

Changing the Role of Research Libraries in Scholarly Communication: The Development of *BioOne*[™]

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Background

As the decade of the 1990's draws to a close, the basic issues related to the economics of scholarly publishing have become familiar to most academic librarians, particularly those involved in collection development. A constantly expanding universe of scholarly information (particularly in the sciences), the continually rising cost of scholarly information, and the inability of academic library budgets to keep pace with inflation are elements of the problem that have all been well documented and discussed continuously over the past fifteen years or so, at least. One of the more recent and concise overviews of the scholarly publishing conundrum was written by Joseph Branin of SUNY-Stony Brook and Mary Case of the Association of Research Libraries (ARL) in 1998 and published in *Notices of the American Mathematical Society* in April 1998.¹ One theme of the Branin/Case article is that the commercialization of scholarly publishing in the sciences is "at the core of the economic problem" faced by academic libraries.²

The appearance of this article coincided with a "call to action" that was initiated by the chief academic officer of a major U.S. university regarding the state of the

scholarly communication system. David Shulenburger, Provost of the University of Kansas, drafted “Scholarly Communication and the Need for Collective Action” as a proposal to be endorsed by his fellow provosts of the Big 12 Athletic Conference Schools.³ The statement was endorsed by that group on April 20, 1998 and begins with the following challenge:

“The Big 12, in collaboration with other higher education associations, scholarly societies, and not-for-profit publishers, must devise a collective action agenda to address the effective management of intellectual property in order to protect and promote scholarly communication. Failure to meet this challenge will put at risk the very nature of the research enterprise, which demands for students and scholars wide access to information about the theories, methods, and findings of others engaged in the search for knowledge.”⁴

A key paragraph in the statement relates directly to the issue of the commercialization of scholarly publishing raised by Branin and Case:

*“We must urge faculty to **submit articles to professional society publications, support ventures into electronic publishing, and pay close attention to and question pricing policies** of the publications in their specialties. Faculty, especially those who serve as leaders in their professional societies, must urge those societies to take responsibility for maintaining or creating low cost venues for print or electronic publication of refereed journals of research finding and scholarly thought.”⁵*

This section of the document calls attention to the fact that many journals previously published by scholarly societies are now produced by major commercial publishers on behalf of those societies. When this happens, it usually results in a higher price tag for the libraries subscribing to the journal. This issue is exacerbated when smaller scholarly societies are faced with the need or desire to move their journals to electronic formats. Most smaller societies cannot afford the investment in electronic publishing unassisted, and commercial publishers often offer a tempting solution to this dilemma.

Shulenburg's call to those societies "to take responsibility for maintaining or creating low cost venues for print or electronic publication" is a daunting challenge indeed.

Encouraging scholarly societies to seek alternatives (both for print and electronic formats) to more expensive commercial publishing partners is in the best interest of academic libraries from the standpoint of cost containment, but what should those alternatives be? Is there a larger role for the academy itself in this process, and what is that role? How might it impact university presses and academic computing centers, as well as libraries themselves? Are there other stakeholders that can play a part as well?

Academic libraries have become more involved directly in the scholarly publishing process only in the past few years. *Project Muse* is a collaboration begun in 1995 between the Johns Hopkins University Press and the Milton S. Eisenhower Library of that university to provide electronic versions of the 40+ journals published by the press in the humanities, social sciences, and sciences. *Project Muse* provides a central search interface for its journals, all of which are mounted on a central server at JHU.⁶ Also in 1995, Stanford University's library launched *Highwire Press* with the electronic production of the highly cited *Journal of Biological Chemistry*. Highwire now provides access to almost 150 scholarly journals, many of which are society-published. Indeed, Highwire describes its partners as "scientific societies and responsible publishers".⁷ Unlike *Project Muse*, however, Highwire does not utilize a central database for its journals. Instead, many of the journals are mounted by its partner societies on their own websites, with central searching of the various titles provided via Highwire's site. These notable projects provide two distinct models for changing scholarly publishing. This

paper outlines a third model that takes advantage of the collaborative energy of research libraries, academic computing resources, scholarly societies *and* commercial publishing.

