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David Tyckoson

California State University, Fresno, davety@csufresno.edu

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Top Ten Innovations in Library History

by **David Tyckoson** (Head of Public Services, Henry Madden Library, California State University, Fresno, 5200 N. Barton Ave., Fresno, CA 93740; Phone: 559-278-5678; Fax: 559-278-6952) <davety@csufresno.edu>

When we think of innovation in libraries, we tend to think about all of the brand-new technologies that have been developed over the past three decades. From online catalogs and Webpages to instant messaging and iPods, libraries see the potential and the applications in new technologies. Librarians have traditionally been very good at identifying, evaluating, and applying new ideas to old problems.

However, innovation in libraries is not a new thing — librarians have been innovating for centuries. It is the collective impact of hundreds of years of innovation that has made libraries what they are today. Most of those innovations we take for granted because we seem to have always done things that way, or we have always used those tools. But we need to remember that there was a time when these ideas and technologies did not exist. Today we tend to see innovation as associated with technology. Although technology does indeed drive innovation by giving us the tools to implement our ideas, the ideas themselves are at the heart of our true innovations.

This all got me to thinking — what were the most important innovations in the history of libraries? Here is one librarian's highly subjective list of the what, who, when, and why of the top ten innovations in the history of libraries, presented in chronological order. Note that this is just my viewpoint — your list may vary.

1. What: Printing Press

Who: Johannes Gutenberg

When: Mid-1400s

Why: The invention of movable type printing revolutionized libraries, scholarship, reading, and learning. Before the invention of the printing press, every book in every library had to be copied by hand (which meant that they were really manuscripts, not books). As a result, no two libraries contained identical copies of the same work. Library collections were very different, and very few books were widely available. Books were also extremely expensive and available only to the elite learned members of society. After the printing press came into being, books could be printed in quantity. This allowed any and all libraries to have copies of exactly the same work, spreading its knowledge and ideas throughout the Western world. Because they existed in greater numbers, the cost of books also dropped significantly. Over time more people learned to read, and more people used libraries. Printing technology has changed drastically over the centuries, allowing for ever-larger numbers of works at lower cost. But the impact of the printing press is still felt today. Even when us-



ing electronic resources, what do most people do? They print them out.

2. What: Dictionary Catalog

Who: Bodleian Library

When: 1620

Why: As libraries grew, it became harder and harder for readers to find the items that they wanted in a library's collections. As a result, libraries developed a wide range of techniques for helping people find the volumes that they needed. Catalogs of various designs arose in libraries in widely differing places, but the first true modern catalog was created for the **Bodleian Library** at **Oxford** in 1620. In this catalog could be found the first dictionary arrangement of authors and standard treatment of titles. Subsequent innovations in the areas of standardized subject headings, detailed descriptions, **ALA** rules, **AACR**, **MARC**, and metadata have all built upon this seventeenth-century idea. Library catalogs have grown significantly more sophisticated over time but are still used in every library today as a starting point for finding materials in the collection.

3. What: Catalog Cards

Who: Bibliotheque National de France

When: 1790s

Why: Catalogs gave library users a tool with which to determine what a library had in its collection, but because these catalogs were printed in book form, they were out of date soon after they were created. During the **French Revolution**, when many private libraries were appropriated and became the property of the people, the French government needed a more flexible way of figuring out what it had in its new national collection. The government came up with an ingenious method of listing each book on cards that could be filed in cabinets. This method gave libraries a way to keep catalogs current in an efficient manner. By using cards, the catalog became an ever-growing, almost living tool of the library. Over time multiple cards were used (author, title, subject) to provide even greater access. In more recent times the data on the cards were migrated to electronic formats, most notably through the **MARC** record. By transferring information about library holdings to unit records that could be changed and updated at any time, the modern catalog was born.

4. What: Poole's Index to Periodicals

Who: W. Frederick Poole

When: 1848

Why: Libraries have always been good at handling books because books tend to be lengthy treatises on one (or only a few) subject. However, libraries also collect magazines, journals, and newspapers, which contain short articles on many,

many subjects. One of the biggest problems libraries faced in the nineteenth century was how to lead readers to periodical articles that would be of interest in their research. Libraries tried many different techniques, including inserting catalog cards for magazine articles into the catalog. Although this solution offered timeliness, flexibility, and a one-stop search engine, it was highly labor intensive. **Poole's** index was a brilliant solution to this problem. He realized that most libraries subscribed to the same set of magazines and that all the libraries had the same indexing problem. By publishing an index to the major magazines of the day, he solved this problem not only for his own library, but also for all libraries. Although a book index had all of the problems of the old book catalogs and in many ways was a step backward, the labor-saving nature of **Poole's** index freed librarians to spend their time on other challenges. Over time publication grew more rapid, other more specialized indexes were started, abstracts were added, and the entire process was shifted to the electronic environment. **Poole's** index, which was the original outsourcing project, established the concept that commercial publishers could aid libraries in their work.

5. What: Circulation

Who: Boston Public Library

When: 1854

Why: The idea of the public library was revolutionary in its time (and still is today, but that is a story for another article). The idea that a community would create a library that was available to all members of that community, regardless of their status within the community, was unheard of before the opening of the **Boston Public Library**. Add to that the idea that community members could take books home, to their office, or to the beach, and this was revolutionary. Prior to this innovation, the small number of elite in the community who had access to library materials had to use those materials in the library building. The idea that people could take books out of the building was risky, but it was clearly a success. In the first year of operations, the number of loans was equal to approximately one book for every two people in the city, or the equivalent of every one of the sixteen thousand books in the collection being checked out four times. People clearly voted with their library cards that they liked the idea of borrowing books, necessitating the dark side of circulation: fines for overdue books.

