Significant Developments in University Library Buildings

DONALD C. DAVIDSON

Distinct trends in the planning, construction, and architecture of university library buildings are identifiable as the twentieth century begins its final and apparently most affluent third. The first third was one of Gothic exteriors, books housed efficiently in seven foot six inch stack floors, readers typically seated in big, high-ceilinged, almost medieval reading rooms, and undermanned staffs. The middle third was one of depression, war, inflation, and arithmetical precision in securing and arranging library space (formulae in the securing and space standards in the arranging). Now the seventies, and perhaps the eighties and nineties, will build on the heritages of the collegiate Gothic, separate stack structure approach of the earlier third and of the loft or "modular" library buildings. A measure of boredom with the austerity of the loft became apparent during the later sixties.

Not only are complete new libraries being planned on the twin heritages of collegiate Gothic experience and of modular planning precision, but new increments are being added directly to earlier structures, perhaps in accordance with prior plans, or otherwise by modification of previous long-range plans. New structures are being designed for aging fixed settings with ingenuity and, occasionally, with dramatic excitement.

The great size of some additions to the library makes existing space a relatively picayunish factor in some cases. Some notable examples of the very large beginning anew are the Universities of Edinburgh, Chicago, Minnesota, New York, and Indiana. The decision whether or not to abandon is an agonizing one to be made after thorough study and analysis of a total situation.

Donald C. Davidson is University Librarian, University of California, Santa Barbara.

OCTOBER, 1969
Donald C. Davidson

The experience of various institutions in deciding whether to start anew or to add to an existing facility seems to point to the necessity for planning for even further expansion and internal flexibility in either case. Unpredictability of academic program, of the very nature (as well as rate of inflow) of materials and information in new guises, of the number and mix of future users, and of consequent service needs has been amply demonstrated in case after case—the newest buildings included. Too often the complaint is heard that too little space was planned for processing staff, or that the total space equation has been altered by the unexpected arrival of a book-hungry new academic program.

Architectural Record, in its editorial tribute to Le Corbusier, commented that architects are “seldom commissioned to invent architectural form, they are hired to design buildings.”¹ After a look at the university library buildings of the two post-World War II decades this generalization certainly appears valid. Now, however, it is possible to suggest that future architectural historians may find in Walter Netsch’s library buildings for two universities in Chicago, Sir Basil Spence’s exquisitely detailed rectangle for the University of Edinburgh² and William Pereira’s tour de force at the University of California, San Diego,³ seminal, aesthetically successful, examples with which to describe a general reintroduction of architecture as a major factor in the university library building scene. To arrive at Netsch’s Northwestern University Library from the rear on a snowy day is to get a vision of a building which contains certain effectively merged elements—upside-down modern Gothic; to leave it from the front is again to admire it for its treatment of mass, just as one admires a European cathedral for its compatibility with its setting.⁴ The other Netsch building in Chicago is at the University of Chicago, and is also reminiscent of the medieval as well as the collegiate Gothic. This is a building with an exterior that actually conceals rather than reveals a precise interior hegemony of elements.

In 1968 Jerrold Orne wrote: “There are more very large buildings being built today. There is evidence of greater expansion of reader space, and greater acceptance of design for massive numbers in one place.”⁵ At Edinburgh, along with Brown,⁶ Washington at St. Louis, and U.C.L.A., the trend to bigness also is apparent. In these examples the loft building approach seems to have reached successful culmination, significantly asymmetrical, with the details of off-center entrance lobbies providing some relief from the boredom of interior columns.
Significant Developments in University Library Buildings

and low ceilings. A successful earlier and smaller example, with a "lively roof of prestressed, folded plates," is at the University of Nevada. The exterior architecture in these five cases pleases through balanced simplicity—and at Edinburgh by harmonious contrast with the general urban, although park-like, setting.

