

Research Libraries' Costs of Doing Business (and Strategies for Avoiding Them)

With today's relatively flat budgets, research libraries are finding their buying power further diminished by the hyperinflationary costs of library materials. Yet technology innovation, coupled with organizational restructuring, is enabling libraries not only to provide more high-quality information services but also to achieve unparalleled efficiencies in the way they do business. Money from the costs avoided is being invested in new collections and services. For example, we estimate that through their close collaboration, the eleven university libraries of the University of California (UC) annually achieve a 30 percent efficiency by avoiding at least \$80 million in costs on a total combined budget of approximately \$240 million.¹

How long this strategy will continue to succeed depends on what further efficiencies libraries can find and on what new pressures are placed on their budgets. Looking forward, I find it hard to be optimistic:

- The cost of library materials continues to rise. Between 1986 and 2002, the price of scholarly journals grew 257 percent; the consumer price index increased only 57 percent during the same period.² In 2002, research libraries spent one-third of their collection budgets on roughly the same number of journal titles that they had acquired in 1986. Given the growth in the number of available titles, libraries today spend ever more on a declining portion of the world's scholarly journal literature. The cynic might say that the lion's share of the costs that li-

braries have avoided in this period is being channeled into the journal publishers' coffers.

- The penetration of the Internet into all aspects of everyday life creates other pressures. Library users' expectations for online information services rise continuously and are shaped by the instant gratification these users get from America Online, Amazon.com, and Google. Such services are not trivial to develop, let alone maintain. Implementing them within a research library can stretch the library beyond capacity. According to a 2002 survey of the Digital Library Federation's members, the average digital library at that time had between six and ten full-time staff.³
- Research libraries are also forced to deal with information in a growing number of digital formats. Can a research library with historic collection strengths in Nordic studies and U.S. state and federal government information, for example, continue to stake claims to preeminence without keeping its collections current and thus tackling the Nordic Web and the 65 percent of government publications that are currently produced exclusively in electronic form? The answer is no. Unless the library wants to become a book museum, it requires information stewardship skills and technologies that are probably not understood, let alone available.

These pressures saddle libraries with new costs and force them to seek new efficiencies, many through technology innovation. A few areas look promising.

Data collected recently by UC libraries suggest that where information is available in both print and digital formats, faculty and students prefer digital by an order of magnitude.⁴ This preference coincides with a reticence to give up on print altogether, however, since online journals are not always complete and sometimes provide inadequate image resolution. Given these evolving preferences, libraries can reduce expenditure on those materials that exist in two formats. Leveraging their consortial approach to journal licensing, for example, the UC libraries have acquired a single print copy of online journal titles supplied by selected publishers. Trust in the continued existence of the archive and in its availability to scholars who need it has enabled the libraries to cancel redundant print subscriptions. In 2004, the libraries saved \$1.8 million on print subscriptions for Elsevier journals alone.

Cost avoidance on an even greater scale is available for legacy print holdings that are accessible online. JSTOR comprises online back-runs for some 400 scholarly journals. The UC libraries possess, on average, seven copies for each of the 23,000 volumes in the JSTOR collection. A single print archive could be assembled from the UC libraries' current holdings for around \$550,000. By eliminating their duplicate copies, the libraries could then save up to \$5.3 million a year in the capital cost of shelving.

Such economies can be achieved with only some print materials, for example:

- Serial publications available in both print and digital formats
- New monographs that can be acquired

in a coordinated fashion to support specialist needs, for example with foreign language materials

Still, these economies are available and will be significant. To achieve them, research libraries will have to re-engineer their technology infrastructure. Despite the wealth of bibliographic services available, none provide the detailed holdings information necessary to compile comprehensive print archives from existing serial collections. The coordinated acquisition of new materials, in the meantime, requires a service through which campus



bibliographers can disclose, and work collectively to fulfill, shared acquisitions needs. While requiring essentially new platforms, these services will also have to interoperate seamlessly with existing ones, notably union- and campus-based online catalogs, to take advantage of their rich bibliographic data. In this regard, they both anticipate and require the development of the next generation of bibliographic systems. This generation will renounce highly centralized, multipurpose cataloging engines in favor of distributed, yet deeply interoperable, systems that perform specific lightweight functions. The new technology environment will require rigorous adherence to standards and protocols that are not yet available and to systems that are not likely to emerge, in the short run, from the in-

dustry. In forty years, the library community has not confronted a retooling requirement so large, so complex, and ultimately, so expensive.

