

# The Development of Bioone: Changing the Role of Research Libraries in Scholarly Communication

Alexander, Adrian; Goodyear, Marilu

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As the decade of the 1990s drew to a close, the basic issues related to the economics of scholarly publishing became 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. 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 [[1](#)][[#N1](#)] and published in *Notices of the American Mathematical Society* in April 1998.

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](#)][[#N2](#)]

## Shulenburg's Call to Action

The appearance of this article coincided with a "call to action" initiated by the chief academic officer of a major U.S. university regarding the state of the scholarly communication system. David Shulenburg, 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](#)][[#N3](#)] The statement, endorsed by that group on April 20, 1998, 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](#)][[#N4](#)]

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] [N5]

That 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 that 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.

Shulenburger'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.

## Alternatives to Commercial Publishers

Encouraging scholarly societies to seek alternatives to more expensive commercial publishing partners (both for print and electronic formats) 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 if so, what is that role? How might it affect university presses and academic computing centers, as well as libraries themselves? Are there other stakeholders that can play a part?

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 Hopkins' Milton S. Eisenhower Library to provide electronic versions of the more-than-forty 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] [N6] 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] [N7] Unlike *Project Muse*, however, *Highwire* does not use a central database for its journals. Instead, many of the journals are mounted by its partner societies on their own Web sites. Users may search across titles on the *Highwire* 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. They include scholarly societies, 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
- Scholarly Publishing & Resources Coalition (SPARC)

The original concept for the project evolved from a conversation between AIBS and Allen Press. The American Institute of Biological Sciences [<http://www.aibs.org/>] serves about 125,000 biologists worldwide. The sixty-nine AIBS societies represent the major biology groups outside the molecular-biology and biochemistry-research communities. Collectively these societies publish more than seventy 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. A complete list of AIBS-related societies [<http://directory.aibs.org/directory>] is available on line. (BioOne plans to reach out beyond AIBS to other research communities in the biological sciences.)

Allen Press Inc., [<http://www.allenpress.com/>] located in Lawrence, Kansas, produces scholarly journals for more than three hundred societies and other scientific organizations. Allen Press, which started as a journal printer, has been involved in electronic publishing since 1997. Currently, it works with more than a dozen scholarly societies on electronic journal production. Allen Press currently produces, in print and/or electronic form, forty-six AIBS journals. We at BioOne recognize Allen Press for its ability to produce high-quality journals while supporting its client societies' goal of providing information at a reasonable price to subscribers. Allen Press believes that some commercial publishers view it as a competitor because it supports the activities of not-for-profit societies, sometimes against the interests of these large journal publishers.

**"Funding to build the database was estimated initially to total almost \$1.25 million"**

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

- Although 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.
- Where AIBS societies have signed deals with commercial publishers to provide electronic-publishing services, subscription prices have gone up.
- AIBS societies and Allen Press share a common goal of allowing AIBS societies and their members to retain control of the intellectual property of AIBS journals.
- Establishing a separate Web site for each AIBS-related journal would be cost-prohibitive for the societies.
- Scientists need aggregated access to AIBS-related journals.

In April 1999, AIBS and Allen Press jointly drafted a concept paper that proposed the creation of a single, aggregated database of the approximately eighty highly cited AIBS journals. That database would be accessible through a common search interface on the Internet, and would make available the full text of journal articles in electronic format. The articles, encoded in SGML, would be integrated, with footnotes linking directly to other articles in the database. Allen Press would

develop and maintain the production database, utilizing their own electronic-publishing resources and expertise. Development would begin with the forty-six AIBS journals currently produced by Allen Press. The launch is targeted for January 2001. The database will start with all articles in the journals from January to December, 2000.

Because we had already identified seventy potential titles for 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 \$1.25 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.ku.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 achieved two immediate purposes. First, it provided BioOne with access to Internet 2 via the university'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.

