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Smarter Libraries Through Technology

Vertical Consolidation Deepens

By Marshall Breeding

Business consolidation has entirely transformed the library technology industry over the last two decades. One aspect of this trend can be seen in the mergers and acquisitions among companies with similar business profiles. This consolidation of direct competitors can be thought of as horizontal consolidation, which has the impact of narrowing the number of companies operating within a given product area. This horizontal consolidation has produced companies such as SirsiDynix, which carries forward previous organizations including Sirsi Corporation, Dynix, DRA, NOTIS, MultiLIS, and others. The acquisitions of diverse companies spanning distinct product areas within an industry can have an even greater transformative impact on an industry. The 2015 acquisition of Ex Libris by ProQuest exemplifies the vertical consolidation, which extends a company's reach into many distinct product areas. Companies pursue vertical consolidation to exploit synergies that may be possible in areas of overlapping functionality, data, or marketing opportunities.

Vertical consolidation in the library services arena centers on the convergence of content and technologies. Organizations rooted in content have been increasingly investing in technology products and platforms supporting behind-the-scenes workflows of libraries and other organizations managing information resources and patron-facing services providing access. While libraries will not likely tolerate a corporate portfolio of products that result in coercion to license content from the provider of resource management or discovery products or *vice versa*, we increasingly see some companies as increasingly interested in gaining insight and influence into the broader ecosystem of procurement, management, and access of information resources. Companies tapping into those synergies will need to tread carefully to avoid any tripwires that will trigger adverse reactions by the libraries and other organizations upon which they depend as customers.

Smart Libraries Newsletter has previously covered ProQuest, Follett Corporation, and EBSCO as examples of the vertical consolidation that has reshaped the library technology industry. We have also covered the institutional repository sector, including events related to the DuraSpace non-profit organization and the products they steward, DSpace and Fedora. In this issue, we turn attention to Elsevier's acquisition of bepress as an example of the vertical consolidation of the scholarly communications sector. Incrementally departing from its roots as a publisher dependent on library subscriptions, Elsevier has made a number of business moves that extend its involvement into a broad swath of activities in the research and scholarly communications arena. Not only is the company working to navigate the increasing demands for open access publishing, but it is also seeking business opportunities in analytics, community networks for researchers, and now institutional repositories.

Elsevier Acquires Bepress

In a move that continues its expansion into technologies and services supporting a diverse range of research activities, Elsevier has purchased bepress, a company best known for its repository solutions for academic libraries. Bepress, based in Berkeley,

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CA, offers a platform and services to support institutional repositories as well as a variety of tools to support editorial processes and to highlight and assess the impact of research publications. The acquisition of bepress represents Elsevier's latest investment in products outside its traditional role as a publisher of scientific literature. In recent years—likely in response to increased interest in open access, moderation of journal pricing, and other factors in the scholarly publishing industry—Elsevier has diversified its portfolio to include tools and services that tap into other aspects of the research process.

Its core product Digital Commons enables an organization to offer an institutional repository or journal hosting platform with hosting and support from bepress without the need for local servers or technical expertise. The company also offers a variety of other tools in support of managing scholarly and professional journals as well as organizing and featuring faculty research profiles. Bepress offers analytical tools supporting scholarly communications workflows, primarily oriented to green open access publications. Bepress characterizes its products and services as ways for researchers to share and feature their work.

Details of the Acquisition

The acquisition was announced on August 2, 2017 following a decision of its board of directors to offer the company for sale. The value of the business deal was not publicly disclosed. This transaction can be considered a strategic acquisition where the target organization offers potential synergies with the acquiring entity that it would not have as a standalone company. This type of transaction usually commands a higher value than a sponsored acquisition where investors, such as private equity firms and their bankers, bid on a company primarily based on factors such as EBIDA, annualized revenue, and perceived opportunities for income growth. As discussed below, Elsevier's acquisition of bepress fits well with its strategic interest in morphing its business as the dynamics of the scholarly publishing industry increasingly present challenges to the traditional subscription-based model.

