

INTEGRATING NEW TECHNOLOGY: RESEARCH LIBRARIES ENTER THE FUTURE*

By Barbara Graham

Abstract: *A new kind of revolution.* In the course of history, libraries and librarians have weathered many historical and social revolutions, but only the digital revolution will alter the way in which we work, define our collections, and serve our constituents. Librarians are familiar with challenges- among them the cost of journals and new books, currency fluctuations, deteriorating materials, and providing efficient intellectual access to collections. What lies ahead is a new generation of challenges, technology-driven, often requiring a steep learning curve. The old challenges remain as pressing as ever, but the tools in our hands are changing and we must learn to use them. Even as we shape tools, they are shaping us. The ongoing dynamic between librarians and information technology will lead to new roles for libraries and for librarians, new forms of collaboration with other institutions including publishers, and more sophisticated electronic and human interfaces with intellectual resources. Nevertheless - however engulfing the electronic future may appear to be - those of us in large research libraries must find ways to integrate the electronic future with the resources of the past.

Nothing new under the sun . . . except change and human adaptation

At a recent conference I heard a publisher speak to a hushed audience about the cataclysmic changes in our lives to be wrought by information technology. She concluded: "I suspect that as Adam and Eve left the Garden of Eden, Adam said to Eve: 'My dear, I think we are in a period of transition.' You know," the publisher reminded us, "change is nothing new!"

Perhaps even more remarkable than change itself is the human ability to respond by adapting and innovating. The social psychologist Shoshana Zuboff (1988) mused about the impact of social change resulting from technology: "Older sensibilities are lost to a kind of social amnesia, crowded out by our adaptations to the demands of changing times" (p. xi).

Many traditional social constructs.- communities, institutions, and organizations such as libraries.-are now caught in the web of change. We librarians must master the digital future while continuing to meet the responsibilities of our past.

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In fact, rapid change is not easily imposed on institutions that have evolved slowly, almost organically, with complex hierarchies.

The Harvard Library: strength in pluralism

The Harvard Library is sometimes perceived by those on the outside as a monolith.-a seamless, centralized archive. The reality is considerably more pluralistic. The Harvard Library is actually a library system of 90-plus units: a federation of significant scholarly collections, joined by the Harvard name and a commitment to excellence and service, but varying a great deal in how they interpret and carry out those responsibilities. Each of the many specialized collections aims to meet the present and future needs of a particular subset of scholars. This ever-changing and growing constellation of collections offers depth and breadth in a wide array of fields and languages. The Library with its many collections remains the single most important reason that Harvard continues to attract the finest scholars from around the world. In pluralism the Harvard Library has found strength, as each library unit has been free to devise the most effective means to serve its own unique constituency. While the Harvard Library neither is nor can be a model for the rest of the world, its experiences, current projects, and future plans may offer lessons for other libraries.

Decentralization promotes innovation

Research-library users are growing increasingly sophisticated in their use of digital resources. User sophistication leads to demand for new services. Harvard's federation of libraries, if you will, allows flexibility in the face of change. Innovative librarians are often free to experiment. And yet the ability to experiment and learn and innovate is not entirely serendipitous, a mere byproduct of organizational structure. As often happens in institutions with a long history, the Harvard Library is crisscrossed by informal and semi-formal lines of authority. An elaborate committee structure brings together librarians from all of Harvard's faculties to discuss and debate all the issues we face: from the next generation of client-server technology to professional recognition. Every year the makeup of all the committees changes somewhat; different topics rise to prominence; over time, librarians have their chance to be heard on the important issues facing the Library as a whole.

The University Library provides coordination and services

The Harvard Library system also has a formal coordinating body called the University Library, or HUL for short. The name is somewhat confusing, because HUL refers at the same time to the entire library system as well as to the

administrative body that coordinates it. The coordinating body is directed by Professor Sidney Verba, a distinguished political scientist. The University Library follows the principle of maximum local control while providing those services that can best be administered centrally. In fact, each faculty library is financially accountable to the dean of its own faculty, which complicates university-wide planning.

Individual initiative versus coordinated efforts

The University Library, as a central coordinating body charged with determining the course that best serves the overall library system, chooses its tasks with care. The HOLLIS¹ electronic catalog, now including over 6 million titles² and growing rapidly, is its most prominent service. As the library collections continue to grow beyond the capacity of library buildings to hold them, the offsite Harvard Depository has risen to international prominence as an aggressive preservation environment and a possible center for digital services in the future. The Harvard University Library Preservation Center has grown rapidly over the last decade as a programmatic response to deteriorating paper-based collections and the acquisition of increasingly ephemeral media.

