Interview: Marshall Breeding

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Marshall Breeding is the Director for Innovative Technologies and Research for the Jean & Alexander Heard Library at Vanderbilt University and is involved in strategic planning for technology and digital library projects. He administers and develops technology for the Vanderbilt Television News Archive. He designed and developed the software for the Archive's Web site, online videotape ordering system, streaming video delivery system, and digital recorders. In his 20 years at Vanderbilt, he has been involved with network design and administration, library automation, database development and a wide array of technology projects. Breeding has led grant projects funded by the National Science Foundation and the National Endowment for the Humanities.

In addition to his work at Vanderbilt, Breeding is an independent consultant in the fields of networking and library automation. He is a regular speaker and teacher at library conferences and has published many articles, books, and book chapters.

Breeding created and maintains the "Library Technology Guides" (http://staffweb.library.vanderbilt.edu/breeding/ltg.html) and "lib-web-cats" (http://staffweb.library.vanderbilt.edu/breeding/libwebcats.html) websites.

Breeding is a columnist for Computers in Libraries and a contributing editor for *Smart Libraries Newsletter* published by ALA TechSource. His monthly "Systems Librarian" column appeared in *Information Today* from January 2000 to December 2002, and since January 2003 in *Computers in Libraries*. He authored the annual "Library Automation Marketplace," the annual assessment of the industry published in *Library Journal,* from 2002 through 2006. He has authored four issues of *Library Technology Reports* published by ALA TechSource. He was a freelance writer for the DataPro Information Services division of the Gartner Group since 1992-2001, covering CD-ROM and DVD networking and SAN/NAS technologies. His articles appear in *Network Computing*, *Information Today*, *Computers in Libraries*, *Journal of Library Administration*, *Library Journal*, *Library Hi-Tech*, *Library Software Review*, *CD-ROM World*, and *CD-ROM Professional*. He contributed chapters to both editions of ALA's *Cybrarian Manual*. Breeding is the author *of TCP/IP and the Internet: A Buyer's Guide for Micro-based TCP/IP Software; The Essential Guide to the IBM-PC, Vol. 31: Integrated Library Systems;* and *Integrated Library Systems for PCs and PC Networks: Descriptive and Analytical Reviews of the Current Products*. He edited *Library LANs: Case Studies in Practice and Application* and *MecklerMedia's Official Internet World World Wide Web Directory* (1996 ed.). From 1992 to 1998, he was editor-in-chief of *Library Software Review*.

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Barbara Dewey, Dean of Libraries, Hodges Library, University of Tennessee-Knoxville:

Is there a future for integrated library systems, or might we eventually be using WorldCat for our catalog?

Yes, I believe that libraries will need integrated library systems for the foreseeable future. It's important to consider the back-end functions of the ILS as well its Web-based catalog. As long as libraries continue to deal with print collections, they will need automation systems to process them

efficiently. No library could operate without the business automation functions that the ILS provides. I do not foresee OCLC getting involved in the internal operations of a library, such as circulation, fund accounting, payment processing, serials receiving, and all the myriad other functions automated by the ILS. While ERM systems are emerging that take on some of the work of managing subscription-based electronic content, these systems are highly reliant on an existing acquisitions system for fund management and payment processing. Higher level-catalogs such as WorldCat overlap with only a small portion of what the ILS performs for a library.

That said, I do see WorldCat and other global Web search facilities taking on an increasing role in the discovery phase of the research process. Most library users begin their search process on one of the major search engines. WorldCat helps drive at least some of those users into our libraries. In this way, I see library interfaces as being a destination rather than the starting point of research. If we do not have compelling, attractive, and efficient catalogs and other interfaces, those users who arrive at library Web sites from the Google to WorldCat path will bounce right back out and move on to other non-library resources.

Another point to keep in mind is that even when libraries use WorldCat as their primary catalog, they will need the functionality of a local ILS and Web catalog for patron services such as holds, recalls, renewals, fee payment, and other personalization features expected in Web catalogs. I don't see WorldCat as taking on these services typically provided by the automation systems of local libraries. Again, I see WorldCat as opening up a new dimension in the discovery process, but not necessarily in the provision of local library services.