Sir Basil and Walter Netsch, whose solutions are often daring, challenging, and exciting have a California counterpart in William Pereira. His solution to the requirement of planning a research library building, while at the same time providing a focal point for the campus, was the architectural creation of a sphere—of five floors suspended in space above ground. This building at San Diego, and the one at Northwestern University, essentially handle the heavy traffic of the public, the staff and the in-flowing materials on the lower levels—where pertinent program requirements are met in large integrated, undergirding chunks of simple loft-type space. The ups and downs of the core (undergraduate centered) collection, the forum and other elements which at Northwestern manifest themselves in complexities of traffic linkages or in extra need for geographical orientation have no counterparts at San Diego. At San Diego "first time" traffic to the five upper floors is introduced by elevator to the central stack floor in the sphere; from there it can disperse itself upwards or downward by stairway or elevators. The University of Utah Library and Learning Center, a large rectangle, is effective visually on its site through treatment of mass (varying fenestration, roof overhang, recesses, balcony) and of materials (pre-cast concrete with white quartz chips and integral patterns).8

Midway between those essentially rectangular modular successes and the challenging (though perhaps architecturally controversial) buildings mentioned above, there is a group of pleasing library buildings which effectively arrange several "cubes" of space in homogeneous artistry. Indiana University has one of the largest of these, with a separate area designed around the needs of undergraduates, another for more advanced students and research workers, with a third area for common services. The exterior is a balanced series of rectangular cubes, with varying sized windows on the lower floors and no fenestration at all on the top eight levels of research stacks. The cubes can be duplicated at right angles to make a large building without overwhelming the site visually.

Then there are the towers being planned or built for places as far apart as Belfast, Northern Ireland, New York University, the Uni-
versity of Massachusetts, and San Jose State College. New York University has to face the wedding-cake code requirements of New York City, and puts its reserve and undergraduate libraries on two large levels below ground, thus from street level getting an upward and downward traffic flow, something almost always desirable in planning a library building.

An influential moderately high-rise research unit was pioneered at Cornell with its Olin Library; this building has the special facilities of carrels, faculty studies, common and seminar rooms located peripherally to long stacks. This Cornell-type library building is also to be found at Ann Arbor in the research addition, and in the long and narrow third unit at Santa Barbara, the latter being designed for lateral doubling to make it six (rather than three) bays wide.

Obviously, variety is another feature of the contemporary library building scene. There are buildings that peek over the edge of a hill and climb down it (Tufts and Alaska). There are buildings with new structural-architectural design elements (Marcel Breuer’s trees at St. John’s University). The top floor was freed of columns some years back in Mies van der Rohe’s John Crerar library in Chicago. Now fans and condensers are being moved from roofs to ground level, or even to separate structures. Or, if they remain on the roof, they are incorporated into the total design as at the University of Chicago. A tour de force, dramatic but not overpowering, was built at the University of Glasgow incorporating five sculptured and peripheral towers. The catalog hall at Minoru Yamasaki’s library for the Regina campus, University of Saskatchewan, might be termed a catalog “chapel” within the exterior cathedral form. The University of California, Santa Cruz, Library sits gracefully and in scale amid clumps of redwood trees whose shade warranted the extensive use of glass and inner open spaces. At Stanford, the planning office’s model of a proposed 200,000 square foot doubling of the 1919 main library building shows a series of flat roofs. These seem a mild contrast to the dominating verticality of the Hoover Library tower, the quadrangle type architecture of the main building, and the columned and pavilioned feeling of the Meyer (undergraduate) Library Building.

The proposed addition to the main library at Stanford shows a first floor of 91,000 square feet and thus points to a continuing trend toward larger floor areas at lower levels. This dates from the Firestone Library at Princeton, a prototype modular, or loft, university library constructed soon after World War II. Later Notre Dame put
Significant Developments in University Library Buildings

an area the size of two football fields into its main floors; Northwestern, the University of California, San Diego, and the University of Massachusetts are proceeding in the same direction. These examples reflect a continuing desire to accommodate processing staffs close to the bibliographic services and records, and both are, increasingly, very large consumers of space. Where available land is limited some libraries have become reconciled to placing the processing staffs on an upper story, confidently hoping that parallel access to a unique record (the card catalog) may be supplanted as electronic communication devices and a multiple record (a computer-produced book catalog) become more feasible. Sacramento State College is planning to put processing staffs on a higher floor for this reason.

