

OLA Quarterly



Research You Can Use

In This Issue

OpenURLs and Reference Linking:
Research and Practical Application in Libraries

National Survey Documents Effects of Internet Use on Libraries

Internet Demographics:
Recent Trends and Implications for Libraries

Change:
The Importance of the Process

Come to Your Census:
Making Some Sense of It All

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Research You Can Use

The motivation behind this issue's theme was to highlight research that we might not encounter in our usual professional reading. We all know (or at least *suspect*) that there is research and publication going on outside the library world that is relevant to our work—but how many of us have time to go looking for it? Assembled here are three original articles by Oregon librarians who have taken the time to investigate, and two reprinted articles of high potential interest to OLAQ readers who may not have seen the original publications in which they appeared.

While articles on a variety of topics were solicited, readers probably will not be too surprised to find that four of the five articles included in this issue have something to do with technology. These articles bring you research information “you can use” on: the OpenURL, Internet demographics, finding and using census information, the preliminary results of a national survey on Internet use and libraries, and the management of change. I learned something from all of them.

Mark Dahl's article provides an excellent introduction to the OpenURL—what it is, how it works, how libraries can use it, and the first

wave of commercial products using this new technology. It should rapidly become apparent to any reader of this article that the OpenURL has significant implications for how libraries will provide access to online resources in the future.

A preliminary report on the results of a national survey of Internet and library use at universities and liberal arts colleges, carried out by the Digital Library Foundation and Outsell, Inc., may confirm many librarians' suspicions, but also may hold a few surprises. The reader's appetite will be whetted for the full report, scheduled to be released later this year. Further insight and food for thought will be gained from Ted Smith's article on trends in Internet use in the population as a whole, with particular attention to the state of Oregon.

In a more practical vein, Craig Smith offers help (served up with a dose of humor) to anyone who has ever struggled with tracking down census information. The surge of census and other statistical information on the World Wide Web has made it possible—but not necessarily easy—to mine these data for research purposes even when far from a regional de-

pository or research library. Without neglecting print sources, the author provides a roadmap for navigating the plethora of often-confusing federal and state Web sites.

A common thread throughout these articles is change: how libraries must anticipate, adapt to, and manage technological change and its effect on information-seeking behavior and the nature of libraries themselves. The short piece by Susan Jurow offers succinct insight and advice on the *process* of change in an organization. Any kind of change within, or to, an organization is a management issue, and the people involved and affected always must be of prime consideration. As we embark on projects to develop new services, or reorganize whole operations, or as we simply strive—in Ted Smith's words—to “stay ahead of the technological curve,” our chances of success will only improve if we keep that truth in mind.

—Victoria S. Mitchell
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Guest Editor



OLAQ

OpenURLs and Reference Linking: Research and Practical Application in Libraries

by Mark Dahl

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A long-standing problem in library reference work is connecting an article citation found in an index to the article itself. The OpenURL is a new tool that helps address this age-old problem in a world of Web-based information resources.

Recently, there has been much discussion in the library community surrounding OpenURLs. In fact, a new and somewhat confusing vocabulary has arisen around the whole concept. This article will seek to clarify what OpenURLs are and then explain some of the current implementations of OpenURLs in libraries today.

What are OpenURLs?

Currently, most libraries provide indexing and abstracting databases via the Web site of a commercial information vendor such as EBSCO, Gale, or ProQuest. Sometimes the library is given the ability to customize the look and functionality of these databases. But for the most part, libraries are stuck with what the vendor gives them.

Often the citations in the database are not connected directly with the other related information offerings of the library, such as print holdings of the journal in which an article is located, or a document delivery service that could obtain an article. The user of the database must cut and paste pieces of the citation (typically a journal title) into another search tool that can tell them if their

library holds the resource.

Some databases do offer the ability to link from a citation to an entry in the local library's catalog that shows the library's holdings of the cited journal. Some databases also offer facilities for linking from a citation to an interlibrary loan request. These are examples of what may be termed *extended services*.

An OpenURL is a device that may be used in indexing and abstracting databases, as well as other places, to link to extended services that are independent of the information provider where the link originates. These extended services may include an article's full text, biographical information about the author of an article, local library holdings information, a Web search on the subject of an article, etc.

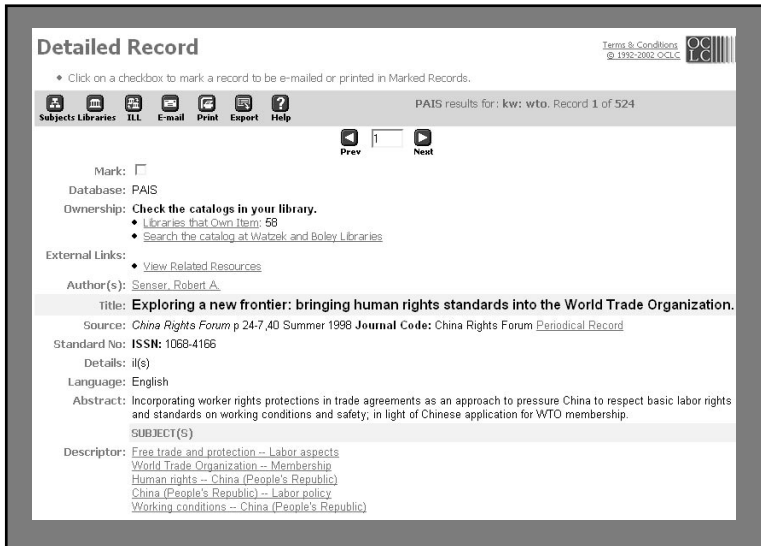
In more abstract terms, OpenURLs are URLs attached to resources that are used to link to related resources. The structure of an OpenURL is composed of two parts: first, the base URL is the *service component* or *resolver*. This is typically the address of a library-controlled server that processes the data in the rest of the OpenURL.

