From brick face to cyberspace

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This paper will discuss the library as a place, looking at the history of the library as a building or part of a building. It will briefly trace the development of health sciences libraries, enumerate standard sources for planning libraries, and consider whether or not the library as a place has a future.

The *Oxford English Dictionary (OED)* defines the word *library* as a "place set apart to contain books for reading, study or reference" [1]. An important word in that definition is *place*. At the present time and throughout history, the concept of a library as a "place" has been necessary for a library to fulfill its mission.

Today the *OED* definition of a library is too narrow. The library is more than a collection of books and a place to study. Although it may be set apart physically, it must now be linked to databases and other electronic information sources within the library and into the world. To the *OED* definition, we need to add the new functions that libraries have assumed, such as teaching, database searching, networking, and brokering.

Buildings and libraries are inextricably linked in our thinking. Libraries are places. For many, the first library experience as a child was in a Carnegie or other public library or the school library. College memories include the campus library as a central feature. Recall the hushed atmosphere of the traditional university library reading room—long oak tables with green-shaded lamps and high ceilings. Long hours of reading and study were spent in this seemingly consecrated place. Whether we think of the library as a hallowed hall for study, a source of knowledge, a center for discovery, or the hub of electronic connection and communication, we picture it as a place, a place where librarians facilitate learning. Despite a rapidly changing library environment, many librarians firmly believe that there is a future for libraries as places. Lucker declares, "I find it impossible to conceive of a time when there will not be a physical, tangible, usable entity with real books and real people inside" [2].

EARLY LIBRARIES

The earliest institutional libraries were built as parts of temples or monasteries. Manuscripts were preserved and copied for the few who could read—the educated and rich. The major purpose of early libraries was to preserve knowledge embodied in the written word, and, even though we sometimes lose sight of it, that is a major purpose of libraries today. From the first-known libraries in the temples of Egypt, the development of the libraries at Pergamum and Alexandria, and the rise of the Roman Empire to our own twentieth century, libraries have played a role in the culture. They have flourished, they have been destroyed, responding to the promise of scholarship or to the woes of war.

The first independent medical school was established at Salerno in the eleventh century. It had a small medical library. The first institutional medical libraries in the United States were established in the Pennsylvania Hospital in 1762 and the College of Physicians in Philadelphia in 1788. This was an era when physicians and scientists built their own personal libraries, following the pattern of scholars and the wealthy from earlier times. But, as medical education in this country grew and developed, so did the medical library. Hunt describes the development of the medical library in North America as a corollary to the "great expansion in medical literature and of higher standards applied both to medical schools and hospitals" [3]. Thirty-nine libraries were founded between 1850 and 1889 and two hundred more between 1900 and 1939. In 1943, thirty-six medical libraries, eight of them in the United States, had holdings of more than 100,000 volumes. The day when a personal library was adequate for a physician's need was definitely gone [4].

During the first half of the twentieth century, little was published in the health sciences library literature about building medical libraries. Before 1950, Fry and Adams identified eighteen articles and five news notes relating to library planning or architecture in the *Bulletin of the Medical Library Association*. Most were descriptions of individual libraries. The first of the four on planning a building was written in 1935 by Gilchrist, who suggested that the problem in medical library planning was not knowledge but "functional

knowledge" [5]. Indeed, function is the key to library planning. The monument-type library originally connected with a temple or cathedral functioned well as such but would not suit modern needs. Leighton and Weber, editing the second edition of Metcalf's classic *Planning Academic and Research Library Buildings*, list ten purposes of a library building, including the basic functions of housing collections and access tools; accommodation for readers; provision for staff and administration; and quarters for services such as photocopying, instruction, media, and computers [6].

ELEMENTS OF LIBRARY DESIGN

Although many of these functions are traditional in the library, changes in design and construction have dramatically improved library buildings. Among the most important are incandescent lighting, air-conditioning, modular building design, and fixed or core stacks.

Toombs points to the importance of the invention of the incandescent light bulb in the late nineteenth century. Prior to that, libraries had to be designed so as to capture natural light. We often think of reading rooms of the grand old public and academic libraries as symbols of the way libraries as places were supposed to be. However, there was practicality behind the symbolism: before electric lights and air-conditioning, this design was essential for maximum light and air circulation [7].

