

The Evolution of Providing Access to Information: The Fall of the Online Catalog

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Summary: In this chapter, the authors explore possible avenues for innovation in the library's most basic public access tool, the online catalog, drawing on features of successful analogous service models primarily from the commercial sector. Online retailers such as Amazon.com have raised the bar for the delivery of information, and this has raised expectations for library services that has relevance for the law librarian as well.

Keywords. access to information, consolidation, delivery of information, law library, library online catalogs, Library 2.0, Web 2.0

Traditionally, library catalogs have been the primary way by which libraries have offered access to the information in their collections. Catalogs have evolved in form over the years, from clay tablets to handwritten lists, printed books, vertical files and cabinets upon cabinets of 3" x 5" index cards, to the current online version, with notable dalliances along the way with microfiche and microfilm versions. The online catalog, while no longer requiring patrons to be in the library physically, offers essentially the same type of access to the library's collections as found in the earliest forms: author, title, and some bibliographic information. Most online catalogs have incorporated live links to selected electronic resources, a significant change in direction, but the catalog itself is little different from its first years. It remains a bibliographic tool, more for librarians and the most sophisticated library patrons, with both too much and not enough information to assist most library users. Catalogs have been just one tool in actually finding the resources needed by library patrons—others include A-Z lists of databases or eJournals, shared catalogs, and lists of digital collections. It is the distributed nature of these tools that presents the single biggest challenge for public services librarians and their patrons. The difficulties of discovering appropriate resources and

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searching them effectively, is the focus of this chapter.

The last several years have brought significant changes to the ways in which legal information is accessed by library patrons. The development of LexisNexis and Westlaw, and the further development of the World Wide Web and web applications for accessing these and other services, have raised patron expectations regarding the availability and “searchability” of research resources. Online full-text searching has become the default for law students and faculty, who have become less willing to venture outside those mammoth resources to use sources like library catalogs and indexes in their research.¹ And online discovery tools like Google have become the default for patrons who don't know in which of the library's resources they should begin.

The larger changes in the world of technology have altered patron expectations as well. The wireless standard known colloquially as “Wi-Fi,”² for example, has enabled patrons to do research in other libraries, in coffeeshops, at airports, and even outdoors, using laptop computers and even a variety of smaller, hand-held devices. This ubiquity has led patrons to expect their resources to be available to them nearly everywhere, at nearly any time – and to expect all accessible resources to be searchable in a unified way.

During this period of changing expectations, companies like Apple, have been wildly successful in capitalizing on the expansion of computer and network availability, most

notably with the iPod mp3³ audio players and the iTunes (online) Music Store (hereinafter iTunes), and have revolutionized the access to and delivery of their products. Customers can buy a song or album from iTunes' enormous library, from the comfort of their own home or even while studying in the library. The folks at Apple also realized, and capitalized on, something Chris Anderson termed "the Long Tail"⁴ effect: that the sales of a large online retailer like iTunes are not dependent on the current musical hits, but instead are composed of "everything else," the millions of non-hits, the total sales of which rival the sales of the much-smaller number of current hits. But Apple is not the only company to have used the modern customer's access to personal computers and the Internet as a springboard for its business: online enterprises such as Amazon, Netflix, and many others have had successful experiences as well in providing goods and services through creative use of technology. Their business practices illustrate a number of common trends that the authors will address below, including, in particular, consolidation of resources, and ease of use. The authors believe these trends may hold the keys to the future of legal information delivery, including reference services and the systems upon which we build our services.

Compared to the rich access systems and services of the commercial sector, several aspects of law library services fall short. For example, most libraries' online public access catalog (OPAC) fails to provide information in a helpful way to users. OPAC searches include only a fraction of the library's resources.⁵ Library patrons, familiar with sophisticated commercial web businesses, expect more now from their library, as well. They expect that library catalogs will work as well as Amazon.com's web site, and that they will find as much relevant material through the library's home page as they seem to find through

Google. Patron expectations in these and other areas should serve as a red flag for the necessity of library systems improvement— an area long overdue.

In this chapter, the authors examine several service models familiar to most patrons, all selected from the retail business world, each of which illustrates a piece of the "future of legal information access" collage. They examine benefits and drawbacks of each of these models, as compared to library systems, and propose ways in which law libraries might adopt (and adapt) the broader trends that permeate these models in order to serve more patrons more effectively. These are not new concepts. Others in the library world,⁶ most notably Lorcan Dempsey, Vice President, Research, and Chief Strategist, OCLC Online Computer Library Center, Inc., have proposed applying successful strategies from Amazon, Google, and Netflix to the library environment. Indeed, this kind of development in the library is long overdue.⁷ But application to the academic law library setting carries some particular challenges the authors wish to address.

While this chapter relies heavily on services that have been built on emerging technologies, most of which have embraced so-called "Web 2.0" principles,⁸ the authors recognize that not every service favored by patrons translates to a desire for more technological innovation, nor do they believe that patrons want technology simply for the "coolness" factor. A range of services will be discussed, not all of which depend on emerging technologies.

Law library patron needs diverge from general academic library patron needs in several areas: 1) the heavy focus on research in the law library⁹, and the need for organizational schemes that follow the structure of legal materials; 2) the dual constituency of faculty researchers and future practitioners (students), and their divergent needs as users, and; 3) the fact that the bulk of legal literature is published by a small number of companies, stifling competition and making innovation unlikely. Modern legal reference work, then, requires a librarian to balance the need for a general familiarity with an ever-increasing number of multidisciplinary and non-law disciplinary resources; and the need to retain a specialist's expertise in LexisNexis and Westlaw, the primary tools of students and faculty.

Finally, the authors recognize that providing access to resources and fulfilling reference goals are necessarily the result of a combination of technical and public services. Without description and organization of information resources, our efforts to help patrons find what they need would be severely limited. This chapter, therefore, addresses both of these traditional library functions in our discussion. In the conclusion, the authors raise questions as to whether this long-standing division of labor continues to serve patrons well in the electronic age.

I. EVOLUTION IN PATRON EXPECTATIONS, EVOLUTION IN SERVICES

Changes in the basic tools used to provide access to legal information have had a substantial effect on patron expectations for law library services.¹⁰ The transformation began in the 1970s and 1980s, with the introduction of the LexisNexis and Westlaw

computer-assisted legal research systems. For the first time, patrons were given an alternative to print versions of primary and secondary legal resources. The systems experienced several major changes in the 1990s: first, when LexisNexis and Westlaw released software for the personal computer, freeing researchers from the dedicated terminals, and later when both products launched services on the World Wide Web, allowing users to do research from any computer with access to the Internet. Increased access meant increased use, and eventually increased reliance on these services. Patrons could do more of their research without consulting books, or even coming in to the library building. Expectations for access to library collections has changed with the changing research and management tools. Law students who will graduate in the spring of 2007 most likely spent their undergraduate years using a variety of digital collections offered by their college libraries. Today's students therefore accept and expect certain features of library service. The mere existence of an online catalog of our collection, online access to indexes, or digital image collections do not translate to innovative service in their minds. The latest OPAC releases, as impressive as they are to the older generation, do not seem state of the art to regular users of Amazon.com.

The even larger changes to modern life brought about by technological developments also have affected patron expectations.¹¹ Patrons' expectations for library systems are increasingly shaped by the innovative businesses that have applied developments in networked systems creatively.¹² Patrons use a variety of information systems outside of the library: Amazon.com, the Internet Movie Database (IMDb),¹³ Orbitz,¹⁴ Netflix,¹⁵ even Google for their professional as well as personal needs.¹⁶ Most of these popular systems

provide a richer overall experience than the library catalog. Amazon, for instance, provides some search functionality that libraries do not, including limited full-text search and author searching when books have more than three authors. Amazon also keeps track of a user's "wish list," historical purchases, and preferred delivery and payment options. It offers recommendations through a variety of algorithms that examine the users' viewing and purchase history and the history of other users. And if Amazon doesn't have the sought-after item, it directs the user to sources for used copies and allows purchase of the item using its own trusted checkout system. Users can even sell materials from their own home libraries using Amazon's system. Library OPACs do not match this array of personalized responses and options.

Systems like Amazon have been birthed and raised into a cocky adolescence in the last ten to fifteen years,¹⁷ and now challenge the "mature" library services. Librarians spent decades developing rules and frameworks for describing and providing access to materials, but the searching and retrieval systems of the commercial newcomers have rapidly passed by those of libraries in the last several years, as millions of dollars have been spent by the commercial vendors in developing products and services for information delivery while library systems have remained comparatively unchanged. Amazon.com and other online vendors are adding more enhancements almost daily, leaving library patrons frustrated with the standard library OPAC. Is it any wonder that so many people, who once turned first to a library for their information needs, now look elsewhere?