The rest of the URL is called the *descriptor*. The descriptor can contain the source of the OpenURL (e.g., the database that created the OpenURL—OCLC FirstSearch, EBSCOhost, etc.), and metadata about the article (or other information object) that the OpenURL describes. In the case of a

The screenshot shows the OCLC FirstSearch Administrative Module interface. At the top, there is a navigation bar with links for 'Account Information', 'System Settings', 'Database Settings', and 'Per-Article Purchase'. Below this is a breadcrumb trail: 'General | Your Library | OpenURL Links | Parameters | ILL Request Form | Topic Areas | Custom Topic Areas | Library Holdings | Custom Library C-IP-Address Recognition | Low Search Notification | ILL via E-mail | 219.38 Library Catalog'. The main content area is titled 'OpenURL Links' and contains a form with the following fields: 'OpenURL Server URL' (with the value 'http://resolver.lclark.edu'), 'OpenURL Icon File URL' (with the value '006015042.jpg'), and 'Link Text' (with the value 'View Related Resources'). There are 'Test' buttons next to the 'OpenURL Server URL' and 'Link Text' fields, and a 'Save Changes' button at the top right of the form area.

Using OCLC FirstSearch
Administrative Module
to activate OpenURLs.
Source: OCLC FirstSearch.





A citation in FirstSearch with a link to an OpenURL resolver. The link is labeled "View Related Resources." Source: OCLC FirstSearch.

journal article, this would include the journal name, its ISSN, the volume and issue numbers, the author's name, the title of the article, etc.

Here is an example of a citation and its corresponding OpenURL:

Hagedorn, George A.: Raising and lowering operators for semiclassical wave packets. *Ann. Physics* 269 (1998), no.1, 77–104

```
http://sfx.caltech.edu:8088/
caltech?sid=Caltech:
WOS&genre=article&atitle=Raising
%20and%20lowering%20operators
%20for%20semiclassical%20wave%
20packets%2E&title=ANN
%20PHYSICS&issn=00034916
&date=1998&volume=269&issue=
1&spage=77&epage=
104&aulast=Hagedorn&auinit=GA
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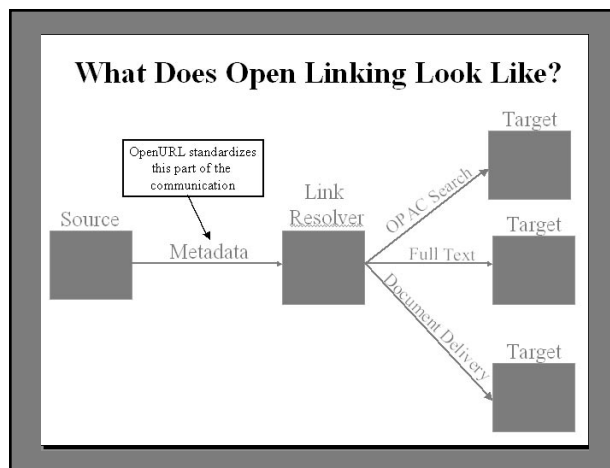
The OpenURL's first line, "http://sfx.caltech.edu:8088," is the resolver, which can also be known as a link server. The rest of the URL is the descriptor, which contains the information about the article that the link server needs. The format in which the descriptor portion of the URL (with the familiar ques-

tion marks, ampersands, equals signs, etc.) resides is the common "query" format for embedding data in URLs. This data describes the object for which the link server needs to find related links. The name-value pairs in which the data, or more appropriately, metadata, is given (issn=00034916, date=1998, etc.) are part of the OpenURL standard.

Typically, a user would start out using an electronic index, find an article of interest, then click on the OpenURL attached to that article to find out what kinds of extended services related to that article were offered by the user's library.

In the background, by clicking on the OpenURL, the user would be taken off of the vendor's Web server and on to a server controlled by the local library. This would be the OpenURL resolver or link server. The library would have configured the resolver to provide the user with the appropriate services relevant to that article. For example, it might offer a link to the article in a full text database to which the library subscribes and/or offer a link to local print holdings of the journal. Given the information in the OpenURL, it might be smart enough to know that the article was not available at the local library and automati-





This demonstrates the flow of information in the OpenURL framework. Source: Van De Velde and Samuels, 2001

cally set up an interlibrary loan request.

OpenURLs also can be used for journal article citations within electronic journals and for monographic citations. They can be used to link books, articles, reference sources, Web sites, and other information objects together.

The Research and the Standard

OpenURLs were conceived and developed by Herbert Van de Sompel and his colleagues at Ghent University in Belgium. In the late 1990s, Van de Sompel recognized that information providers (i.e., database vendors) were providing links with their citations, but that often those links only pointed to resources within a vendor's own realm. Perhaps they provided a link to full text of the resource, but only through that particular vendor's own fee-for-use service.

Van de Sompel described these vendor-provided links as non-context sensitive (meaning they did not take into account who was accessing the resource or where they were coming from), limited in scope (meaning they often included only the information universe associated with the vendor) and closed (meaning that they did not allow the library to supplement these links with other resources).

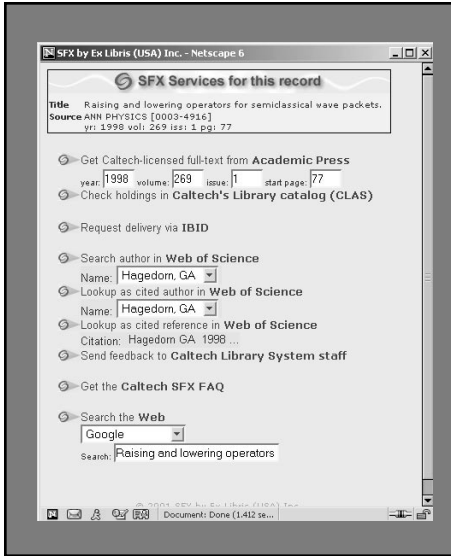
Responding to these shortcomings, Van

de Sompel embarked on what he and his colleagues termed "SFX research" (SFX for special effects). They sought a linking solution that was context-sensitive, unlimited in scope, and open. Over the course of several experiments, they developed the OpenURL framework described above.

The OpenURL framework is context sensitive because it allows the library to control the link server that provides related resources. If the library so desires, it can tailor the related resources that it provides by the IP address or other means. It can point a user to the most inexpensive copy of a resource given its own contracts with information providers, thus solving what has been termed the "appropriate copy problem." Library control over the link resolver and the non-proprietary nature of the OpenURL protocol makes for limitless scope and completely open application. Any database can link into the resolver; and given a description of an article (or another type of information object) from an OpenURL, the resolver can relate that metadata to any number of other resources (Van de Sompel and Beit-Arie, 2001).

The OpenURL framework is non-proprietary and is being reviewed for acceptance as a NISO standard. If accepted as a standard, more information providers will, hopefully,





This is a sample set of extended services offered by a link server, in this case an SFX server.
 Source: <<http://library.caltech.edu/openurl/Documents/Demo.htm>>

Group, HW Wilson, and OCLC, offer the option of including OpenURLs alongside their citations. Electronic journal vendors, notably Ingenta, also are beginning to offer OpenURLs. CrossRef, a nonprofit initiative to link citations between electronic journal articles of various publishers, has now integrated OpenURLs into their linking framework. See <http://www.crossref.org>.

Setting up an electronic index to provide OpenURL links with citations need not be difficult. For example, to activate OpenURLs in OCLC FirstSearch, libraries need only login to the FirstSearch Administrative Module, and turn the feature on. From the Administrative Module, a librarian may simply enter the address of the library's local resolver. Once OpenURLs are turned on in FirstSearch, every citation viewed has an OpenURL link offered.

Purchasing and configuring a link server to deal with these OpenURLs is, perhaps, a more complex process. Library automa-

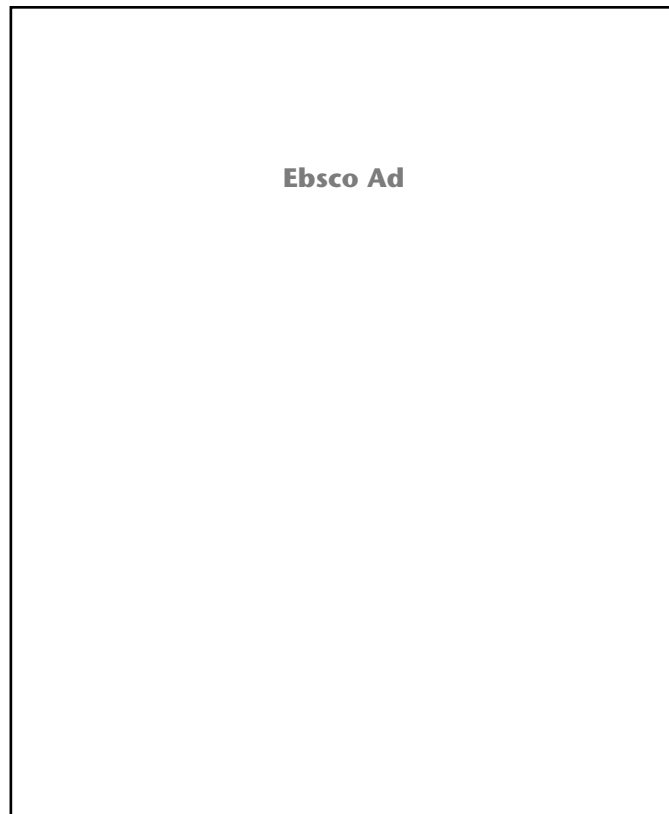
provide OpenURLs with their resources. In addition, any vendor or library may produce an OpenURL resolver. Many information providers and library automation vendors have already begun to design or modify their products around the standard.

Current working papers on the proposed OpenURL standard can be found at: http://library.caltech.edu/openurl/Working_Documents.htm.

Application of the OpenURL Framework

In order to use the OpenURL standard, libraries need to have OpenURL links attached to the citations that their patrons are viewing in their abstracting and indexing databases. They might also want such links to appear in the text of journal articles, in Web-based subject bibliographies, and next to bibliographic entries in their public catalogs.

Currently, a number of database vendors including EBSCO, ProQuest, Gale



tion vendors have stepped up to the task of providing link servers. As OpenURL resolvers are designed to manage the resources of a particular library—much like an integrated library system—library system vendors may believe that it is a natural progression to move into the area of link management. At some point, a link server may be as essential an ingredient of an integrated library system as a circulation or acquisitions subsystem.

Rights to Van de Sompel's SFX server, a link server that his team designed in the course of their research, were purchased by Ex Libris, a library automation vendor in the United States. Ex Libris then developed their SFX server product, an OpenURL resolver. While Van de Sompel and his colleagues conceived the OpenURL standard as open, they recognized that the resolvers used to deal with OpenURLs could and would be proprietary. The SFX server may be purchased independently from Ex Libris' other library automation products. See <http://www.sfxit.com/> for more information.

Endeavor Information Systems offers an OpenURL resolver product called LinkFinderPlus, also available as a stand-alone product. LinkFinderPlus comes with a pre-populated database of information providers and content. Presumably, the library selects the appropriate full-text databases and electronic journal aggregators, and LinkFinderPlus provides the patron with an appropriate list of full-text content options for a given citation. Such an approach could eliminate the need for special journal title databases populated from aggregator title lists or electronic journal management services such as Serials Solutions. See <http://www.endinfosys.com/prods/linkfinderplus.htm>.

Innovative Interfaces offers a product called WebBridge that appears to be more focused on creating links from citations in an OPAC to external resources. It allows libraries to add related links to records in

their catalogs. Its promotional literature claims that it has the capability to resolve OpenURL links external to the catalog but does not explain the process of resolving such links (Davidson, 2001). See http://www.iii.com/html/products/p_map.shtml.

