Bibliographic Essay Unit 3
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# Hardware Issues

Personal, Portable, Pedestrian. That is simply how we want our technology. It is also the title of a new book by Mizuko Ito, Daisuke Okabe, and Misa Matsuda describing "telecocooning," or an always-on state of wireless closeness (Jardin 2005). In this technological age, it is important that we, as librarians, understand how computer hardware affects the varied aspects of a library. For example, GPS technology can be used to map library bookshelves determining which shelves patrons pulled books from, (Xia 2004) assisting in circulation and acquisitions. Libraries are responsible with providing patrons with the means to access information which now includes the internet and the ability to efficiently provide access to online materials. The use of technological advancements frees library employees from more repetitive tasks allowing them the opportunity to redirect themselves towards areas where human contact is valuable, resulting in an atmosphere of cooperation and common learning (Ghosh and Jambekar 2003).

This paper will examine hardware issues in four areas of library service: circulation, collection management, the role of the library as a meeting place, and the delivery of online resources.

## Circulation

Circulation still takes up 75% of our business and will hopefully only continue to escalate. However, automation of circulation activities is lagging behind. Large library systems like the King County Library System had a static number of staff and they were suffering from an increased number of repetitive stress injuries. Circulating roughly 16 million items per year, they had to come up with a solution reflective of the size of the problem (Moffitt 2004). After much investigation, they implemented a combination of RFID (radio frequency identification tags) and AMHS (Automated Materials Handling System) to handle the check-in and out, sorting and distribution of library materials, and the automatic processing of holds. It is the largest library in the world to employ this hardware, distributing materials among its more than twenty branches (Watt 2005). No published studies yet exist presenting quantifiable evidence that RFID provides greater gains than expenditures. There are significant issues in using the RFID technology. Security in transmitting data in a wireless environment and the pesky problem of inaccurate reading of the tag when comparing it to library holdings stands in the way of satisfaction. There is also the always-present layer of maintenance and installation of subsequent upgrades of machinery and software (Smart 2004).

Also affecting circulation services is the move to self servicing of check-out, check-in, checking patron's records, and registration for holds on materials. Emerging in the early 1990's, self-issue of library materials has shown a dramatic increase at the University of Sunderland (UK). Monthly statistics typically show a 50-60% usage for

self- service. The most common self-services (which are relatively minimal in fiscal outlay and work for staff) are accessing the OPAC, self-renewal, self-reservation, and self-checking patron records. Self-check out and self-return use cellphone technology in telemessaging self-renewals and reservations, reducing staff intervention and freeing staff from the telephone and circulation desk questions (Richardson 2003).

The desire to offer services 24/7 to library patrons poses a difficult problem for system administrators in terms of maintenance and backing up of data backup when there is no "down time." System administrators will have to use data to determine the times least impacted for maintenance and file backup (Ou and Dugan 2002).

**Collection Management**

One of the many goals of a library is to collect and disseminate diverse information to its patrons (Library Bill of Rights, 1948). This task has been made easier with the introduction of various technological advancements. Tools have been provided that can increase the efficiency of libraries, such as library and information management systems (LIMS) and electronic resource management systems (ERMS). These programs utilize software, provided through a vendor, and hardware, provided by the library, to assist in the day to day management of library collections. The role of a system, such as an ERM, is to assist library administrators with "tools to manage e-resources throughout their life-cycle while supplying the data that administrators need to make decisions about acquisitions, renewals, and cancellations of e-resource subscriptions (Sadeh and Ellignsen, 2005)." Programs such as ERMS and LIMS utilize the internet through the use of personal computers in the library. According to Georgios Skretas, oftentimes, the tools provided by LIMS are not utilized appropriately. This is due to numerous factors, some of which are directly related to the hardware employed by libraries. He maintains that the "technical infrastructure that support the library functions be appropriate and well functioning." Along with the infrastructure, there should be support systems in place to provide assistance for issues, ranging from virus protection to system restoration, faced when using computers (2005). If these systems are used to their maximum potential, they can provide a great service to library administration.

In a collection that includes electronic journals, libraries must be sure to provide their patrons with an assortment of hardware input and output devices. Libraries subscribe to various journals or journal databases but not without investing time and energy into researching and trying the resources first. Prior to licensing an electronic resource, librarians will allow for a trial period during which users can evaluate the usefulness of the resource. Usefulness includes the ease with which patrons can view the records on computers as well as how effective the interface being provided (Sadeh and Ellignsen, 2005). It is also important that patrons have access to printers and other means of storing the information if necessary. If printing is unavailable, the library may still have a hardcopy of the journal(s) in question, in which case, a functioning copy machine is helpful (Robertson, 2003).

Despite the space saved through subscriptions to electronic resources, there are occasions when libraries are forced to create more storage space. According to Kari Mathisen, The National Library of Norway's collection of publications is expected to grow by between two and three million in a few years! Growth like this requires libraries

to invest in storage facilities which can be rather expensive and time consuming. In Norway, the National Library looked towards automated storage and retrieval to reduce the amount of space required for storage. The system runs all the components necessary to store and retrieve the books thus controlling the software and technological aspects. The boxes are labeled with bar codes, a means of distinguishing each. As the boxes are placed in the system, the bar codes are read by one of three operators hand scanner. Materials loaned to patrons are stored with their own bar codes though items such as periodicals, which are not loaned, are grouped together labeled with one bar code. As books are requested, robotic forklifts are sent to retrieve the item which is then loaned or sent for copies (in the case of journals) (2004).