The cost of new services can also be reduced, if not avoided. Several years of user-needs analyses tell us that Google-like interfaces for information relevant to particular research or teaching needs are in high demand. The problem is that research and teaching needs vary across disciplines and, for individuals, across time. The challenge is to build tools that enable the ready development of highly configured search interfaces. The approach adopted at UC is a layered one. The California Digital Library (CDL) is creating a suite of tools that campus library staff will use to build online portals serving specific user communities. With these tools, campus library staff will also be able to integrate information resources that are available globally (e.g., via the World Wide Web), regionally (e.g., via the online collections that the libraries license consortially), and locally (e.g., via the campus library collections) and to tailor user interfaces so that they integrate appropriately with local online environments. The service model is hardly new—it mimics the model characteristic of any utility provider. It drives infrastructural costs down by spending once and sharing widely. The model is entirely new for libraries, however, and requires them to relinquish reliance on systems that are independently developed and locally controlled. It demands a new degree of collaboration and trust, as well as a new generation of technologies.

The same service model is being used to develop a digital archival repository. Research libraries must begin to act as stewards of electronic scholarly and cultural heritage lest it be lost to the academy and society at large. Yet not every research library should have to bear the cost of building the necessary infrastructure. At UC, the libraries are building a single, common digital preservation infrastructure. The CDL will use it to manage digital assets acquired on a systemwide basis. Campus libraries will use it to manage digital assets in which they take a unique local interest. The model enables the libraries to cost-effectively meet what is perhaps the greatest chal-

lenge they will confront in the coming decade. It also makes sense in an extensively distributed networked environment, where locally managed curatorial applications (e.g., ones that enable libraries to select, document, and manage access to digital information assets) can be layered on top of centrally managed utilities (e.g., ones that ensure the integrity of bits without regard to how they are acquired or how they may be used in the future or to whom they may belong).

By building selected print collections in a shared manner and by putting in place utilities that support the cost-effective development of local digital library services, the UC libraries seek to avoid costs amounting to another \$30–\$50 million a year. Will such savings support all of the new demands that are being made of libraries? If the money is simply eaten away by unmitigated steep increases in the price of library materials, the answer is no. Changing the unsustainable economics of scholarly publishing remains a key to the future of research libraries—indeed, to the continued ability of colleges and universities to provide faculty and researchers with the access they need to the world's scholarly knowledge.⁵

Notes

1. See University of California University Libraries and the Office of Systemwide Library Planning, *Systemwide Strategic Directions for Libraries and Scholarly Information at the University of California* (Oakland: University of California, 2004), <http://libraries.universityofcalifornia.edu/planning/library_strategy.pdf>.
2. Data from the Association of Research Libraries: <http://www.arl.org/stats/arlstat/graphs/2003/graph2_03.xls>.
3. See Daniel Greenstein and Suzanne E. Thorin, *The Digital Library: A Biography* (Washington, D.C.: CLIR, 2002), <<http://www.clir.org/pubs/abstract/pub109abst.html>>.
4. See Brian E. C. Schottlaender et al., "Collection Management Strategies in a Digital Environment," a project of the Collection Management Initiative, University of California, Office of the President, Office of Systemwide Library Planning, 2004, <<http://www.ucop.edu/cmi/finalreport/index.html>>.
5. See Daniel Greenstein, "Not So Quiet on a Western Front," *Nature* (May 28, 2004), <<http://www.nature.com/nature/focus/accessdebate/23.html>>.

Daniel Greenstein is Associate Vice Provost, Scholarly Information, University of California, and University Librarian for Systemwide Library Planning and the California Digital Library.

