Those Who Use Should Choose:
Library Design Decision Making

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Much has been written recently about designing libraries for "new technologies" such as computerized electronic information retrieval, automated circulation systems, and telecommunications. Yet, in any effort to implement these advancements and other library facility improvements, it is important to consider *who* should determine the basic criteria for library design - *the individuals who use and staff these facilities*. Lack of proper attention to the needs of the individual can result in a facility confusing for patrons, with limited control, and reduced staff efficiency. Ultimately, consideration of these needs offers the best understanding of a library's function and facilitates space and fixture planning in designing a library.

New construction or renovation usually originates from one or more of the following needs: (l) additional collection space, (2) additional patron space, (3) change in an existing service, or (4) a new service. Whatever the motive, the above needs affect all elements of a library facility from shelving location, through patron and staff areas, to electrical and environmental control systems. Understanding each element's impact on patrons and staff will contribute to a successful final project.

Shelving:

Library shelving and its arrangement constitute one of the major decisions for a library project. The fact is that in most libraries shelving will occupy more space than any other item in the building. Determining a layout that will satisfy the staff, the public, and the physical demands of the building is no small task.

There are myriad factors to be considered in dealing with library shelving. Some of the more important considerations include: the impact of shelving heights on visual control of public areas; the suitability of shelving heights for intended user groups; the effect shelving will have on lighting; the weight of shelving in relation to the floor load capacity, an especially significant consideration when dealing with a multi-story building; the arrangement of shelving to facilitate use by the public and the staff as well as special user groups, such as the handicapped; the amount of storage capacity for books and other library materials; the adaptability of shelving for storing materials other than books; the use of shelving to demarcate distinct areas throughout the library.

Anyone embarking upon a library building project is advised to learn as much about library shelving as possible. The likelihood of designing a successful library building will hinge in large part on how well the designers (architects and librarians) understand library shelving.

Seating and Work Areas:

For general reading and relaxing, single seating in clustered arrangements is preferred. These clusters should be located within visual control of staff service desks. This is not to discount the importance of taking advantage of the occasional opportunity to position patrons in areas of the library offering attractive exterior viewing or seclusion. As a rule, as the seating becomes more secluded, limit groupings to four or less chairs. These low numbers usually prevent a remote location from becoming a gathering point conducive to objectionable behaviors.

Use of couches for seating is discouraged. Couches require more floor space, and inevitably will be used as wide single seats. They also invite use by those few patrons whose primary interest is horizontal relaxation (a common activity of vagrants).

Individual study areas, both carrels and desks, should be provided for patrons throughout the library, concentrated in areas supporting research and writing. A few single units can be successfully scattered around segments of a collection if visual control by staff can be maintained. These single units serve the patron whose research style requires frequent visits to stacks or requires the seclusion offered within a stack area.

Another important seating requirement is for small study groups. This usually translates into tables and chairs. For best control and uniformity, standardize this seating type using small tables with four chairs. Small tables provide utilization for single use, including any need to "spread out" resources; but will remain comfortable for two patrons forced to share accommodations in crowded conditions. Limiting study groups to a maximum of four patrons (within the library proper) provides manageable limits for staff. Larger groups should be directed to conference rooms where noise control is managed by the containment of the room itself.

Patron - Staff Interface:

From the patron's perspective, service desks must be located in consistent fashion throughout the library, easily accessible and recognizable as points of service. They should be located near the collection served and designed to meet the public's posture. Locating service points as the hub of a department from which indexes, seating, collections, machines, and equipment radiate helps to address the requirements of proper location, accessibility, and recognition. Designing for public posture relates to whether patrons are standing or sitting and for what length of time. Patrons who are standing will prefer desks with counter heights at 40"-42" (similar to bank teller windows). This is particularly important if the person served must write. Other operations such

as voter registration will be better served by desks matching office desk heights.