The location of the library, it has long been said, should be central. Clearly now, even on such a modestly-sized graduate campus as the Naval Postgraduate School at Monterey, the question of defining centrality becomes complex. Which group of users, coming from where, going to where, when and for how long, can determine the center. Second and third campuses have developed and will continue to develop to siphon off elements of a large, general collection. The relation of the library site to other academic buildings and to residence halls remains a major consideration, but sometimes location in relationship to traffic patterns (pedestrian, publicly transported, in private vehicles, or from parking lots or spots on public streets) suggests the wisdom of a location, as at Monterey, at a major traffic entrance, adjacent to campus and city street parking. At the University of Alaska the site chosen was closest to the largest parking lot for off-campus students and on the student route between academic buildings and on-campus residence halls. At the Indiana University the multiple-purpose structure is bisected logically by a pedestrian throughway from a busy public street across which many patrons live. The research library addition at Michigan sits atop a pedestrian walkway required by the campus traffic pattern. The undergraduate Meyer Library at Stanford invites through foot traffic on its lower floor. At Hofstra patrons may cross a busy highway by bridge leading into the library and beyond. The University of Minnesota Library is, in effect, notched at a corner by a public bus route. At Santa Barbara the location was determined by the first of the college-level master plans, now in a university level master plan; it is indeed central, and isolated from all but pedestrian traffic ways. This will be alleviated somewhat when an undergraduate library is
DONALD C. DAVIDSON

built a few hundred yards away on the route to the private apartment and housing area forming a unique enclave populated by two-thirds of the student body. The device of the undergraduate library, of course, is a significant development over the last two decades.

The compact, "instant" unified campus, such as Simon Fraser University in British Columbia, and a couple of other new megastructure campuses in Ontario, make the problem simpler. An "omnibuilding" approach is taken for Pace College, New York City, where the library is on the third and fourth floors of a five story lateral building. Atop this building sit ten dormitory floors. One suspects that librarians would greatly prefer such compactness, for it strengthens the case for centralized library service, virtually eliminating the opposing argument of distance from laboratory or chalk board.

There has been a pronounced nationwide trend toward very long hours—three times as long as the period into which most classes are concentrated; this makes the factors relating to traffic to and from housing just as important as those concerned with general academic and classroom traffic patterns.

The problem of entrances logically related to traffic patterns remains one that, in almost all cases, should not be resolved through multiple entrances and exits. The problem, of course, is primarily one of controlled exits. The individual inspection station approach is an almost universal solution of a standard problem.

The more "open-stack" the operation, the greater the need for unified exit controls. Free access to stack areas for all patrons is becoming standard, while in stack areas the interspersing of readers at tables, in offices, carrels, seminar rooms, common rooms, or rooms with individual stations for graduate students in the same or closely related disciplines, has become normal. The University of Chicago, however, hoped to help preserve its books by keeping stack temperatures somewhat cooler than the usual American level. This decision, combined with a desire to minimize the unofficial internal migration of books in a 3,000,000-volume stack, led to placing all the 2,200 carrel and study seats in reading rooms outside but adjacent to the bookstacks, while leaving within the stacks some 265 consultation tables.

This return to the concept of a separate stack area—open to all comers, however, with floor controls and charging stations at the stack exits—is a basic determinant of the total program. Chicago's subject specialists are relieved of control of collections and other extraneous administrative matters, and are available for consultation
by patrons in the core area on each floor which separates stacks from reader stations. The combination of heretofore dispersed libraries permits the provision of card catalogs on subject floors, adjacent to both books and subject specialists.