This growing disparity in usability between the OPAC and other library systems on the one hand, and Amazon and similar online retailers on the other, may not separate patrons from the library permanently. But library users become frustrated (and understandably so) when they are not able to find and access information easily from our catalogs, indexes, e-journal lists, and other discrete information services; they will go elsewhere for their information needs. Librarians are well-advised to look to the commercial sector for inspiration and guidance in improving access to information resources. Just one negative encounter can send users running to Google, away from the expensive resources the library has purchased.¹⁸

The effects these changes have on user expectations, and on librarians' ability to provide adequate access to information resources, are unavoidable. Librarians can choose whether and how to respond to changing expectations, however. Determining the appropriate response requires closer examination of patron expectations, and a reexamination of the library's mission. While some expectations should serve as targets for librarians to work towards, others may need to be managed instead.¹⁹ How librarians respond in terms of balancing management and meeting patron expectations, will determine whether libraries remain a viable part of the information landscape.

II. SEARCH INTERFACES AND DISPLAYS

A major trend in the development of information access is the increasing clarity and simplification of commercial search interfaces and information displays, particularly in the organization of search results. This is the most basic access point for system users, and can

be the “make or break” point in an online company’s business. If consumers cannot find what they need easily, they will quickly find another site to use in its place. An examination of Amazon and Google screen displays, as exemplars of the largest aggregated information resources in the commercial world, illustrates recognition of this imperative. While their search power and precision are actually dwarfed by those of most library systems, Amazon’s and Google’s results are generally clear and easy to understand, and are very satisfying to users,²⁰ even if the users cannot find what they are actually seeking.

In contrast, the quality of library collections generally exceed patron expectations and meet their needs but all too often, library users are unable to find or use library materials because the primary discovery tool, the OPAC, is designed more for librarians than for users, and also because it provides access to an increasingly smaller proportion of the library's total collections. OPAC displays have too much information (for example, the physical dimensions of a book), yet rarely include evaluative information like book reviews or the full text of the resource. Patrons accustomed to commercial interfaces find OPAC displays clunky and unhelpful.

A. Library Search Interfaces

Libraries keep excellent records about their collections. This is one of the strongest, and most distinguishing, features of library catalogs. The records in a library's Integrated Library System (ILS) are both very detailed and of very high quality, creating a database with tremendous potential. In fact, MARC bibliographic and holdings records, which are the standard format behind OPAC displays, store much more information than is used by most OPACs. Much of this information could be helpful if displayed in a better way.

In terms of search power, library OPACs should be far superior to Amazon's catalog: OPACs provide both fielded and keyword searching of high quality, highly detailed records built by professional catalogers, with controlled vocabulary and authority control, descriptive notes, and other content added to the record (e.g., table of contents).²¹ Library records track relationships amongst themselves (e.g, series statements and serial continuation statements) and have relationships to a wealth of other information (e.g., item, order, check-in, circulation count, and hold records) that the OPAC search mechanisms ignore. We need a different view of the same metadata, with interfaces customized to the goal or needs of the patron, whether she is a sophisticated researcher or is merely seeking a quick, factual answer..

While holding high-quality data, OPACs display some of that data in a way that makes it difficult for patrons to understand it and use it effectively.. This is a second distinguishing feature of library OPACs. One example of this is subject heading information. Changing the way OPACs present subject headings could help patrons use this information to more quickly find what they want

There are a variety of ways OPAC searching could be enhanced and displays improved. Compare the following examples from Amazon.com and North Carolina State University.²²

Amazon.com²³

Amazon.com has a straightforward, clearly labeled search interface. Its results are displayed in a user-friendly arrangement. Amazon's display includes links to other editions

and versions of the same work, while displaying the most recent edition first. It provides an image of the book's cover and an ability to view selected pages (with participation from the publisher), and provides purchase links from Amazon's own warehouse or from other Amazon users who have used copies of the book. The display also includes options to filter the results, though these are often not terribly helpful to a researcher, because they are very broad subjects, designed for browsing in a bookstore.



Among the most helpful features of Amazon's search and display screen are the following features:

1. Search Inside™, which allows users to search the text of the book. Libraries could offer a similar feature for those titles held as an electronic equivalent in one of the library's licensed databases.
2. The most recent edition (8th) is displayed first.
3. There is an explicit offer to expand search results – Amazon doesn't expect users to know that they have to remove search terms to broaden their search.
4. There is an explicit offer to narrow the search by category (using BISAC-like broad categories²⁴). Note that this does not simply run a new subject search like many library catalogs; it adds the subject limitation to the existing search.
5. Results can be easily re-sorted.
6. The screen includes an explicit, easily changed search universe. This drop-down menu also serves as a reminder that users *can* search something other than books.

North Carolina State University²⁵

The North Carolina State University OPAC is an example of a library search site and display that meets needs of both researchers and casual users. NCSU has added an application to its ILS that takes data already in the bibliographic records and displays it in a way that patrons can easily understand. In this keyword search (below) for "copyright," the interface offers the option to filter results by topic, form/genre, and even by Library of Congress classification. Categories are only displayed if they contain results, and patrons can see how many results are located in each category.

The screenshot shows the NCSU Libraries OPAC search results for the keyword "copyright". The interface includes a search bar with the query "copyright" and a "Go" button. Below the search bar, the results are displayed in a list format. The search results are filtered by "K - Law in general. Comparative and uniform law. Jurisprudence" (17 items). The results are sorted by "Relevance". The first five results are listed, each with a brief description, author, publication date, and format. The interface also includes a "Narrow Results By" section on the left, which allows users to filter results by subject, genre, format, region, and author. The search results are displayed in a list format, with each result including a brief description, author, publication date, and format. The interface is clean and user-friendly, with clear navigation options and a well-organized layout.

NCSU LIBRARIES Search the Collection | Browse Subjects | Services | Library Information | Community | News & Events
MY LIBRARY: Library Account | My Course Reserves | My Alerts | RefWorks

Catalog Search: copyright Anywhere Go Start Over Send search to: Go

Search 'copyright': Online Resources : K - Law in general. Comparative and uniform law. Jurisprudence
We found 21 matching items.

Narrow By Call Number Range:
K1 - K7720 Law in general. Comparative and uniform law. Juri ... (4) KF - KF Law of the United States (17)

Narrow Results By: **3**
Subject: Topic
· Copyright (12)
· Law and legislation (8)
· Copyright and electronic data processing (7)
· Intellectual property (6)
· Computer programs (4)
Show More ...
Subject: Genre
· Directories (2)
· Databases (2)
· Popular works (2)
· Congresses (1)
Format
· Online (21)
· Book (15)
Subject: Region
· United States (18)
· Great Britain (1)
Author
· Library of Congress. Copyright Office. (4)
· Stim, Richard. (2)

Brief View | Full View Sort By: Relevance

1. A review of the copyright licensing regimes covering retransmission of broadcast signals : a report of the Register of Copyrights, August 1, 1997.
Author: Library of Congress. Copyright Office.
Published: 1997.
Format: Electronic resource
Online: View resource online
2. Project looking forward : sketching the future of copyright in a networked world : final report, May 1998
Author: Hardy, I. Trotter.
Published: 1998.
Format: Electronic resource
3. The copyright book [electronic resource] : a practical guide
Author: Strong, William S.
Published: c1999.
Format: eBook
Online: View resource online
4. Project looking forward : sketching the future of copyright in a networked world, May 1998
Author: Hardy, I. Trotter.
Published: [1998]
Format: Electronic resource
Online: View resource online
5. Report on legal protection for databases : a report of the Register of Copyrights
Author: Library of Congress. Copyright Office.
Published: [1997]
Format: Electronic resource
Online: View resource online

1. Search limits are clearly displayed and can be removed with a single click on the red "x".

2. Further limits can be imposed by call number and, as with Amazon, the sort order is displayed and easily changeable.
3. Results can be further narrowed by subject using Library of Congress Subject Headings (LCSH) contained in the result set. Searchers can narrow searches based on LCSH subdivisions such as form/genre (in the MARC 650 subfield v). Other elements of the bibliographic records are also presented as search limits, and are capable of manipulation.

The Endeca²⁶ filtering scheme used by NCSU allows patrons to use the data that already exist in its bibliographic records in new ways. The ability to limit results by subject headings and even subdivisions of subject headings is especially significant; it is one of the features that makes Endeca-like systems especially powerful. This same concept can be applied to geographic, chronological and other subject subdivisions. Presenting each type of descriptor data allows patrons to actually use all of the rich metadata that catalogers provide.

With better interfaces, patrons might actually understand, use, and benefit from subject headings. Librarians should make the value of subject headings explicit by showing patrons how to use them to limit and focus their searches. Even something as simple as changing the wording in existing OPACs to include options such as “more like this” or “more on the topic...” might be better understood by patrons than the current “Subject” or worse “LCSH” options. Rather than train users to adapt to the library’s OPACs, OPACs should be changed to make them more like the systems our patrons already use while maintaining the benefits of the library’s high-quality metadata.²⁷

2. Known Item Retrieval

Known item retrieval — finding a specific book or article or Web site — is something that current OPACs do fairly well, provided patrons are physically in the library and/or have a librarian helping them. Known item searches are particularly important in law libraries, where it is common to use the footnotes of one source for subsequent research. It is also typical of academic law libraries in particular, where law students serve as editors for journals and are required to find huge lists of known items for verification of the citations in footnotes.