In general, library automation vendors are hoping to use OpenURL resolution as well as other linking initiatives to keep themselves at the center of libraries' information resources. In addition, there are other OpenURL servers available besides those offered by traditional library automation vendors, notably Icate from Openly Informatics. See <http://www.openly.com>.

Libraries also have the option of creating their own OpenURL resolvers. The data embedded in an OpenURL is easy to extract using a CGI-script or Web scripting language like PHP. I recently OpenURL-enabled the Web-based journal title database at Lewis and Clark College. When pointed to by an OpenURL, this journal title database checks for any journals with an ISSN matching that specified in the OpenURL parameter. It then returns the appropriate journal title record.

This implementation of the OpenURL protocol is not fully realized, as it is only using a small part of the metadata available (the ISSN) and is only offering journal holdings information—no other related resources. But it is a start. A future enhancement could be a link to an interlibrary loan request—already filled out with citation details—should the journal title search fail. Libraries could create more advanced OpenURL resolvers with any number of features.

Perhaps more interesting than the development of OpenURL technologies is the new role that reference-linking brings to librarianship. Librarians now will have the ability establish rules for offering related resources within the configurations of their link servers. Determining what to offer could be a complicated affair. Given



National Survey Documents Effects of Internet Use on Libraries

by Daniel Greenstein
University Librarian &
Executive Director
California Digital Library

&

Leigh Watson Healy
Vice President &
Chief Analyst
Outsell, Inc.

Eighty percent of the students and faculty members who responded to a recent national survey stated that the Internet has changed the way in which they use campus libraries. More than one-third of the respondents overall and half of those in fields such as business and engineering now use the library less than they did just two years ago.

These are among the preliminary findings of the survey of more than 3,200 students and faculty members at universities and liberal arts colleges conducted by the Digital Library Federation (DLF) and the research firm Outsell, Inc. The main purpose of the inquiry was to learn how the Internet is affecting the work of students and scholars and what consequences Internet use will have on campus libraries. CLIR will publish full results of the study, entitled *Dimensions and Use of the Scholarly Information Environment*, this summer.

A preliminary analysis of findings indicates that respondents' patterns of information use and their perceptions of libraries are not monolithic. Information needs vary depending on whether a user is a researcher, teacher, or student; they also vary on the basis of general academic field. Faculty and students in business and law view and use information differently than do those in the arts and humanities; the needs of engineers and physical scientists differ from those of both these groups. Patterns of use and perceptions also vary by type of institution: faculty and students at liberal arts colleges perceive of and use information differently than do their counterparts at universities.

Where Scholarly Work Is Done

The survey data provide insight into the workplaces of faculty and students: where they are (office, home, library), how they are equipped (network connections and hardware), and what portion of respondents' working time is spent where. Of the time that graduate and undergraduate students



When searching for and using information for research and teaching, faculty members, by contrast, spend only about 10 percent of their time in the library.

devote to looking for information used in research and course work, one-third is spent in campus libraries. When searching for and using information for research and teaching, faculty members, by contrast, spend only about 10 percent of their time in the library. Three-quarters of the time that professors, particularly those at universities, put into seeking information for teaching and research is spent in their offices. Of the time that undergraduates devote to finding and using information for course work, about half is spent in their residences.

The data raise significant questions about how universities and colleges should allocate equipment and space both in the library and elsewhere on campus. For example, students and scholars alike rarely use network connections in computer labs, science labs, and classrooms for research, teaching, or learning. Does that argue for fewer connections in these locations? Are faculty members and students working so much outside the library because the information they need is readily available to them remotely? Or are they adjusting their information needs to suit their preferences for working environments?

It seems clear that libraries must be able to deliver effective services online, reaching faculty in their offices and everyone in their residences.



Information-Seeking Behavior

Much of the survey data deal with how respondents locate and obtain (or acquire access to) different kinds of information, such as books, print journals, e-journals, abstracts, and indexes. Search strategies differ depending on whether one is looking for resources for research, teaching, or learning. When searching for a hard-copy book as part of a research project, for example, 83 percent of faculty members and graduate students go online. Nearly half (47 percent) use printed sources (respondents could give more than one answer). Only 23 percent seek personal assistance to locate the book. The pattern for undergraduates looking for books or other

materials used in a course is considerably different: fewer (72 percent) go online, and more (35 percent) seek personal assistance. Twenty-nine percent use printed sources to locate the material.

Information-seeking behavior also differs by kind of institution. For researchers at liberal arts colleges, online resource discovery is more important than it is for researchers at public and private universities, at least when searching for hard-copy books. This may reflect the fact that many college libraries' collections are oriented toward teaching. Researchers at these institutions are dependent on outside libraries' collections, which are most easily searched online. Personal assistance, conversely, is

Haycock and Associates 1/2 page Ad



more important to researchers at private universities than it is to those at liberal arts colleges. This may demonstrate that research-collection strengths at private universities are matched by the level of reference services they offer.

The information-seeking behavior of students is the opposite of that for researchers. Personal assistance in locating hard-copy books is more important for students at liberal arts colleges than it is for their counterparts at universities.

Provision of Course Materials

The survey questionnaire requested information about how teachers distribute and students access readings and other materials for courses. A preliminary analysis indicates that teachers overwhelmingly prefer to distribute materials physically rather than online. Three-quarters of all teachers make course materials such as syllabi available to students through handouts; half also use course Web pages. When all electronic formats (e-mail, course Web pages, e-reserves) are considered together, nearly two-thirds of all teachers said they make at least some course materials available online. Fully 100 percent, however, provide such materials in physical form.

Some variation exists depending on type of institution and academic discipline. Teachers at liberal arts colleges prefer physical handouts more than their counterparts at universities do. Nearly four-fifths of physical scientists and engineers, compared with less than half of arts and humanities teachers, use the network as a means of distributing course materials. Libraries play only a small role in distributing the administrative information associated with courses.


For course readings, the picture is different. College teachers use more means than do their university counterparts to make readings and other learning materials available. They also place much greater emphasis on the library as a source for these materials. Variation is also apparent, though less