Even today, the best examples of library architecture have been designed to take advantage of natural light and the varieties of artificial lighting available. Librarians working with architects to design libraries must be familiar with the literature of lighting. It is important to provide the best lighting for individuals who spend many hours reading and studying. Poor lighting can be depressive and supermarket glare oppressive. Good natural light and full-spectrum fluorescent light can enhance the library.

A major improvement in library design was air-conditioning in the post–World War II era. It is not surprising that the first health sciences library to be air-conditioned was located in Georgia: the Fulton County Medical Society Library [8]. With temperature control came humidity control and filtered air. Together, they created a comfortable atmosphere for staff and readers and for the collection, furniture, and computer equipment. Careful humidity and temperature control is characteristically given great attention in the design of library space for rare books and not necessarily the attention that it deserves for other parts of the library.

Modular construction has been called the greatest innovation in library architecture since the electric light. The modular system, as opposed to a fixed-function design, is a building supported by columns placed at regular intervals. Space for functions or collections can be deployed as needs of the library change.

Flexibility is essential if the library building is to continue to be satisfactory for a long period of time. Modular design allows stacks and reading areas that flexibility. In the future, another kind of flexibility will be required. Buildings will have to have the kind of temperature and humidity control necessary for computers that is now found in rare-book vaults [9].

Along with modular construction came freestanding book stacks. Before modular design and electric lighting, libraries had to place readers where they could use natural light. Only the walls were weight bearing, so shelving had to be placed along the walls. With electric lighting and modular construction, readers and shelving could be integrated. Another innovation was the introduction of cast-iron multi-tiered book stacks that allowed the weight of books to be carried higher than one story. One of the first to use these stacks was the Bibliotheque Nationale in Paris, France.

The changes in construction to provide a building that allowed for the weight of compact shelving and for the ability to move and add stacks was revolutionary. Air-conditioning and well-lit stacks allowed the opening of the collection to readers and closed-stacks policies were relegated to the past.

Library architecture has come far since the turn of this century. The building and dedication of the National Library of Medicine in Bethesda, MD, elicited great excitement. Speaking at the dedication in 1961, Condit described the number of architectural events during the past century that converged in that building. He traced the evolution of building styles from the industrial age to the construction of the stacks for the Bibliotheque Nationale in Paris, the first time an element of the library was designed on the basis of function; from Billings' contributions to the design of the New York Public Library to the development of functional design. He makes this statement:

No public institution appears to have suffered as much as the library from a lag between need and condition, between the requirement of its users and its staff, and the immediate likelihood of satisfying them. The public or private library, whether it serves a community, a university, or the nation, seems to be chronically ill-housed and ill-fed: there is never enough space, enough light, a large enough staff and collection, and of course, enough money. There are social and historical reasons for this state of affairs. We usually treat our cultural institutions as unwanted step-children who must take second place to the demands of commerce and entertainment . . . [10].

Interest in health sciences library buildings was further stimulated by the Bloomquist report, "The Status and Needs of Medical School Libraries in the

United States," in 1963. He paints a gloomy picture of libraries at that time. Seventy percent of the buildings had been built more than ten years before; 50% more than thirty years earlier. Bloomquist characterized the libraries as crowded and dirty, with improper heating, ventilating, and lighting [11]. Among his recommendations was the call for federal matching funds for constructing, equipping and renovating medical school libraries. Two years later, a Joint Committee of the Association of American Medical Colleges and the Medical Library Association prepared "Guidelines for Medical School Libraries," with a detailed section on facilities. Again, all the functions of the library were identified and related to the development of the physical facilities. It is interesting to note that even thirty years ago, the committee recognized the need to consider the future by providing for the "utilization of machines, electronic communications, and other devices by providing space that is adequately sound-proofed and air-conditioned, and that has adequate floor load." The report goes on to recommend adequate electronic access with sufficient raceways to accommodate the necessary channels, adding that attempts to solve these problems by means of conduit soon may prove inadequate [12].

As urged by the Bloomquist report, federal construction grants did become a reality, and Wayne State University Medical School in Detroit was the first to receive a Public Health Service grant in 1968, awarded under the Medical Library Assistance Act. In 1971, Cummings and Corning reported that construction grants totaling more than eleven million dollars had been awarded to health-related institutions. This infusion of funding gave impetus to many new buildings and renovations during the next decade [13].