Genesis of the BioOne Project

BioOne is the result of an alliance of five organizations related to scholarly communication, representing scholarly societies, the university and academic libraries, and the commercial sector:

- American Institute of Biological Sciences (AIBS)
- Big 12 Plus Libraries Consortium (BTP)
- University of Kansas
- Allen Press, Inc.
- Scholarly Publishing & Resources Coalition (SPARC)

The respective roles of these various partners in the enterprise will be described later, but the original concept for the project evolved from an initial conversation between AIBS and Allen Press. The American Institute of Biological Sciences (<http://www.aibs.org>) serves approximately 125,000 biologists worldwide. The 64 AIBS societies represent the major biology groups outside the molecular biology and biochemistry research communities. Collectively these societies publish about 70 journals, many of which are the leading journals in their respective fields. The research foci of AIBS societies are in the general areas of ecology, environmental sciences, and macro-level, basic biological studies: systematics, botany, mammalogy, plant science, conservation biology, toxicology, agronomy, ornithology, limnology and taxonomy. AIBS society memberships range from 500 to 6000 dues-paying scientists per organization. The

largest AIBS society is the Ecological Society of America while the smallest is the Society of Nematologists. A complete list of AIBS-related societies is available from <http://www.aibs.org>.

Allen Press, Inc. (<http://www.allenpress.com>), located in Lawrence, Kansas, produces scholarly journals for over 300 societies and other scientific organizations. Primarily a printer of journals, Allen Press has been involved in electronic publishing since 1997. Currently, it works with over a dozen scholarly societies on electronic journal production, including the American Meteorological Society and the Ecological Society of America. Altogether, Allen Press currently produces in print and/or electronic form, over 30 AIBS journals. Allen Press is known and respected for its ability to produce high quality journals while supporting its client societies' goal of *providing information at a reasonable price to subscribers*. Some commercial publishers view Allen Press as a competitor because it supports the activities of not-for-profit societies, sometimes against the interests of these large journal publishers.

Early discussions between AIBS and Allen Press confirmed several common interests and ideas related to the dissemination of scholarly information:

- The vast majority of AIBS societies do not yet provide electronic versions of their journals. There is growing interest among the societies to begin developing this option.
- Commercial publishers have approached some AIBS societies about providing electronic publishing services. A few societies, in fact, have already signed deals with commercial publishers, with much higher subscription prices for their journals the result.

- AIBS societies and Allen Press share a common goal of retaining control of the intellectual property of AIBS journals in the hands of the societies and their members.
- Establishing separate websites for AIBS-related journals would be cost-prohibitive for the societies.
- There is a need for aggregated access to AIBS-related journals, due to the amount of “cross-usage” by users of those journals.

In April 1999, AIBS and Allen Press drafted jointly a “concept paper” that proposed the creation of a single, aggregated database of the approximately 80 highly-cited AIBS journals, to be produced in full-text electronic format, searchable via a common interface and available via the Internet, using commonly available Web browsers. The database would provide integrated contents via links among fully searchable SGML-encoded articles, with a fully navigable electronic archive. Allen Press would develop and maintain the production database, utilizing the electronic publishing resources and expertise they had developed already. Development would begin with the 30+ AIBS journals that are currently produced by Allen Press. The launch was targeted for January 2001, with the full content for the 1999 and 2000 subscription years included in the first release of the database.

Due to the long-term potential size of the database, however, a second technology partner was needed to provide high-speed network access. Additionally, development funding to build the database was estimated initially to total almost \$1 million, a sum that AIBS and Allen Press could not handle alone. Because of previous conversations about

scholarly publishing issues between Allen Press and its “neighbor” in Lawrence, the University of Kansas (<http://www.ukans.edu>), the concept paper was sent to William J. Crowe, then Vice-Chancellor for Information Services and Dean of Libraries at Kansas. Crowe immediately recognized the potential for a unique “public/private sector” collaborative opportunity involving scholarly societies, academic libraries, the university community and a for-profit publisher. The involvement of the University of Kansas (KU) achieved two immediate purposes. First, it provided *BioOne* with eventual access to Internet 2 via KU’s connection to that high-speed network. More immediately, however, it brought AIBS and Allen Press together quickly with two important partners representing the key research library market, SPARC and the Big 12 Plus Libraries Consortium (BTP).

Launched with support from the members of the Association of Research Libraries (ARL), SPARC, the Scholarly Publishing & Academic Resources Coalition (<http://www.arl.org/sparc>), works to create various partnerships with publishers that are developing high-quality, economical alternatives to commercial scholarly publishing. SPARC’s overall aim is to create a more competitive scholarly communication marketplace, ensure fair use of electronic resources, and apply technology to improve the process of scholarly communication in a cost-effective way. SPARC’s leadership immediately realized the benefit of a project such as *BioOne* to its 170 member libraries.

