The Evolutionary Library

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ETEC 511

30635023

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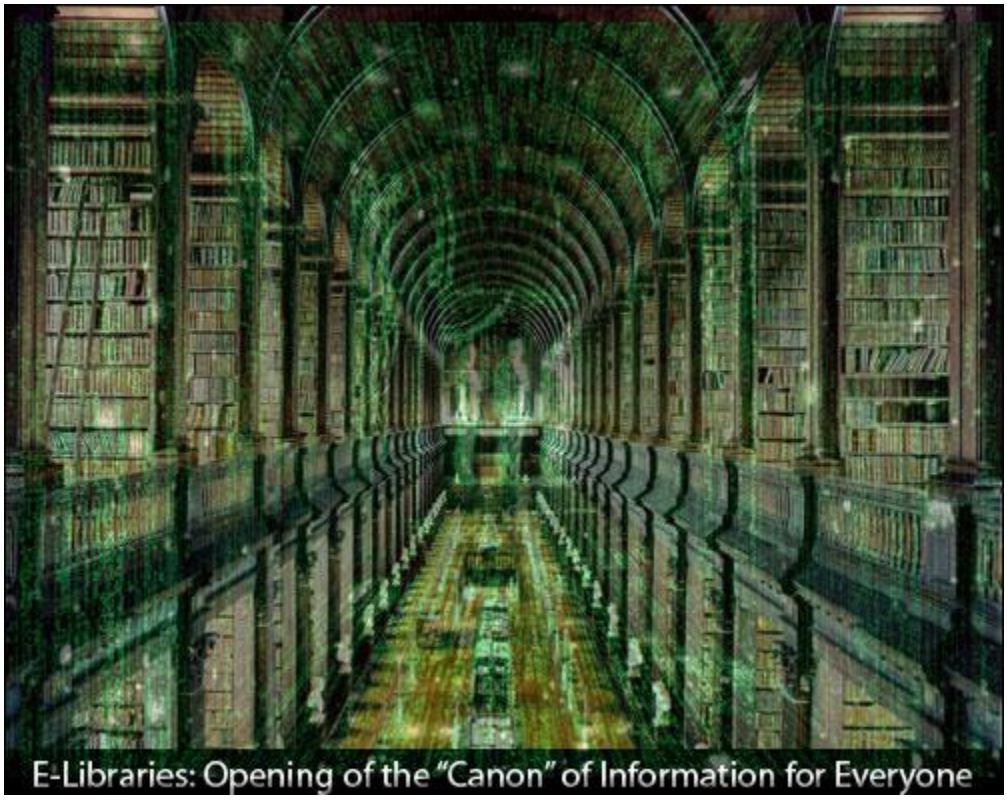
6 July 2010



Introduction

The Library has a long and storied history in providing our civilizations and societies with public access to information, space, skills and resources that represent the collective state of knowledge and understanding. This pedigree goes back thousands of years to the ancient Library of Alexandria, which pioneered the concept of collecting as much knowledge, resources, artifacts and scholars to share with the rest of their world. This tradition has continued through the ages, fueled by a scarcity of resources and recognition that this collected knowledge and information was a very valuable asset for civilizations and societies throughout the world. As we moved into the modern age, this concept of Libraries continued to serve the common good, democratically opening up the collected wisdom of the ages for all to use and read. In our more post-modern era, Libraries are facing a very profound change in their abilities, structures and functions. When the digital realm began in the late 1960s, the die had been cast, and the way Libraries existed before became numbered. In our current digital, hyper-connected world, the Libraries of the world need to adapt and evolve, or they might find themselves relics of the analog age, no longer a place and idea which carry meaning and a rich tradition. Libraries must evolve into hybrid "Cybraries" in order to continue meeting the needs of their patrons and to provide their historically important role in our new post-modern inter-connected world.