More and more, however, patrons seeking known items are not working in the physical library space, instead accessing the library's resources remotely. This is an area in which small improvements could make a big difference in the user experience. For example alternate titles can be added to the catalog record.²⁸ Metadata that is important to law library patrons, e.g. whether online materials are text-based like Westlaw or image-based like HeinOnline, should be made available. These are the kinds of options patrons should be able to access.

B. Models for Improvement

Comparing library OPAC functionality to Google is certainly unfair in light of the enormous size disparity between databases, not to mention the difference in the very nature of the resources. Google is designed to be a single-source discovery tool for an ever-expanding universe of content, while the OPAC continues to provide access primarily to the library's print collections. A closer look at Google does, however, provide an extreme

view of the differences in ease of use between a tool with which users are very familiar and comfortable—Google—and a tool that users do not understand well and find difficult to use—most OPACs.

Google's initial popularity owed much to its simplicity: a white screen, simple colorful logo, and one little box. When it debuted in September of 1998²⁹, the cluttered portals like Excite and Yahoo! were the norm; Google quickly proved that users respond favorably to a single, simple search box. While the size of its index grew astronomically, Google's simple public page stayed virtually unchanged while its results just got better and better. A new standard was set.

Google continues to provide unstructured, "type-in-the-box"³⁰ searches, running them against a huge database of full-text items and, returning algorithmically relevance-ranked results that are often very good. Library OPACs provide structured, "type author's last name, comma, first name" searching against an often large database of cataloged records, returning results that seem to be almost arbitrary in display, certainly in terms of immediate relevance,³¹ results that can be quite disappointing, in terms of what patrons want. A one-character error, either in cataloging or in the search query — even a common misspelling — is generally disastrous to the quality of the results, for example.

Library systems are very precise, sometimes too precise and detailed to be helpful. Google-

like search functionality may actually be good enough for most purposes, or for most patrons. Librarians may ultimately conclude that, in light of scarce resources, complete bibliographic descriptions of items are not cost-effective, especially for resources cataloged locally. The library's resources might be better used on consolidating resources (see below), rather than creating yet another set of cataloging records.³² Local description and library-specific cataloging procedures might be a luxury in which we can no longer indulge³³.

C. Vision for Library Search Interfaces

1. Open WorldCat as OPAC?

OCLC's Open WorldCat program³⁴ presents one alternative to the local OPAC. OCLC has been working to make its WorldCat union catalog available independent of traditional library systems for several years. In 2003, the OCLC began a project with Yahoo! and Google to make some of its millions of bibliographic records available to search engine users.³⁵ The results from what was then called "worldcatlibraries.org" were integrated into the commercial search engines' results. As the commercial search engines developed specialized searches of books, the WorldCat results were integrated there as well, offering search engine users a link to find a particular item in a library. A few years later, OCLC allowed web surfers to freely search the previously subscription-only database, using a somewhat traditional OPAC-type interface at worldcat.org. Interestingly, at the same time, the company made a search "widget" available for any user to install on his or her own web site.

As an alternative to creating their own catalog, libraries could offer WorldCat.org as their main search tool, linking search results to their inventories to determine item status and location in the library. Using WorldCat instead of a local OPAC, emphasizing the cooperative nature of librarians and library work, would allow the development of better, shared, tools for resource discovery³⁶, and access to a much wider range of resources for all patrons.

2. Personalization Services

Personalized services are becoming the norm outside of the library environment. For example, Amazon.com provides suggestions to shoppers based on what others who have looked at a given item ended up purchasing, and offers recommendations based on "wish list" items that customers have identified. Why shouldn't library OPACs suggest books based on previous check-outs? Why shouldn't OPAC results suggest databases based on OPAC search terms? Applications already exist to offer these services.

Consider, in particular, how an academic law library's faculty services, usually very labor-intensive, could be personalized through automating certain aspects. Faculty services typically rely on the hand-selection of resources, management of custom searches on the library's electronic databases such as the Current Index to Legal Periodicals, and document delivery upon request. Absent privacy concerns, many of the same types of service could be provided by an automated system. In fact, many services could be and are provided by vendor clipping services or custom alert services. By automating these services, all users — not just faculty — could benefit, and public services librarians' attention could be focused more on reference and research (a different type of personalization).

What does the future library interface look like? It would need to provide at least the ease of use and level of services that patrons get from Google and Amazon. Google works because people can find what they want, without any training. The rich information experience of an interface that looks more like Amazon, Netflix, eBay, or iTunes could be quite powerful in the law library. An interface supporting browsing by “facets,” such as broad legal subjects, country of origin, or form/genre,³⁷ and recommended materials³⁸ could provide our users with the tools to find exactly what they want and more. In the academic law library, an interface that draws on registration information from the student information system could automatically display suggestions selected by the faculty, career services staff, and librarians, based on a student's class year and/or enrolled classes. First-year students might see recommendations for hornbooks and nutshells, recommended monographs from the faculty, books about building a career as an attorney or as a legal academic, and legal research and writing guides. Second year students might see recommended materials from career services or the law clinics. Faculty could allow students in their classes to see recommendations made just for them, and students could recommend items to each other.

Perhaps separating discovery processes from our accounting systems would be a good place to start. The OPACs that are bundled with integrated library systems are little more than web access to a library's inventory. With the proper access to ILS data, the library could push reserve items and recommended readings directly to existing course management systems, creating individual lists for each course.³⁹

III. CONSOLIDATION OF RESOURCES

A. Access to Resources

In the modern world of ever-increasing options for finding information, it becomes increasingly important to make it easy for library patrons to find (or "discover") the resources that they need.⁴⁰ Users must be made aware of the existence of major tools like the library catalog, online resources lists or databases, and any other places where information about collections are located. Further, after patrons have found the library's "front door" to information and reach one of the library's discovery tools, they still must be able to successfully locate the resources that will address their question.

Most often, selecting from among collections is made possible, but not simple, by the extensive A-Z lists of electronic journals and databases that are featured on library web sites. But A-Z lists are unwieldy, even if the list is annotated and searchable.⁴¹ A user seeking the *Philadelphia Gazette*, for example, which is an indispensable resource for early American legal history, is unlikely to discover the *Early American Newspapers* collection, through which most libraries offer access to the *Gazette*, in the A-Z list. Unless the enormous list of titles in the *Early American Newspapers* database is enumerated in the library's A-Z list or its catalog, the *Philadelphia Gazette* will remain undiscovered. Even if the database's titles are listed, searching contents of a single title and finding the full-text its articles takes multiple steps. This problem exists for many law library resources, including law journals, which is possibly most problematic for users. A comprehensive discovery tool like Google should become the standard in law libraries if patrons are to turn first to the library for information. Libraries need more effective discovery tools that tear down walls between resources and help users connect to information through a single point

of entry. The effective delivery of information in the future depends on it.

A. Consolidation of Resources: A Non-library Model

Consolidation of resources is an underlying strength of many modern web businesses. In this context, consolidation requires a powerful search interface, the “demand point,” and complete control over the business’ entire inventory. The section below considers a retail business, Netflix, whose success is built at least partly on its ability to consolidate many resources and offer them through one interface. The consolidation phenomenon has been described in many discussions of “the Long Tail,”⁴² some of which address the concept as applied to libraries.⁴³ The case study includes examples of successful library offerings and indicates where there is room for improvement.

Netflix, the popular DVD movie rent-by-mail service, has torn down the walls between people and the information they want. Both because of and in spite of its enormous database —its *aggregation of supply* — Netflix is very effective at getting users what they want. Its rich search interface, built on an incredibly deep catalog, offers a variety of recommendation features to help users identify additional relevant items. Netflix is very effective at delivering items via the U.S. Postal Service once a user decides what he wants. Librarians could learn much by studying how Netflix (and similar businesses) handles search and delivery, and comparing its service to similar functions in the library.

The Netflix service is relatively straightforward for users: identify a film in the online catalog, click the “add” button to drop it into the queue, and the movie DVD will appear in

the mailbox in 1-2 days. When customers return a DVD, Netflix checks it in and ships the next film in the queue, generally the same day. Customers pay a flat monthly fee for the service level that best fits their needs in terms of viewing, from an entry level of one DVD at a time (with a maximum of two rentals per month), to the power-user level of eight DVDs at a time (and no maximum total rentals per month).