All contacts and licenses that customer organizations have made for bepress products and services remain in place under their original terms. Organizations using Digital Commons retain ownership of the content hosted on the platform. This business transaction does not impact the legal status of documents hosted on Digital Commons or data on other products and services.

Bepress will operate as a wholly owned business unit of Elsevier. The executives and workforce of bepress will continue as employees of their new parent organization.

Community Reaction

The acquisition of bepress by Elsevier has generated considerable discussion in social media and discussion lists. Many express frustration that a company that was perceived as supportive to open access and to lowering the costs of access to scholarly literature has been absorbed by one of the largest and most aggressive publishers in terms of pricing models that have strained library budgets. Libraries opted to base their institutional repositories to host journals they produce on bepress as a hedge against the commercial publishing environment. Some have felt betrayed that their open access content hosted by bepress will now become part of the ecosystem of a major commercial publisher. This change of ownership cannot alter the legal status of the content managed within the bepress infrastructure. The organizations will continue to retain ownership and control of the content hosted on bepress. In addition to gaining the revenues for that service, Elsevier also gains indirect benefits, such as access and insight into use data and workflows. Open access advocates do not necessarily favor the expansion of Elsevier's sphere of influence into the realm of open access publishing.

Time will tell whether libraries using Digital Commons will accept its new ownership arrangement or shift to other options. Unlike the integrated library system (ILS) arena, migrating to a new institutional repository is relatively easy. Digital Commons supports the OAI-PMH protocol, enabling organizations to harvest content into other discovery environments or hosting platforms. Changes in ownership of ILS products have not resulted in significant exodus of customer libraries. Many of these factors may not apply to institutional repositories.

Bepress Organizational Background

Bepress was founded in 1999 by three professors from Stanford University—Robert Cooter, Aaron Edlin, and Benjamin E. Hermalin. The company was incorporated as "Internet-Journals, Inc." but has done business as Berkeley Electronic Press, or more recently bepress.

Jean-Gabriel Bankier joined bepress as its President and Chief Executive Officer in January 2010 and retains this role following the acquisition.

Bepress is based in Berkeley, CA and currently employs around 75 personnel, with about 20 persons involved in technology and development. The company earns an estimated $20 million in annual revenue.

Berkeley Electronic Press as an Alternative E-Journal Publisher

The initial activity of the company involved the publication of e-journals. The company emerged at a time when serials pricing was considered to be a major crisis for libraries and their academic institutions. Berkeley Electronic Press aimed to produce new or acquired e-journals at far lower costs than the contemporary commercial players. Berkeley Electronic Press was successful in developing a stable of journals across a variety of academic disciplines. These journals published by Berkeley Electronic Press were primarily in the areas of law, economics, business, natural sciences, and humanities. The company exited its involvement in the direct publication of e-journals shortly after Bankier took the reins of the company. Bepress sold its 67 journals to De Gruyter in September 2011. De Gruyter is based in Berlin, Germany and currently publishes around 700 journals and 1,300 scholarly monographs annually.

It is interesting to note that in this phase of its business Berkeley Electronic Press divested its content portfolio in favor of its hosting platform and editorial workflow solutions. This contrasts with the current phase of content providers expanding their reach into resource management and workflow solutions. Elsevier's recent acquisitions are one example; ProQuest's acquisition of Ex Libris, and EBSCO Information Systems' support of FOLIO can also be seen as part of this trend.

Repository Platforms: eScholarship and Digital Commons

Berkeley Electronic Press leveraged its expertise in e-journal hosting to develop a general purpose institutional repository hosting platform. This platform saw two early implementations—the eScholarship repository for the California Digital Library and the Digital Commons created for ProQuest.

