

## Technology and the Future of Libraries

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### ABSTRACT

The communities served by marine science libraries and information centers are on the leading edge of change, research and experimentation. Information is the foundation of their work, and it must be up-to-date, pertinent and immediate. Are we using technology to our advantage to deliver what our clients need? Will our diminishing resource levels and the tremendous costs of technological change allow us to enhance and improve our user services? Towards which "new" technologies should we be directing our energies? In the technological race are we neglecting our traditional professional talents — reference skills, collection development and management expertise?

The concerns which I want to share with you centre on technology in our libraries. As I look around my own library, I see telephones, photocopiers, computer workstations, telefacsimiles, electronic mail terminals, microform reader/printers, and the newest kid on the block, CD ROM machines. Technology is multiplying in our libraries, and, at times, seems to be overwhelming in its rapid change and complexity.

Change does not always come easily to libraries - a major revolution took place in the early 1900s when the typewriter was introduced. At that time, one of the prerequisites of graduation from library school was a proper "library hand" — a clear, legible writing style used on the hand-written public catalogue cards. Many librarians prided themselves on their "library hand," and clear penmanship was a kind of library art form. A qualification once prized was eliminated overnight with the introduction of the typewriter. To replace an art form with a mechanical printing device which made every letter in an identical way was heresy indeed! Dispositions were written about this fall from grace. Articles appeared detailing the inefficiencies of the typewriter; since few library workers had experience in typing, it took longer to type the cards than to write them out in long-hand. When you are next in an older library (one that still has a card catalogue), flip through the cards—you may find a now rare, hand-written catalogue card, a rose among thorns, which, although beautiful in its penmanship, may be somewhat difficult to read. We can look back on this transition in libraries with a smile—time heals many wounds.

There are many changes overtaking libraries—the computerized integrated systems, the telefacsimile of journal articles, independent database searching by users, the transition from print and on-line reference tools to CD ROM. Will we in the library community look back on these changes in eighty years time with a smile, or, a chilling thought, will there be a library community to look back?

C.S. Lewis said that the future is "something everyone reaches at the rate of sixty minutes an hour, whatever he does, whoever he is."<sup>1</sup> About twenty years ago we went through a "paperless society" phase, during which it was predicted that most print materials would be converted to microform, creating the paperless office. This caused quite a stir with librarians, who tried to equip their libraries with the latest in microform technology. The prediction never eventuated, for various practical reasons, including the fact that industry focused on microform production technology and virtually ignored the end user and the endurance of human eyesight.

The 1990s trend will be towards information represented in non-print form (i.e. through electronic means). As we are aware, costs of print-on-paper information continue to escalate. Scientific journals are pricing themselves beyond the resources of many subscribers. As library budgets remain static, our purchase power decreases with inflation. This in turn necessitates cancellations, and for publishers a vicious circle is created, since fewer subscribers mean price increases per subscription to cover costs even though the customer base is shrinking. "It is just not economically feasible to sustain a print-on-paper publication unless an extremely large market can be reasonably assured..."<sup>2</sup> Because of this, publishers will consider beginning new journals in the 1990s in electronic form only to avoid high print-on-paper costs. With more office computers available, scientists (and others) will have direct access to full-text data. Since many researchers now compose and edit their papers by electronic means, the transmission and even publishing of journals will be possible without print interference. Computer conferencing, the paperless office and electronic mail all emphasize electronics rather than paper.

One professional has said, "In the 1970s most on-line searches were mediated searches conducted by librarians or other information specialists on behalf of the ultimate users. By 1985, however, the wider accessibility of terminals, together with the greatly increased demand for on-line searches...had produced a change in this pattern of use – more and more scientists, social scientists and other professionals were using on-line systems directly."<sup>3</sup>

Another has stated, "...changes have continued in the social, technical and professional contexts in which we work. Widespread ownership of personal computers, cheap computer communications devices and the continuing fall in the costs of computer memory (e.g., CD ROMs, WORMs and the variety of videodiscs about to be launched) already provide a growing section of the community with access to a vast range of information (an increasing proportion of it full-text) outside the library. There is increasing community acceptance of computer access to much technical information for reference purposes, although computer screens remain as unpopular as microfiche readers for prolonged reading."<sup>4</sup>

The more information I gathered about technology in libraries and the more I read in the literature, the more concerned I became about the future of libraries as we now know them. In a book entitled *The Role of the Library in an Electronic Society*, the authors predicted that changes in the 1980s and 1990s would alter libraries as we know them today. The trends they described included a switch from card to on-line data base searching, the development of multisource catalogues (i.e., union catalogues on-line), the virtual disappearance of the concept of main entries, the increase in importance of subject and concept cataloguing, the decline in volume of acquisition activity, the increase in shared cataloguing through on-line cataloguing services (and with this, the decline in size of cataloguing departments in the technical services function), widespread cancellation of printed subscriptions in favour of on-line full-text services, and a decline in inter-library loan traffic due to the availability of full-text material on-line – inter-library loans being restricted to older books, reports and journals.<sup>5</sup> Although some of these forecasts seem exaggerated, others have already happened in our libraries.