As in many contemporary and decentralized organizations, the question of when to encourage individual actors to take the initiative and when to make decisions at the center is a critical factor in the University Library's long-term effectiveness and therefore success. Experimentation works well in this environment, but it is difficult to impose innovation. Even central decisions often require local consensus to be implemented effectively. For example, coordinated acquisition offerings do not correlate well with a decentralized federation.

A vision of the digital future

Despite the obstacles, the University Library has begun to frame a vision of the digital future. This future will include

- an electronic infrastructure integrated efficiently with the traditional print collections;
- more cooperative and collaborative efforts with other institutions and with the private sector;
- negotiations with producers and vendors of electronic information for

¹ HOLLIS is the acronym for the Harvard OnLine Library Information System

² The Harvard University Library system now holds over 13 million volumes and pamphlets exclusive of electronic, manuscript, and other special collections.

University-wide access to electronic resources, including access to archives of the materials;

- ownership of or access in perpetuity to master files of materials mined from the collections by electronic publishers;
- a commitment to preserving and archiving materials in electronic form--particularly those that we create ourselves--and the ability to refresh and migrate electronic materials as needed;
- enhanced electronic intellectual access (including both indexing and abstracting) to the vast and multi-disciplinary paper collections.

There are many possible paths to follow, but large research libraries like Harvard have compelling reasons to identify those we must follow to fulfill our mission. The key is useful and efficient information access. Without useful intellectual access, the value of the vast holdings of our libraries is diminished; but by exploiting new technologies judiciously, we hope to pyramid our intellectual capital.

At the recent Harvard College Library conference titled *Finding Common Ground: Creating a Library of the Future Without Diminishing the Library of the Past*, Clifford Lynch defined new territory for the library of the future. He argued that the Library's role should be to ensure the integrity of intellectual discussion for our new information-based global cultures. He described the challenge and burdens of archiving data as the "price for facilitating intellectual discourse." Lynch and others also discussed the Library's role in "quality filtering." As with print information, not all electronic information produced will be collected. By performing their traditional function of selection, research libraries will add value to the information culture.

Building the digital library, brick by virtual brick

Few if any of Harvard's librarians believe that the fully digital library will be a reality in our lifetimes. However, this is not to say progress in that direction is not being made. Within Harvard's mosaic of libraries, several initiatives exemplify the growing momentum. The projects listed below are a sample of those underway. They reflect a synergy among various Library concerns. For instance, preservation issues may prompt microfilming or digitization of texts, but the final product also enhances intellectual access. This is especially true when Harvard's local resources are uploaded to the great national library databases. In these cases, solving a local problem also benefits the world of scholarship. Access is also enhanced by substituting facsimiles for direct access to vulnerable materials that may be housed off-site in an ideal storage environment. Other projects create professional assessment tools or guides for the field. These timely collaborative

efforts demonstrate the value of inter- and intra-institutional cooperation. They realign organizations along new lines of mutual interest and need.

- First and foremost is the current Recon Project (short for "retrospective conversion"), a massive effort to place practically the entire Harvard Library (manual) catalog online in HOLLIS. The millions of records on HOLLIS represent the vast holdings of all Harvard's libraries, including film, images, print books, archival collections, and journals. It is already used to request books from our remote storage depository. Perhaps one day the material will also be delivered electronically. The expected completion date of the Recon project is December 1996. In addition, over 325,000 records of Chinese, Japanese, and Korean (CJK) bibliographic records in Roman alphabets and the vernacular will be converted to machine-readable form in the next five years. The records will be available in OCLC and RLIN and eventually the vernacular form will also be available in HOLLIS.

- The JSTOR or Journal Storage Project is a cooperative effort begun at another university. Funded through the W. Andrew Mellon Foundation, the backfiles of 10 core historical journals are being made available through the HOLLIS catalog.

- The Periodicals Contents Index is of particular interest to social scientists and humanists. This is a multifaceted example of a cooperative commercial venture to offer article- and issue-level access to hundreds of ceased and unindexed journals. Both the CD-ROM and magnetic tape editions are now available through the publisher. This immediate and efficient form of access has allowed the Library to free valuable shelf space in Cambridge by removing some of these volumes to remote storage 30 miles away while continuing to provide subject searching capability to scholars.