Based in Kansas City, Missouri, the Big 12 Plus Libraries Consortium [formerly <http://www.big12plus.org>] consists of twenty-three large research libraries (most of which are ARL members) located in ten states in the Midwest, Southwest, and Rocky Mountains. 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 "Need for Collective Action" statement drafted by Shulenburg and adopted by the Big 12 Chief Academic Officers. The Big 12 Plus staff, in fact, assisted the Big 12 provosts in publicizing the statement in *The Chronicle of Higher Education* and the magazine *Change*. [8][#N8] Since that time, the consortium has engaged in continuing 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 enthusiastically endorsed the BioOne concept paper. One library director described the project as the most important thing that the Big 12 Plus could be involved in at that time. There was consensus the consortium should involve itself in various aspects of the project, and give money to develop 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. SPARC, the Scholarly Publishing & Academic Resources Coalition, [<http://www.arl.org/sparc/>] works to create partnerships with publishers that are developing high-quality, economical alternatives to commercial scholarly publishing. SPARC's 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. About two-thirds of SPARC's 170 members are also member institutions of the Association of Research Libraries. Many of SPARC's key members immediately realized the benefit of a project such as BioOne to its entire membership, and members of the working group asked SPARC Enterprise Director Richard K. Johnson to make the organization a BioOne partner.

## Project Development

Since then, the five BioOne partners have been guiding the development of the enterprise. 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 nonbinding memorandum of understanding was signed by the partners in June 1999 to formalize the partners' intent to continue developing the enterprise. BioOne Inc. was incorporated in Washington, D.C., as a nonprofit organization on behalf of the five partners, which will be known as Sponsoring Organizations. The new entity will be managed by a board of directors consisting of two representatives from each of the Sponsoring Organizations. In July 1999, an informational Web site about BioOne [<http://www.bioone.org/bioone/?request=index-html>] was established. On January 21, 2000, the Board of Directors of BioOne Inc. held its first formal meeting in Washington, D.C. At that meeting, Dr. Alan P. Covich, a noted biologist at Colorado State University and President of the American Institute of Biological Sciences, was elected chairman of the board.

**"The goal is to obtain enough funding up front so that those costs are not amortized into the price of the service"**

## Technical Issues

Initially, it is expected that the BioOne database will include at least the 30+ journal titles currently produced by Allen Press, and perhaps as many as fifty journals published by AIBS societies. When the database is launched at the beginning of the 2001 subscription year, it will include the 2000 journal

issues as well. Development of the database will take place at Allen Press, which will also be the contractor on the project. 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 the journal header and article elements of all document types of the journals in the system, as well as DOI and PMIDs (PubMed identifiers). BioOne journals will follow PubMed's URL specifications [[http://www.pubmedcentral.nih.gov/about/PMC\\_Uutilities.html](http://www.pubmedcentral.nih.gov/about/PMC_Uutilities.html)] so that automatic links can be generated by library systems or abstracting and indexing services. All characters not supported by standard Web browsers will be rendered as graphics. Allen Press has 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 to match the appearance of the printed version. Numerous standard links will be available in the BioOne database, including:

- Table of Contents to HTML abstracts, HTML full text, and PDF
- HTML abstract to HTML full text and PDF
- HTML full text to PDF
- Tables, figures, equations, and citations to references to them
- Citations to the full text of any article in any journal on the system

- Citations to Medline data (titles, abstracts, works by the same author)
- Bi-directional links 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 department. That arrangement will enable high-speed access to the BioOne database through the university's participation in both Internet 1 and Internet 2.

## Finances

The most immediate financial issue for BioOne has been obtaining funding to underwrite the initial database development costs, estimated at almost \$1.25 million. The BioOne partners have discussed a variety of options and have embarked on an ambitious program to solicit support from the academic-library community while at the same time exploring grant opportunities. The goal is to obtain enough funding up front for development of the product, so that those costs are not amortized into the price of the service when it goes to market.

The Big 12 Plus consortium will be a financial stakeholder in the enterprise, contributing funds directly from its financial reserves. Last August SPARC asked its members for funds to support the development of BioOne as part of the annual Purchase Commitment that member libraries make toward resources sponsored or developed by SPARC. Member libraries have been asked to provide a one-time Charter Support contribution of between \$1,000 and \$5,000, depending on the size of their materials budget, to help fund the development of BioOne. SPARC members have responded in an overwhelmingly positive manner, with many providing funds over and above the Charter Support amount to become Sponsors. Those who became Sponsors are cited by SPARC as leaders in the effort to transform scholarly communications.

The other major financial issue to be decided is the price of access to the BioOne database. Discussion of this issue involves the AIBS societies whose titles will be in the database, of course, as well as the libraries. The BioOne partners are very interested in gathering extensive feedback from the library community on this issue. The BioOne partners are especially interested in working with library consortia on both pricing and licensing issues. The "Statement of Current Perspective and Preferred Practices for the Selection and Purchase of Electronic Information" [<http://www.library.yale.edu/consortia/statement.html>] developed by the International Coalition of Library Consortia is particularly important in this regard.