Don Craig, Dean of the Library, Middle Tennessee State University:

Are OPACS of the future going to be just one of many databases that our users search through federated searching software, and if so, what impact will this have on integrated library systems?

While I believe that most libraries will include the bibliographic database of the ILS in federated search environments, I don't see OPACs as going away altogether.   I hope that libraries evolve toward interfaces that provide

a more seamless searching environment for their users, and traditional library catalog data will represent an important part of the library's overall collections of electronic and print content. Library users are increasingly less patient with our requirement that they search dozens of separate silos of information, often making them search one place for information on the topic that might be in journal articles and elsewhere for information in books. These silos are often labeled according to brand names that are familiar to us, but not meaningful to library users.

Though library catalog information will hopefully be included in these more seamless and comprehensive search environments, I don't think that we will want to discard the library OPAC altogether. At least some users will appreciate the ability to use the native interface of the library OPAC to perform more exact searching than will inevitably be possible through federated search interfaces.

Valerie Adams, Head of Cataloging and Records Management, Lupton Library, The University of Tennessee at Chattanooga:

I remember that when I was in Library School, one of my professors said that he thought that libraries purchased integrated library systems to make life easier for the librarians, rather than for their patrons. Do you think that this is true?

Library automation systems must serve as both business automation for the operation of the library and as an interface to deliver services and content to library users. Any complex organization—whether it is a hospital, a university, an insurance office, or a library--needs automation tools to help it operate efficiently. In that role, libraries need automation systems more than ever, and have systems that are highly tailored for their work patterns. The cost of operating a library would be extraordinarily high if we did not have automation systems to allow library workers to execute their roles efficiently.

This brings me once again to the distinction between the back-end functionality of the ILS versus the online catalog. Many in the field are becoming more outspoken about how unsatisfactory library users find the current generation of library OPACS. Many are too complex and assume too much advanced knowledge of the library. I see this point as the issue

consistent with your professor's observation. Our online catalogs need to be approachable by users, even when it rubs against the grain of librarians.

To summarize, the back end of library automation systems should make the life easier for librarians, but the front end of the system must be wholly tailored to the needs of library users.

Do you think libraries should be cataloging the web? Is a catalog that is cluttered with web sites really useful to our patrons?

In my view the "catalog" represents the library's collection. So to the extent that subject selectors identify Web sites with appropriate high-value content, then it seems reasonable that they be included in the library catalog. Given the volatile nature of Web sites, they have to be closely monitored for de-selection as well. The amount of effort devoted to cataloging Web sites might be tempered by the reality that so few library users begin their research process in the library catalog. Since most users begin their research on the Web, they are likely to find those sites anyway. Seeing Web sites in the library catalog may help users have confidence of more trustworthiness.

What do you think should be the very first search offered to patrons in a library catalog and why?

I prefer a general keyword query as the initial search offering in a library catalog. That is the type of query that most library users expect and it's usually the most forgiving of the options. It's also important to consider how the results will be ordered. The Internet search engines have also trained our users to expect relevancy ranking of results rather than the alphabetical or reverse chronological ordering preferred by librarians.

Aaron W. Dobbs, Network Services Librarian, Austin Peay State University:

What about "Catalog tagging," user generated tags applied to contents of library catalogs, similar to Amazon's new tagging service (Worldcat is also dabbling in this)? Who is doing it, why, and how?

I'm a bit skeptical of the concept of offering tagging in individual library catalogs. Tagging works when you have large communities of users

interacting with a body of content. I just don't think that most library catalogs have the critical mass of regular users that would make tagging an effective strategy. Tagging can be very helpful in collections of objects that have no metadata at all. User-supplied tags make it possible to find items in sites like the popular photo sharing site Flickr. Library catalogs, on the other hand, are chock full of metadata. It would be interesting, however to experiment with catalogs that offer both library supplied metadata plus user-supplied tags.

I am not aware of off-the-shelf automation systems that offer user-supplied tagging. OCLC has recently launched a pilot project, called Wiki WorldCat or WikiD that allows users to supply reviews of items. (See: http://www.oclc.org/productworks/wcwiki.htm).

Which vendors are working on supporting features such as this?