Definition of "Cybrary"

The first emergence of a digital collection of documents and resources, or an early version of a digital library, quickly followed the birth of the early Internet, the ARPANET. These early pioneers, provided textual documents, manuals, how-to guides, and other digital collections of resources like the Gutenberg Project, launched by Michael Hart on July 4th, 1971 (Suber, 2009). This helped to create a new model and idea of what a digital library might be. But what exactly constitutes a digital library or "Cybrary"? This is a very important question and there are many competing visions of what a Cybrary should be, or could be. Also confusing the issue is the many different titles and names ascribed to this concept (Brophy, 2006; Borgman, 1999). For the purposes of this discussion,

Seadle and Greifeneder's definition of a Digital Library as a, "electronic provision of digital documents in connection with online services, building on the tasks of a traditional library, which enables worldwide access to its collection via the Internet" (Seadle and Greifeneder, 2007, p.172), accurately captures the essence of what a Cybrary should be. This definition places an appropriate balance between resources and services, which are both essential parts of the historical legacy of Libraries in our communities. Libraries will become museums if they focus purely on collections instead of providing information services to their patrons. The other very important aspect of this apt definition is the concept of building upon the tasks of the traditional library, expanding services through new technologies, reaching out to new patrons and clients who would not necessarily come into a physical location (Schmidt, 2003; Ross & Sennyey, 2008; Arnold, 1995). Finally, the most important goal of the new Cybrary is to enable worldwide access to their collections and resources twenty-four hours a day, seven days a week. This change in the service model will most greatly impact and enlarge the Cybraries role in our civilizations and global inter-connected world. It is a challenging time for Libraries, but it is also an exciting time full of new opportunities to evolve our valued Library traditions and models.

History of Libraries on the Internet

When the precursor to the Internet was created, the ARPANET, near the end of 1969 (Hauben, 1994), the ultimate goal was to create "a common user digital data communication plant designed specifically for the transmission of digital data among a large set of subscribers" (Baran, 1962). This goal was largely born out of a desire to withstand possible cataclysmic events, such as a nuclear attack. If any one node on the network was taken out of service, the information would be automatically re-routed via other connections. This can be compared to the original intentions of the creators of the ancient Library of Alexandria; a desire to protect and preserve the cultural legacies of knowledge and information for future generations. As Christine Borgman discusses in "From Gutenberg to the Global Information Infrastructure: Access to Information in the Networked World" the birth of this global information infrastructure today has enabled this ancient goal in a much more

accessible, efficient and redundant model, that will more likely succeed where the Library of Alexandria failed (Borgman, 2000; Kapitske, 2001).

The early Internet was fantastically prolific in collecting, organizing and distributing digital copies of information and knowledge. This was in response to the previous structures of isolated silos of information, sequestered away in dark stacks around the globe. Vint Cerf, one of the founding fathers of the World Wide Web, wrote a poem expressing the problem with the pre-connected information based world:

"Like distant islands sundered by the sea,
We had no sense of one community.
We lived and worked apart and rarely knew
That others searched with us for knowledge, too." (Vint Cerf, 1989)

This poem accurately captures the isolated nature of information, stored, but not shared; available, but not accessible. The Internet and its global reach in connecting these isolated silos of knowledge and information changed the paradigm and started this evolutionary process of Libraries and their changing models. The first digital libraries were small Bulletin Board Systems, or BBSs, as they were called. These early Cybraries started collecting software, manuals, text-files, documents and computer code for all to share. Users could contribute to these libraries and borrow whatever they were interested in. This lead to bigger collections, like the Gutenberg Project (http://www.gutenberg.org/wiki/Main_Page), developed by Michael Hart in 1971 "to make information, books and other materials available to the general public in forms a vast majority of the computers, programs and people can easily read, use, quote, and search" (Hart, 1992). These new projects mirrored the original intention of the early ARPANET in creating a robust and cohesive collection of knowledge and information with universal access. This agenda is still with us today with controversial new projects such as the Google Book Search, a project intending to index the entire collection of books currently available on the planet.

