduced access to new information, a result of the increased number of journals published and their rising prices; and the abuse of authors perpetuated by publishers who demand assignment of copyright, and often per-page payments, to put an article into print. The publishers seem to have forgotten that they provide a medium for scholarly communication, not the communication itself. Morton suggests that their abuses are forcing a paradigm shift because the present system cannot be maintained, yet indicates that the new system will be no better unless we design it carefully. Among the problems he foresees are financial support, technical considerations, archiving, access, indexing, copyright, and academic credibility.

Four years later, Andrew Albanese (2001) reiterates that rising costs, new distribution possibilities, and a growing feeling that research should be a public resource rather than property of a publisher make change inevitable.

Of course, the publishing industry is anxious to defend itself, and its profits, against the perceived threat of electronic publishing. Karen Hunter (1998), a Vice President at Elsevier Science, presents a rebuttal that boils down to an explication of costs. Paper publishers, she notes, face first-copy content costs, printing and distribution costs, and database creation and maintenance costs. She also says that "databases are electronic tools—and resources for mining—but one can argue that they are not 'publishing' in the sense that the word 'publishing' has traditionally been used." This sentence, which demonstrates that she does not understand the argument in which she is

participating, does not, however, undermine the fact that electronic publishers will still face all the costs of print publishers except the actual printing and postage.

Finally, we should note what users want or expect of electronic publications. William Miller (1997) points to the growing belief that all information is (or should be) online and free; Vincent Resh (1998) examines user expectations that electronic publishing will reduce subscription costs and time to publication, provide value-adding elements, and encourage collaboration. He concludes that all of this is possible, but realization will again depend on what sort of system we construct.

The Vision, circa 1997

Ginsparg's HEP-TH pre-print abstracts database, launched in August 1991, was one of the first efforts at online-only scholarly publishing (Ginsparg 1996). Ginsparg sees such a database as both more efficient and more cost-effective for distributing research than the traditional model and, if supported by publication fees, free to all users. Additionally, he sees this as allowing authors to utilize the web's multi-media advantages over paper, such as links to cited articles, audio or video files, and other attachments to the text, while leaving copyrights in the hands of authors or their funding institutions. Peer-review should also be easier online. He does, however, note that this model will only be effective in fields for which there is no commercial market.

Morton (1997) also put forward ideas about how electronic publication should be implemented. He too assumes that peer review will be part of the process; additionally, he sees credibility resulting from affiliation with sponsoring professional and scholarly organizations. Morton suggests that either of two models could work: a decentralized system, in which each title is resident on the server of its sponsoring institution, and a

centralized one in which all fields, titles, and articles would be brought together under a single institution such as the Association of Research Libraries or American Council of Learned Societies, or a consortium of such groups. He suggests that costs for server maintenance could be covered by institutional access fees, with smaller schools paying less. In either model, articles could be released in either regular volume/ issue form or posted immediately upon acceptance. In all cases, he asserts that copyright should remain with the author or research-funding institution.

Miller tries to curb enthusiasm by pointing out that even electronic publishing entails costs beyond server maintenance, and that commercial publishers see electronic journals as an additional revenue stream. He suggests, however, that material can be made freely available in either of two ways: the funding institution can publish it online directly, or the government can establish an open-access collection to publish tax-payer subsidized research. These models are logical extensions of Morton's decentralized and centralized models, carrying only the obvious additional caveat that the host institutions foot the bill, and BioMed Central is an example of the later approach in action.

Challenges

Appealing as this vision of unlimited, universal access to all published scholarly material is, it still faces three major hurdles. The first is a question of preservation: since these electronic publications are ethereal items, with no physical manifestation, how will they be made available to future generations? The bits reside on a server; if the server crashes or is shut down, what becomes of the knowledge contained therein? This question is being addressed by a number of institutions, from the National Archives to the Internet Archive (<http://www.archive.org/>).

Another challenge with scholarly publishing is the reputation factor. As Jack Snoeyink (2005) notes, "The research community needs certainty with respect to the validity, normally obtained through the peer review process"; this unfolds into two problems. First, the peer-review process grants credibility to the findings of a particular paper. Secondly, however, the very journal in which a paper appears carries information about quality: longstanding journals known for excellence are preferable to startup endeavors of unknown quality, and are thus more desirable places to publish.