Recognizing that the multiple jobs of the staff must take place in a relatively small area and that each may relate to the others, staff concerns expand design criteria in several ways. Staff members must visually supervise the particular library area served by the desk, have convenient access to their operational "tools of the trade" (typewriter, computer terminals, security desensitizer, files, etc.), and have comfortable work areas for the duration of a normal work shift. Design decisions should be made to accommodate all of these activities with a minimum of staff movement.

Housing the librarians' operational tools has certainly become more challenging with recent technology advancements. The additions of computers, fax machines, and copiers mandate efficient work station layouts. When planning for counters, allow an extra 6" - 8" beyond the standard 20" - 24" widths usual for typewriters. In addition, provide adequate receptacles and computer cabling conduits. Also, consider aesthetics when accommodating the multiple wires and cables extending from this new equipment.

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Another staff concern about patron interface is recognition that during a typical work shift, staff may require spaces separated from patron access. These areas allow staff the privacy to complete many activities impossible with periodic or constant interruptions. Some of these areas, while creating privacy, must remain close enough geographically to allow staff members visual and audible contact with their service areas. Departmental layouts, technical services, mail rooms, staff work rooms, outreach services, and staff break areas that function without patron interface must be located outside the public's traffic and vision lines.

Support Areas:

As in other building types, library design requires an assortment of support spaces. Exit stairs, toilets, elevators, mechanical rooms, yard equipment storage, garages, and electrical rooms are necessary evils. Positions should be established for these spaces that do not fragment the library's program areas. From a staff perspective, spaces such as public toilets represent potential trouble spots. Entrances to restrooms or the corridors to their entrances should be visible by staff working service desks. Similar visual control is desirable for doors that are "exit only" to the exterior of the library. Audible alarms supplementing this visual control of these exits will raise staff's ability to minimize vandalism and theft of collection materials.

Special Cases:

Several conditions existing in library design merit special considerations. First are considerations for handicapped patrons and staff. The State of North Carolina has been a leader in the development of a handicapped accessibility code to address these persons' desires for accessing public (and private) services and resources. In general terms, this code provides an excellent resource for design criteria and implies automatic response by the architect.

The development of our handicapped code centers on the desire to provide access and services to handicapped individuals without calling attention to their limitation(s). In doing this we emphasize a "mainstream" approach for this segment of our population. For example, it is undesirable simply to provide a path for handicapped patrons from a parking lot into the library building when this path segregates or requires staff to escort these individuals. The preferred access is through the library's main public entrance. It is also important to provide access to the full range of library services. Access to fiction and not to non-fiction or reference would dilute the mainstreaming concept. Design decisions must be made consistently with the understanding that these patrons wish to function independently within the scope of normal library services.

Recent design philosophy is to diminish differences in detailing for handicapped patrons by integrating these details into the basic building elements. An example is an access ramp which, while primarily intended for handicapped access to a mid-floor level, incorporates a display gallery, thus suggesting its use by all patrons. This philosophy, termed "universal design," presents many interesting architectural possibilities and ultimately will better invite the handicapped patron into the library environment.

Accessibility issues must be extended to staff work areas as well, including cabinetry and furnishings. The issue of employment discrimination due to handicapped accessibility is real, particularly if spaces exist that are unavailable to potential employees who are disabled.

Separate spaces for age grouping is another area of special consideration for design. A space designed for a specific age group's use must possess what the intended user desires while offering a setting congruent with the library's function. For example, a children's room must be friendly and inviting, meeting a child's need to "take possession" of a space in order to use its resources. Color and texture can contribute to this friendly atmosphere along with fixtures sized for a child's stature. This room must be located easily within the library complex while being somewhat secluded from the remaining library for better noise control.