Customers are responsible for keeping their "queue" of desired movies full, prioritized in the order they wish to receive them.⁴⁴ The queue can be built from known item searches of Netflix's catalog, from browsing (a variety of options are presented, including genre, director, popularity or customer ratings), or by acting on recommendations (from "friends" or other users, or even the Netflix system,⁴⁵ based on past rentals). DVDs are mailed in simple flat envelopes that also serve as the return mailer (postage-paid), allowing users to drop the viewed disc in the nearest mailbox at any time. There are no due dates, no late fees, no postage to worry about, and no need for any action from the user unless his queue of films is empty.⁴⁶

Netflix is, in effect, a refinement of the traditional book-borrowing model that we all learned as children in the public library. Netflix's nationwide business, accessible through a single web presence, provides movies through a network of distributed warehouses. A single Web site provides access to the entire collection of films, no matter where the user is located and no matter whether copies of a movie are present in all warehouses, or in only a few. While each Netflix warehouse stocks the same basic collection of titles, the warehouses serve a kind of load-balancing function for each other, addressing increased demand for titles in one region with supply from warehouses in another region. Users never

know from where a film comes or to where it needs to be returned, since the envelopes are pre-printed with the return address.⁴⁷

Netflix works because its inventory is large, its web site is very easy to use, transactions are handled relatively quickly, and a user only has to go back to the web site when he so desires. It's an effective "long tail" business, consolidating both supply and demand to connect users to a very large catalog of titles.⁴⁸ Netflix succeeds because of a creative concept that brings a rich interface to a deep catalog, combined with consistent, reliable delivery through the U.S. Mail.

B. Consolidation of Library Resources

1. Matching Patrons to Licensed Resources

The acquisition of licensed resources is an area where many libraries exceed patron expectations for access to information. Libraries license tremendous amounts of content. However, libraries typically do not effectively consolidate this content or make it easy to discover or use.

Many patrons regularly start their research with a general internet search engine, even if they are physically in the library.⁴⁹ While Open WorldCat and some full-text book searching tools such as Google Book Search⁵⁰ help guide patrons back to the library's physical book collections, the licensed article collections (and interlibrary loan services for

articles not in licensed or owned journals) are largely invisible to patrons who begin their research with Google. What is visible are the commercial publisher sites that identify relevant books and journals but, understandably, require payment for access to the information on their site. The faculty member who accesses an article at the publisher's site (having arrived there as the result of a Google or Google Scholar search), without knowing that the library has access to the article via several aggregations and other electronic journal collections, can cause the law school to pay for the same information twice: once for her personal purchase and again for the library's subscription. The publisher sites do not provide links to library databases or to interlibrary loan services. Patrons who start with Google miss quality resources that libraries pay dearly for.

Library discovery tools (the OPAC, ejournal A-Z lists, and our online databases) are powerful, holding an enormous volume of content, just like Netflix. But the library user must be aware of and familiar with many tools in order to reach all of the library's content. Users must come to the library's "front doors," choose among the resources, figure out how to use those resources, and then locate appropriate citations in yet another location. And, once the appropriate text is located, the library's retrieval and delivery systems (i.e., check-out, document delivery, or ILL) may require yet another series of log-ins, passwords, and data re-entry to request the text, assuming the patron knows the retrieval and delivery systems even exist.⁵¹ Library supply and delivery systems are not aggregated, and the library today lacks the gravitational pull⁵² of the large aggregated information providers like Google and Amazon. Unless changes are made quickly, library patrons may abandon the library entirely.

2. Collection-Building in the 21st Century

Collection building is fundamental to information access, but neither the process itself nor the reasons for it are well understood by patrons. Librarians should focus more on explaining that the information in a library built especially for patrons, and will ultimately provide them with reliable, thoughtfully-selected resources, while also saving their time. Showing patrons that "we chose these three books after evaluating a dozen similar ones" or "we chose this book with input from your professor" may also help them understand one of the chief advantages of having professional librarians in the library. This would be a major change: librarians must sell discrete and thoughtful collections as one of the chief services that the library provides. Librarians must create guides, mount displays, present classroom lectures and interact one-on-one with our patrons to let them know how much work goes into collection building.

In addition to building a local collection and selecting a range of online resources to license, libraries have an opportunity to push their collection-building expertise out to users elsewhere on the internet. Search engines traditionally cast a very wide net, attempting to gather as much of the content of the web into their indexes as possible. Some search engines allow users to define their own set of sites and materials to search. Librarians need to leverage these tools for their patrons. In particular, Google allows users to create a "custom search engine" by defining a set of Web sites to be searched. Even more precise result sets can be created and published using the "subscribed links" feature. Librarians can publicize these aspects of search engines and demonstrate to patrons how to select "their" library, thus ensuring that a Google search result will display the library's carefully

selected materials. Search results could be course reserve records, pathfinders, links to chat services, even individual bibliographic records.⁵³ This is one way that librarians will help patrons navigate the flood of available information—to “sip from the fire hose,” as it were.⁵⁴

3. An "Ideal" Method for Discovery and Search

In an ideal setting, how could librarians best facilitate a user's search? In a word, aggregation. The options are varied, in terms of technology, and involve very different models. Broadly speaking, they fall into two opposite groups: push and pull. "Push" would involve taking existing metadata from the library's catalog and "syndicating" it, using the same basic technology that allows bloggers to syndicate their content (RSS/OPML),⁵⁵ so that search tools like Google (or custom library search interfaces) would find the right records and lead patrons back to the catalog. "Pull" would involve gathering all (or selected) collections together in one interface. The most familiar application of this is federated searching, where a "meta" search option is created, running the user's search through to multiple databases. Libraries also use the Z39.50 protocol⁵⁶ to search other, selected collections. Another application of "pull" is combined metadata collections such as OAIster,⁵⁷ which use the Open Archives Institute (OAI) protocol⁵⁸ for harvesting metadata from digital collections. If librarians could effectively harvest or otherwise obtain metadata for all digital collections⁵⁹, and add MARC-based metadata from the ILS, combining them into one database, a single discovery process would be possible.

4. Technology Solutions

How accessible is a single discovery process, in terms of the technology? How might a tool that effectively directs users to relevant resources for their research needs, and to the appropriate copy of that resource, be built? It would require aggregating an enormous amount of metadata, or at least building tools to better mine the metadata of scattered systems. The ability to search across numerous siloed databases is not particularly new—Dialog allowed this at the advent of online information retrieval,⁶⁰ LexisNexis and Westlaw allow it now, albeit only within their own systems. Searching across several sources involves trade-offs, namely sacrificing precision for breadth. Users lose the ability to search using controlled vocabularies (because they differ between databases) but gain the ability to pull together resources from disparate disciplines to approach research from a new direction.

There are a number of technologies for building tools that allow users to search in one place for things that are contained in multiple places. While these are the subjects of entire articles, and beyond the scope of this article, some brief explanations and examples are offered here. Federated searching (also referred to as broadcast searching) is a process that sends one query out to multiple databases simultaneously. This can be accomplished through a Z39.50 connection or another standard format like OpenSearch⁶¹ or SRU/SRW.⁶² These are often implemented through the use of a tool such as MetaLib,⁶³ WebFeat,⁶⁴ or Central Search,⁶⁵ but the freely available A9 search engine⁶⁶ also allows users to select web sources for federated (or as A9 calls it, “syndicated”) searching.

With a product like MetaLib, librarians select databases to be grouped together for searching, such as "periodical indexes," or "historical full-text collections," and users search those resources with one query. A library computer, running the MetaLib software, sends the search, so licensed databases can be searched. A different approach to aggregating search results begins with aggregating the data to be searched. Libraries and other data providers can normalize their metadata (and data, if desired) to a standard format and allow it to be harvested by other libraries. One popular standard for normalizing and transferring this data is Open Archives Institute Protocol for Metadata Harvesting (OAI-PMH).⁶⁷ This approach allows the creation of databases representing metadata from a number of discrete collections. Users can search the metadata from those collections in one place, and don't need to know about each individual collection.⁶⁸ Many popular institutional repository software packages like Greenstone,⁶⁹ DSpace,⁷⁰ and bePress⁷¹ are already OAI-PMH providers, meaning that data can be harvested from the collections built in these packages. Perhaps the most famous OAI-PMH "consumer" or aggregator is the University of Michigan's OAIster, which has harvested over 10 million records from hundreds of contributing collections.⁷² Other librarians may wish to build smaller, more focused collections for their patrons to search by choosing to harvest records from only a few specialized collections.

One key to the success of databases like OAIster is the flexibility of the metadata. Some is derived from traditional library catalog records, some is more minimal; entered in the workflow of a university or library's digital repository. The data is simply re-used in the OAI application, not reentered or normalized to subjective rules. Librarians still spend a disproportionate amount of time describing resources as compared to the use they might

receive. Imagine if Netflix had to employ an army of professional catalogers to describe each of its films. Could they remain in business? Netflix would close, but every local library still describes its resources in a highly detailed manner, and that's a problem. Some local cataloging practices will continue to be necessary, but should all local changes be loaded back into the central utility? Could less be more, when it comes to allowing for ease of searching of aggregated data?

D. Goals

In order to effectively connect users with collections, librarians must make access to those collections transparent, regardless of where they begin their search. Collections must be available to patrons whenever they begin their search and wherever they are physically located. No longer can libraries offer access only within the physical library facility. Therefore, as a short-term approach to improving access to ALL information, libraries could rely on union catalogs like WorldCat for information access, provided that the union catalog effectively points them to local holdings. Why do patrons need to search multiple catalogs—local law library, university library, regional consortium, and finally WorldCat, when WorldCat alone will do?