Based in Kansas City, Missouri, the Big 12 Plus Libraries Consortium (<http://www.big12plus.org>) consists of 23 large research libraries (most of which are ARL members) located in 10 states in the Midwest, Southwest, and Rocky Mountain regions. At the consortium’s first strategic planning retreat in October 1998, the directors

of the member libraries identified scholarly communication as a key program area in which to cooperate. The previous spring, the members had endorsed the “Scholarly Communication and the Need for Collective Action” statement drafted by Shulenburg and adopted by the Big 12 Chief Academic Officers. The Big 12 Plus staff office, in fact, assisted the Big 12 provosts in publicizing the statement in *The Chronicle of Higher Education* and the magazine *Change*.⁸ Since that time, the BTP had continued conversations with the Big 12 provosts on how to effect change in the scholarly publishing process.

At their spring meeting in Kansas City in April 1999, the Big 12 Plus library deans/directors received a briefing on the *BioOne* concept paper and endorsed the concept enthusiastically. One library director described the project as the most important thing that the Big 12 Plus could be involved in at the present time. There was strong consensus the consortium should involve itself in various aspects of the project, including a commitment of consortium financial resources to development of the database. Soon after, the concept was discussed at a meeting of the SPARC Working Group at the spring meeting of the Association of Research Libraries in Kansas City, Missouri. Members of the working group expressed considerable interest in a role for SPARC in the further development of the project, and charged SPARC Enterprise Director Richard K. Johnson to continue working with the *BioOne* partners.

Project Development

During the intervening months, the five *BioOne* partners have met, either in person or via conference calls, on numerous occasions as development of the enterprise

continues in earnest. The target date for product launch remains January 2001, but a number of things must be accomplished before that can take place.

The Legal Entity

A non-binding memorandum of understanding (MOU) was signed by the partners in June, 1999 which formalized the mutual intent of the partners to continue work on development of the enterprise. BioOne, Inc. was incorporated in Washington, D.C. as a non-profit organization on behalf of the five partners, which will be known corporately as Sponsoring Organizations. The new entity will be managed by a board of directors consisting of one representative from each of the Sponsoring Organizations. In July 1999, an informational website about the *BioOne* website was established at <http://www.bioone.org>.

Technical Issues

Initially, it is expected that the *BioOne* database will include at least the 30+ journal titles currently produced by Allen Press, but perhaps as many as 50 journals published by AIBS societies. When the database is launched at the beginning of the 2001 subscription year, it will include the 1999 and 2000 journal issues as well. Development of the database will take place at Allen Press, which will act in a dual role of contractor in this regard. Since the company already provides electronic publishing services for several AIBS journals, it is in a unique and effective position to implement and maintain the database. Also, Allen Press has a commitment to open standards such as SGML, HTML, ODBC, SQL, and the Digital Object Identifier (DOI).

All journal articles and other document types (book reviews, letters, notes, errata, etc.) will be tagged in a modified version of ISO 12083 SGML, designed to identify all of

the journal header and article elements of all document types of the journals in the system, as well as DOI and PMIDs (PubMed) identifiers. All data will be accessible from computable URLs according to NCBI (<http://www.ncbi.nlm.nih.gov/PubMed/linking.html>) URL specifications so that automatic links can be generated from library systems or A&I services. All characters not supported by standard Web browsers will be rendered as graphics. Allen Press had already developed a large graphic library of almost 5,000 special characters used in science publishing for this purpose. Complex equations will be displayed as graphics, distilled from Postscript for exact appearance of the printed version. Numerous standard links will be available in the *BioOne* database, including:

- TOC to HTML abstracts, HTML full-text, and PDF
- HTML abstract to HTML full-text and PDF
- HTML full-text to PDF
- Tables, figures, equations, citations to references to them
- Citations to full-text of any article in any journal on the system
- Citations to Medline data (titles, abstracts, works by the same author)
- Bi-directional between errata and original article
- Author index to abstracts, full-text and PDF
- Keyword index to abstracts, full-text and PDF

While production of the SGML files will take place at Allen Press, the database will actually “live” at the University of Kansas, maintained by the University’s Academic Computing Services (ACS) department. This arrangement will enable high-speed access to the *BioOne* database through KU’s participation in both Internet 1 and 2.