Peer-review is offered by many open-access journals; in fact, it is required for listing in the Directory of Open Access Journals. As for the prestige conveyed by inclusion in a top journal, there is a potential remedy: schools with well-known programs could host journals on those subjects, and could perhaps enlist corporate sponsorship. This would mean that both the school and the business 1) support the journal financially and 2) both funnel their scholars to it as a preferred publication. These actions will increase the new journal's prestige (as top names in the field publish in it, its reputation will improve), ensure support through (and beyond) the startup phase, and provide a captive content source.

Finally, the greatest challenge facing open-access journals is cost. Rick Anderson (2004) summarized the various beliefs about information access: 1) scholarly information is a public good and ought to be available to the public at little or no charge, 2) information is inherently free and no one ought to have to pay for access; 3) academics are producing most of the scholarly articles in the journal marketplace, but the institutions that provide the content are having to pay excessively for access to the very content that they created; or 4) information that has been created with the support of public funds

should not be restricted at all. Electronic publishing has for some time now been seen as a possible solution to "the serial crisis" in academic libraries, but even a journal delivered online and created by volunteer editors, reviewers, and authors faces certain significant expenses, as John Houghton (n.d.) describes in "The Crisis in Scholarly Communication: An Economic Analysis". First copy costs are estimated at about 75% of the total costs of publishing a print journal; article processing costs—those associated with selecting and accepting a paper—are nearly 45% of the total, while marketing and administration are almost 30%; the printing and distribution costs are only about 25% of the total cost in the current paradigm. This means that the potential savings from digital delivery will not make the exercise immediately affordable to any interested party. While no one wants cost to be an issue—we assume an open-source, open-access model with end-product freely available via the internet is the goal—these expenses must be met if the journal is to be produced.

Given that electronic journals are distributed over the Internet, without incurring the costs of printing and postage, it seems reasonable to expect that production costs, and thus access costs, should be significantly lower. Yet even so staunch a proponent of electronic publishing as Harnard acknowledges that necessary expenses exist. Within the electronic publishing community, however, there is great difference in what those costs are expected to be. Some of the differences can be attributed to differences in publication requirements: journals in the humanities rarely require the expensive typesetting required for mathematical equations in the sciences.

Harnard advocates what amounts to massive migration of esoteric academic articles, those only published to benefit a small community of researchers, to an entirely

electronic format. His estimate is that by completely bypassing the print process, saving 75%-80% over comparable print journals is possible (Okerson & O'Donnell 1995). As Hunter pointed out earlier, however, any credible publisher will still incur first-copy costs. Lorrin Garson of the American Chemical Society's publication division has indicated that their first-copy costs are approximately 85% of their total publication costs (Okerson & O'Donnell 1995), while the online journal *Earth Interactions* found that costs were nearly identical to those of their sponsoring societies' print offerings (Holoviak & Seitter 2001).

According to Marjolien Bot, the cost of publishing an electronic journal can be divided into the following categories (Bot et. al. 1998):

- a. General overhead, e.g., buildings and management.
- b. Facilities, e.g., computers and networks.
- c. Publications, e.g., editing, training, and marketing.
- d. Creation of material, e.g., authors, editors and reviewers.
- e. User costs, e.g., personal computers and Internet connections.

Material creation is generally uncompensated, and user costs are borne by users, so neither needs be considered here.

Whatever the costs may be, they will have to be paid if electronic journals are to be published. So far, three models have developed. The first, adopted by *Earth Interactions*, is to provide a subscription service, just as print journals do. The second, also borrowed from print practice, is to charge a publication fee to cover publishing expenses, as does the Public Library of Science. Finally, of course, the publication may be undertaken entirely gratis by a volunteer who provides all the necessary resources, or may be underwritten by either grants or host institution support. Whatever the model chosen, however, the hopes for free access to everything for everyone are at best

premature. As Anderson concludes, "for information to be made freely and permanently available to the public, the costs of creation, publication, and distribution must be absorbed by someone other than those who wish to use it. The Internet eliminates most distribution costs, but not all of them, and does not affect creative costs or publication costs to any appreciable degree" (2004). The question of how best to secure this funding drives the remainder of this paper.

Controlling Costs

As noted above, first copy costs will be a great portion of any journal's budget, probably around 25% when separated from other overhead expenses. Once the costs of printing and delivering the physical journal are eliminated, the next step is to examine the process of content creation and editorial work in search of means to facilitate the process and drive cost savings; even small efficiencies in the peer-review and editorial process can realize significant benefit. Reducing these first-copy costs, after all, will apparently be the chief means of reducing costs (Sosteric, Shi, and Wenker). John Willinsky (2003b) suggests that "further savings can be achieved as more of the journal management is supported by the use of open source management systems which, for example, automate aspects of the correspondence with authors, reviews and others". Finding suitable tools, with both low monetary cost and low skill-development cost, is thus essential, and a wide variety of tools is presently available. The Association of Research Libraries maintains a list of journal management systems at <http://www.arl.org/sparc/resources/pubres.html> which includes offerings from Highwire Press, the University of Maryland, Aries Systems Corp, Zope and others. Some of these are proprietary systems, while others are available as open-source software.