New patrons, new services, new ideas

With these new possibilities, made available by advances in information technology, Cybraries have a tremendous opportunity to expand their role in our civilizations. This could not come at a more important time, as the traditional model and concept of a physical space to store books in an organized system, allowing patrons to circulate the resources, is coming under attack from new service models. Patrons are not accessing their public Libraries like they used to, as less people are coming in, and instead looking to the Internet for access to the information and resources they seek. As Libraries migrated from card catalog indexing systems to internet accessible union collections, this allowed patrons to search and select materials digitally, and then only having to stop in to pick up or return their selections. Now, Libraries are subscribing to online only resources such as databases, encyclopedias, e-books, social communities, ordering and cataloging services, and virtual reference services inside virtual spaces like Second Life (Abram, 2007). This transition is a response to the changing needs of the patrons, who need to access their information easily and 'just in time'. This 'just in time' information seeking is a new trend that has its critics, as explored in the CBC Ideas program titled "The Great Library 2.0" (Prpick, 2009), but its efficiency and utilitarian motivations cannot be denied. Students around the world are accessing the stream of information surrounding them not constantly, but only when timely and necessary for their information needs. Cybraries like the University of California Los Angeles Research Library are exploring other new services for their patrons like virtual reality labs that provide immersion experiences to three dimensional recreations of important historical and interesting physical spaces (Frischer, 2002). Electronic texts and databases, like e-books, are also a new service model that allows Cybraries to meet the needs of their patrons in a new digital space. Also experiencing rapid growth is the use of electronic journal access, which allows patrons to search, select and access full text journals from anywhere (Kaptitzke, 2001).

Teaching and Learning with Cybraries

Another exciting opportunity for Cybraries is to expand their role in teaching the new information literacy skills our digital world requires. Cybraries, in all forms, from public K-12, Academic University, and Municipal Public, can all play a role in educating all members of our society, from children, to students, to academics and seniors. These skills are critical in our new information based world. In order to access even basic health, education, and other government services, citizens will need these skills to find, evaluate and utilize the information, knowledge and services available online. Teacher-Librarians, in the public school system, are using the Internet and new digital resources to equip their students to be information savvy "digital natives" (Prensky, 2001); able to navigate this expansive sea. Skills such as effective search strategies, evaluation of resources, synthesis of appropriate information, collation and integration of new knowledge, and reflection of the process to adapt and learn for the future are the most important information literacy skills Cybrarians can teach (Machionini & Maurer, 1995). This teaching and learning is also occurring within post-secondary academic Libraries, as well as in municipal public libraries, thereby capturing most of our western society's citizens.

Creating a physical space to complement your virtual space

Cybraries have a critical problem that needs to be solved if they are to survive this transformation to a new model. Cybraries must find a way to complement their virtual presences with an attractive and valuable physical space. There will always need to be a physical space for our highly social species to interact and share their knowledge, as we have since the days of the Library of Alexandria. Cybraries need not prioritize their physical spaces anymore to the housing, display and organization of their collections. Physical resources can be stored in automatic systems that control the integrity of the organization, controlled by RFID chips and preserved in controlled climates. Of course these resources would be best circulated by digitization and online distribution, but many original works should be kept and preserved, providing an original if anything should happen to the digital copies. The ancient past-time of 'browsing the stacks' to look for materials not

necessarily found in an electronic catalog search can be achieved with digital browsing of the books catalogued nearby and presented in a visual format for patrons to find that serendipitous resource they may not have been able to find based on keyword searches (Demas, 2005). Physical spaces in Cybraries should be prioritized into meeting spaces, quiet zones for patrons to read and explore the digital catalog, and media rooms for patrons to watch, listen, and experience virtual simulations (Frischer, 2005). Also important for physical space design is access to real Librarians, who can help patrons search, select and utilize materials. As discussed by Kenneth Arnold in "The Electronic Librarian is a Verb/The Electronic Library is not a Sentence", Librarians can be information mavens, navigating the way for patrons to access information, both in person and online (Arnold, 1995). The Cybrary can evolve its physical presence to be more of a social community information center, a place for all citizens to access the digital and analog world.

Community building online

Another way Cybraries can expand access to citizens is by building up their presence online through community applications. Cybraries can include many innovations from the private information sector, namely Google and Amazon, by allowing patrons to rate their books, discuss books with other patrons online, participate in discussion forums, share media with their Cybrary and allowing community members to publish and contribute to their Cybrary's collections. By building relationships online with their patrons, Cybraries can further reinforce their important role as an information institution in our society, building upon the recent developments in community and collaborative Web 2.0 technologies. Communities will interact between the digital and the physical, implementing an interface between the two which will increasingly become blurred. Already Libraries and Librarians are providing virtual reference desks and catalog access through Second Life, allowing patrons to interact with the Library purely in the Cyber landscape. Stephen Abrams has explored the Second Life "Info Island" and found "more than 400 Librarians" in his article "Future School Libraries: A Third Presence in Second Life" (Abrams, 2007, p.20).