Once the library has acquired new materials, it is important that the catalogue is updated appropriately. This is done through the use of tools that are constantly revised to remain current. These include bibliographic databases, the Library of Congress Classification, the Dewey Decimal Classification, and authority databases, among others. Prior to the introduction of CD-ROMs and databases, catalogers relied upon the National Union Catalog which came in hard copy until 1982. With CD-ROMs vendors were able to store large amounts of bibliographic data which can be more easily distributed, stored, and accessed than with volumes of books. Providing cataloguing tools in an electronic format allows for "increase[d] accuracy, efficiency, and overall productivity" (Khurshid, 2003).

While it is important that new materials be catalogued and stored appropriately, libraries are forced to deal with issues of preserving older materials daily. Technology plays a large role in increasing access to archival materials through digitization. The British Library has put some of their rare books on exhibit through their website the result of a project entitled, *Turning the Pages*. The project utilizes digital imaging and animation bringing old works to life for all to enjoy. Using a mouse, patrons can turn the pages of these rare books from the comfort of their home, possibly listening to a description of the work at hand (Ojala, 2003). Other libraries have also taken to scanning certain books in an attempt to keep the information accessible without harming the books through repeated use. This is especially true for what Michael Seadle refers to as "gray literature", works which were never published commercially, are not registered, and are often not inventoried, such as pamphlets and fliers. Researchers can still gain access to the information without causing much harm, preserving the information for future users (2004).

**The Library as Digital Meeting Place**

One of the roles of a library is to serve as a meeting place for members of the community. The introduction of computers into libraries has enabled the library to remain a meeting arena, drawing various people in and allowing them the opportunity to interact with others. An example of this occurred in Oslo, Norway where one public library hosted internet classes for older members of the community. Because the library had up-to-date computers and programs, a group of young, computer savvy people would visit from other districts. The two groups worked together in the same room fostering relationships as the younger people began to help the senior citizens (Aundunson, 2004).

As the above example showed, libraries are faced with patrons with varying computer skills, a divide that seems to be growing. In the changing world, the role of a library to provide information also includes providing patrons with the skills necessary to retrieve information. Some libraries provide programs to help parents get their children prepare to read. This can be done through the effective use of computer programs which combine animation, sound, and input to make learning fun. Patrons expect that accessing information will be easy and available without resorting going to a librarian for help. As patrons turn to non-text media for information, it is important that libraries provide them with the tools and materials they want (Sullivan, 2005).

**Delivery of Online Resources**

As our lecture notes reflected, smaller, faster, and cheaper are the tenets of the day. In determining a hardware design to fit the situation, some libraries are opting for dumb terminal technology over stand-alone workstations. Centralized servers are purported to be easier to maintain in terms of the upgrading of software, backing up data, and maintenance of the central server. Despite this, they still have potential maintenance issues. Some technicians report that a majority of maintenance is in broken keyboards, burned out monitors, and trashed mice. Even hard drives go out when there is a centralized server with dumb terminals.

Robust servers are necessary to deliver, with lightning speed, the online resources and traffic of multimedia files. Libraries have to analyze their bandwidth to ascertain proper delivery and speed of information required. Servers are becoming so specialized that they perform just one task. State of the art computer networks find great uses in libraries serving up electronic content in the form of text, images, sound and video. (Breeding 2003) The work culture in libraries has changed due to the growth of computer networks and the World Wide Web. We expect the network to be there when we are.

Wireless networks are in much demand. Users expect to have access when they enter libraries with their own laptops. Libraries have to decide how to accommodate users who provide their own equipment. The ultimate goal is a network capable of handling the delivery of any type of traffic, with optimal performance at the lowest layers and automated inter-intra business process at the highest layers. Pervasive access is must. Increased use of wireless technologies has gone hand-in-hand with the increase in IP technology (Best 2004). Bluetooth technology is allowing for cleaner desktops as devices are used without cords and staff is tied to desks less and less (Levine 2005).

Services are popping up on the internet for storage of personal files that are available no matter where a patron is working. iDisk is an example of storage space that can be mounted from a PC or Macintosh via the internet. Some sites offer space for free and some offer it for a nominal fee. Internet service providers often provide space for off-site storage and backup. Flash drives are so commonplace that they are in Swiss Army knives. Mozilla's *Firefox*, the open source internet browser, has a beta that can be downloaded and configured on a flash drive. Users can just insert the drive into a library computer's USB port and cruise around the internet with their own bookmarks and preferences. (Levine 2005)

Some libraries are using network speed and availability for serving up information to market services and the collection, online and in-house. RSS (Really

Simple Syndication or Rich Site Summary) feeds are becoming more commonplace as a way to get out the news. Library pioneers include Karen Schneider, Michael Stephens, David Free, David King, and Steven Cohen. You can subscribe to their feeds and have the news in their libraries and about their projects delivered to your computer as they develop (Balas 2004). This technology is an excellent way to bring information to distant users about new additions to the collection, internet instruction guides, new journals, or new books. The immediacy of this medium creates a newness for which we all clamor!

Handheld computers can gain access to specially-formatted webpages of the OPAC and other library web sources (Ou and Dugan 2002). Librarians can be equipped with internet-capable handhelds to have real time access to reference questions and the OPAC wherever they are. No more running to a desk for a call number! Handheld computers can be also used to download eBooks, but though eBooks have not yet replaced traditional print resources. No device has come close to the efficiency and psychological comfort of a paper book. However, despite the small screen, adaptations in the reader software on handhelds have made eBooks useful for travelers (Bell 2005).

## Conclusion

As librarians, we embrace advances in technology, using the speed provided by computers in the quest to disseminate information efficiently. Using technological advancements, librarians are mastering the tools with which we can automate many procedures which have previously required great amounts of staff time. By embracing technology, we are able to provide our patrons with the services they expect and desire. The price of new technology goes beyond dollars, however. Every new solution brings its own problems. New solutions often grab our attention and focus from service issues. We need to research, plan, and implement wisely those technology changes we choose to support our patrons' information needs.

## Resources


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