I am not aware of any of the current library automation systems that offer user-supplied tagging.

How can/will/won't it affect libraries in the near-term and long-term future?

I see little impact. I doubt that many libraries will reduce their efforts on providing high-quality metadata to describe their collections and rely on user supplied tagging or folksonomies. While this may eventually work its way as an optional feature in library catalogs, I don't see it as having a major impact.

What is "Library 2.0" to you?

Tim O'Reilly describes a set of emerging Web technologies as "Web 2.0." Essentially the concepts of Web 2.0 recognize the transition from static, single-user oriented Web sites to a Web based on dynamic interaction, community participation, and true interoperability of Web-based applications. Examples include wikis, tagging, blogging, and Web services. "Library 2.0" casts these concepts and technologies into the library environment. The hype level of these new technologies is currently high, but they form only a small part of a library's broader library automation strategy. Personally, I don't really like the term Library 2.0. I think that technologies should be selected because they help libraries meet

their strategic mission, not just because they are cool. Sometimes a technology is cool and strategic at the same time, but not always.

In maintaining my lib-web-cats online directory of libraries (http://www.librarytechnology.org) I'm reminded how many Tennessee libraries do not have even basic technologies. Many still do not have Web sites or library automation systems. I'd like to see all libraries get to a "1.0" level at the same time as we explore the next phases of Web technologies.

The part of Web 2.0 that I see as most strategic involves Web services. This behind-the-scenes suite of protocols is well positioned to help libraries integrate better with their organization's portal environments and helps libraries deliver content and services in much more transparent and user-friendly ways. Web services has gained wide acceptance in the broader information technology space as a standard approach for system-to-system communications among diverse applications. The library world is catching on to this model a bit late, but most of the vendors that develop library automation systems are beginning to add a Web services layer to the design of their systems.

Are library vendors addressing the small screen display niche market?

Innovative Interfaces introduced AirPAC, a version of their Millennium Web OPAC designed specifically for small screen devices in 2001. I am not aware of other vendors that have announced similar products.

Is the dis-integration of integrated library systems upon us?

Let's hope not. We need integration of library automation components more than ever. Today a comprehensive library automation environment includes not only an ILS, but additional components such as a link resolver, federated search interface, and a module for electronic resource management. Whether or not libraries buy separate components from different vendors or buy a single system from a single vendor, it is essential that these components be tightly integrated into a cohesive whole. Today, the components are loosely integrated at best, and this vastly increases the cost and decreases the effectiveness of the library automation environment. Content, metadata, and services must flow smoothly and

efficiently among these components and library users should be presented with a seamless and consistent interface.

Joyce Johnston, Catalog/Reference Librarian, Jackson State Community College:

What are the top three factors that libraries should consider before they start looking for new library systems?

In my view, the selection of a library automation system should be based first on the viability and vision of the company offering the product and then on the functionality and affordability of the product. The functionality of what I call the "flagship" ILS products from each of the major companies is very similar. While it's important to select a system with the functionality that best suits the library's functional requirements, it's even more important to find a company that will be in business for the long term. It's very disruptive to a library's automation strategy to have selected and implemented an ILS and be forced to change systems prematurely due to a business transition. No one can predict with certainty, but it's important to be aware of each company's vulnerabilities. My top priority would involve selecting the company with a vision best aligned with the library's view of its future and the technologies needed to accomplish its goals. What you buy today is only a snapshot in time of what should be an evolving product. Given the rapidly changing information technology landscape, it's vital to partner with a company that you believe will develop its products in step with this pace of change.

In your opinion, what is the single greatest mistake libraries make during the migration process from the old to the new library systems?

I think that implementing a new library automation system is an opportunity to fundamentally reshape library procedures. It's tempting to shoe-horn the new system into practices dictated by the old one. Be willing to adapt to the natural flow of the new system, as long as it accomplishes the desired results.

Which library systems have the best records, in your opinion, concerning successful migration of catalog records from the old to the new system? That is, what systems make the transition from old

to new with the fewest lost, overlaid, or otherwise damaged and changed bibliographic and authority records?