The Current Situation

The printed editions of some leading scientific journals are no longer complete or authoritative; the authentic versions of record are the electronic editions, which may have more articles, embedded or linked supplementary information appended to the articles, or editorial content that cannot exist in print form (Keller et. al. 2003). Some journals are only available online, such as *Earth Interactions* (<http://earthinteractions.org>), *Public Library of Science* (<http://plos.org/>) or *First Monday* (<http://www.firstmonday.org>). Best practices are evolving, and most parties seem to have accepted that progress, however slow it may seem, is being made toward the ultimate goal of making information more useful and more available. The following examples will help illustrate where the field is presently.

Earth Interactions

EI began publication in January 1997 with a simple goal: "to remove the limitations of the printed page while delivering a high-quality, peer-reviewed scientific journal that permits scientists to present their results in the most useful manner possible" (Holoviak & Seitter, 1997). To that end, they created an online-only journal, with support from the American Geophysical Union, American Meteorological Society, and Association of American Geographers. It is a subscription service; individual subscribers pay \$55/ year, while institutional rates range from \$110 to \$450. Abstracts can be accessed free of charge, and the site offers a pay-per-view mode for non-subscribers who wish to see a particular item. New issues are released quarterly (*Earth Interactions*).

EI, then, is a subscription service like any traditional journal. It is sponsored by, and gains credibility from, academic societies, and requires peer review. With an eight-

year publishing history, it would seem to be an unqualified success. It is not, however, an open-access journal.

First Monday

Since its start in May 1996, the Internet-only, peer-review journal about the Internet

First Monday has published 504 papers in 93 issues; these papers were written by 609 different authors. It is indexed in Communication Abstracts, INSPEC, LISA, PAIS and other services. In 2003, users from 816,912 distinct hosts around the world downloaded 5,385,649 articles. After an initial experiment with subscriptions, the journal decided to allow open access. It is hosted by the University of Illinois-Chicago (*First Monday*).

This is another peer-reviewed journal with a (relatively) long history and free access. It stands as an exemplar of electronic publishing's promise, realized.

Public Library of Science

PLoS is a growing group of electronic journals. Beginning with *Biology* in late 2003, followed by *Medicine* in early 2004, the plan is to create an open-access repository for current, peer-reviewed scientific articles. The project aims to catalyze change by urging individual scientists to take back control of their scholarly work; by using a publication-fee model, the journal is able to recover costs and allow free access (Doyle 2004).

Moving into the Future

In 1997, only about 4000 of the 150,000 journals published were available online (Miller 1997), and very few Internet-only journals were published. Now we are up to approximately 2,400 open-access online journals, an Internet-only journal such as *First Monday* has gained enough stature that it can be cited in academic work, and most scholarly journals are available online by some means. Yet we still want more. We want

everything to be available freely. Studies have shown (Harnad and Brody, 2004) that while access is not a sufficient condition for citation, it is a necessary one. Because free access makes material available to a much larger audience than can subscribe, open access leads to a disproportionate number of citations.

The Directory of Open Access Journals (<http://www.doaj.org/alpha/ALL/%20>) defines open access journals as "journals that use a funding model that does not charge readers or their institutions for access", and requires that the journal must exercise peer-review or editorial quality control to be included. The Directory "aims to be comprehensive and cover all open access scientific and scholarly journals that use a quality control system to guarantee the content", "to increase the visibility and ease of use of open access scientific and scholarly journals thereby promoting their increased usage and impact". The lists of titles they have available are staggering. Yet while early visions of an online academic community of scholars are closer to reality than ever, commercial publishing still holds sway. To publishers, online journal availability represents an additional revenue stream, while electronic publishers must still struggle with the fact that publishing, whatever its form, is an expensive effort. For example, the National Institute of Health (2005), responding to questions about operating costs for their public access archive PubMed Central, estimates \$2-\$4 million per year for the incremental costs to create and maintain a website for submitting authors' final manuscripts and for XML tagging of the manuscripts into archival format. This cost is reduced by using existing information technology infrastructure housed at the NLM, and should be an exceptionally cost-effective means to accomplish its goals of archiving,

facilitating program management, and enhancing accessibility. While perhaps a great savings, \$2 million is no small amount of money.