For many purposes, time is less a factor than an efficient research process. If a researcher can push a button to have just the right resource delivered, waiting two days for delivery might not be problematic. And when time **is** a factor for a particular item, a global catalog could allow limiting search to local items, ranking results by distance.⁷³ Netflix provides a good demonstration (in the entertainment arena, at least) of the notion that people don't necessarily want to have their items "right now". Amazon and Netflix users give up

immediate access in exchange for convenience — would library users do the same?⁷⁴

IV. WEB 2.0 AND LIBRARIES

All the trends mentioned above are connected to a broad concept known as "Web 2.0." Web 2.0 refers to what many see as a significant shift in the nature and use of the world wide web, from static web pages to interactive applications. Where personal web pages represent the Web 1.0 generation, blogging represents Web 2.0. There are several principles of Web 2.0 services that hold promise for improving library OPACs and enhancing access to information, including trust of users as co-developers and contributors, creation of self-service applications, rich user interfaces, and development of services that will work on many platforms (as opposed to software written for specific operating systems)⁷⁵.

The term "Library 2.0" was coined to describe the next generation of library services,⁷⁶ such as open source library catalogs, RSS feeds for new books, and podcasting. Not all next-generation services require technological solutions, and the changes envisioned in Library 2.0 are no exception. Building innovative services requires creative thinking and a willingness to allow user participation—key features of Web 2.0—whether the solution is technological or not. The creation of space in the law library for collaborative projects is a Library 2.0 concept that does not require technology, for example. The key to Web 2.0 and Library 2.0 concepts is using technology to encourage user participation.

This is not, in fact, a new concept for libraries. Librarians have always encouraged patrons to interact with library collections: by checking them out, by reading them, by creating new works based on existing information in the collections. Library 2.0 concepts just suggest that the longstanding creative work of librarians should both move to new platforms or media and use technology to increase and enhance services in a way that was not possible in a print-only world.

Collaboration and Social Networking

The social networking functionality that has been incorporated in some popular services like MySpace⁷⁷ and Facebook⁷⁸ is another major trend with implications for libraries seeking to provide the best access to information. A social network is an online community of people who share a common interest, and pursue it through a variety of ways such as blogs, sharing photos and videos, e-mailing, chats, and instant messaging, and creating and sharing content such as through a wiki. Social networking is a key feature of Web 2.0, and is also characteristic of Library 2.0 services, whether they are technology-driven or not. Del.icio.us,⁷⁹ the social bookmarking service, and LibraryThing,⁸⁰ a relatively new direct application of social networking concepts to the organization of books, hold great promise for libraries seeking to capitalize on social networking experiences of their users.

Del.icio.us allows users to store bookmarks online, tagged with subjects of their choosing. These bookmarks are available to other users, sortable by user as well as by tagged subject. The most frequently-assigned tags are constructed into a visual “cloud” of popular topics,⁸¹ giving users a quick view of popular tags (each of which is linked to the items that bear the tag). For example, upon finding the library's online guide to using the microforms machine,

a user could click her "add to del.icio.us" button on her browser, and tag it with "library" and "microforms" and "University of Illinois Urbana-Champaign (or "uiuc")". Another user could search the del.icio.us database for "uiuc library microforms," and would find the guide.

Tags are highly subjective, and assigned freely by each individual who adds a bookmark to the database. Searching the combined database can yield interesting and surprisingly relevant results.⁸² Services such as del.icio.us provide opportunities for large numbers of geographically-disparate users the power to act on a set of documents easily and quickly, in effect creating their own union catalog. With del.icio.us and other sites, the user community builds a kind of community taxonomy, or "folksonomy"⁸³ of the document set⁸⁴ (or even the web),⁸⁵ by applying tags to documents.

LibraryThing is a site designed for users to easily "catalog" their books and share their collections with others. LibraryThing combines more traditional metadata with freeform user tagging of books. The system works by having users catalog their own book collections, entering an ISBN or title or by manually entering basic metadata. Once a user has built her collection, the system compares it to the collections of others and creates suggestions (and "unsuggestions") for additional works to acquire based on other user's collections. The system also allows users to tag their books, rate and review them and have discussions about a given work.⁸⁶

In the law library, several social networking applications can be envisioned. The continued

blurring of the distinction between professional and personal use of information and technology services and devices can be used to a library's advantage. With services like MySpace, Facebook, and Friendster,⁸⁷ and the blogging/online journaling and IM explosion, users are tapped into each others' self-published information in a way that could well suggest new ways to provide access to information. Further, capitalizing on the library-focused social networking sites, librarians should consider additional subject access descriptions for the OPAC that come from actual user experience and not just the Library of Congress. Librarians should make an effort to meet patrons half-way with these new technologies, just as has been done in the past. Consider that, when the telephone first made its way into the workplace, there was great debate in the library literature about whether to provide reference service via the telephone; there were (and are) similar debates about email reference even today.⁸⁸ Access to the library's collections must be available to patrons, especially students, where they are or they will get help from someone else.

Work has already begun on ways to apply the social networking phenomenon to libraries.⁸⁹ Additional issues in need of exploration include identifying the proper role of folksonomies in libraries, and managing tensions between expert-built taxonomies and user-built folksonomies (and perceived loss of "control" that accompanies user tagging).⁹⁰ Some libraries are already implementing a community-authoring system with wikis,⁹¹ often restricted to staff or a group of contributors, but offering all libraries a glimpse at the quality of data that patrons can provide.

The OPAC of the future could allow user tagging of resources, and the ability to build and share lists of information sources. It could also allow easy searching of subsets of the

catalog identified by users. Law librarians could create a “pro se” catalog by simply building a search form that appends a “and subject=popular works” to any keyword search.⁹² This would be another way to personalize access and bring information resources to the user in a novel way—meeting the challenges posed by Library 2.0

VI. TARGETS AND CONCLUSIONS

Information access has evolved rapidly in the last few years. Once almost the exclusive province of libraries, information has become a shared commodity, and a profitable one as well. It’s available for innumerable sources, round-the-clock, from virtually anywhere. To retain a prominent position as information providers, the following goals should be adopted by librarians.

A. Goal #1: Build Services That Reach Patrons Wherever They Are

Libraries still require users come to the library’s web catalog (and e-journals list, database list, and other print and electronic resources) for their information, expecting them to choose from among multiple resource options, figure out how to use the various systems, and then navigate the systems to acquire the full text of the item. Library OPACs do not provide users with the ability to create wish lists of desired resources, let alone syndicate them, despite the ready availability and widespread commercial use of software for such purposes. Law librarians need to develop ways to provide information access to patrons regardless of locale and regardless of hardware (laptop or desktop computer, iPod, PDA, or other device), pushing the information to the user based on past use, profiles, class registration, or any of dozens of other characteristics. Information access must become

dynamic, replacing the static “come to the library” services presently offered. Commercial information vendors can provide these services; libraries must do so, too.

B. Goal #2: Improve OPAC Search Interfaces

OPAC search interfaces need to be revitalized. In their current form, they look like tools designed by and for librarians, and they provide access to a limited piece of the library's collections. They should instead feature the stark simplicity of a Google, or the information rich, option-laden site of an Amazon.com. OPAC search interfaces should incorporate social networking principles, allowing library users to “mash-up” resources—combining search results and contents from multiple sources into a new, combined, and personalized resource. OPACs should offer federated searching of distributed resources, saving patrons time and effort and making their library information access efficient. Most importantly, OPACs should be usable without training or instruction. Amazon.com and Netflix do not offer instruction in the use of their search pages. Library OPACs should be as user-friendly and intuitive as the commercial sites our patrons use regularly.

C. Conclusions

These ideas are intended to start a conversation that librarians need to have, to ensure adequate information access for today's library users. Constant vigilance — of trends, of adequate information access for today's library users. Constant vigilance — of trends, of library practices — is required to keep information access practices current.

Law libraries did an outstanding job of meeting patron information expectations when the legal information world was comprised solely of print.⁹³ There were few other options for obtaining books, and the card catalog and later the OPAC were powerful tools for locating

known items on the library shelves.

Now physical location — of the resources or the the patrons — doesn't matter as much. The business world has exploited this reality, providing information and services in ways that libraries have yet to adopt or adapt. If the goals of information access remain that of matching patrons with what they need and saving their time,⁹⁴ then librarians need to re-think the way in which library OPACs and search engines meet those goals. The trends and goals discussed above suggest that systems development is what we really need to focus on. Online businesses, social networking applications, and user behavior should guide the development of the next generation OPAC. In the short-term, union catalogs might provide new ways to provide information access. Law librarians should take some comfort in the fact that the issues we face are not any different than those of the rest of the library world. Librarians across all disciplines are also struggling with what Library 2.0 means, and how to put more powerful tools into users' hands. Law librarians can and should draw heavily on research in the broader library literature for help

¹ See e.g. Lawrence B. Solum, *Download it While it's Hot: Open Access and Legal Scholarship*, 10 Lewis and Clark L. Rev. 841 (2006), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=957237 (last accessed Feb. 5, 2007).