The California Digital Library engaged Berkeley Electronic Press in October 2001 to help develop the platform for its eScholarship repository, which aimed to collect and provide access to the working papers, preprints, and other scholarly publications of researchers throughout the University of California system. This project represented one of the most ambitious repository projects, serving all 9 campuses of the University of California and the California Digital Library (CDL). eScholarship launched in August 2002 and continues today under the Publishing Group of CDL. According to statistics stated on the organization's website, the repository currently hosts almost 150,000 publications.

Berkeley Electronic Press also developed a version of its content hosting platform for ProQuest, which marketed it as Digital Commons as a commercially supported institutional repository solution. Work on the project began in December 2002, with the platform operational by June 2004. Early adopters of the ProQuest Digital Commons service included the University of Pennsylvania and the University of New Brunswick.

During this period, Digital Commons was offered as a product of ProQuest, which held exclusive rights to market the product. Berkeley Electronic Press continued its role in product development and support and received a commission of the revenues generated. This arrangement changed in July 2007 as bepress announced it would begin direct sales of Digital Commons. A subsequent announcement the next month reported that Berkeley Electronic Press had acquired full rights to the Digital Commons platform from ProQuest. From that time forward, Berkeley Electronic Press expanded its sales and support staff in support of Digital Commons as its core business activity. By the time of its acquisition by Elsevier, bepress had licensed Digital Commons to over 500 institutions.

Editorial Workflow Products

Berkeley Electronic Press also created a product based on the manuscript submission and editorial tools it had created, branded as EdiKit. This product has been licensed by a number of scholarly and professional associations to help them manage their journals. In June 2003, the American Finance Association became the external organization to license EdiKit.

ExpressO is a manuscript processing service for law reviews that automates the submission, review, and editing workflows. This product was initially launched in July 2003 and has become well established as a specialized tool for managing the complete editorial process involved in law reviews.

The Expert Gallery Suite is a set tool to track, manage, and showcase the publications and research activities of individuals and organizations. Announced in February 2016 as SelectedWorks, this service enables the library to curate faculty profiles, which features their areas of expertise and publications. It includes analytic tools to track and assess the readership and impact of faculty research.

Institutional Repository Competitors

Over 500 libraries have implemented Digital Commons, with the majority based in the United States and Canada. While bepress is the main commercial provider of institutional repository services, a much larger number of libraries

have implemented repositories based on open source products. DuraSpace coordinates the development and support for DSpace and Fedora and maintains a registry of implementations. This registry indicates that about 2,000 organizations have implemented DSpace and 250 have repositories based on Fedora (http://www.duraspace.org/registry/). It is likely that these numbers underrepresent the actual implementations.

As a fully hosted repository, Digital Commons provides a service to organizations that either do not have interest or expertise in the implementation of one of the open source products or that choose to allocate their technical capacity to other projects. Although there are also organizations that provide support and hosting for the open source products, bepress had established a reputation as having strong customer service for a repository product with better features and usability for content submission, presentation, and discoverability.

Elsevier Company Background

From Elsevier's perspective, the acquisition of bepress can be seen as a strategic business move. The company has purchased other companies and products to deepen its involvement outside its traditional subscription-based content portfolio. Bringing institutional repositories into its fold enables it to tap into yet another aspect of the complex ecosystem of scholarly communications.

Elsevier ranks as one of the largest scholarly publishing conglomerates globally. The company began as a small Dutch publisher in 1880. It has a complex history of mergers and acquisitions, which eventually led it to become established as the dominant provider of scholarly content, including some of the world's most prestigious publications. Elsevier is owned by RELX Group, which was known as Reed Elsevier until February 2015. RELX Group is in turn owned by London-based Reed Elsevier PLC and Amsterdam-based Reed Elsevier NV. The RELX Group 2016 annual report indicated £6,895 million in net revenues (about $8.88 billion in today's US dollars).

