

# Technology Trends and Libraries: So many opportunities

In the current environment where computers are almost ubiquitously connected to each other and people's expectations regarding access to data and information are increasing, the opportunities for the library profession abound. The challenge lies in learning how to apply them in a networked environment.

## Trends

Computer trends are identified by abstracting new techniques at least one level out. It is not about the iPhone as much as it is about mobile computing. It is not about hybrid automobiles as much as it is about fuel efficiency and going green. It is not about implementing Web servers as much as it is about hyper-linking documents. It is not about implementing Web 2.0 techniques as much as it is about interactive Web content. It is not about XML, RDF, and linked data, as much as it is about exploiting the Internet and allowing data to flow freely. With this in mind, below are a few trends from one person's perspective.

The size of digestible pieces of information is getting smaller. A book-sized piece of information is not the norm. Instead, it is about getting an answer, verifying what I already know, finding it now through my browser, and increasingly on my cell phone.

There are growth opportunities in mobile computing. In the restaurant. In the grocery store. In the coffee shop. Wherever you may be located at any particular time. This goes hand-in-hand with convenience. If it is not easy, then people don't want to do it.

Content is increasingly "born digital". With the characteristic comes all of the benefits of digital content without the weaknesses of printed materials.

The Semantic Web is more of a reality than we are willing to acknowledge. If content is described in standardized, well-agreed upon, widely-adopted forms – such as linked data – then it is easy for computers to traverse this information, to identify relationships (similarities and differences) much faster and more thoroughly than a human can. I didn't say this process was "better" or more authoritative, just bigger and closer to complete. In such an environment, the relationships that seem the most common and the relationships that don't seem

to exist are the ones most deserving of our consideration.

The ground-breaking technologies of librarianship have been transformed/replaced by other technologies. Examples include: MARC and XML, MARC8 and Unicode, Z39.50 and OpenSearch, printed thesauri and SKOS, LCSH (and all the other controlled vocabularies) and tagging/statistical analysis combinations.

Search is seen as more important than browse. This is probably because the size of collections are too large. There are too many atomistic items, and they don't fit very well onto a computer screen, let alone a mobile screen. High precision/recall ratios are not as important as relevance ranked search results. It is not so important to get "all" of the documents, just a few – the ones I need to satisfy my problem at hand. Only a tiny, very tiny minority of the people involved in information seeking behavior need/require comprehensive search results.

The wisdom of the crowds is often times just as good the authority of experts. Think Wikipedia. Such a thing is possible in an environment of the Web, a place where de-centralization is the norm. Other examples include the flowering of open source software or the advantages of blogging and open access publishing compared to traditional journalism and peer review.

## Challenges

The challenge of the times is to not lose sight of the bigger goals, to miss the forest from the trees. Put another way, it is not so much the what of libraries that needs to change, but rather the how. The profession's core principles are just as important, if not more important considering the current environment.

Our profession is in a difficult position because we are trying to serve two masters at the same time, follow two different paths to get to the same place, facilitate two methods to our madness. One of these paths is more traditional and deals with books, journals, physical spaces, and people asking questions at reference desks. The other path is digital in almost every way. Ebooks and ejournals. Second Life and online courses. Email and online chat. Unfortunately, we are trying to do all of these things with the resources – time, people, money, and expertise – required do barely do one of them justice. This causes tension, conflict, and imbalance.

The core principles of librarianship have a much longer-lasting utility than technological trends, but we must remember that these principles are not necessary public goods. It is entirely possible for other institutions to fulfill the functions of libraries. If the products and services that libraries provide do not match up with the expectations of the people who fund us, then the profession is doomed to the way of the blacksmith.

Granted, these things aren't going to happen overnight, but the environment is changing quicker than we are adapting. We as a profession we must make a concerted effort to do be keenly observant of the changes going on around us, spend time doing applied research & development, innovate, and share our experiences with others. This is the challenge of our time.

## Opportunities

There are so many ways we can apply our trade to the current environment. They are almost limitless. The amount of information available to us these days is greater than ever before. Much of it is free and exists for the taking. Open access journal articles, content from pre-print servers, content from institutional repositories, data sets, mailing list archives, blog postings, scanned books from the Internet Archive, United States government documents, locally digitized materials. Figure out ways to systematically collect these materials and bring them into your collections. Co-operate with your peers and/or your complimentary institutions so you can focus on your particular needs but have the long tail supplemented by your fellow institutions.

Once collected, spend time systematically organizing and describing it. Instead of relying solely on MARC, AACR2, and LCSH, use XML, crowd-sourcing, and statistical analysis to describe your collections. (Think of OCLC's shared cataloging practices as forerunners of crowd sourcing materials.)

Provide access to your collections by indexing the full text of your materials supplemented by the metadata created from the organization process. Provide relevance ranking of materials based on not only statistical probability, but also on the characteristics of your users. Bring works to user's attention by learning about your users and finding the things they want. It is more than just subjects. Provide this access

through the mediums they expect. Computers. 'Cell phones. Print-on-demand services.

For extra credit, go beyond simply providing materials. In addition provide sets of tools allowing your clientele to use the documents they find. Put them into a spreadsheet and create a graph. Dump them into a computer program and create a word cloud. Apply sets of well-established names or terms to document to make it easier to extract key piece of information. Provide access to a summarizer. Illustrate results. Provide a way to annotate texts, share the annotations, and discuss them with sets of other readers. Allow them to take data sets and analyze them in new and different ways.

Libraries are not warehouses of data and information, as much as they are gateways to learning and knowledge. In the past these gateways have been facilitated through the delivery of books and journal articles. The Internet provides this functionality now, better than a library does currently. In order to remain relevant libraries must evolve into something else, something that builds on the past, not clings to it like a comfortable sweater. Libraries need to meet the expectations of their supporters. They live and work with their funding; they are not as much of a necessary public good as they used to be. The process is not difficult. It simply takes a conscience effort – the ability to make a choice.

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