

Automated Library Catalogs: Going Digital

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Introduction

In 1986, I started a degree program at San Francisco State University. This degree required research, and for the first time I learned how to do advanced research in an academic library. I became a competent user of library research tools. At that time, Leonard Library at SFSU had a card catalog. Before graduating in May of 1988, I noticed that computer terminals had been placed in the main floor near the card catalog and students were beginning to use them.

Then in 1992, I returned to SFSU for more education. I was dismayed when I noticed that the rows and rows of card catalogs were gone and in their places were pods of computer terminals. Sometime between 1988 and 1992, the library catalog had become completely automated and all searches now had to be done by computer. Although I became accustomed to the digital catalog at SFSU, I never felt entirely certain that I could search the library's collection as thoroughly as I had with the card catalog.

When libraries moved their catalogs from cards to computers, users like me had to learn a new set of skills to find books in the library. In most libraries, the card catalog and digital catalog existed side by side for many years. For many people, the computerized catalog at the library may have been their first contact with a computer terminal. How did this important change in the library world take place: the transition from the card catalog to the online public-access catalog?

The OPAC- Online Public Assess Catalog

Most public libraries in this area got their first automated catalog in the late 1980s or early 1990s. Once the card catalogs were no longer updated and the digital catalog became the de facto library catalog, futurists in the library world predicted that digital access would cause the end of print media and that all physical media, as well as physical libraries themselves, would become unnecessary (Crawford, 1999, pp. 1-5). Electronic books and virtual libraries were predicted to

cause the demise of print books and brick and mortar libraries, much as dot coms and e-commerce were going to eliminate the need for brick and mortar stores.

Studies were made and by the late 1990s; the flurry had died down. The facts showed that when library catalogs were put online, more library materials went into circulation. Giving the public access to the catalog anytime, anywhere, consistently increased circulation of library holdings and increased public attendance at libraries (Crawford, 1999, p. 103). Direct, online, public access to information about a library’s collection increased the use of that collection. In fact, digitalizing information did not foretell the immediate death of books or print media.

By the beginning of the 21st century, libraries as local public institutions were flourishing. To keep up with increases in circulation and attendance, libraries expanded their facilities, built new facilities, or new branches. In the South Bay alone, five city or county libraries have rebuilt or are in the process of rebuilding: Mountain View, Santa Clara City, Cupertino, Saratoga, and Milpitas. San Jose Public has built a new main library as a joint library with San Jose State University, the first joint public and university library of its kind in the country, and is currently building several new branches. San Francisco Public built a new main in the late 1990’s.

This local growth coincided with the introduction of automated library catalogs. A database at <http://www.librarytechnology.org/libwebcats/index.pl> allows for searches by library name or location. Results show the year the library implemented an automated system, the name of the original system and the current system being used. Most local libraries have moved on from their first system to a second-generation system with another company.

| Library | Year | Library | Year |
|------------------|-------------|---------------------|-------------|
| Stanford | 1972 | City College SF | 1990 |
| San Mateo Public | 1983 | Santa Clara County* | 1991 |
| Palo Alto Public | 1985 | Los Gatos Public | 1993 |
| Sunnyvale Public | 1986 | Redwood City | 1993 |
| SFSU | 1989 | San Jose Public | 1999 |
| SJSU | 1989 | Mountain View | 2001 |

*Library System

Objectives of a catalog

Charles Cutter, one of the founding members of the American Library Association, first stated the objectives of the library catalog in 1867 (Matthews. 1985. p. 5; Yee, 1998. p. 5).

1. To enable a person to find a book about which one of the following is known:
 - the author
 - the title
 - the subject
2. To show what the library has
 - by a given author
 - on a given subject
 - in a given kind of literature
3. To assist in the choice of a book
 - as to its edition (bibliographically)
 - as to its character (literary or topical)

A more current description of the purpose of a catalog is that it “links library patrons with library collections. A good library catalog brings readers together with materials they need and with materials they can use but were not aware of” (Crawford, 1987, p. 1).

The American library Association defines the online public access catalog as “a computer-based and supported library catalog designed to be accessed via terminals so that library users may directly and effectively search for and retrieve bibliographic records without the assistance of a human intermediary such as a specially trained member of the library staff” (Yee, 1998, p. 5). The online public access catalog (OPAC) allows for public browsing of the catalog over the Internet. OPACs show everything that had been displayed on a card catalog, and more. Most systems show the circulation status of the material (whether available now or date of availability), and usually allow library cardholders to place material on reserves. And distance is not a factor; from my home computer in Sunnyvale, I can browse the Boston Public Library’s collection via their OPAC, MIT’s collection, UC Berkeley’s collection via MELVYL, Library of Congress, or any library in the world that has an OPAC. How did all this come about?