Elsevier is well established as a publisher of scholarly journals, which still represent the majority of revenue for the company. The journals offered by Elsevier are made available through ScienceDirect, a consolidated content platform delivering access to books and journal articles published by Elsevier. Elsevier has also created Scopus, a citation database of scholarly literature selected from selected high-quality publications from many publishers.

Involvement in Other Research Platforms

Elsevier has in recent years purchased companies and products within the general sphere of scholarly communications in addition to acquiring additional e-journals and scholarly monographs. Some examples of Elsevier's acquisitions in this area include:

- **Mendeley**, a major research collaboration platform designed to help researchers and students organize, share, and discover research resources. The service was originally launched in 2008 as a privately funded startup. Elsevier acquired Mendeley in April 2013.
- **Pure**, a research information management system. This product was developed by Atira A/S, which was acquired by Elsevier in August 2012.
- **Social Science Research Network**, or SSRN, was acquired by Elsevier in May 2016. This platform operates essentially as a social network for researchers, enabling collaboration and sharing of articles and works in progress. At the time of its acquisition by Elsevier, the platform had over two million participants.
- **NewsFlo**, which Elsevier acquired in Jan 2015. It's a service that tracks news coverage of researchers to help measure their impact. NewsFlo monitors over 55,000 primarily English news sources. Based on this monitored content, the service is able to highlight trends in coverage and produce alerts. The service was initially created in 2012 by a group of physicists at Imperial College London.
- **Plum Analtyics**, which helps measure the impact of research by tracking many types of interactions, including direct downloads, blog posts, mentions in social media, in addition to traditional measures such as citations in books or articles. Plum Analytics was founded in 2012 by Andrea Michalek and Mike Buschman to create services in the increasingly important altmetrics arena that assess the impact and value of publications on measures beyond those based on traditional factors such as citations and access counts. The company was acquired by EBSCO Information Services in January 2014. In February 2017, Elsevier acquired Plum Analytics EBSCO. Elsevier announced in July 2017 that Plum Analytics metrics have integrated into Scopus, Pure, and the journals published on elseveir.com. Integration with ScienceDirect is underway.

The scholarly publishing sector currently finds itself in the midst of tremendous pressures. Open access publishing models have been gaining ground for many years. But

the pressures to move quickly away from subscription-based access seems unprecedented. Many national and funder-based initiatives mandate that research results be published as open access. Academic institutions increasingly have less tolerance for a business model funded by libraries purchasing subscriptions for the output of publicly funded research. The window of opportunity for this business model may be closing. Some major libraries have terminated longstanding license arrangements, and some groups of researchers have boycotted involvement with commercial publishers. In an environment where it will be increasingly difficult to monetize content according to long-established subscription business models, companies interested in long-term survival will need to reinvent themselves based on new sources of revenue. Elsevier's acquisition of bepress is the latest—but likely not the last—in a series of moves to shift toward transactional revenue sources rather than subscriptions.

Sidebar: The Endeavor Chapter

Elsevier had made an earlier foray into the library workflows arena with its ownership of Endeavor Information Systems. Endeavor was founded in September 1994 by individuals formerly associated with NOTIS Systems, which had been acquired by Ameritech Library Systems. Shortly after its founding, Jane Burke joined as its President and Chief Executive Officer (June 1995). The company's Voyager ILS found rapid acceptance among academic libraries and eventually became established as one of the leading products in that sector. By December 1997, 100 libraries had selected Endeavor's Voyager ILS; by 1998, that number exceeded 350. The Library of Congress placed Voyager in production in October 1999. In April 2000, Elsevier acquired Endeavor from its founders. At the time, the company had 131 employees, and its Voyager ILS was used in over 650 academic libraries.

Under Elsevier's ownership, the number of academic libraries using Voyager continued to grow, gaining wide acceptance in the academic library sector. Ex Libris Aleph was as one of its key competitors. By 2004, 1,200 libraries had selected Voyager.