Another age group with particularly difficult design criteria is young adults. Their physical developments more closely match those of the adult; however, neither they nor most adults care to share the same spaces. Young adults frequently use a library's resources for school papers, leisure reading, listening to music, and computer use. A major consideration is the balance of privacy and spatial possession with the need for staff control and observation. Possibilities include positioning these areas some distance from the nearest staff control station (i.e., circulation desk, information desk, children's desk) but in direct view. For this age group a preference should be given to visual control. Also, consider that young adults may not locate in the spaces "designed" or acknowledged as young adult areas. They will migrate to the most comfortable area with little regard to design intent. This fact emphasizes the need for at least a minimum amount of control for every area of possible congregation within the library.

Multipurpose rooms for libraries offer other particular challenges in design. These spaces serve patrons in a large array of functions ranging from small discussion groups to large regional conferences; from movies to live concerts; from literacy classes to computer training. In a broad sense, these rooms should be designed rectilinear, with length to width ratios of less than 2:1. Walls must divide acoustically these areas from other library functions. Staff will appreciate locating supporting areas such as projection rooms, kitchens or kitchenettes, chair and table stor-

age, and perhaps a loading dock adjacent to these multipurpose areas for easy access.

Acoustics:

The classical view of the library is of quiet, where each patron sits silently reading a book and where all communications are brief and soft spoken. In contrast, the library will typically contain a full spectrum of sounds, including the expected quiet study, normal office communications, group discussions, large auditorium type productions, and screams of small children at active play. Important design decisions must be made to align comparable/compatible noise levels together. Where program and functions position incompatible groups together, buffers (aisles, stacks, or service desks) or barriers (walls or support areas) must be built and properly designed to minimize acoustic conflicts.

Flooring:

Floor finishes offer solutions to a number of library design and utility issues. With a careful analysis of product capabilities, the library's long term appearance and durability can be improved. For example, the use of hard tiles (i.e. ceramic tiles, quarry tiles, porcelain tiles) produce an almost virtual solution to conditions associated with high traffic or wet conditions. V.C. (vinyl composition) tile offers a low budget alternative to hard tiles and for the most part proves equally durable if traffic wear is a primary concern. However, the most popular library floor finish is carpeting. Carpets offer more acoustical compatibility while finishing spaces comfortably for extended periods of standing and walking, particularly important to patrons browsing stacks, staff hosting circulation desks, or staff re-shelving books

Carpet's major weakness becomes apparent if installed in areas where traffic generates heavy wear patterns. In such areas (around circulation desks, information desks, entries, exits, etc.), the use of carpet tiles has proven a very effective alternative. Carpet tiles are broad run carpet applied to a thick rubber mat and cut into 18" x 18" or 24"x 24" squares. The beauty of these "tiles" is in their ability to be replaced (or rotated) if traffic wear patterns begin to appear. Carpet tiles also offer a couple of bonuses which help justify their price premium. These tiles can be laid directly over "flat wiring" (wiring which can provide power, data, and communication), which allows desks to be located around receptacles, terminals, telephones, etc., anywhere within the area covered by these tiles. An additional advantage is the ability to create aesthetically interesting color patterns and borders. Used correctly, carpet tile patterns can assist in highlighting traffic lanes, defining departments and functional space groups, and providing intuitive directional patron circulation patterns within a library.

Lighting Design:

Library lighting problems create the need for a gamut of solutions. For the comfort and stamina of both staff and patrons, lighting should be matched to the various experiences encountered while using the library. Lighting levels are quantified objectives. Recommended lighting levels are available in various architectural and engineering design standards such as those published by the Illumination Engineering Society (IES). As a rule, corridors and stairways function with as little as 20 footcandles (fc) of light; reading areas and non-critical writing areas function at 50 fc; regular office areas and assembly areas can need as much as 100 fc; and detailed/inspection areas can demand 200 fc. The difficulty in designing lighting systems is in producing *comfortable* lighting. This effort is influenced by the combination of illumination level, reflection of light, contrast, and glare. A balance of each of these factors is paramount.

Lighting of stack and seating areas adds additional difficulty. In these areas it is important to provide even and adequate lighting without defining specific furnishing arrangements. As an example, lighting rigorously located between proposed shelf ranges permanently compose the shelving layout until a major renovation occurs. In contrast, a lighting pattern established along diagonals and with a pattern of evenly spaced fixtures will allow for various shelving layouts should program or collection size change.