Wi-Fi is a marketing term for the family of radio data transmission standards defined by the Institute of Electrical and Electronic Engineers as 802.11. "Any of several standards for the high-speed wireless transmission of data over a relatively small range." *Oxford English Dictionary*, 3rd ed. (available at OED Online) (Draft entry Sept. 2006). See also *Wi-Fi*, <http://en.wikipedia.org/wiki/Wifi> (last accessed Feb. 5, 2007).

³ MP3 is short for MPEG-1 Audio Layer 3, technically an audio compression algorithm. MP3 has come to mean an audio file so compressed, usually played back on a computer or portable media player, e.g., Apple's iPod, Creative's Zen or SanDisk's Sansa. "An MPEG Standard that is used for the compression of audio sequences, esp. music, for digital storage and transmission." *Oxford English Dictionary*, 3rd ed. (available at OED Online) (Draft entry Mar. 2002). See also *MP3*, <http://en.wikipedia.org/wiki/Mp3> (last accessed Feb. 5, 2007).

⁴ Chris Anderson, *The Long Tail*, 12.10 Wired (Oct. 2004).

⁵ For more on digital and hybrid (print and digital) library environments and some general challenges and issues, see e.g. Bishop, Van House and Butterfield, eds., *Digital Library Use* (MIT Press, 2003).

⁶ Casey Bisson, Michael Stevens, and others have also written about conforming library systems to modern web standards. But see David Bawden and Polona Vilar, *Digital Libraries: to meet or manage user expectations*, 58(4) Aslib Proceedings: New Information Perspectives 346 (2006) [hereinafter Bawden and Vilar, *Digital Libraries*].

⁷ Indeed, Morris Cohen drew special attention to issues of "effective access" in his 1971 AALL President's Page on on principles fundamental to law librarianship: "Since the publishers do not seem to be developing new techniques or bibliographic forms to handle today's explosion of legal literature, perhaps we librarians have to take some responsibility in this area. Liberal rules for library use are not enough unless our readers have actual and effective access to the materials of law. That access may depend on *our* ability to devise or encourage new methods of retrieval and research in law. The real threat to freedom to read in law libraries comes not from some heavy-handed censor, but rather from the cumbersome weight of accumulated court decisions and statutes and from the creaking efforts of yesterday's search books and finding tools to meet the needs of today's legal research." (emphasis in original). Morris Cohen, *President's Page: Towards a Philosophy of Law Librarianship*, 64 Law Libr. J. 1 (1971).

⁸ In brief, Web 2.0 refers to the current generation of Internet-based interactive services such as Google Maps, Flickr and Wikipedia. These services are interactive, participatory and open, allowing users to "mash up" the information with one service with information from another to create something entirely new. For more on Web 2.0, see e.g. *Riding the Waves of 'Web 2.0'*, *infra* n. 18. See also *Web 2.0*, http://en.wikipedia.org/wiki/Web_2.0 (accessed Feb. 5, 2007).

⁹ Law library reference librarians are "...spared the quiz-show questions..." Mary K. Sanders (chapter 7 author), *Law Librarianship: A Handbook*, 175 (Fred B. Rothman & Co., 1983).

¹⁰ "Our users expect simplicity and immediate reward and Amazon, Google, and iTunes are the standards against which we are judged. Our current systems pale beside them." University of California Bibliographic Services Task Force, *Rethinking How We Provide Bibliographic Services for the University of California, Final Report 2*, <http://libraries.universityofcalifornia.edu/sopag/BSTF/Final.pdf> (Dec. 2005) [hereinafter *Rethinking Report*]. Assessing this could be an exciting research project. The Danish libraries did something similar recently, studying users' perceptions. *The Hybrid Library: From the Users' Perspective: A report for the DEFF project: "The Loaners' Expectations and Demands for the Hybrid Library"*, <http://www.statsbiblioteket.dk/publ/fieldstudies.pdf> (Statsbiblioteket, February 2006, English translation September 2006) [hereinafter *DEFF Report*].

¹¹ OCLC, Inc., *Perceptions of Libraries and Information Resources*, <http://www.oclc.org/reports/2005perceptions.htm> (last accessed Feb. 5, 2007) [hereinafter *OCLC Perceptions*].

¹² See Bawden and Vilar, *Digital Libraries* at 347. Note that they go on to acknowledge that user expectations are usually unrealistically high.

¹³ The Internet Movie Database, at <http://www.imdb.com>, is a free database of film, television, video game and related industry information. While it began as a volunteer-built project, Amazon purchased the service in 1998, see http://imdb.com/help/show_leaf?history (last accessed Feb. 5, 2007).

¹⁴ Most readers are likely familiar with Orbitz' (<http://www.orbitz.com>) cheesy gameshow commercials. The online travel service was founded by the big five airlines in 1999, *see* <http://www.orbitz.com/App/AboutUs> (last accessed Feb. 5, 2007).

¹⁵ The online DVD rental service at <http://www.netflix.com> debuted in 1999 and is perhaps the biggest surprise of the bunch. It relies on a combination of clever use of technology and even more clever use of the good old Postal Service. <http://www.netflix.com/HowItWorks> (last accessed Feb. 5, 2007).

¹⁶ What perhaps used to be a sharper division between work or research-related use of tools is becoming more dull: "The wall between a user's computing experience within and outside the workplace is rapidly crumbling ... Increasingly, users have their own gadgets that are used universally across work and lifestyle activities. Although the capabilities offered by these devices are more personal and socially oriented, the always-on environment that increasingly surrounds users (given widespread connectivity options) makes it virtually impossible for workers to surrender them entirely in favor of traditional corporate-controlled alternatives." Mike Gotta, *Trends in Social Software: Collaboration and Content Strategies: In-Depth Research Overview* 25-26, <http://www.educause.edu/LibraryDetailPage/666?ID=ERS0604> (The Burton Group May 2006).

¹⁷ Amazon's media kit lists July 1995 as the date of the site's first sale. <http://phx.corporate-ir.net/phoenix.zhtml?c=176060&p=irol-corporateTimeline> (last accessed Feb. 5, 2007).

¹⁸ Amanda Lenhart, Mary Madden & Paul Hitlin, *Pew Internet and American Life Project: Teens and Technology*, http://www.pewinternet.org/pdfs/PIP_Teens_Tech_July2005web.pdf (July 27, 2005) (on teenagers' use of the internet). *See also Rethinking Report* 7-8; Mary Madden & Susannah Fox, *Riding the Waves of 'Web 2.0'*, http://www.pewinternet.org/pdfs/PIP_Web_2.0.pdf (Oct. 5, 2006); Lee Rainie & John Horrigan, *A Decade of Adoption: How the Internet Has Woven Itself into American Life*, http://www.pewinternet.org/pdfs/Internet_Status_2005.pdf (Jan. 25, 2005).

¹⁹ Bawden and Vilar, *Digital Libraries*. Reference librarian Kelly Kunsch noted in 2002, "[a]nd because more can be done, and it can be done faster and perhaps in a more usable format to the patron, the expectations are higher ... And it is those expectations that make the job more challenging today than yesterday." Kelly Kunsch, *The Way We Were and What We "B"* 21(1) *Legal Ref. Services Q.* 97, 110 (2002).

²⁰ The seemingly "magical" results are largely the result of the immense size of the database – searchers are more likely to find what they are looking for simply because it's very likely to be in the database they are searching. This phenomenon is repeated in most of the services that we discuss below, but not generally in libraries. Our OPACs encompass an ever-dwindling fraction of the resources we purchase and license, and that makes discovery an ever-growing problem, which we discuss in the next section.

²¹ We do a mostly atrocious job of explaining these and making them available to patrons, but they are there.

²² Note that the North Carolina State University's catalog added only a new search interface to an existing backend ILS. A similar approach was taken by Casey Bisson at Plymouth State University with his WPopac, <http://wpopac.blogs.plymouth.edu/> (last accessed Feb. 2, 2007).

²³ Amazon.com, at <http://www.amazon.com> (last accessed Feb. 2, 2007).

²⁴ BISAC is Book Industry Standards and Communication, a standards group that, among other activities, maintains a simple, hierarchical list of subject headings designed to help bookstores collocate similar books. *See* <http://www.bisg.org/bisac/> (last accessed Feb. 2, 2007).

²⁵ North Carolina State University Libraries, <http://www.lib.ncsu.edu/catalog/> (last accessed Feb. 2, 2007).

²⁶ <http://www.endeca.com> (last accessed Feb. 2, 2007).

²⁷ For a clever and effective use of an open system, *see* Casey Bisson's award-winning search at <http://www.plymouth.edu/library/opac>. The WordPress-powered search engine is fed XML bibliographic records from that school's III system (last accessed Feb. 2, 2007). Smart librarians working together could build interfaces like this, but it requires open, documented access to our databases, which has not been traditionally available from ILS vendors.

²⁸ If, for example, most patrons seeking the International Court of Justice reports search the catalog for "ICJ Reports", we could suggest that the catalog include this as an alternate to the official French title, "Recueil des arrêts, avis consultatifs et ordonnances".