As we move forward, the question should not be whether scholarly communication can make the transition to online-only forms, but rather how scholarly work and communication should be funded and made accessible. Complaints against the current system involve pricing and access restrictions; these complaints are not addressed by moving journals online, but require a new publishing paradigm for scholarly articles. The remainder of this paper will take a more in-depth look at potential funding models and consider a case study of the University of Michigan's Scholarly Publishing Office.

Even the early dreamers must recognize that high-quality scholarly publishing carries costs, even in the online environment. There are other open-access approaches such as self-archiving by authors and open institutional repositories; these, however, differ from peer-reviewed journals in significant ways. Self-archiving makes material available, but carries no authority beyond the author's name; a journal, on the other hand, certifies the ideas contained therein as being worthy of discussion. Institutional repositories do lend the credibility of their names; however, they can make no effort to organize, catalogue, or otherwise add value to their contents—the task would simply be too great.

Jeff MacKie-Mason, in introductory comments to the Electronic Scientific, Technical, and Medical Journal Publishing and its Implications symposium in 2004, sums up the new attitude:

The business models depend on how the information is accessed and what the information is. . . . There is value in the content itself, as well as in the value-added services that publishers, disseminators, aggregators, and distributors provide. There is thus a question about how different business models might

succeed at supporting both aspects of the process, both content creation and distribution, getting incentives to generate the knowledge in the first place and getting reasonable incentives to provide high-quality publication, dissemination, indexing, and abstracting services. Having a particular business model that may address some of those needs, may not address others.

Mackie-Mason is well-positioned to speak on this, having worked with Carl Shapiro on the Pricing of Electronic Access to Knowledge (PEAK) project. Yet the PEAK studies are of limited value, in that they examine the effects of differing subscriptions methods on academic electronic journal usage. Imagine, electronic journals get more use when it takes less effort for the reader to get to an article! Likewise, Shapiro's work with Hal Varian in *Information Rules*, while addressing the information economy and strategies for succeeding in it, is not particularly germane. They are discussing hardware and applications more than content. The discussions of pricing and versioning have relevance, but would be much more applicable if we were not dedicated to giving away the content we are going to produce. Giving it away, after all, is what makes it open access. However, even such a strong supporter of open access as Andrew Odlyzko (n.d.) concedes that, thanks to the negligible marginal costs involved with digital publishing, price differentiation and versioning may be effective for cost recovery in some models. He counsels, however, that it may also raise questions of fairness, and his preference for open-access is apparent.

Yet what exactly does that mean? The Directory of Open Access Journals defines it as "journals that use a funding model that does not charge readers or their institutions for access", but John Willinsky (2003) identifies nine varieties of "free" access. Some of these are compatible with a subscription model; others are presented as a pure public good. In the order Willinsky addresses them, these models are "eprint servers" which

enable authors to place their published and unpublished work online in an open access and well-indexed format; a journal that is immediately, completely, and exclusively free-to-read, the unqualified open access journal as defined by the Directory; a dual mode open access model which publishes an immediate and complete online edition of its print version, to which it continues to sell subscriptions. Next is delayed open access, which provides complete free access some months after initial publication for subscribers.

Author-fee open access offers complete open access by charging author fees for successful papers, and fits the Directory requirement. Making a portion of the journal free to read, in partial open access; providing per-capita open access, making the online versions of journals free to those living in countries with low per capita incomes; open access abstracts; and a co-operative among the principal users of the journals which would support open access journals as a means of managing their access to the research literature while providing the rest of the world with the benefits of this work—an institutionally-sponsored open access—round out the list. While each type of open access described here does help make the literature more accessible, we are most interested in the unqualified open access journal and the institutionally-supported model, both of which provide immediate, free universal access to material as soon as it becomes available.

Many suggestions have been made for recouping the costs of intellectual property and information delivered via the internet. Michael Lesk (2005) addresses several of these, asserting that monthly or yearly subscription fees, per-minute fees, bounties for signing up new users, transaction fees for downloading, advertising, and page charges are all valid means of recovering cost. However, a system that is by definition free to end-

users eliminates requiring either subscription or per-view fees. This leaves only a few models to generate revenue: advertising, author page charges in any of several forms, and institutional support or sponsorship are the most prominent. Always we face the same problem: who pays? In the end there are only three choices. Users, either the library or reader; producers, through author fees or publisher goodwill; or third parties with advertising or sponsorship.