The University of Chicago library is representative of two major characteristics of the university library of this age: first, in its subject arrangement, which was pioneered by Ralph Ellsworth at Iowa and Colorado. The University of Utah's new structure is so arranged, as is the library at Arizona State University. The expanded University of New Mexico building, and others, subscribe to the same philosophy. How the principle is effected varies from place to place but subject arrangement is a basic, well-established trend. One strong trend is to arrange the collections primarily by the classification, for the ease of the patron. There is, at the same time, more of a tendency to arrange the book stack according to the classification scheme, than to plan subject specialization in specialized rooms dominated by subject specialist reference staff. Economy encourages this trend; subject specialists can be “pooled” as is planned at Sacramento State College.

The University of Chicago's new building is a good example of a second recognizable trend, that of increasing centralization as former branches and departmental libraries merge into more efficient centralized units. The trend to longer hours is an economic factor which accelerates this movement toward centralization.

Libraries are also being forced underground by aesthetic or code considerations. According to a 1968 news story in an architectural magazine, several hundred students stopped work on the removal of a couple of small trees, preparatory to skylight construction for the underground library at Yale: “Its 16 large skylights protruding from below, like rows of giant rectangular eyes, would effectively destroy the green open space, which students had used for decades as an informal meeting ground, touch football field, girl-watcher's lair, and outdoor reading room.” Student opinion and the New Haven Preservation Trust concurred on burial of the structure. An alternative solution proposed by the architect was a moat design, which was accepted for construction. In one case at least, opinion forced a library even more underground.

As one approaches the University of Illinois undergraduate library from the Illini Union one wonders if the two small flat-roofed structures, reminiscent in appearance of bus or subway stations, have any-
thing to do with the library. They do, for they are plaza level elevator stops and stairway exists. Otherwise this building is completely underground, forced there since it was not permitted to cast shadows on a dedicated monument, an agricultural plot. Light is brought into the two story structure through a 72' by 72' central open well and courtyard.\(^\text{17}\) Other buildings are forced underground only partly in order to meet code or aesthetic considerations. Not many had the tremendous water table problems encountered in building the library at the University of Amsterdam. Johns Hopkins University had problems with ground pressure as well as with water in submerging five-sevenths of its library below ground.\(^\text{18}\)

The cantilever is being increasingly employed to provide specialized space and to vary exteriors. The library at Trinity College, Dublin, a simple rectangle, has a south facade with cantilever variants making a Corbusier-like play with mass. Brown University, the University of Utah, and others employ the technique in a more repetitive manner, usually to good effect. The University of Missouri at Kansas City cantilevers bays to accommodate two tables for four students or three double carrels, with windows on the sides. University of Utah Library windows provide vertical contrast at the inner wall. The Hillman Library at the University of Pittsburg uses a triangular indented window on each side of an individual study station which faces the blank portions of two outer walls, or with two windows in the faculty studies along other walls. Arizona State University is one of several examples which also demonstrate the use of the cantilever to make an essentially rectangular building look less blocky, bulky, or big.

Fenestration, too, is varied at Arizona State. On the top floor there is a narrow clerestory window strip above the walls for carrels and studies. Precast walls with slit windows characterize the next two levels, while the first two stories at ground level are largely glass, rather typically, therefore, being recessed. There is also a level below ground, moated. Access to the main floor is by bridge. Aesthetically and functionally this is one of the more successful subject-arranged loft or modular buildings in the West. The fenestration of the Science Library, University of Aberdeen, creates an exterior decorative motif. A repetitive upside down “U” for four bays is part of a semi-symmetrical pattern, which in turn reflects the basic structure. This is designed to take two floors of the stack per structural floor, the mezzanine stacks providing for expansion and flexibility.\(^\text{19}\)