²⁹ See <http://www.google.com/corporate/history.html> (last accessed Feb. 2, 2007).

³⁰ Joseph Janes, *What's Next? Search Me*, 35 *American Libraries* 62 (Dec. 2004).

³¹ Arbitrary in terms of the relevance to the patron – clearly results are sorted according to some chosen field in the record (e.g., date). For instance, serial titles fare poorly in date-based displays, and the seminal treatise on a subject isn't treated any differently than a 20-page white paper or a master's thesis held by the university's archives.

³² The University of California's Bibliographic Services Task Force recommended just this, in fact: "Given its prohibitive cost, staff-created metadata should be applied only when there is proven value for current and future scholars." *Rethinking Report* at 9. We can interpret this to suggest a variety of possibilities, including Library of Congress cataloging-in-publication data, unmodified OCLC copy, or some other option.

³³ *Id.*

³⁴ <http://www.oclc.org/worldcat/open/default.htm> (last accessed Feb. 5, 2007).

³⁵ *WorldCat.org Offers Search Access to Libraries Collections*, <http://digitalarchive.oclc.org/da/ViewObjectMain.jsp?fileid=0000057113:000002556771> (Aug. 8, 2006).

³⁶ This vision is articulated by OCLC Chief Strategist Lorcan Dempsey. See *Lorcan Dempsey's Weblog on Libraries, Services and Networks*, <http://orweblog.oclc.org/> (last accessed Feb. 5, 2007).

³⁷ Note that Endeca (which built the NCSU interface, see <http://www.lib.ncsu.edu/endeca/> (last accessed Feb. 5, 2007)) and other providers, who include AquaBrowser Library (<http://www.medialab.nl/> (last accessed Feb. 2, 2007)), can do this *now* with data *already in our records*. So can WorldCat.org and the open source ILS, Evergreen (<http://open-ils.org/> (last accessed Feb. 5, 2007)).

³⁸ For an example, see <http://www.LibraryThing.com> (last accessed Feb. 5, 2007) and its extensive recommendation services, including "unrecommendations."

³⁹ Some libraries are already doing this. See e.g. www.dlib.indiana.edu/projects/sakai/projectDoc/RSSWhitePaper_10_31.pdf (October 30, 2006).

⁴⁰ For more on this issue, see, e.g., Lorcan Dempsey, *The Library Catalogue in the New Discovery Environment: Some Thoughts*, *Ariadne* issue 48, <http://www.ariadne.ac.uk/issue48/dempsey/> (July 2006).

⁴¹ Scholars writing on digital and hybrid library issues have noted this extensively. For an overview, see Reg Carr, *What Users Want: An Academic 'Hybrid' Library Perspective*, *Ariadne* issue 46, <http://www.ariadne.ac.uk/issue46/carr/> (Feb. 2006).

⁴² Chris Anderson, *The Long Tail*, 12.10 *Wired* (Oct. 2004), Chris Anderson, *The Long Tail: Why the Future of Business is Selling Less of More* (Hyperion, 2006).

⁴³ See Lorcan Dempsey, *Libraries and the Long Tail: Some Thoughts About Libraries in a Network Age*, 12 *D-Lib Magazine*, <http://www.dlib.org/dlib/april06/dempsey/04dempsey.html> (Apr. 2006), for the original suggestion of application of the long tail concept to the library. Dempsey looks broadly at all library types, and considers the economic impact of applying consolidation to the supply and demand "ends" of the tail.

⁴⁴ Notes regarding availability, such as "short wait" or "long wait" appear in the queue, and serve as rough guides to how quickly a user can expect a film. Along with faster shipping times, users who rent fewer movies per month can also expect to receive "short wait" and "long wait" films faster than their more prolific friends.

⁴⁵ Netflix sponsors an annual and ongoing contest for programmers to help them improve their recommendations algorithm. <http://www.netflixprize.com> (last accessed Nov. 30, 2006).

⁴⁶ It's worth noting that in addition to the user having to contact Netflix only when the mood strikes, Netflix' contact with users is similarly low-volume. Users are notified upon receipt and shipping of discs, and occasionally are asked to respond to emails regarding receipt date of a particular film in order for Netflix to maintain data about shipping time.

⁴⁷ Note that the return address is based on the warehouse that a film shipped *from*, and a user may have several films at home, not all of which came from the same warehouse. Netflix apparently doesn't care which envelope you use to ship films back however, and presumably they handle returns in a similar way that libraries handle books returned to other libraries – either direct return or by allowing a “floating collection.”

⁴⁸ The traditional video rental industry also aggregates supply (if not demand) by entering into revenue sharing agreements with major studios or distributors. These agreements generally provide that the studios lease the videos or DVDs to the retailers for a very low initial cost, then take a share of the rental revenue each time the movie circulates. This allows supply to meet demand because each Blockbuster can have 150 copies of the latest blockbuster on its shelves without paying full price for each copy. *See e.g.* http://www.rentrak.com/bus_homevideo.php (last accessed Nov. 30, 2006). This model is used in libraries when public libraries rent or lease bestsellers to help satisfy demand. In fact, Blockbuster's latest offering, a combination of the Netflix model with traditional in-store rentals is most apt for libraries, since it allows the customer the option of interacting with the service entirely through the mail or by also occasionally visiting a local retail outlet. Libraries could, and some have, adopted this model by allowing patrons to request materials from a consortial catalog and have them delivered to their homes (or home libraries) via the mail.

⁴⁹ We'll call this “Google” because it's convenient shorthand. Like most shorthand however, it's not entirely accurate - we need to consider all major search engines where our patrons begin their research. When asked “Where do you typically begin your search for information on a particular topic?” 89% of college students said that they began with a search engine. OCLC *Perceptions* at 1-17.

⁵⁰ Google Book Search, formerly known as Google Print, <http://books.google.com>. For more about the project, *see* <http://books.google.com/intl/en/googlebooks/about.html> (last accessed Feb. 5, 2007).

⁵¹ The authors are most familiar with the current systems in place in the law libraries where they have been employed in the last three years (Yale, the University of Illinois, and the University of Colorado). At Yale, the law school runs an Innovative Interfaces system, and the rest of the campus operates on a shared Endeavor Voyager system. In both systems, the user must login in order to request materials. In both systems, no interlibrary loan form is presented upon an unsuccessful search, nor is the user directed to WorldCat or either of the two direct consortial borrowing systems, and the interlibrary loan system uses a separate user ID and password. At the University of Illinois, the law library shares an Endeavor Voyager system with all campus libraries, and is part of a shared catalog of Illinois university libraries. The local catalog is searched by default, and while union search options are presented upon the completion of an unsuccessful search, and request buttons are presented in the shared catalog for items that are identified (assuming they're available), no suggestion is made of interlibrary loan. Login to the local and shared catalogs are separate (but use the same credentials), but login to the interlibrary loan system uses institutional NetID credentials. At Colorado there are two separate Innovative Interfaces systems, which must be searched separately. There is a statewide direct consortial borrowing system - the third catalog a user must search - and then when all else fails, users must search WorldCat via FirstSearch to place an ILL request.

⁵² A more effective name for what was previously called “stickiness,” gravitational pull describes both the volume of users that a resource is able to reach, and to the strength the resource is able to exert over those users by virtue of its dominance in the market. Netflix owes much of its gravitational pull to an aggressive marketing campaign in its first few years that offered the first month of service free to purchasers of new DVD players and users of services like Yahoo! and AOL. *See* Dempsey, *supra* n. 43.

⁵³ This custom service is freely available and well documented. Any library can set up a custom search or syndicate specific results to subscribing patrons. *See Welcome to Google Co-op*, <http://google.com/coop/> (accessed Nov. 30, 2006).

⁵⁴ *See e.g.* the Urban Dictionary on the modern phrase “drinking from the firehose,” <http://www.urbandictionary.com/define.php?term=drinking+from+the+firehose&defid=1867465> (last accessed Feb. 5, 2007). Librarian Michael Gorman uses the term to indicate information overload generally.

⁵⁵ RSS is an XML file format for syndicating frequently changing information. <http://www.rssboard.org/rss-history> (last visited Feb. 5, 2007). OPML is an XML file format for outline information. It is frequently used as a way to exchange lists of RSS feeds between users or computers. <http://www.opml.org/about> (last visited Feb. 5, 2007).

⁵⁶ *See Z39.50 Resource Page*, http://www.niso.org/standards/resources/Z3950_Resources.html (last accessed Feb. 5, 2007).

⁵⁷ *OAIster ... Find the Pearls*, <http://oaister.umdl.umich.edu/o/oaister/> (last accessed Feb. 5, 2007).

⁵⁸ *Open Archives Initiative Protocol for Metadata Harvesting*, <http://www.openarchives.org/pmh/> (last accessed Feb. 5, 2007).