pronounced, by discipline: in this area, the kind of higher-education institution makes a greater difference than does subject.

Trust of Internet Resources

The survey provides evidence that for online resources, faculty and students give high priority to speed and ease of access, information quality, and search functionality. They assign low priority to display options and user-support services. Library-supplied information is universally trusted and used. With Internet resources, three-quarters of the respondents agreed with the following statements: "The Internet contains information that I use and cite," "The Internet contains high-quality information," and "The Internet contains information from credible sources." Only about half, by contrast, agreed with the assertion that "The Internet contains information that I use and trust." Undergraduates and users at liberal arts colleges generally put greater faith in and make greater use of Internet resources than do persons who use university libraries. Arts and humanities users and social scientists trust Internet resources less than do their counterparts in other disciplines.

The preliminary data reveal that faculty and students are comfortable with both print and electronic information, with little or no variation by discipline, institution type, or kind of user. Most students and faculty feel that printed books and journals will continue to be important to them in five years. At the same time, they agreed that the amount of academically relevant Internet information is growing and that this may further reduce their use of physical libraries.

For more information about the study and its results, see <http://www.diglib.org/use.htm>. 

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Internet Demographics:

Recent Trends and Implications for Libraries

by *Ted D. Smith*
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While most people associate libraries with books, we who work in the profession know that libraries are actually about providing access to information in whatever format it happens to come. The book remains the most widely used container for conveying information, whether for recreational, avocational or professional purposes. However, as personal computers and Internet technology have become more widely used over the past two decades, libraries have increasingly incorporated digital resources into their mix of tools for providing the information sought by library users. Thus, it is important for library professionals to be aware of demographic trends in the use of digital technology in order to plan future library services, market those services effectively, and respond appropriately to the changing needs and capabilities of our users. This article surveys the recent research on computer and Internet usage in the United States and draws some conclusions about the implications for libraries.

Recent data confirm what we already knew intuitively: more Americans are using computers and going online than ever before, and spending more time online when they do so. Data from the U.S. Census Bureau show that in August 2000, over half of the households in the United States (51 percent) had at least one computer in the house, up from 42 percent in December 1998 and 36.6 percent in 1997. (United States Bureau of the Census, 2001). If the trend continues, 71 percent of households will have a computer by 2003. The same report noted that 41.5 percent of households had Internet access in 2000. The Current Population survey showed a marked increase in the percentage of Americans who use the Internet either from home or elsewhere: from 22 percent in 1997 to 54 percent in 2001 (United States National Telecommunications & Information Administration, 2002). Moreover, as the number of people who go online has increased dra-

matically, the average amount of time each individual spends online has increased as well, rising from 9.4 hours per week in 2000 to 9.8 hours per week in 2001. (UCLA Center for Communication Policy, 2001). Furthermore, the amount of time one spends online increases with experience level, with those who have been on the Internet for five years or more spending an average of 13.2 hours per week online, as opposed to 6.5 hours per week for those with less than 1 year of online experience.

While the national-level data shows a striking increase in the use of technology in recent years, the state-level data for Oregon is even more impressive. According to the National Telecommunications & Information Administration, the percentage of households in Oregon with computers in 2001 was 65.8 percent, the fifth-highest of any state. The percentage of Oregon households with Internet access in 2001 was 58.2 percent, the fourth-highest of any state. (United States National Telecommunications & Information Administration, 2002). This would indicate that whatever ramifications the data hold for the U.S. as a whole are magnified in the case of our own state.

Historically, the use of computer and Internet technology rises with educational attainment and income. Known as the "digital divide," the differing degrees of access to technology among socio-economic groups has been well documented. U.S. government data from the mid-1990s showed that use of the Internet varied considerably by income. In 1998, the figures ranged from 12.1 percent of those with incomes between \$5,000 and \$9,999 to 58.9 percent for persons with household incomes above \$75,000. (United States National Telecommunications & Information Administration, 1999). Furthermore, those with lower incomes who did access the Internet were much more likely to access it solely from outside the home (work, school, library) than were those with higher incomes, who often had access both at home and else-



where. While the most recent data show that use of the Internet remains strongly correlated to family income, the rate of increase among those with less education and income is faster than for the traditionally heavy user groups. For example, Internet use among people who live in households where family income is less than \$15,000 grew at an annual rate of 25 percent between December 1998 and September 2001. Over the same period, Internet use grew at an annual rate of 11 percent among people living in households where family income was \$75,000 or more. (United States National Telecommunications & Information Administration, 2002). As the technology matures, we are likely to see fewer differences in usage among socio-economic groups, as was the case with earlier media technologies such as telephones, radio, and television.

Computer and Internet use has always been strongly correlated with age. Younger persons are the most likely to be users of technology. Both computer and Internet use are highest among those in their late teens, with elderly populations (those over age 60) the least likely to use the technology. However, as current generations of computer and Internet users age, we are likely to see dramatic increases in the number of older users.

What are the implications of these data for libraries? Librarians have recognized from the beginning that we have an important role to play in providing access to online information for those who cannot afford to purchase access for themselves. Furthermore, since many of our users in both academic and public libraries came to us with little background and understanding of the technology, we knew we had to do a lot of teaching of our patrons, showing them how to use the new technological tools to get at the data they were seeking. As the most recent surveys show, a user who comes into our libraries in Oregon now is more likely than not to have access



As the most recent surveys show, a user who comes into our libraries in Oregon now is more likely than not to have access to a computer and the Internet at home.


to a computer and the Internet at home. This is particularly true of young people and students, a core constituency of both public and academic libraries. Thus, we can expect to spend less time teaching users how to use a mouse or save a file, and more time focusing on how to find and interpret information. What technological training we *will* be called upon to provide must be at a higher level, i.e., teaching how to understand the various file formats used for data, or the different approaches needed to search a subscription database such as *MasterFILE Premier*. Nevertheless, we must remain sensitive to the special needs of those who are still less familiar with the technology and/or are intimidated by it.