Finances

The most immediate financial issue for *BioOne* is obtaining funding to underwrite the initial database development costs, estimated at almost \$1 million. The *BioOne* partners have discussed a variety of options and are currently exploring two primary

avenues. First, there are several grant possibilities that are being investigated, but which cannot be mentioned specifically at this time. One possibility does look fairly promising, however.

The second option that is being actively pursued is the solicitation of financial support from the academic library community, which will be one of the major markets for *BioOne* and a direct beneficiary of the enterprise's goal of price moderation. The Big 12 Plus consortium will be a financial stakeholder in the enterprise, although the amount of that contribution has not been finalized. On August 26, 1999, SPARC issued a solicitation to its members for funds to support the development of *BioOne*. Libraries joining SPARC make an annual *Purchase Commitment* toward resources sponsored or developed by SPARC. Member libraries have been asked to provide *Charter Support* of between \$1,000 and \$5,000 (one-time contribution), depending on the size of their materials budget, to help fund the development of *BioOne*. This contribution would be counted toward a SPARC member library's purchase commitment for 1999.

The other major, but less immediate, financial issue to be decided is the price of the *BioOne* database. Discussion of this issue is still in the preliminary stage and will require additional input from a number of stakeholders, including the AIBS societies whose titles will be included. Additionally, it is expected that academic library consortia will be a major market for the product, so the *BioOne* partners are very interested in gathering extensive feedback from the consortial community on this issue. The *BioOne* partners are familiar with the "Statement of Current Perspective and Preferred Practices for the Selection and Purchase of Electronic Information" developed by the International

Coalition of Library Consortia (ICOLC) and will make every effort to develop the product within the scope of those guidelines.⁹

Licensing

The *BioOne* enterprise will require the development of license agreement for both subscribers to the database and the publishers (societies) whose journals will be included. Both license agreements are in process, with a first draft of the publisher license already in hand. Development of the subscriber license is being done with considerable input from the academic library community via the Big 12 Plus, SPARC's licensing taskforce, and staff from the University of Kansas. Additional input for the subscriber consortial license will be sought from ICOLC, again within the scope of the electronic information principles described above.

Conclusion

BioOne has attracted considerable attention since its announcement last spring. Over the summer of 1999, articles about the project have appeared in: *Science* (June 25), Library Journal Academic Newswire (June 22 & July 20), Nature (June 24), The London Times (July 25), and the Chronicle of Higher Education (July 2). Further information about the project is available at the *BioOne* website at <http://www.bioone.org>.

The partners in the *BioOne* enterprise have taken Shulenburg's challenge to "protect and promote scholarly communication" through the effective management of the academy's intellectual property to heart in the conceptualization and development of this project. *BioOne* represents a unique collaboration between scientific societies, higher education, and commercial publishing. It will bring to scientists and students a valuable aggregation of high-impact bioscience research journals in the form of a cost-effective,

hyper-linked Internet resource. Most importantly, it will help to keep ownership of information in the hands of the scholarly societies whose members produce that information, while making it more accessible for those who use it, and keeping it affordable for the libraries that buy it.

NOTES

¹ Branin, Joseph J. and Case, Mary, "Reforming Scholarly Publishing in the Sciences: A Librarian Perspective," *Notices of the American Mathematical Society*, v. 45, no. 4 (April 1998): 475-486.

² *Ibid.*, 478-479.

³ The Big 12 Conference is composed of the following schools: Baylor University, Iowa State University, Kansas State University, Oklahoma State University, Texas A&M University, Texas Tech University, University of Colorado-Boulder, University of Kansas, University of Missouri – Columbia, University of Nebraska – Lincoln, University of Oklahoma, University of Texas at Austin.

⁴ "Scholarly Communication and the Need for Collective Action: A Statement by the Chief Academic Officers of the Big 12", <http://www.big12plus.org/pressreleases/scholar.htm>, May 20, 1998.

⁵ *Ibid.*

⁶ <http://www.press.jhu.edu/muse.html>

⁷ <http://highwire.stanford.edu/about.dtl>

⁸ *Chronicle of Higher Education* (May 29, 1998): A25 and *Change*, v. 30, no. 6 (November/December 1998): 7.

⁹ <http://www.library.yale.edu/consortia/statement.html>