John Unsworth (2003) interestingly suggests that a journal may be both free and subscription-funded. Unsworth's own title, *Postmodern Culture*, (<http://www.iath.virginia.edu/pmc/contents.all.html>) was founded as and remains an open-access, peer-reviewed journal. However, in addition to free access via its website, *PMC* is also available as part of a subscription bundle through Project Muse. In this case, institutions are willing to subscribe to the title, rather than linking directly to the free site, because Project Muse provides several titles they want and superior features for accessing them. While something to consider, this would probably only be an option once a title has established a readership and reputation. Moreover, it would be oxymoronic for an open-access journal to count of subscription fees for funding.

Mary Barton and Julie Walker (2003), on the other hand, share a multi-faceted funding model from MIT's DSpace project. They receive support from their institution, which recognizes it as an extension of the library's role and funds it through the library budget. Additionally, DSpace benefits from collaborative development with Hewlett-Packard and the World Wide Web Consortium, which contributes to the programming expenses such a project requires. Moreover, federation with other open-source partners allows further, distributed research and development of the product without expense to

MIT. Finally, DSpace even recoups some funds by offering premium services which add value for the end user. Such an approach to funding will probably be necessary for any successful open-access journal. It should be no surprise that Lila Guterman (2005) reports open-access journals have widely varying business models. While the open-access movement is often associated with the author-pays business model, less than half of the open-access journals surveyed charged fees to authors. Other sources of financial support included advertising, corporate sponsorships, and government grants. This is a good thing; as Bell (2005) notes, "while an author-pays model might cover current costs of getting an article into print today, in the absence of subscription income the amount might be insufficient to cover all the expenses of maintaining that article online in perpetuity, including migration to future digital platforms." What, then, does the author fee cover? Mrak and Griffin (2004) explicate how article-processing charges of US\$525 for articles accepted by the Journal of Neuroinflammation are used. They "pay for an electronic submission process that facilitates efficient and thorough peer review, for publication costs involved in providing the article freely and universally accessible in various formats online, and for the processes required for the article's inclusion in PubMed and its archiving in PubMed Central, e- Depot, Potsdam and INIST." All editorial work is voluntary. This seems like a reasonable cost for what publication provides. Yet for some institutions, author fees may prove more costly than current subscription rates; because their faculty publishes, they would be subsidizing free access for everyone else. This indicates that alternatives are necessary.

The Open Society Institute (2004), happily, suggests a variety of potential funding mechanisms. Both self-generated income and subsidies are presented, because different means of covering costs will be acceptable to different organizations.

Options for generating income include input fees for submitted or accepted papers and off-print sales or affinity relationships like advertising, sponsorships, or co-hosting events. Alternative distributors are another option, selling licenses to access files as PDF instead of HTML, for instance. Finally, selling related products and services such as a print (or other media) version or a value-added feature such as a search interface, or selling other merchandise through electronic commerce. Subsidies, on the other hand, bring in funds as gifts, rather than as exchanges. These might include a membership surcharge to support publishing, partnerships with other institutions or agencies, or seeks grants and contributions from other individuals and organizations.

The idea of incorporating scholarly publishing into the library mission seems to be catching. This general institutional support takes advantage of existing infrastructure developed for other initiatives, such as preservation digitizing and providing student access to online resources. Since the stake, in terms of collection expenditures, is so high for libraries, this makes some sense. Savenije and Grygierczyk (2000) point out that they have traditionally been tasked with selecting, preserving, and providing access to information; the processes already have much in common. It should be as efficient for the library to coordinate the back-office work as another group. Moreover, they suggest, taking this new role may be essential for the library's survival as more library functions become available through online services. A portion of the collection budget could be

earmarked for developing the institution's own contribution to the collection, which would be available free to all.

Willinsky (2003b) takes this a step further, by suggesting that consortia of institutions could come together to provide open access—the last of his nine "flavors" described above. He describes it thus:

A cooperative venture formed among research libraries and scholarly associations could well provide the reviewing, publishing, indexing and archival processes that are vital to the health of the research enterprise. . . . It might be based, for example, on the famous 20-80 rule used by Institute for Scientific Information (ISI) . . . That is, roughly 20 percent of the universities produce 80 percent of the most heavily cited articles and are the major beneficiaries of the academic knowledge economy, whether one looks at grants, citations, salaries, or other measures. Further, imagine that 400-500 research libraries worldwide form an alliance to support the publishing programs of scholarly associations at a rate based on perhaps 80 percent of the current subscription fees paid by those libraries to the associations. In return, the scholarly associations would publish their journals on an open access basis. The top research libraries would achieve immediate and long-term savings, while thousands of other institutions would have access to these journals for the first time.