An additional factor to consider is what Internet users actually *do* online. Survey results show that new users are more likely than experienced users to spend time doing “entertainment” type functions such as participating in chat rooms, playing online games, or just browsing. More experienced users spend a greater percentage of their online time accessing information: performing banking and financial transactions, reading news, or doing school or professional work (UCLA Center for Communication Policy, 2001). Among all user groups,



however, by far the most popular online activity is electronic mail. This means that even “experienced” Internet users may come to the library with very few skills in actually using the Internet to find information. The ability of the reference librarian to locate and retrieve information should remain just as critical to our users in the online environment as it has been in the past.

With the increasing likelihood that our users have access to online information from the home and other places outside the library, we must be increasingly prepared to offer services to users from a remote location. A recent survey by the Digital Library Federation showed that academic library users of all kinds are going to the physical library less, in favor of conducting research online. (Greenstein and Healy, 2002). This is not to say that users are no longer using library resources. In many cases, they are accessing the library catalogs and other library-provided databases from their residences and offices. This would imply that libraries should consider placing more emphasis on such tasks as database maintenance and developing online tutorials and pathfinders as opposed to the provision of physical services in the library. Electronic reference service has been a topic of discussion in libraries for some time now, but many libraries have yet to develop an effective way to integrate such services into their normal routines. The time may not be very far off when libraries will be expected to provide online reference service in real time via synchronous online communications, not just by monitoring an e-mail in-box on a once-a-day basis. Planning for such an eventuality should be on every library’s agenda right now.

As our users become more sophisticated and experienced in the use of digital technology and communications, libraries must work to stay ahead of the technological curve in understanding how our users access information online and how we can facilitate such access, both by providing training and by selecting and organizing appropriate resources for our users. Our success in doing so will go a long way toward determining our effectiveness in performing our role as the providers of access to information for our communities in the digital future. 

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Change:

The Importance of the Process

by *Susan Jurow*
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How one undertakes a project, how one plans for it, and how the people affected are engaged by that project are as important as its outcome. The process is critical to the long-term success of a project and the long-term health of an organization. The measure of a successful change initiative is the organizational legacy that it leaves in its wake: does the project support and promote a healthy organizational culture and climate, or does it leave behind bruised feelings, mistrust, and animosity?

In my experience, completing a project takes the same amount of time whether you involve people or not. If you don't, questions and concerns extend the process well beyond the time frame envisioned by the planners. After the dust settles, you're left with anger and mistrust, making it as difficult, if not more difficult, to undertake the next major change effort.

If you do engage a broad range of stakeholders, the project will be planned to take longer than usual. The planning anticipates the requisite consensus-building and ongoing learning that must take place for the process to be successful. When such a project is completed, however, individuals are excited about the positive potential of change because they have experienced it firsthand. New

process skills have been developed, permitting the next project to take place more swiftly and efficiently.

A key element that is often overlooked in the success of a change process is the role of the assessment leading to the change. Disagreement over an approach or strategy is often rooted in disagreement over the assessment that change is needed or over the type of change that is needed. The assessment is likely to vary among individuals, depending on their type and depth of knowledge about the situation and their position in the organization. For this reason, information needs to be shared broadly and often before, during, and after a change initiative.

Just as a medical prescription hinges on the diagnosis, the type of change proposed will be driven by the assessment. Developmental change means doing something the same way but better, using techniques like process reengineering. Transitional change means finding a new way to do the same thing, such as the automation of a process. Transformational change means doing something different by creating new structures and new processes to fit new objectives.

A change process must start from where the organization is. Each organi-



A key element that is often overlooked in the success of a change process is the role of the assessment leading to the change.



zation has a unique history, culture, and staff. The change strategy that is developed must take into account the organization's current capacity and capability for change. An assessment of these variables should be undertaken before a change process is engaged.

Three elements need to be considered for a successful change strategy: the



Today's workplace requires individuals to have the emotional and intellectual capacity to be flexible enough for continuous change no matter what their job or position.

people, the process, and the structure. Thought should be given to the skills and attitudes of the people involved. The process should be planned and should take into account the stakeholders, time frame, context, and outcome. The structure, the formalized relationships and organizational imperatives through which work gets done, should be flexible enough to be reconfigured and reshaped as needed with changing circumstances.

Transformational change is undoubtedly the most difficult type of change to undertake. It requires not just a change in the status quo but the development of a new framework that may bear no resemblance to anything the stakeholders have seen or experienced in the past. They must be convinced not only that the new construct will be an improvement over the existing one but also that it will work.

Process needs to be considered in the overall management of an organization. Today's workplace requires individuals to have the emotional and intellectual capacity to be flexible enough for continuous change no matter what their job or position. They need to have the skills to be successful within this context. At a minimum, a bias toward continuous improvement should be the norm. For an organization to thrive, a bias toward innovation is required.



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Come to Your Census: Making Some Sense of It All

by *Craig A. Smith*
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Census tools and resources have changed dramatically since the 1970s and my first exposure to those “government documents” feared by all novice librarians. As the “new” guy on staff I always got stuck with having to answer the questions requiring use of the new SuDocs classification scheme. I began to actually like the documents. In fact I very quickly became the go-to guy when hard-to-find statistics or information was needed. Guess what? The federal government looks into almost everything we do and counts it. Indeed I discovered a treasure trove of tables and articles and information available absolutely free and from a reliable source (so the feds claim).

In the dark ages of information science (BC—before computers) you had paper products, and you had co-workers, and a small personal network of colleagues to assist you. At times you felt alone when attempting to answer those census and demographic questions asked by the inquiring public. In the early 1970s, technology consisted of an electric fan and, if you were lucky, an IBM Selectric typewriter. (They were the typewriters with the changeable metal ball containing all kinds of different fonts). This was neat stuff, as I believe we still had quill sharpeners on staff. During the rise of the Information Age and growth of personal computers in the 1980s, several of my colleagues had to take a typing class before they could even begin accessing the 12 databases available (300 baud via modem) on the Dialog System. The most useful class in all of high school for me turned out to be the non-college prep class called beginning typing.