Libraries claiming the publishing and distribution of knowledge and ideas

Another important role that Cybraries can create through this evolutionary process is to claim the publishing role of the community they serve. Academic Libraries in the post-secondary world are positioned in a very strategic way to leverage these new collaborative technologies by bringing together the professional academic community in sharing, peer evaluating, and publishing collections of articles. In this new journal model there could be an increase in access and return of the knowledge to the wider community in a more democratic and open way. John Willinsky explores this topic greatly in "The Scholary Wing of the Public Cybrary and the Right to Know" as does Alex Byrne in "Digital Libraries: Can we deliver them without Open Access?". The distribution of collected knowledge and information has always been the ideal goal of any Library, and the Cybrary has an opportunity to expand their services by managing this important academic institution of peer-reviewed and selected articles.

New content management systems, integrated with cataloguing software can enable Cybraries to easily publish professional articles. Cybraries can also organize peer-reviewers, and create a 'prestige' collection that would protect the integrity of the academic community by ensuring only the best and most vetted articles are marketed and promoted through great Cybrary "Collections". These collections can replace the traditional private Journal organizations. The effect of this dramatic new model would be very disruptive to the current hegemonic system, and will illicit a strong counter-response. As John Willinsky explores in "The Scholarly Wing of the Public Cybrary and the Right to Know", the larger public community should have free access to this knowledge and understanding in order to further progress and develop our societies (Willinsky, 2006). When the academic community is creating these works and peer-evaluating each other's works, but not publishing their own works, they are giving up a key piece of control to an outside organization. Why not claim control by using tools previously not available? The traditional model of peer-reviewed Journals served a very important role in the past, but similar to stacks of books, this model no longer meets the needs of the patrons and the communities they serve. It is time to evolve and

adapt to a world where distribution is the easiest aspect of the process, and tools exist to self-organize and peer-review shared works.

Looking forward: a complete index of all the books

The future direction of these evolutions and adaptations is focused on a complete universal access, union catalog of all books, articles, websites, media and information in our digital world, organized by extensive and elaborate meta-information (Lynch, 2005). This goal is a massive and seemingly impossible task, attempting the same goals of the ancient Library of Alexandria. There are many competing visions of how this could best be achieved and the most prolific and successful thus far is the Google Book Search initiative. Google is rapidly scanning the books at some of the United States 'Great' Libraries. Their aim is to provide an index for all these scanned books that would be implemented into the main Google search. When a user searches for a keyword they will not only find all web-based resources, but also any books and articles that might also satisfy the user's search request. Cybraries and Cybrarians are essential to this process to ensure that this index is built in a fair, democratic, open and robust way. Competing visions for this master index of all the books on the Internet are being built by groups such as the Open Content Alliance (http://www.opencontentalliance.org/). This group wants to achieve the same goal as Google, but to make their index available to all search engines and all possible patrons. They want this ultimate research tool to be owned, organized and created by the greater public community, to ensure access and protection for all posterity.

Summary

As we look forward to the future of Libraries, it is very useful to also look in our rear-view mirror to see where we have come. The intrinsic value and goals of Libraries have not changed at all since the Ancient Library of Alexandria, but the models, tools, and impact have changed dramatically. Cybraries have a unique opportunity to redefine themselves in new ways, while still achieving their most important roles of collectors, organizers, evaluators, preservers and navigators.

There are challenges from other institutions and organizations within our modern civilizations, namely Google Book Search, which may work with Libraries and publishers to achieve the holy grail of a master index of all books, articles, media and information, but this, cannot be counted upon. It is put upon the Libraries of today to discuss and model the new visions of Cybraries and information management; to evolve and adapt in a way that meets the needs of their patrons, while preserving the historical role which Libraries have always held.

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