This approach brings libraries into publishing as partners, rather than as publishers; they continue to "subscribe" to the journals they support, but as a condition of their support, the journals must be open. Yet another variation would be to have the consortia support one of their members as the publisher, something Maria Bonn touches on in the case study which follows.

University of Michigan's Scholarly Publishing Office (SPO)
Ms Bonn, director of the SPO, was kind enough to grant an interview on 31 March 2005.

To begin, she noted that the SPO differs from the University Press (UP) in several ways.

While the UP no longer produces journals, having abandoned the *Journal of Electronic Publishing* a few years ago, these are the bulk of SPO's output. However, while the UP is still driven by the peer review process; SPO relies on the editorial board of each journal.

This could raise alarms, but SPO is only providing a platform here, not content. Certification demands differ for each journal, and the SPO takes care only to offer a home to those they believe to be of sufficient quality. Additionally, the SPO serves University faculty first as part of its mission, while the UP focuses on acquiring material that relates to its known strengths, regardless of where it originates. Finally, however, the biggest difference is the fact that UP has a profit motive—it must at least try to cover costs—while the SPO is funded from the library's collections budget and expected to lose money.

The SPO provides a variety of services. In addition to hosting scholarly journals such as *Philosopher's Imprint*, whether for University departments or other schools, SPO provides server space for outside projects such as monograph collections or a collection of legal materials which will eventually reach one hundred million pages. It is the University's institutional repository, where any community member can mount material. They are additionally experimenting with publication of faculty monographs in both online only and print-on-demand forms, as well as hosting the occasional online-only "instead-of-a-book" project, where a scholar develops an informative, interactive website to teach or demonstrate some set of material.

SPO is, by design, a money pit: it's a spending line in the library budget. In spite of this secure funding base, there is no provision for growth. The SPO is expected to increase its capacity just the same. However, as some of the projects just described are hosted to benefit outside institutions, they are made to pay. Hosting services provide for several staff positions and activities. In addition, the SPO occasionally receives

publication funds from a faculty grant. They do not seek page charges, though, and faculty rarely seek to spend money where it is not required.

Bonn has made a philosophical choice not to pursue grants. While many SPOs are grant funded and compelled to spend their lives on the 'hamster wheel', she prefers not to rely on temporary funds. She is thinking about long-term access issues, and losing funds to keep the server up jeopardizes access. Aside from the institutional-support and author-pays models, she sees a number of options. For instance, libraries might use collection funds to support open access efforts instead of purchasing some number of titles. Membership organizations such as SPARC could collect funds from several schools for distribution to various SPOs, or scholarly society could provide support by paying for online, instead of print, publication and letting the results be free, instead of limited to members. She also recognizes advertising or sponsorship as a possibility, but the University tries to avoid this.

Ms Bonn sees a hub model developing, with one SPO for several schools. The division could be geographical, by conference (Big 10, Pac 10 &c), or by subject. This model allows the non-host members to support open access activities financially, and everyone with access to the internet to receive benefit. It is, again, Willinsky's flavor number nine. She asserts that real institutional commitment is necessary on this issue, because "we support scholarship all the way TO distribution, then hand over our work so we can pay for it again. We need to carry the ball over the goal ourselves."

Literature and practice seem to be converging on the institutional support model, with institutional repositories and SPOs as competing, complementary approaches to providing open access.

Next Steps for Research

As this review of the literature and case study have made clear, there are a number of questions facing scholarly communication as it makes the transition from print to the online environment. Open access, whereby academic work is immediately, freely available, is a worthy goal. Libraries seem to be well-positioned to have a role in providing this. Several options for funding such ventures might be effective, and all should be considered. Yet new questions arise: what is the role of scholarly societies in such a model? Will the new SPOs co-exist or compete with commercial publishers? How, exactly, are the open-access journals currently publishing funded? Additionally, there may be ethical questions relating to the appropriateness of advertising or sponsorship.

A reasonable next step might be to design an instrument with which to survey a random selection of journals listed in the Directory of Open Access Journals. Such a survey should seek to develop a more complete picture of what standard practices are developing and how these journals are managing to stay "in print". Moreover, a book of examples drawn from real practice would make a significant contribution to the literature, which is currently dominated by theoretical work.