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"Job specific" lighting is required in locations housing CRT's and lighted screen equipment such as computer terminals and microfilm/microfiche readers. The lighting in these areas must not reflect off the equipment screens. Fixtures controlled by dimmers provide the ability to properly balance light volumes, minimizing glare.

Other specialized lighting occurs at staff workstations. The term "task lighting" defines lighting design for these spaces. Lighting for such activities as research reading, filling out forms, checking out, and registering literally can be focused on the required task surface. For staff desks, task lighting is best handled as a component of desk furnishings. This method is successful

An effective display technique utilizes slat walls, commonly seen in department stores. The Caldwell County Public Library in Lenoir uses slat walls to display new books and videotapes. Photo: Jim McKee.

because it travels with staff workstations when rearrangement of office spaces occurs. Task lighting also works well in permanent areas where specific operations occur, such as a library's main circulation desk.

Lighting multipurpose areas requires a system which can produce a wide range of footcandles depending on user demands. Patrons using these areas may be watching performances (these require zero to 50 fc); participating in seminars (50 -100 fc); or quilting (150-100 fc) just to mention a few of the wide assortment of activities occurring in a library's multipurpose spaces.

During planning, the design possibilities using indirect lighting (lighting that reflects off other surfaces and diffused to task level) and natural lighting should be investigated, as well as the advantages of using different types of fixtures including incandescent, fluorescent, mercury vapor, metal halide, and high-pressure sodium. Recognize that each, while producing sufficient lighting, can also aid in creating various desirable moods and effects.

Mechanical Design:

Designing mechanical systems for libraries requires providing environmental control of space temperatures and humidity throughout the building within the limits that protect the building's contents from environmental extremes while supplying "creature comfort" for patrons and staff. Objectively this is easy to target.

— Human comfort is reached at 74°F (plus or minus 2°F) at 50 percent humidity (plus 10 percent)
— Books, paper materials, films and film media are protected within these same limits.
— Rare papers and special collections merit closer scrutiny.

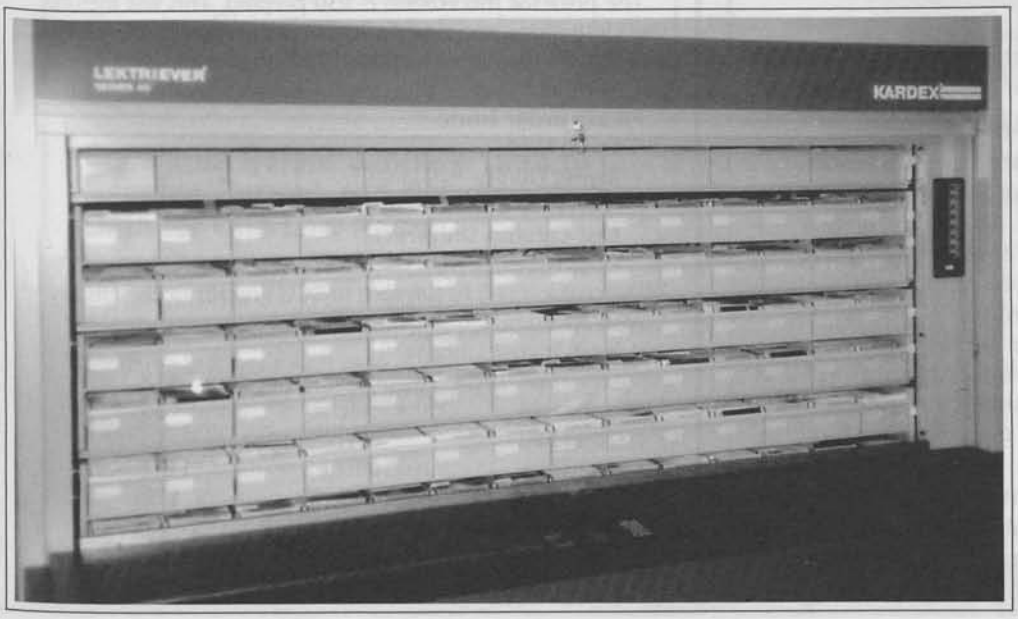
The difficulties arise in the subjective nature of providing creature comforts. Ironically, a mechanical design is one hundred percent successful if patrons and staff do not realize the system exists. In other words, the mechanical system operates invisibly.