History of Online Catalogs

Book and card catalogs

Until the later part of the nineteenth century, library catalogs in America were book catalogs (Reynolds, 1985, p. 72). As libraries grew, the expense of reprinting a book catalog necessitated a change. The catalog of individual cards that replaced the book catalogs became the traditional library catalog until the birth of computers. The 1960s marked huge growth for libraries in budgets and acquisitions. Library staff could no longer keep up with the task of constantly updating the card catalog. “The structure of the card catalog revolved around the concept of several ... entries for a single item:” a title card and an author card, multiple subject cards, plus cross reference cards (Reynolds, 1985, p. 73). The physical space these catalogs occupied also became an issue for many libraries with finite floor space but expanding collections.

Machine produced catalogs

At the same time, computers enabled librarians to compile machine-readable database of bibliographic records. Libraries printed their databases as computer-produced book catalogs, reverting to an earlier idea. These automated book catalogs were snapshots of what the library owned at any given time. However, items removed or lost could not be deleted from the catalog until the next edition was published: (Reynolds, 1985, p. 81). Some libraries put their book catalogs into microform on film or fiche as Computer Output Microform (COM) catalogs. Libraries began experimenting with online access to their catalog databases as early as the mid 1960s when computer-generated book and COM catalogs were coming into greater use (Reynolds, 1985, p. 91).

OPACs

The first academic library to introduce an OPAC was Ohio State University whose library had an automated circulation system designed with a broad range of access points (ways of searching the catalog). It allowed for item query searches by the standard cataloging entries of call number, title, author, and combination of title/author. The circulation system contained permanently stored, bibliographic records for all items in the university's 21 libraries. (Duval, 1992, p. 135) (Reynolds, 1985, p. 98). This system was used by staff to keep records and maintain holdings, to catalog new books, to delete removed books, to indicate the location of material, and to record circulation status—when a book is withdrawn and returned.

In the mid 1970s, Ohio College Library Center (OCLC) put some computer terminals in the public area of the main library and thus opened up their automated circulation system for public use. The original plan was for the automated system to NOT replace the card catalog until all the features of the card catalog could be incorporated into the automated catalog. By the late 1970s, the automated catalog was upgraded to allow searches by subject headings, which listed a brief bibliographic record of titles assigned that subject heading, as well as all the original access points: title, author, and call number. Cross-referencing was soon added. By then most of the features of the card catalog were incorporated into the automated catalog with the additional features of providing circulation status, a feature not available with a catalog card. It told the user which OSU library held the item and whether each copy was charged out. The user could check whether the book was available before going to the specific library. The entire holdings could be searched at any one terminal and items could be charged out on terminals located at another library. (Reynolds, 1985, p. 98)

In the 1980s, other university libraries developed online public access catalogs that were designed from the ground up specifically for public users, rather than as an outgrowth of a preexisting circulation catalog. MELVYL, developed by University of California system wide

division of library automation, was first implemented as a public access catalog, which later incorporated a circulation function. “Some libraries developed integrated systems in which the public access catalog was just one component of a broader online system” (Reynolds, 1985, p. 99). Front and back office functions, such as acquisitions processing, cataloging, circulation, and an online catalog, were brought together into one integrated system, such as the Claremont Colleges’ Total Library System (TLS). Another direction for online catalogs in the 1980s was their design to accommodate multi-institutional systems, such that users in a specific library could search the catalog of their own library, the catalog of another library, or a system-wide union catalog. By the end of the 1980s, many of the online systems developed in house were being offered for sale to outside university and public libraries (Reynolds, 1985 p. 100).

RECON, MARC, and OCLC

Machine-readable cataloging

When a library wants to go digital with its catalog, it is faced with the task of converting the entire manual bibliographic record to machine-readable format—a one-time process called retrospective conversion (RECON). Many libraries had already developed databases of their collections, particularly libraries that had compiled machine-readable databases for their computer-generated book and COM catalogs, but these databases often applied the standard rules of cataloging incompletely or idiosyncratically.

Part of the process of establishing a bibliographic record of a collection is to catalog every piece of material according to established standards called the Anglo-American Cataloging Rules (AACR). Since by law every book published in the United States must be sent to the Library of Congress (LOC), LOC has become the depository of records for all published material. In the past,

most libraries ordered cataloging cards that were prepared and sold by the LOC, or they typed out their own using the AACR standards.

Starting in the 1964, LOC started experimenting with a cataloging format that was machine readable. Soon LOC developed a systematic format that converted cataloging cards into a machine-readable form that utilized 3-digit tags and accorded with AACR standards. LOC began sending out machine-readable magnetic tapes prepared in MARC--Machine Readable Cataloging-format along with the usual cataloging cards. The MARC format enabled the subscription institutions to load the tapes and manipulated the data on their own computers (Reynolds, 1985, p. 56).