Endeavor also produced technologies related to electronic resource management and access. These products were of particular interest to Elsevier and received more development attention than the Voyager ILS. Endeavor expanded its product line to include the ENCompass product for managing digital collections system and providing access to subscribed electronic resources. The ENCompass for Journals OnSite was introduced in February 2004, enabling libraries to securely manage local copies of their electronic journal collections rather than access them via the internet. This product succeeded the ScienceServer platform, which Elsevier had previously developed for local hosting of electronic journals.

The genre of commercial OpenURL link resolvers began in 2000 with the launch of SFX by Ex Libris. Endeavor joined the competition with its LinkFinderPlus in 2001. The Meridian electronic resource management system was launched in June 2004, but failed to receive wide adoption.

This chapter in Elsevier's involvement in the library automation systems ended in November 2006 when it sold Endeavor Information Systems to the private equity firm Francisco Partners, which merged the company with Ex Libris, which it had acquired in June 2006. This six-year period ultimately did not make a major impact on either the library automation industry or the scholarly communications sector. Many of the synergies possible today are enabled through converged workflows of print and electronic resources and cloud-based technologies.

My article analyzing the acquisition of Endeavor by Elsevier makes observations at that time that bear remarkable similarity to the trends playing out today. Although the effort turned out not to be sustained, it is notable that even at that time Elsevier was exploring synergies between resource management and access technologies and its content products.

> We have long seen a trend toward horizontal consolidation in both the library automation marketplace and the publishing business. The marketplace now seems to demand a smaller number of strong competitors that can achieve lower costs through economies of scale. Companies that can do so gain strength through acquiring the customer base and technologies of their competitors. But the acquisition of Endeavor by Elsevier Science leads the way toward vertical consolidation as well. From the library automation company's perspective, it may no longer be enough to provide a solid integrated library system. As library automation systems become mature, the points of differentiation will lie in the opportunities the companies can offer in the delivery of full-text content. This new level of consolidation and convergence will certainly alter the landscape. Given that libraries generally share the vision of an integrated information environment, such alliances will likely result in better tools and technologies toward meeting these goals. It will also likely result in creating some unlikely and uncomfortable bedfellows.[1]

1. Marshall Breeding, "Consolidation and Convergence: Elsevier Science Acquires Endeavor Information Systems," *Information Today* 17, no. 5 (May 2000), https://librarytechnology.org/document/7905.

Smart Libraries Q&A

Each issue, Marshall Breeding responds to questions submitted by readers. Have a question that you want answered? Email it to Samantha Imburgia, Associate Editor for ALA TechSource, at simburgia@ala.org.

When transitioning to a new library automation system, what time frame should libraries anticipate and prepare for?

Moving to a new integrated library system represents a major undertaking that requires a great deal of planning and preparation. The length of the timeline for the entire process will depend on many factors, such as the size and the complexity of the library and the scope of the project.

Moving to a new integrated library system or library services platform can be broken down into several phases.

Preliminary discussions. Prior to any formal process, key stakeholders and decisionmakers in the library need to arrive at a consensus that the organization needs to initiate the process of selecting and implementing a new system. A variety of events may trigger the process, such as the availability of funding, increased awareness of the inadequacy of the incumbent system, or other internal initiative. These discussions don't always result in a decision to go forward. It may instead be decided that the current system should be retained, at least for some additional time. *Timeframe: 1-6 months*

Developing Requirements. Once a decision is made to go forward with pursuing a new system, the formal procurement process begins. These processes will vary according to institutional procurement processes and organizational preferences. In most cases, a set of committees will be established to develop criteria in various aspects of functionality. These areas might include metadata management, electronic resource management, collection development, resource sharing, circulation, reporting or analytics, and patron-facing discovery interfaces. Another group might be charged with technical architecture and interoperability requirements.