6. What: Classification Systems

Who: Melvil Dewey

When: 1876

Why: By the nineteenth century library catalogs had become highly structured and were quite adept at handling authors, titles, and descriptions. However, subject access had always lagged behind. What was needed was a

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way to arrange materials based on topic, placing like materials together within some overall organizational scheme. Although subject classification systems had been in use in a number of libraries prior to the publication of Dewey's numerical approach, his is the one that really caught on. Although the idea of categorizing all of the world's knowledge into ten broad classes was both audacious and imperfect, it established a framework that provided browsability for collections and that is still in use in many libraries today. In fact, this innovation is so well known that it became a symbol of libraries for the general public. When you meet people and tell them that you are a librarian, how many times do they say, "Oh, then you must know the Dewey Decimal System"?

7. What: Telephone

Who: Invented by Alexander Graham Bell

When: Patented 1877, adopted by libraries in the early twentieth century

Why: Before the invention of the telephone, there were only two ways to communicate with a library: going into the building in person or writing the librarian a letter. These two options required either effort or time on behalf of the potential library user. After the advent of telephony, it was possible to communicate in real time with the librarian from remote locations. In fact, this technology made it possible for anyone, anywhere, to communicate live with any library, anywhere. This invention opened up a new level of service, allowing people to find out if the library contained a specific book or journal or to get an answer to a factual question without having to take the time to visit the library. Libraries began promoting remote telephone services, and some libraries, especially big city public libraries, developed large remote reference departments dedicated to this service. Today's Questionpoint and instant messaging services are direct descendants of these early telephone reference services.

8. What: Microfilm

Who: Eastman Kodak

When: 1930s

Why: Although microfilm is generally regarded today as one of the least appealing formats for information storage, it was in fact a big breakthrough in information technology. Photographing documents onto film that could be read on special readers helped libraries solve three problems: storage, preservation, and access. By acquiring microfilm, libraries saved space by eliminating large numbers of bound volumes. Microfilm not only saved space, but also saved the information itself, especially for newspapers printed on highly acidic paper. If not for microfilm, the information would literally have dissolved into history. Microfilm also proved especially useful in distributing unique information from rare and archival materials. Items that are available in only a few libraries in their original print formats could be made

available in many collections with the aid of microfilm. For example, very few collections would have the early American periodicals series without this technology. Microfilm may be little, but it certainly has had a big impact.

9. What: Photocopier

Who: Xerox

When: 1955

Why: The first general office copiers were produced in 1955, and they became standard features in libraries over the subsequent two decades. The photocopier radically changed the way that users interacted with library collections. Before copiers, users had to either check books out to take home and read, or else they had to write down their interpretation of the contents by hand. After copiers, users could get an exact reproduction of a page for only a small fee. As copiers became more prevalent, libraries became less about reading and more about reproducing. In fact, many

users seem to feel that copying is the same as reading and that the copying process is equivalent to the learning process. Combined with printing technology, photocopying has made the concept of the paperless society more of a myth than a reality.

10. What: Data Processing (computers)

Who: IBM and other mainframe manufacturers

When: 1960s-1970s

Why: To the modern eye, no technology has had a greater impact on libraries than the computer. What we do today to manipulate text, data, images, audio, and video had its roots in the data-processing experiments of the 1960s. Early attempts at automating circulation data and journal indexes have evolved into the sophisticated online catalogs, databases, and Websites of today. This technology has

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against the grain people profile

Head of Public Services, Henry Madden Library
California State University, Fresno
5200 N. Barton Ave., Fresno, CA 93740
Phone: (559) 278-5678 • Fax: (559) 278-6952
<davety@csufresno.edu>

David A. Tyckoson

BORN & LIVED: Born: Evanston, IL. Lived in Illinois, Ohio, Iowa, New York, and now California.

EARLY LIFE: Nerdy teenager.

FAMILY: Wife, no children, two cats.

EDUCATION: B.S. in Physics, M.L.S., both from **University of Illinois**.

FIRST JOB: Science Librarian, **Miami University**, Oxford Ohio (first professional job).

FIRST TEENAGE JOB: McDonald's.

PROFESSIONAL CAREER AND ACTIVITIES: Reference Librarian, Head of Reference, Head of Public Services.

IN MY SPARE TIME I LIKE TO: Raide trains.

FAVORITE BOOKS: *Harry Potter*.

PET PEEVES/WHAT MAKES ME MAD: Bad customer service.

PHILOSOPHY: Use the tools of today to continue the traditions of the past.

MOST MEANINGFUL CAREER ACHIEVEMENT: Received **Isadore Gilbert Mudge Award**, the "lifetime achievement" award for reference librarians.

GOAL I HOPE TO ACHIEVE FIVE YEARS FROM NOW: Complete book on the reference interview.

HOW/WHERE DO I SEE THE INDUSTRY IN FIVE YEARS: I assume that you are referring to the publishing industry. I see things much as they are now, with somewhat fewer players involved.

The big will get bigger (**Thomson, Elsevier**) as they acquire smaller companies. Their library-oriented products will get more expensive, but more comprehensive.

The general publishing industry will become bigger as well.

Bookstores as place will diminish as people buy (and sometimes receive) their products online.

A few scholarly journals will disappear, but most will still be around (almost entirely in electronic form) and will be an even larger burden on library budgets. 🐼