That was then, this is now. What a wonderful world of information technology we now live in. Yes, you still need the basic detective skills taught in library school, and a broad general college coursework background (liberal arts with some science thrown in), serendipity abilities (the pages sometimes just fall open to the right spot), computer and database training, and personal

networking skills to be a successful librarian or information researcher. Our minds do not work like computers so we are able to deal with, interpret, and answer the types of questions our users ask. The real secret of success is knowing which rocks to turn over and the people to contact. This is what makes our profession so valuable and irreplaceable, when the only other option is pay-up-front and as-you-go commercial information brokers, and “smart” expensive computer databases. Our great system of libraries allows those without financial resources to have at least some equal access to the world of information.

Using census and demographic products can be intimidating and a bit scary. Here are some of the rocks to turn over and examine.

In the Beginning: Paper Census and Demographic Products

Yes, at some point you will need to deal with paper in answering census data questions, especially those of a historical nature. Remember the farther back you go in time, the less data are available. At one point a census taken every 10 years satisfied most statistical needs. In fact paper is the only place you will find state and lower geography tables for the early years. The first truly electronic data did not appear until after the 1990 census (1980 used main-frame tapes.) So, any information prior to the 1980 census that has not been scanned or converted to electronic format is still in paper. The majority of the paper census products will be found at Oregon’s Superintendent of Documents (SuDoc) Depository libraries. Start at the big institutions: Multnomah County Library, Portland State University (regional depository), Oregon State Library, Oregon State University, University of Oregon, and Western, Southern, and Eastern Oregon Universities. Many private college libraries are good sources but may be limited in historical coverage.



The Census Bureau likes to place their publications in various series. Use your “Andriot” (Batten, 2000). This will help you locate where in SuDoc classification many of these items are scattered throughout the many years of publication. The SuDoc numbers will be a good starting point to begin the digging. Current census publications now are all electronic and most are on the Web full-text in .pdf format. Don’t overlook the old Monthly Catalogs to zero in on individual reports. After 1970, use the annual publication published by CIS—the ASI (American Statistics Index), with its wonderful index by subject, category, topic, etc. If you need quick data at the state and national levels, go to the Statistical Abstract of the United States (1995–current online at <http://www.census.gov/statab/www/>). The paper product goes back to 1938 and tables are not repeated in the newer editions, so keep your old editions; also don’t forget about the special edition: *The Historical Statistics of the United States*. Both are published by the Census Bureau. Commercial paper products are useful if you can afford to purchase them and don’t mind estimates based on formulas and surveys. My favorite is the *Rand McNally Commercial Atlas*. Keep your old ones. This large, oversized product produces annual population estimates for small places that even the Census Bureau ignores. I have used products produced by CACI (<http://www.infods.com/>) and Geolytics (<http://www.geolytics.com/>). There are other good census/demographics vendors out there.

CD-ROM Stuff

Now you will need to buy a DVD/CD-ROM drive for your computer. Lots of detailed data not available on the Web will be coming out on DVD disk. We have received several already as part of the SuDoc depository system. One of my favorite programs is the Landview software (<http://landview.census.gov/>). This product is a Geographic Information System (GIS) featured software available directly from the Census Bureau.

The earlier version was freeware on CD-ROM. The DVD version is an upgrade with many enhancements. Both versions should be available at depository libraries. You and your patrons now can create some of your own GIS products at very low cost using data and map layers supplied free from the Census Bureau (<http://www.census.gov/geo/www/tiger/>) and other federal agencies. Yes, there is a learning curve!

Maps

A word about maps. Detailed historical maps at the census tract and lower geographic levels for 1970–1990 are available here at the State Library. They are oversize and not a lot of fun to use or copy. Printed census tract versions are also available via many Oregon depository libraries. Commercial vendors also will sell the historic maps to you. All of the 2000 Census maps are now available via the Web from the Census Bureau and Proximity One. They are free; you just need to download them. They come in two versions: .pdf and electronic. See the map resources I have listed at: (http://www3.osl.state.or.us/smarter/Census/Oregon/Census_Maps/). It is important to remember that ZIP code maps are not produced by the Census Bureau. They are a product of the U.S. Postal Service, which sells the mapping software to commercial vendors for sale to the general public. The vendor I have used in Oregon is WER at <http://www.wermaps.com/map.or.html>. Check the Web for additional vendors.

The Web

WOW! Most of it is out there. You just have to figure out where to look. The main U.S. Census Bureau Web site is always a good place to start: <http://www.census.gov/>. One important thing to remember is that this page is designed for the public. The Census Bureau is a massive organization with lots and lots of divisions and sub-units. Many of these units are not linked to the public page in a logical manner. The



internal site links are improving but a lot of information remains hidden on the site and you need to roam around to find all the locations. One step in the right direction for self-service to customers is the Bureau's American FactFinder site (<http://factfinder.census.gov/>). The design of the site can get in the way of finding the real treasures. Use the "street address" link to quickly search and find data at any geographic level. The "Census 2000 Supplementary Survey" link is very important as it provides socio-economic data for some counties and metropolitan areas until the detailed data is released. Explore the "data sets" option to find .ftp sources for unpublished and hard-to-locate data. If you are going to use the data sets you will need a background in using SAS software or someone to help you customize data elements. When visiting a Census Website always look at the pull-down menus and buttons scattered around the pages. I have created a Census Web page (<http://www3.osl.state.or.us/smartor/Census/>) with links to many of my favorite census Web sites. A companion is my Oregon Statistics Web page (see below).

Help Available?

Stuck? Don't know where to start or where to begin looking? Go to the Oregon State Data Center Web page hosted by Portland State University's Population Research Center. This link provides contacts and phone numbers for information and planning people scattered around the state of Oregon (<http://www.upa.pdx.edu/CPRC/csdcpgm.html>). Where do you go if no help is available here in Oregon? Try the Experts Contact list for U.S. Census Bureau employees at <http://www.census.gov/contacts/www/contacts.html>. I have had fantastic success over the years in talking directly with the people who actually assemble the census information and statistics. They even answer their own telephones. Call them only when you are truly stumped or on a tight time frame. Giving the individual telephone numbers out to the general public is

probably not a good idea. Before calling do some research on what surveys are actually available. See the list at <http://www.census.gov/main/www/surveys.html>.

Keeping Up-to-Date