Articulating the requirements of the library for a new technology platform should be approached strategically. I recommend going beyond describing the current operational requirements by providing ample consideration to areas of functionality that may have previously been out of the scope of the current system. Detailed checklists of granular functionality are likely to reinforce current task workflows rather than enabling opportunities for new ways of organizing functions that may be more aligned with current and future expectations. *Timeframe: 3-9 months*

Creating and issuing procurement documents. Usually in conjunction with the organization's procurement officer, these requirements will be incorporated into a Request for Information, or Request for Proposals, which would also include the procedural processes that need to be followed by vendors interested in responding. The procurement documents will usually include guidelines on how the responses will be evaluated. *Timeframe: 1-3 months*

Vendor response period. Once the Request for Proposals/Information has been issued, vendors should be given at least 6 weeks to submit responses. *Timeframe: 1-2 months*

Response evaluation. Following the expiration of the deadline for responses, the library can begin evaluating the responses. A preliminary evaluation may identify a subset of the total vendors responding qualified for further consideration. *Timeframe: less than 1 month*

Vendor demonstrations. The short list of preferred vendors will usually be invited to give on-site or virtual demonstrations of their products. These demonstrations may be guided by a list of issues or questions prepared by the library. *Timeframe: 1 month*

Final evaluation and selection. Once the demonstrations have been concluded, the library will perform another round of evaluations and make its final selection or recommendation. In most cases, the selection process is conducted by a steering committee with input from each of the functional groups and other stakeholders. *Timeframe: less than 1 month*

Administrative review and approval. In most cases, the recommendation of the library's internal group will need be vetted through multiple layers of administrative approval. In some cases, the final decision may be made by the top library administrator, such as the university librarian or the chief executive officer of a public library system. Some organizations may also require approval by administrators in the library's parent organization. *Timeframe: 0-2 months*

Contract negotiations. Following final organizational approval, the library and the vendor will begin the process of finalizing business terms and producing a legal contract. Large organizations or those with mandatory contract terms may take longer to finalize the contract. Once the contract has

been executed, the implementation process can commence. *Timeframe: 1-2 months*

Implementation. The transition to a new system will involve several major stages of activity. *Timeframe: 4-12 months*

- **Preliminary deployment**. With the business agreement complete, the vendor and the library can commence their partnership to implement the new system. In most cases, the initial step involves the vendor creating an instance of the system for the use of the library. This instance enables library personnel to become familiar with the new system and to begin its configuration and to plan for loading each category of data. Since most systems are currently deployed via hosted services or on cloud-based infrastructure, the library does not need to install or configure local hardware, operating systems, or databases.
- **Data migration**. Library systems have many different categories of descriptive and operational data that must be extracted from the incumbent system and loaded into the new platform. Some sets of data follow standards, but others may need to be converted into new formats. In most cases, many other libraries will have previously migrated from the same combination of products, and the vendor will have many tools in place to extract, transform, and load the data.
- **Validation and testing**. Once the new platform has been populated with the library's data, rigorous testing needs to be performed to identify any problems and make any needed corrections.
- **Training**. Almost all library personnel will need some degree of training on the new product. This training can commence at any point following the preliminary installation, but in general, libraries prefer to learn on a system populated with their own data.
- **Production**. Once all data has been validated and the training processes are complete, the library can make the transition to production use of the new system. This transition date is typically established well in advance and other activities are scheduled accordingly.
- **Decommissioning**. Once the migration has been completed, the incumbent system can be deactivated. Many libraries opt to keep the incumbent system operating behind the scenes for a few weeks to be available for running final reports, troubleshooting data issues, or other contingencies.

The time frame required for each of these phases can be compressed for small libraries. All libraries should go into the selection and implementation process with realistic expectations regarding the time it will take and on the involvement required by a broad set of staff members and stakeholders. Very rough time frames have been suggested for each of these phases. For most libraries, it will be at least a year or two from the time that they begin discussing the possibility of moving to a new system until the time that they are using it. Given this lengthy period, it is important for libraries to begin the process as early as they can and to not wait until the need for a new system is critical.

Questions or suggestions for topics in future issues?

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