The success of migrating data has much more to do with the consistency and quality of the library's practices for cataloging and authority control than with the particular library automation systems involved. Libraries with problems in their bibliographic databases in the old system are more likely to have problems in the migration of that data to a new system. Overall, bibliographic and authority files tend to migrate with the fewest problems since there are well-defined standards involved. The more challenging aspects of migration involve serials holdings, patron, vendor, and circulation data.

Gayle Baker, Electronic Services Coordinator, Hodges Library, University of Tennessee- Knoxville:

What do you think about the Electronic Resource Management Systems (ERMS) from the ILS vendors? Do they meet expectations for improved management of electronic resources?

I think that the very existence of the ERMS product genre stands as an indictment that the ILS has failed to keep up with the fundamental shift toward collections of increased proportions of electronic content. Why didn't the acquisitions modules of the ILS organically evolve to handle the expanded requirements needed to handle electronic subscriptions?

But, given the reality that this functionality has been spun off into a new product genre, I think that the ERMS has become an essential add-on, especially for large academic libraries. The major products available on the market today offer solid functionality needed to manage the ever-increasing numbers of subscriptions to electronic content products. The key concern involves the integration between the multiple products that deal with some aspect of this material: the acquisition module of the ILS, the ERMS, the OpenURL link resolver, and a federated search environment. It's essential to achieve a high degree of integration that does not involve duplication of effort and that provides a single point of management for electronic subscription holdings data.

Nancy Burdette Thomas, Libraries Technical Support Provider, The University of Memphis Libraries:

What do you see as the future for electronic reserve operations in academic libraries in any or all of the following areas: extent of services offered, staffing and cost issues, software (ILS modules versus stand-alone, homegrown or open source systems) and hardware, evaluation procedures, and especially copyright issues?

At least one factor in the area of electronic reserves involves the increased adoption of course management systems by colleges and universities. There is considerable movement toward placing the type of supplemental course reading material on course pages rather than library-managed electronic reserves services. Broadly, I am aware of shifts from printed "course packs" to providing electronic copies of course-related material, and increasingly the electronic versions are mounted on the course page in the course management system rather than on a stand-alone system managed by the library. It's also likely that the articles associated with a class can be linked to versions already in electronic form in the library's collection of e-journals rather than having to be scanned from print versions.

It's much more convenient for students to access this material from their course pages than to have to locate them on a separate system managed by the library. This reality points to the strategic need for tight integration between library automation systems and external systems such as course management systems. It's essential to find ways for library content and services to be exposed through university-operated course management environments and portals. Web services is the underlying technology that will make this kind of integration possible.

That change doesn't necessarily remove the library from the process. It's still essential that these materials be processed for copyright clearance and any necessary fees paid.

This leads me to think that the need for stand-alone electronic reserves systems will diminish over time in favor of library components that perform information discovery and copyright clearance functions that integrate with course management or e-learning environments.

Dr. Mark Danley, Cataloger, University of Memphis Libraries:

Users increasingly call upon libraries to interact with other cultural institutions such as archives and museums. What is the current relationship in terms of design, function, and interoperability between library systems, museum collection management systems, and other database-type software related to cultural resources (such as digital library collection management software like ContentDM, Hyperion, etc.).

Currently, I see very little integration among the systems you mention. They operate as independent silos of information, and most libraries require their users to interact with each of these systems independently.

What should that relationship be? How cognizant are ILS vendors of the necessity of accommodating the desired relationship, whatever that relationship is and should be?

The relationship should, of course, be seamless from the perspective of library users. It would be far better to have a single interface that could operate with each of the content systems maintained by the library. While we need different back-end systems to appropriately manage these different types of collections, it would be great to offer a single interface to our users. Federated search systems can be set up to accomplish this to a certain extent, but not in an ideal way. I think that library vendors are beginning to grasp this problem. Ex Libris, for example, is working on a new product called Primo that addresses exactly this set of problems.

The international library community had adopted standards for just what a library catalog should be and do since at least the promulgation of the Paris Principles in 1961. Catalogers have helped develop and recognize successive recent international standards such as the Dublin Core Metadata Standard and the more recent Functional Requirements for Bibliographic Records. In each new standard, catalogers may find both innovations and continuity. How have ILS vendors recognized these changes in terms of the products they offer? Or have ILS vendors simply designed their systems around whatever the current MARC format is at the time? Is it necessary or desirable to do more? To what extent do the more theoretical standards for cataloging affect ILS design?