LITERATURE OF LIBRARY BUILDING

The library must fit into the realm of its parent institution—the medical school, the hospital, the society, or industry. That further cements the idea of the library as a building, a place within the whole. This concept is reflected in the literature about library buildings. Metcalf's *Planning Academic and Research Library Buildings*, published in 1965, became the standard in the field [14]. Both first and second editions are encyclopedic in scope. *Mason on Library Buildings* is different in approach [15]. He includes floorplans and illustrations of six libraries, including Harvard's Francis A. Countway Library of Medicine in Boston, Massachusetts, in addition to design issues. The *Handbook of Medical Library Practice* includes chapters on building health sciences libraries. Both Fry, in the third edition [16], and Hitt, in the fourth [17], give good overviews of the current thinking on health sciences library architecture and the useful literature for the time periods. Bastille's chapter on planning

the hospital library in *Hospital Library Management* remains the standard for hospital libraries [18]. Both *Library Journal* and the *Bulletin of the Medical Library Association* provide regular architecture issues that offer a wealth of information concerning specific topics and buildings of note. *Library Journal* has included architectural articles since 1882, and Cannons' *Bibliography of Library Economy* (1876–1920) has extensive listings of items on library building [19]. One of the most interesting was the *Second International Library Conference Proceedings (London)*, which included articles on library architecture from the architect's point of view and from the librarian's point of view [20].

Several authors, including Hitt, commented on the building design developed by Ralph Esterquest for the Countway Library of Medicine at Harvard. Hitt included Esterquest's table of contents in his chapter as an outline of the scope of this ninety-one-page document [21]. Throughout this literature, the library is defined as a place, one primarily designed to hold collections and readers. Again and again, these authors describe the life of a library as ten to twenty years before space is once again filled to capacity. Fremont Rider judged that research libraries would double in size every sixteen years. Based on that rate of growth, he predicted that the library at Yale University would contain some 200 million volumes by the year 2040 and that the catalog would occupy eight acres of floor space. His solution to this future dilemma was the microtext [22].

We tend to think today that technology is a recent event in the library, but Rider's suggestion in 1944 was not an isolated one. Vannevar Bush described the "Memex" as a way to access vast amounts of information in 1945 [23], and, in 1950, the "Doken" was described as a high-speed reading machine that could search the entire Library of Congress in ten seconds [24]. Surely these ideas were the forerunners of the "virtual" library that is popular today.

Librarians have always wrestled with the need to acquire and provide information and resources and at the same time live within an ever-shrinking space within the library. New libraries often seem empty, with eons of time before space becomes a problem, and are often mandated to give space to other departments or classrooms. This arrangement brings its own difficulties, ranging from traffic and security to the ultimate, often unpleasant task of evicting nonlibrary faculty and staff. But what of the future? Recent library buildings reflect the changing needs of our work and the demands of the electronic environment. Ludwig says that librarianship is made more, not less, important by technology. "Technology is reducing or eliminating unwanted, unnecessary human contact for the very purpose of increasing the efficacy of necessary contact." Librarians must be aware, he continues, of how "external environments

are changing and to develop the ability to perceive the opportunities (and threats) in change" [25].

LIBRARY OF THE FUTURE

Many definitions can be found for this library of the future, the digital library. At Case Western Reserve University Library in Cleveland, Ohio, the mission is changing to reflect a new capability of "informational technologies to accommodate new users at new levels." What this means and how "knowledge management" is bringing forth change will be discussed in the papers in the ensuing symposium [26].

Whatever it is called—library, learning center, digital or virtual library—the institution we know as a library will continue to be a place. It may include connections, linking, access, outreach, distance learning, and teaching as well as the books, journals, media, and databases that we know today. It will also be a place where students and readers can come to search for information or delve into the treasures of the past. It will be a place to read today's latest medical news or to sit and contemplate. It must continue to support biomedical scholarship and research. Librarians' work may be different, but they will be there to help users make the connections and assist them in learning. More than ever, it needs to be not only a place but the "center of learning place" of the institution.

The libraries of three prominent physicians, Harvey Cushing, Arnold C. Klebs, and John F. Fulton, were given to Yale University to create the Historical Library at the Yale Medical Library. In a letter to Fulton, Klebs writes of providing the Medical Library with a "humanistic department where that very spirit of searching inquiry into past thought and achievement . . . would be kept up for the benefit of future generations." He adds another sentence that perhaps sums up all that a health sciences library can be, whether brick or cyber: "It is simply and plainly a laboratory in which human thought on medicine like any other phenomenon becomes the subject of research" [27].

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