## Licensing

The BioOne enterprise will require the development of license agreements for subscribers to the database and for the publishers (societies) whose journals will be included.

The content license has been completed and has been distributed to all AIBS societies and to other publishers that have expressed interest in the project. Development of the subscriber license is being done with considerable input from the academic library community via the Big 12 Plus, SPARC's licensing task force, 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 Web site.

The partners in the BioOne enterprise have taken to heart Shulenburger's challenge to "protect and promote scholarly communication" through the effective management of the academy's intellectual property. 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, hyperlinked Internet resource. Most important, it will help to keep ownership of information in the hands of the scholarly societies whose members produce it, while making the information more accessible for those who use it, and keeping it affordable for the libraries that buy it.

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Adrian Alexander, the first Executive Director of the Big 12 Plus Libraries Consortium <http://www.big12plus.org> [<http://www.big12plus.org>], has served since March 1998. The Big 12 Plus now consists of 26 major research libraries in 12 states. An academic librarian by training, Adrian has also spent more than 15 years in information-industry sales, sales management, and marketing. He holds a BA in Russian History from Texas Tech University and a masters degree and a certificate of advanced study in academic-library administration from the University of North Texas. He has been an active member of several professional organizations for a number of years and has served on the editorial boards of three library science journals. He is the author of numerous articles in the professional literature. You may contact him by e-mail at [alexandera@lindahall.org](mailto:alexandera@lindahall.org).



Since July 1999 Marilu Goodyear has been Vice Chancellor for Information Services at the University of Kansas, where she is responsible for libraries, computing, telecommunications and printing services. Previously, she was Associate Dean of Libraries at Kansas. She is also Associate Professor of Public Administration and teaches information technology in the Master's program. She holds a PhD in Public Administration from the University of Colorado and Master's in library and information science and public administration from the University of Missouri-Columbia. She has conducted numerous workshops on copyright and information policy in the electronic environment. You may contact her by e-mail at [goodyear@ukans.edu](mailto:goodyear@ukans.edu).

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## Notes

1. Joseph J. Branin and Mary Case, "Reforming Scholarly Publishing in the Sciences: A Librarian Perspective," *Notices of the American Mathematical Society* 45(4):475-86 (April 1998). ♣ [#N1-pt1]
2. Ibid., 478-79. ♣ [#N2-pt1]
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. ♣ [#N3-pt1]
4. "Scholarly Communication and the Need for Collective Action: A Statement by the Chief Academic Officers of the Big 12," <http://www.gwla.org/pressreleases/scholar.html> [<http://www.gwla.org/pressreleases/scholar.html>], May 20, 1998. ♣ [#N4-pt1]
5. Ibid. ♣ [#N5-pt1]
6. <http://muse.jhu.edu/> [<http://muse.jhu.edu/>]. ♣ [#N6-pt1]
7. <http://highwire.stanford.edu/about/intro.dtl>. [<http://highwire.stanford.edu/about/intro.dtl>] ♣ [#N7-pt1]
8. *Chronicle of Higher Education* (May 29, 1998): A25; and *Change* 30(6): 7 (November/December 1998). ♣ [#N8-pt1]

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## Links from this article:

Allen Press Inc., <http://www.allenpress.com/> [<http://www.allenpress.com/>]

American Institute of Biological Sciences, <http://www.aibs.org/> [<http://www.aibs.org/>]

AIBS-related societies list, <http://directory.aibs.org/directory> [<http://directory.aibs.org/directory>]

Big 12 Plus Libraries Consortium, [formerly <http://www.big12plus.org>]

BioOne, <http://www.bioone.org/bioone/?request=index-html> [<http://www.bioone.org/bioone/?request=index-html>]

PubMed's URL specifications, [http://www.pubmedcentral.nih.gov/about/PMC\\_Uilities.html](http://www.pubmedcentral.nih.gov/about/PMC_Uilities.html) [[http://www.pubmedcentral.nih.gov/about/PMC\\_Uilities.html](http://www.pubmedcentral.nih.gov/about/PMC_Uilities.html)]

Scholarly Publishing and Academic Resources Coalition, <http://www.arl.org/sparc/> [<http://www.arl.org/sparc/>]

University of Kansas, <http://www.ku.edu/> [<http://www.ku.edu/>]