Most of the library automation systems available today have solid support for MARC 21, but have not necessarily advanced beyond that. Only a few library automation systems support a true FRBR organization of bibliographic data. Dublin Core tends to be supported in separate repository systems for digital collections, but not necessarily in the ILS itself. In my view, that state of affairs isn't ideal. I think that the next step in evolution will be toward XML-based metadata formats. MARCXML, METS, MODS, MPEG21 are some of the schemas in which the next generation of metadata will be embodied. I don't see this change happening quickly, and it will happen in other content repositories before it makes its way into the ILS. XML stands as the *lingua franca* of information technology. Libraries can gain more leverage out of their efforts to create and manage metadata to the extent that they adopt those based on XML.

Where do small special collections/research libraries stand in the ILS market? Vendors now provide systems specially tailored to the small library, but how well do those systems accommodate needs particular to the special collections library?   Several years ago, some of the "small library" systems seemed to me not very amenable to special collections needs (notes fields with allowable field length too limited for special collections purposes; authority modules too simple to allow for carefully documented local subject headings, etc.), though they would have worked reasonably well for a small library with a general collection (e.g. a small public library). How accurate was my impression then? How accurate would it be now?

The relevant trend here involves the increased sharing of library automation systems by libraries that choose to form partnerships. By sharing an ILS with nearby universities or other libraries, a small research library can gain access to a sophisticated automation environment at a cost significantly less than implementing their own. The number of libraries implementing their own independent automation systems is going down as more libraries choose automation strategies based on shared consortial systems.

Small special libraries often feel that the only automation systems they can afford are those designed for small school and public libraries. These, as you note, do not have the functionality expected to manage a research collection. In many cases these libraries may find a better solution by sharing a high-end ILS or through an ASP (application service provider)

arrangement where the vendor hosts the system at a more modest annual fee. The ASP model saves the library from having to provide local hardware and technical support, greatly reducing its automation expenses.

That said, there are also a number of very sophisticated automation systems for special libraries—especially those in corporate, medical, or legal organizations. These systems, however, are not priced at the low end of the scale.

Celia Szarejko, Sherrod Library Systems Department, East Tennessee State University:

Do you think Open Source library system software will represent a viable alternative to commercial products in the academic library market during the next three years?

No. In the research that I do for the annual Automated System Marketplace feature for *Library Journal*, I see that the number of libraries selecting open source automation systems is miniscule relative to those choosing to purchase commercial systems. There are some important efforts underway, including the Evergreen ILS being developed for the Georgia PINES consortium. If that project turns out to be a great success, it could bolster interest in open source ILS opportunities. Even so, the impact would be longer than the three year timeframe you mentioned.

That said, open source software abounds in other parts of the library automation scene. Many of the commercial automation systems rely on open source components such as the YAZ Z39.50 toolkit from Index Data, the Apache Web server, Apache Tomcat, Apache Axis, and Linux, just to mention a few. The open source DSpace and Fedora institutional repository platforms have gained very high levels of use in libraries.

John Dooley, Computer Resources Librarian, Automated Services, Memphis Public Library and Information Center:

With Ajax technologies now showing up in many creative ways in popular sites like Google Maps, what can Asynchronous JavaScript And XML do for libraries?

Initially, Ajax might provide the means to improve the interfaces to library catalogs or other library-managed applications with a Web-based

interface. Ajax can help overcome many of the limitations otherwise present in Web interfaces relative to graphical desktop interfaces.

It will be interesting to see if Ajax can really improve library catalog interfaces. Can the problems be overcome by interface trickery like Ajax, or are the issues more systemic and related to the underlying architectures?

The first Ajax-powered library catalog that I've seen was a prototype demonstrated by Polaris Library Systems at the ALA Midwinter Conference last January. I'm sure that there will be many others soon.

Ajax isn't without controversy. They don't necessarily follow all the conventions users expect in a Web-based interface, such as proper support for the browser's "Back" button and are not friendly to adaptive technologies such as screen readers.