On-Line Library Catalog

Based on the uniformity imposed by machine-readable formatting and Anglo-American Cataloging Rules on all library catalogs, the Ohio College Library Center recognized that cataloging data for any particular item would be similar for all libraries everywhere. Because of this principle, OCLC evolved the idea that a central file of cataloging records could be maintained on a single computer system and accessed through terminals by many other libraries not part of that system (Reynolds, 1985, p.47). If participating libraries could share MARC files online, this would eliminate the need for them to independently catalog all their preexisting items. Thus was born the OCLC database that solved the problem of retrospective conversion—the one-time event whereby the library converts its entire collection from manual bibliographic records to machine-readable form.

In 1971, OCLC went online installing terminals that allowed participating libraries to access an On-Line Union Catalog, the bibliographic database that underlay its public access catalog. The Union Catalog allowed for participating libraries to match their item to the MARC record created at LOC and instantly download that record into their local system. They no longer

had to order tapes or cards from the LOC. The On-Line Union Catalog database was cooperatively maintained. Participating libraries could create a MARC record for an item not found in the Union Catalog or not cataloged by LOC, and upload that record into the database to be used by all other participating libraries.

In 1981, OCLC became independent from Ohio State University and changed its name to Online Computer Library Center. It remains the major, international, online bibliographic database for all present day automated library systems.

Types of Online Catalogs

Libraries and library systems are currently in the process of creating networks of shared library catalogs. Once your library acquires an online catalog, technology allows this catalog to link up with other catalogs forming networks called library consortia. According to Erlinda Estrada, my instructor in the Library Technology program at Foothill College and the acquisitions librarian at Mission College, “A network is a formal arrangement whereby several libraries or other organizations engage in a common pattern or exchange of information, materials, services, or all three for some functional purpose.” I have taken the following information from class notes from LT 50: Introduction to Library Services.

International Networks

Bibliographic networks are electronic databases provided and maintained by bibliographic utilities that make available the information contained in national and international catalogs for use by librarians and others. Major North American bibliographic networks are OCLC and Research Library Information Network (RLIN).

OCLC, as mentioned, is the world’s largest and most comprehensive bibliographic database of over 42 million records including books, films, reports, or monographs, derived from

MARC tapes, individual cataloging of member libraries, and holdings of all major government libraries. 7,000 member libraries supply cataloging information to the OCLC database. 30,000 libraries in 63 countries participate in and use the OCLC database. For a fee, member and participating libraries can telnet to OCLC's Online Union Catalog or use the World Wide Web to access OCLC's WebCat, their graphic interface version that is far more user friendly than telnet dialup. OCLC also offers FirstSearch, 55+ databases of journals to search with full-text document delivery. PRISM services include interlibrary loan services involving 5,550 participating libraries worldwide.

RLIN, located in Menlo Park, is a more scholarly network of 25+ million records from Ivy League universities plus major U.S. research centers like NY Public Library, CA State Library, and the National Library of Medicine. RLIN services include an online union catalog of 75 million items held in research libraries and special libraries and information about non-book materials ranging from musical scores, films, videos, serials, maps and archival collections.

State Networks and Regional Consortia

State and regional networks often come together for economic reasons and act as brokers for member libraries to get the best possible deals on services and products offered by the big bibliographic utilities. Their basic functions are to provide bibliographic resources, access to collections serviced by the network, and to share the costs of information databases.

A new technology called Z39.50 is now being discussed in California by regional network representatives and California State Library. Z39.50 is a standard interface that makes expanded access more powerful and more flexible. According to Crawford and Gorman, "Z39.50 makes it possible for users of a given library catalog to search remote systems using the commands and menus of their home catalog and have the results displayed in the same format" (Crawford, 1995, p. 169). With Z39.50, the Library of California, a virtual library made up of seven, regional, state

networks, will eventually provide access to the catalogs, databases, and e-books of all California public libraries and interlibrary loans services

Other regional networks, such as the Golden Gate Network, consist of all the public libraries in the entire Bay Area. It recently purchased access to several hundred electronic books at great discounts that will be made available to all member libraries. The Community College Library Network provides discounted database services to community college libraries. The San Andreas Library Network includes all public libraries in Santa Clara County, San Mateo County and Santa Cruz County. Silicon Valley Library System, South Bay Cooperative Library System, Santa Clara County Library System is made up of eight libraries and share access to holdings via one automated online library system.

Conclusion

Last year I complete the Library Technology program at Foothill College. Because of the budget crisis Foothill has terminated the program even though it had been in existence since the 1960s. Today, because of the Internet, information is entering everyone's lives more directly, and skills in managing information are needed more than ever. People who use library catalogs generally have no idea how to make use of subject headings for expanded searches or that the subject headings in their local catalogs are standardized across all libraries and all catalogs. With Z39.50 the need for basic strategies in searching for and managing information will grow. Through education, we are able to bring information literacy to all students at the community colleges and to all public library users.

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