In my own library, we have examined carefully our reference collections, specifically our indexes and abstracts, with the idea of cancelling our print copies in favour of on-line use of the same reference tools. More and more libraries will have "an increasing portion of the budget allocated to the purchase of on-line access to information sources when needed, at the expense of outright purchase."<sup>6</sup> The strategy is that since we have no need to second guess demand levels, we can avoid investing in materials that are rarely used, must be processed and take up valuable shelf space.

In my view, librarians will continue to play a role as intermediary between the user and on-line data bases. Little progress has been made towards standardizing search procedures among data bases or in advancing natural language interrogation. On-line access continues as well as to be costly, especially for the inexperienced searcher. Although some users have expressed an interest in performing their own on-line searching, most researchers prefer to have the searching handled by the library professionals who are expert in this area.

However, the development and increasing popularity of CD ROM technology have resulted in a new direction of library user independence. Researchers like the idea of using CD ROM products for information

searching. Librarians have written simple self-help manuals, and data-base vendors provide instructions for the use of their products. A researcher can perform searches at his leisure, at any time the library's CD ROM machine is accessible, and his searches need no time limitations.

"Add-ons" like CD ROMs seem to enhance services of the library, but are not an integral part of the service. My concern is not with technology *per se*, but with how new technologies are being integrated into our libraries. We all learned early on in the automation game that it was not enough to simply automate old methods and procedures. The entire process had to be analysed to determine how to best use automation to our advantage. We are failing to do this with our new technologies.

Librarians are becoming "techies"—forced by new pressures into analysing, interpreting, installing, running, explaining, and repairing machines in a library environment. This is too much for a regular library staff. It can perhaps be accomplished if you have the luxury of a dedicated systems librarian.

We are neglecting our grass root service. CD ROM is a good example of this neglect. CD ROM, as mentioned earlier, is attractive for users. It is new, experimental and self-sufficient. It is immediately attractive for the library staff because work loads are heavy, and CD ROM provides an aspect of reference service which users can do themselves. But is it good sound library practice? It introduces library users to a new technology which seems to be an up and coming trend in information provision. CD ROM technology may play an integral part not only in data base presentation from commercial vendors (like ASFA), but also possibly in accessing our library catalogues and union list catalogues in the future. There is a real possibility that many library catalogues will take the form of compact discs in the future, so we are indoctrinating our users into a new collections access methodology. We are learning about this new technology ourselves by experimentation with new products. We are helping database vendors improve their products by constructively criticizing software, ease of use and practicality of client use of their products. New technologies help us (or force us) to analyse effectively the procedures we use in reference services to help clients access information—do we use verbal instruction or write a simple step by step guide to CD ROM use? Which is more efficient and effective? We like being on the leading edge of technology. It enhances our jobs and our profession. To introduce our researchers to a new piece of technology (such as CD ROM machines), if done in an effective manner, increases our stature in their eyes and increases the prominence of the library in their programs. All of these factors are qualitative enhancements to our jobs and very important in a world where negative criticism has such a greater impact than positive feedback.

In times of scarce resources and threatening cutbacks, we must use every advantage to its fullest potential. We must not let new technological services substitute for traditional library services. For example, de-emphasizing the importance of complete reference services because new CD ROM technology makes information retrieval self-sufficient is a mistake. Users may not be aware of the multiple sources we normally would use in the answering of a reference query. "Not only do end users have a limited knowledge of retrieving information, but they often do not know how to delimit or judge the lists of citations... In terms of precision and recall, there is a real question about the effectiveness of information retrieval in the end user context."<sup>7</sup> The real danger is that users are not aware, literally, of what they are missing. They think that they have done a complete search when, in fact, they have explored only a fraction of the potential information available to them.

I want to leave you with the wise comments of John Cotton Dana, who was the first president of the Special Libraries Association and was speaking in 1907 about librarians and the future: "I have not attempted to say definitely how the librarian of the future will adapt his practice to new conditions. I have tried only to make it quite clear that the wise librarian will keep his mental manners plastic and his professional methods flexible... After an enthusiasm born of love of the calling, the one most essential attribute of the librarian, if he would be forever helpful and never an obstacle, is a profound belief that the end is not yet, that new conditions arise daily, and that they can be wisely met only after a confession of ignorance, a surrender of all doctrine, and careful and unprejudiced observations."<sup>8</sup>

## REFERENCES

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