Fenestration as part of the visual environment of the patron at work
is something that the librarian, as representative of the user, must specify. User opinion well might be sought. If there is an exterior view, such as of a city park as at the University of Sheffield, then the large reading room (if one must have one) is the most logical to be located adjacent to the view. If the exterior view is of "a semi-derelict area" then the architect may create a view by providing an inner courtyard as at the Faculty of Arts Library, University of Liverpool.20 Except for some of the British "plateglass universities"21 one's cumulative impression of visits to American and British libraries is that windows are located more often as design elements than as apertures to provide light or a view; there was, of course, a fairly recent period when librarians learned the hard way about heat gain and glare from excessive amounts of plate glass.

The unobtrusive, asymmetrically arranged windows in the mountain-toned walls of the library at Brigham Young University permit some view to the user and visitor. The latest addition to the University of Houston Library has twenty-one columns which are paralleled and equalled in size by window strips. An unusual method of turning a corner, and letting "the interior peer through" is seen in the two story lounges at each corner of the library of the National School of Agriculture at Chapingo, Mexico.

Moving to the interior of the building at Arizona State, and staying with the visual environments which architects wish to create, one finds that the entrance lobby is opened to the second floor, which does minor violence to the sonic environment desired by library patrons. It here does no great violence, as do some such holes punched through floors, to the flexibility inherent in loft space at or above the desirable minimum of three bays square. When architects punch holes through a number of floors to create an atrium both dangers exist. At the University of Utah the sonic environment is handled by having the horizontal traffic ways within the attractive atrium itself, and separated from subject reading areas by glass walls. The building is large enough to overcome the danger of interruptions to basic space flow. Three bays, twenty-five and a half feet by twenty-five and a half feet each, plus the cantilever encircle the atrium, and hence flexibility appears protected. Courtyards must pass the same tests as atria.

The university libraries at Utah and Arizona State also are convincing demonstrations of the truth of the architectural injunction of Mies van der Rohe that "God is in the details."22 The materials used
in covering floors and walls at Arizona are coordinated in texture and color, and the schemes are extended to such details as the colors of door pulls.

The bay size of twenty-two and a half feet by twenty-two and a half feet was nearly always the standard until recently, but there is now a trend to larger bay sizes, still reflecting the three foot (plus at least an inch and a half at each end of a stack range) library book shelf. York University in England is pioneering the four and a half foot shelf, while the four foot shelf has not yet been accepted in the United States; this may be because the gauge of steel used in the United States is less. Larger bay sizes accommodate flexible arrangements of books and readers. To the latter a table space of at least three feet by two feet each is now the standard, and this means tightness within the smaller bay. The larger bay is therefore welcomed (twenty-four feet at Urbana, twenty-five and a half at Pittsburgh and Salt Lake City, extension by a bit over three feet on one side at Bloomington, twenty-seven at Edinburgh, and the University of Chicago, and thirty by forty-five, University of Illinois, Chicago Circle).

Circular buildings are unusual, and stack arrangements within such space must be ingenious. At Northwestern the first layout will house intermingled stacks and reader stations radially, with a built-in alternative for parallel stack ranges. At Chabot College in Hayward, California, serpentine wood stacks avoid a wheel-spoke appearance.

Escalators and automatic doors are now being employed as libraries become larger and traffic demands such aids. There is increasing acceptance of and satisfaction with the longer, space-saving stack range (forty-five feet at Santa Barbara, thirty-nine at Tempe) but many libraries cling to the traditional shorter lengths. The four foot six inch center to center range placement appears to be the satisfactory norm. Stack areas without study tables, carrels, studies, and seminar rooms are unusual. The individual study station is popular, perhaps is in danger of becoming over-popular. The table for four or six is still preferred by some patrons.

Longer open hours, and perhaps longer individual stays, have suggested the inclusion of food dispenser machines, snack bars, tea rooms (Edinburgh), and cafeterias (Indiana and Washington at Seattle). Libraries where these activities are within the library proper envy libraries where food can be purchased adjacent to but distinctly sepa-
rate from library operations (the coffee bar at Warwick University, Coventry, is thus isolated).