- The Environmental Sciences Library, a new interfaculty initiative, is a virtual effort at its best. It represents cooperation and resource-sharing among several different science and social-science disciplines at Harvard, technological innovation, and electronic links to the real world being studied.

- The visual database of Israeli posters created by the Judaica Division of Harvard's Widener Library is an elegant and efficient solution to the thorny preservation, access, and storage problems posed by a collection of well over 55,000 large posters. The posters themselves have been moved offsite to storage at the Harvard Depository.

- The Harvard Map Collection, after recent acquisitions of advanced and innovative software, has become a focal point on campus for scholars interested in Geodetic Information Systems. These include faculty from the Graduate Schools

of Design and Public Health, in addition to faculty in several departments within the Faculty of Arts & Sciences.

- Recently, through federal funding, an archive of the renowned 19th-century architect Henry Hobson Richardson was conserved and reproduced on microfilm. Intellectual control of and access to the digital files were established during filming. The database is searchable by visual attributes and is primed to merge with digital images should funding be secured to digitize the microfilm.
- The Harvard College Library appointed an Electronic Texts Librarian in Widener Library's Research Services division. This position has the primary goals of providing access to and making effective use of Widener's developing collection of electronic texts in the humanities.
- The Finding Aids Project is another example of inter-institutional collaboration to improve research access to special collections and archives. The effort to digitize finding aids by converting the manual record to electronic form will link these tools to bibliographic records and provide sophisticated and valuable information to national databases.
- The Digital White Paper. Recently several senior librarians at Harvard collaborated on a guide to selecting materials for digitization. Focusing on the key considerations as they are currently understood, the paper provides an overview of the technological, economic, organizational, and legal issues to be decided when preparing a project.

Digitization: the key to stewardship?

Books that crumble cannot be read; resources that are not easily located will not be used. Digitization is in its infancy as a preservation medium, but its promise is unmistakable. Digital information is reproducible and distributable. Considerable intellectual value can be added by linking one piece or bit of information to another.

At the same time digitization raises new problems. There is the overwhelming issue of archiving electronic information. For all their sophistication and potential, digital products are often less efficient than books. Most books are portable and require no energy source, no hardware, no software interface. Editions vary but are generally intelligible by readers. On the other hand, hardware, software, searching tools, and vocabularies change. Data that was viable a year ago may be difficult to retrieve and decipher today. Technology, for all its promise, offers a perplexing new set of issues.

Conclusion

As Zuboff notes, "Technology makes the world a new place" (*In the Age of the Smart Machine*, p. 388). At Harvard, the landscape will change but the Library's fundamental mission will remain the same. According to Sidney Verba, Director of the University Library and a leading social scientist,

There is no simple formula for [accomplishing our mission]. Nor will we get there with a single overarching grand plan. Technology is changing too rapidly and in unexpected directions for that. Rather we must address the problems with many plans and with flexibility.... We cannot control change but we can help to shape change—if we are actively engaged. And we learn by doing. If we are active in [new] developments ... we will be ready to take advantage of the emerging technologies. (S. Verba, *Harvard University Library Annual Report 1994-1995*, p. 8)

At Harvard, collection development and management, preservation, and public service librarians, as well as catalogers and systems analysts are assembling what may be called *integrated collections*.—including the traditional print resources of the past but with an eye to the future. At Harvard's recent conference *Finding Common Ground*, Walter Crawford of the Research Libraries Group pointed out that "People and their preferences do matter. Just because it is possible to communicate digitally does not mean that it will become the only way. Digital collections enrich libraries but do not make them digital libraries." Somewhat freed of old biases in terms of format, but with the same critical sense of what constitutes quality, selectors and public service staff are actively shaping a scholarly future of mixed media. Librarians will continue to mediate between information and scholars by seeking ways to add value to new intellectual tools, creating new relationships among materials, and choosing appropriate ways to preserve what came before.

Looking to the future also means looking beyond our own library walls. Cooperation is no longer a choice; it is a necessity. Research libraries will seek to realize more efficiencies and will be ever more conscious of the organizational and social contexts within which they must operate.

As research libraries enter the future, we must strive to be like the Roman god Janus, with one face turned to the past and one to the future.

References

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