What's going on out there? How do I keep up? There are several options. The Census Bureau maintains a product release schedule at <http://www.census.gov/population/www/censusdata/c2kproducts.html>. Don't be afraid! Use listservs. The State Data Center/Business Industry Data Center Program maintains a great e-mail service at <http://www.sdcbidc.iupui.edu/index.html>. This group covers every aspect of Census Bureau activity and products and usually has several messages each day.

A local listserv Cens-or (maintained by the author) is more focused on Oregon data information. The number of messages averages several each week. Typical messages will include sharing of important Oregon data resources; questions relating to Oregon census and demographic data; investigation, planning and announcements for workshops; and networking between remote users and providers of Oregon data.

To subscribe, send an e-mail to: majordomo@sparkie.osl.state.or.us. Do not add a subject. In the body of the message type "subscribe cens-or" and your e-mail address.

Demographics and More


Craig's top ten statistical Web sites for Oregon Data:

1. SmartORgov Best of the Web Statistics/Oregon. This site is maintained by an Information Specialist at the State Library. Information is arranged in sub-categories with annotations and hot links. http://www3.osl.state.or.us/smart-or/Oregon_Statistics/
2. Office of Economic Analysis. Detailed quarterly Oregon economic/demographic data and projections. This includes



- prison and youth related statistics, analysis of the Oregon Population Survey, and population estimates and projections at the county level. The quarterly economic data includes Consumer Price Index (CPI) and other relevant statistical data for Oregon. <http://www.oea.das.state.or.us/>
3. Oregon Progress Board. Source for Oregon Benchmark information and data as well as the biennial Oregon Population Survey tables; also some county level data and past Oregon Population Survey results. You need SAS experience to use the latest data. <http://www.econ.state.or.us/opb/index.htm>
 4. Oregon Employment Department, OLMIS: Oregon Labor Market Information System. Source for employment and other Oregon-specific economic data. Difficult to navigate but worth it once you find the data. Netscape may crash due to java scripts. This site has dozens of publications and statistics tables worth investigating. <http://www.olmis.org/olmisj/OlmisZine>
 5. Local area data for Oregon, University of Oregon. The University of Oregon documents staff in the Knight Library have organized this page. Annotated links are arranged by major topics with hot links out to the original source. <http://libweb.uoregon.edu/govdocs/localdat.html>
 6. Oregon Health Division. Source for health-related statistics, including such socio-related lists as Abortion Aata, Adolescent Suicide Attempt Surveillance Data, Adult Behavior rRsk Factor Surveillance System (BRFSS) AIDS Surveillance Weekly Report, Birth Data, Death Data, Oregon Health Status Indicators, Youth Behavior Risk Survey (YRBS), Vital Statistics Annual Reports, Vital Statistics County Data and much more. Don't overlook the most popular data list at the site: Oregon Baby Names—lists of the most popular names back to 1961. <http://www.ohd.hr.state.or.us/>
 7. Center for Population Research, Portland State University. The Population Research Center (PRC) is the “official” source for all State of Oregon population information. PRC is responsible for producing the July 1 annual population estimates for the state, its counties and cities. PRC also serves as the Lead Agency for the State Data Center program providing U.S. Census Bureau data to the citizens of Oregon. <http://www.upa.pdx.edu/CPRC/>
 8. Oregon Department of Human Services, Oregon Data Directory. This site was developed by a group of state and local “data enthusiasts.” The listings can lead you to sources for unpublished and unreleased data. Contact name and phone numbers are provided. http://dhsdirector.hr.state.or.us/data/data_resources.htm
 9. Shortcut to Oregon Statistics, Oregon State University. Oregon State University list of links relating to Oregon statistical resources on the Web. A good place to start when looking for Oregon data. <http://govinfo.kerr.orst.edu/oregon.html>
 10. Oregon Statistical Information, Oregon Economic and Community Development Department. OECD quick reference tables for Oregon including: Consumer Price Index, County Economic Indicators, Distressed Areas in Oregon, Oregon Economic Indicators, Oregon Facts and Symbols, Oregon Maps (these are maps you can use in your software for graphs and charts, etc.). <http://www.econ.state.or.us/stats.htm>



Also see the Department's Oregon Community Profiles (nice descriptions of local cities with a host of information on economy, climate, festivals, sites, recreation, etc.). <http://159.121.111.9/profile.htm> 

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Open URLs

Continued from page 6

a citation from a science database, what additional resources make sense? Science-specific biographical sources, citation indexes, search engines, other reference resources? What different types of resources are important for a humanities citation?

Reference linking using OpenURLs has gone from the theoretical to the possible. But will it really be useful to library patrons? I think librarians can rightly assume that given a citation, users will want to get to the full text of the article. OpenURLs definitely will help with this issue. But will users also appreciate an abundance of other related links attached to a citation? This remains to be seen. 

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Time's Wingèd Chariots

by Fred R. Reenstjerna
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Shortly after you receive this issue of *OLAQ*, the *Oregon Library Quarterly*, Colleen Bell will retire as Chair of the OLA Publications Committee. As incoming Chair, I would like to offer the thanks of a grateful profession for her dedicated service.

Electrical engineer Gordon Moore formulated "Moore's Law" in 1975. In essence, Moore's Law states that computer capacity doubles every eighteen months—hence, Macintosh V, VI, ..., IX, X, and Windows 95, 98, etc. Every 18 months is a new "Moore generation" of doubled computing speed.

Think of the fact that Colleen Bell chaired OLA's Publications Committee for about 5 Moore generations, and you understand the scope of her work. In human life-spans, 5 generations goes back to our own great-great-grandparents, and that's where we were technologically when she started. Colleen brought OLA's publications along with the technology over the ensuing Moore generations.

Back in 1998 (about 2.5 Moore generations ago), when I joined the Publications Committee, a burning issue involved the appropriate method for distributing our semi-monthly *Hotline* newsletter. Colleen advocated sending the *Hotline* via e-mail, saving substantial amounts in printing costs by using latest technology. But there was resistance among those who were concerned that librarians (implication: many librarians) lacked access to this new-fangled thing called the Internet. As I recall, we compromised by mailing paper copies to those members who lacked Internet e-mail

addresses. Today, of course, the notion that anyone would profess to be a librarian and be without e-mail is equivalent to their being without a telephone and electric lighting—and the *Hotline* arrives in our 'In' boxes on the 1st and 15th of each month (kudos also to Pam Horan!). Some of us may even download our *Hotline* e-mails onto PDAs, and all of us can access current and past issues via OLA's Web site.

Colleen was a leader in developing and maintaining the Web site, securing our own domain [olaweb.org] and the services of a Web designer to maintain the site. As more events require a Web presence (the annual conference springs to mind), OLA groups make increased use of this important resource that Colleen championed.

Always at the leading edge, Colleen is now actively involved in a Web-based publication, *New Breed Librarian*. Oregon's very own library "e-zine" has received high praise from such luminaries as Sanford Berman, himself a leading-edge professional who brought subject cataloging out of its Victorian-era slumber.

Robert F. Kennedy said, "Some people look at what is and ask, 'Why?' I look at what can be and ask, 'Why not?'" As a historian, I often find it useful to look at what is and ask, "Why?" Otherwise, we forget or overlook the great contributions that have been made to bring us to a particular point in time. That is why I encourage us all to stop and think about the contribution that Colleen Bell has made to our lives as Oregon librarians, and the example she has set for professional commitment.

Thank you, Colleen!



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