The mosaic wall on the dominating research tower which stands above the two more general floors at Notre Dame is a rare example of exterior decoration on a grand scale. The sandblasted murals at Bowling Green State University form another. Interior decoration on the same scale is about as rare. A dramatic and effective exception is the sculptured mural, “The History of Writing,” four stories tall, created by Professor John Tatschl for the stairwell of the new addition to the University of New Mexico Library. Murals are also found on the central walls of the University of Strathclyde in Glasgow.

Stairways themselves continue to invite the eyes of architects. Circular ones are featured at the University of California, Santa Cruz, the Air Force Academy, the University of Pennsylvania, and the Countway Library of Medicine at Harvard. A “geometric form stair well” at Xavier University in Cincinnati, is a triangle encompassing an open well at the corner near the main entrance. Librarians have not yet convinced architects that steps to get into libraries are no more desirable than they are to get into department stores; it is too easy to find the nuisance of steps even in the most recent and most effective libraries. The wheelchair test too often is barely and deviously passed.

Painstaking and continuous attention to detail is the price in time for a successful building. This extends to electrical and mechanical details, for which architects normally rely on engineering specialists. Bernard Kreissman told a session of the annual meeting of the American Association of Law Libraries in 1968 that “the librarian should work with the engineer and make him justify and explain all details and items relating to the electrical and mechanical areas of the building.” He further suggested the bringing in of consultants in times of crisis after the building is completed. The use of consultants has become much more common in such matters as library organization, furniture and its arrangement, and color coordination. Consultants are also being employed fairly often for newer purposes such as acoustics, air-conditioning, engineering, the design of audio-visual facilities, and cost estimating. Occasionally one hears of a contractor’s having been retained during the planning stage in order to reduce costs through construction simplifications.

The possibility for imaginative expansion of a building would be
increased by regarding each increment of space as a new and separate challenge. This was the approach taken in the Cornell-type additions made at the University of California, Santa Barbara, and the University of Michigan. Stack additions continue to be made at the University of Illinois, for one example, as a continuing commitment to the traditional research stack. Other institutions have decided to place a loft or modular type structure in locations where additions to a self-supporting stack structure had earlier been contemplated. How to expand can become a difficult problem when the existing architecture is incompatible with planned expansion. Planned expansion should be considered even in every completely new building.

Librarians, at best, have the initiative only for a very short time very early in the process of planning a building. Therefore, it behooves them to think on a macrocosmic scale similar to that which architects must always consider when facing a new problem. Thus librarians and their consultants, early in the game, must jointly develop positions on flexibility, expansibility, fenestration, stairs, steps, and the movements of patrons, staff, books and information into, around, up, down, and out of the proposed building. Librarians, accordingly, must think about and state positions on basic space in large chunks and on possibly bothersome interruptions to such basic space as those created by the mezzanine, atrium, or two-story treatment of part of the building. Librarians must not allow themselves to be overly absorbed by the microcosmic features which they will necessarily have been considering with all their staff in the detailed statement of program (a program definitely and desirably has become a habit). Buildings can too easily go in fundamentally undesirable directions because the client is not yet ready to talk with the architect about such macrocosmic features as those here suggested. Details are vital, it is true, but the large view and the early initiative are equally important.

References

4. For Mr. Netsch's "Field Theory" and its first full application at Wells
Significant Developments in University Library Buildings


21. Beloff, Michael. “The Plateglass Universities,” Encounter, 30:14, n. 1, May 1968. The title is a “generic term... It is architecturally evocative: but more important it is metaphorically accurate.”


General Note: The British university libraries mentioned were visited by the author in 1966/67 as Visiting Senior Research Fellow at the University of Sheffield. Most of the North American libraries mentioned have also been visited by the author.

October, 1969