Most patrons and staff will notice the following types of problems: (l) noise, (2) hot spots, cold spots or drafts, (3) humidity, and (4) service/maintenance access (staff concerns).

Noise problems can be attributed to delivering too much air through too small a duct system. Unfortunately, a designer's objective when minimizing cost is to move as much air through as little duct as possible before reaching the point of generating intolerable noise levels. Designers should be encouraged to provide a safer "margin of error" in controlling duct noise in areas where staff and patrons must talk, staff must concentrate, or where patrons must study. These would include circulation and reference desks, patron reading areas, and staff office areas. Stack areas, storage areas, toilets, corridors, and stairs are less crucial.

Location of cyclical and other heavy mechanical equipment should be positioned in mechanical rooms isolated from library program areas. This type of equipment not only makes noise, but is frequently the source of rhythmical noise; at best this is annoying and at worst it may set up reverberations that disturb the entire library.

Our answer to Blockbuster: Bookbuster! More and more public libraries are incorpating a "bookstore image" in their appearance, as seen here in the use of display shelving at the Cliffdale Branch Library in Fayetteville.



Microfilm and microfiche are both stored for ready retrieval in a Kardex Lektriever at the F. D. Bluford Library of North Carolina A & T University. The equipment "delivers" the desired file to the user, omitting the usual lengthy search among traditional storage units.

Photo: Alva Stewart.

Solutions (even in a general context) to hot spots, cold spots and drafts are more difficult to address. The design intent, of course, is to deliver air evenly over the entire library building. A multitude of factors complicates the design process. These factors include the building's own structural framing; numbers of people within a space; the level of physical activity; and the building's exposure to the sun. Shelving, an element peculiar to libraries, may hinder the efficiencies of an HVAC system's air distribution. Establishing even air patterns over tall ranges of shelves can be difficult.

Humidity can adversely affect a library's collections. Too much moisture contributes to mildew and fungus growth and too little moisture will overly dry pages and deteriorate glue. Specific dehumidification equipment will usually not be required. Dehumidification normally occurs during daily operations of normal heating and air conditioning systems. Basement and below grade areas will be more susceptible to moisture and consequently demand closer scrutiny in the design to determine if any specific dehumidification equipment is necessary. The addition of moisture when conditions become too dry will require the addition of humidification equipment to the basic HVAC system. The issues of moisture are more critical to collections than to patrons or staff, aside from person' with allergies.

Critical to staff will be the design of the HVAC system relative to system maintenance. This is an underrated and frequently forgotten issue in library design. The "out of sight, out of mind" principle applies if equipment is in inaccessible places, an acute problem for equipment that requires routine filter cleaning or changes to maintain efficient operation. At a minimum, staff should review the anticipated service requirements of any proposed HVAC system.

Conclusion:

There are numerous design issues to be decided during library building projects, all affecting patron and staff use of the facility. Many are at conflict, such as:

- — Quiet and relaxing study areas near areas that permit talking and activity;
- — Areas where children and young adults take possession of spaces while staff maintains control;
- — Control of library materials by staff while allowing and encouraging individual use without staff involvement;
- — Areas designed for specific use and intention while maintaining the flexibility necessary for an industry susceptible to change from advancing technologies.

All of these issues must be weighed during the design process with the needs of *the individuals who use and staff these facilities.* Thoughtful consideration of all of these elements will minimize the inevitable conflicts and will contribute to a successful library building endeavor.

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