⁵⁹ The authors are certainly aware of the availability of MARC records for resources such as LexisNexis and Westlaw, BNA's online packages, the LexisNexis and Readex Serial Set collections, Gale's Making of Modern Law and others. This option poses strong and valid concerns for public services and technical services librarians, though, who worry about "junking up" results in the OPAC. Adding more records to our existing broken OPACs may not help the patron, and may only make search more difficult.

⁶⁰ Dialog aggregated databases from various sources onto its platform and allowed users to run a search query across multiple databases, much as Westlaw allows a multi-database search.

⁶¹ See *OpenSearch.org*, <http://www.opensearch.org> (last accessed Feb. 5, 2007). See also Amazon's A9.com, "OpenSearch is a set of simple formats for the sharing of search results. Any website that has a search feature can make their results available in OpenSearch™ format. Other tools can then read those search results. OpenSearch is an open format with a Creative Commons license. Rather than reinventing the wheel, it uses the simple and very popular syndication formats RSS and Atom, along with a document describing the search engine." <http://opensearch.a9.com/> (last accessed Feb. 6, 2007).

⁶² SRU stands for Search/Retrieve via URL; SRW stands for Search/Retrieve Web Service. See *SRU: Search/Retrieve via URL*, <http://www.loc.gov/standard/sru/> (last accessed Feb. 5, 2007).

⁶³ MetaLib is ExLibris' federated search product. <http://www.exlibrisgroup.com/metalib.htm> (last accessed Feb. 5, 2007). See also <http://susanowo.grainger.uiuc.edu/searchaid/searchassist.asp> (last accessed Feb. 5, 2007).

⁶⁴ See <http://www.carli.illinois.edu/mem-prod/wf.html> (last accessed Feb. 5, 2007) for more documentation.

⁶⁵ Central Search is Serials Solutions' federated search product. <http://www.serialssolutions.com/promotion/centralsearch.asp> (last accessed Feb. 6, 2007). See also <http://www.bpl.org/electronic/government.asp> (last accessed Feb. 5, 2007) for an example of how the Boston Public Library uses Central Search to allow patrons to search across many related databases from different vendors.

⁶⁶ *A9 search more at once.*, <http://a9.com/> (last accessed Feb. 5, 2007).

⁶⁷ *Supra* n. 58.

⁶⁸ The advantage over Z39.50 broadcast search of multiple collections is largely one of transaction time, though the ability to build increasingly larger aggregations of OAI data providers also allows for easier (automated) discovery of new collections.

⁶⁹ <http://www.greenstone.org/> (last accessed Feb. 5, 2007).

⁷⁰ <http://www.dspace.org/> (last accessed Feb. 5, 2007).

⁷¹ <http://www.bepress.com/> (last accessed Feb. 5, 2007).

⁷² *Supra* n. 57.

⁷³ Imagine something like the online retailers' "find a store near you" services, which return a map with a ranked list of stores based on your zip code. If the catalog or your browser knows where you are, it could return results in a way that's sensitive to location as well as access privileges.

⁷⁴ We grant that demand for a particular item in an academic law library is very, very different from demand in a firm or corporate library. Where reference is provided in any business setting, time is extremely important. But even shipping hard copies is fast in today's flat world, and speed doesn't necessarily need to be sacrificed for patrons. If an item is available locally, patrons should be directed to it as seamlessly as possible.

⁷⁵ One technique that makes some Web 2.0 services like Flickr especially efficient is Ajax, which stands for asynchronous javascript and xml, a technology that allows manipulation of text on a web page without requiring the browser to refresh. See e.g. [http://en.wikipedia.org/wiki/Ajax_\(programming\)](http://en.wikipedia.org/wiki/Ajax_(programming)) (last accessed Feb. 5, 2007).

⁷⁶ Wikipedia attributes this to Michael Casey's LibraryCrunch blog (<http://www.librarycrunch.com> (last accessed Feb. 5, 2007)). See also Michael A. Habib, *Toward Academic Library 2.0: Development and Application of a Library 2.0 Methodology* (UNC SILS Master's paper), <http://hdl.handle.net/1901/356> (Nov. 17, 2006). For an ILS vendor's perspective on Library 2.0, See Ken Chad and Paul Miller, *Do libraries matter: the rise of library 2.0*, http://www.talis.com/downloads/white_papers/DoLibrariesMatter.pdf (Nov. 2005).

⁷⁷ <http://www.myspace.com> (last accessed Feb. 5, 2007).

⁷⁸

<http://www.facebook.com> (last accessed Feb. 5, 2007).

⁷⁹ In a bit of clever domain-name-play, the service is accessible at <http://del.icio.us>.

⁸⁰ www.librarything.com, see *Library Geeks* podcast episode 3 "The Thing You Do" wherein the developers of the site describe it. <http://onebiglibrary.net/geeks/episode/003-the-thing-you-do> (last accessed Feb. 5, 2007).

⁸¹ The tag cloud presents a visual representation of popular tags, using font size to represent relative popularity.

⁸² "It is an activity with low cognitive cost, which provides immediate self and social feedback." Emma Tonkin, *Folksonomies: The Fall and Rise of Plain-text Tagging*, Ariadne issue 47, <http://www.ariadne.ac.uk/issue47/tonkin/> (April 2006). See James Surowiecki, *The Wisdom of Crowds* (Doubleday 2004).

⁸³ See T. Hammond, T. Hannay, B. Lund, & J. Scott, *Social Bookmarking Tools: A General Review*, 11 D-Lib Magazine <http://www.dlib.org/dlib/april05/hammond/04hammond.html> (Apr. 2005).

⁸⁴ The photo sharing site Flickr (Flickr.com), now owned by Yahoo!, is an excellent example of the added value of user participation. While users can only tag their own photos, and can limit viewing, the database of public photos is enormous, and can be viewed by nearly as many facets as can be imagined, including dominant color, shape, popularity, "interestingness", assignment in group photo pools, and licensing scheme, in addition to the user-assigned tags.

⁸⁵ See also Tonkin, *supra* n. 82, "However, it is very likely fair to say that the most commonplace Web search services, such as Google, operate according to search methods that owe very little to formal metadata; rather, Google makes use of techniques such as statistical analysis, content analysis and data retrieved from analysis of links and link text."

⁸⁶ We do mean work in the Functional Requirements for Bibliographic Records (FRBR) sense: "All LibraryThing books belong to a 'work,' a cross-user and cross-edition concept designed to improve social contact, recommendations and cataloging quality." See <http://www.librarything.com/work-info.php?book=8352268> (last accessed Feb. 5, 2007). In this sense, LibraryThing is a bit like Wikipedia – all the work and name authority control is done by the users. Any user can join two titles into a work or two authors into a sort of name authority record called "Also known as?" or they can split them up.

⁸⁷ <http://www.friendster.com> (last accessed Feb. 5, 2007).

⁸⁸ M. Kathleen Kern, *Have(n't) We Been Here Before? Lessons from Telephone Reference*, 85 *The Reference Librarian* 1 (2005).

⁸⁹ See e.g. Library Technology Reports' special issue on Web 2.0 and Libraries, by Michael Stephens, author of the blog "Tame the Web: Libraries and Technologies" (<http://www.tametheweb.com>). Stephens emphasizes collaboration and community in the development of library services. *Library Technology Reports* (July-August 2006). See also "Despite its hype, Burton Group believes that the intersection of multiple trends across consumer and enterprise markets will have long-term implications to organizations (e.g., informal learning and community building). These derivative impacts make social software an emerging technology sector worth tracking more closely." Gotta, *supra* n. 16.

⁹⁰ There are, as we've stated, advantages to each. We need to decide how to balance the time spent cataloging with the use an item is going to get later. Would users be served as well (or better) if we give up *some* of that control and let them assign their own metadata?

⁹¹ See e.g. *Legal and Law Library Wiki*, <http://legalwiki.pbwiki.com/> (last accessed Feb. 5, 2007) and *Law Lib Wik*, http://www.edithis.info/lawlibrary/Main_Page (last accessed Feb. 5, 2007).

⁹² A custom search form generator for the Innovative Interfaces library system was developed by Galen Wetterling, a student at Carelton College. Presentation available at http://www.macalester.edu/mniug/presentations/Spr06_MniUG_Custom_Search_Forms.ppt (last accessed Feb. 5, 2007). A

“pro se” custom search of the University of Colorado Law Library’s catalog is available at <http://www.misinformed.info/customsearch.html> (last accessed Feb. 5, 2007).

⁹³ One academic reference librarian notes, "It used to be so simple. You got good at using your catalog and if your library did not have an item, you knew it. No question. Then the options were two: interlibrary loan or go elsewhere. There were no hidden items that the library "had" because it had access to them. Not so anymore." Kunsch, *supra* n. 19 at 106.

⁹⁴ Shiyali Ramamrita Ranganathan, *The Five Laws of Library Science* (Madras Library Association, 1931). The five laws are: 1) books are for use; 2) books are for all; 3) every book its reader; 4) save the time of the reader; 5) the library is a growing organism. Ranganathan’s laws remain as potent today as they were 75 years ago, in the law library as well as public and other libraries, as we continue to struggle to build effective resources for our “readers”.