CHAPTER 5

DEVELOPMENT OF UNIVERSITY LIBRARIES IN INDIA WITH SPECIAL REFERENCE TO MAHARASHTRA STATE AND THE EVALUATION OF SPACE PLANNING

Changing concepts of architecture are more expressive in library buildings through the ages and one can easily distinguish various architectural practices prevalent at the time, when these were constructed. Old architectural concepts of grandeur are giving way to contemporary functional library architecture. The ancient and medieval libraries, which were meant for a privileged few such as the scholars, the monks, the princes, or the noble men, have been replaced slowly and gradually by the open access libraries, free for all, with services related to books and other materials. Old guard house buildings have vanished, chain and walls have disappeared and their places have been taken by the plate glass and glass cupboards and windows filled with book, inviting passers-by to use them and enjoy reading them, in almost home comfort or some time even more than that.

The concept of functionally planned library buildings based on the modern service concept has definitely emerged. Librarians in fact became allergic or hostile to the old gothic. Romanesque or Baroque styles which normally prevented them from providing space suitable for major new services or re-organization of existing service systems. They wanted changes to accommodate the forthcoming new ideas, new inventions and new services based on newer technologies in the libraries. They started experimenting their new ideas with newer planning concepts with the help of forward-looking authorities as well as architects.

The academic Library buildings were constructed in a style which was most favoured at the time of structural style than by their functions, as there was no specific architectural style or design to express the functions performed inside the library building. But today, new library buildings have been created which express the functions performed within the library by use of various methods, which include display of books and extensive use of glass all around the library. Exterior architectural work must indicate or reflect the functions which are being performed inside as far as possible. In other words, the exterior is just like skin on the surface to match with the surrounding buildings. But the main decision is of accommodating modern functions if the library is to serve its users properly and to the maximum possible extent.

5.1 Library Architecture in India:

Academic Library Architecture in our country is comparatively of very recent origin and has mainly come up and gained momentum after
Independence and especially after the establishment of the University Grants Commission in the year 1953. The development of Academic Library Architecture could be divided into two major phases:

a) Developments prior to Independence, and
b) Developments after Independence.

a) Development Prior to Independence

Before 1947, only a few large academic library buildings existed in our country. Some of them were housed not in their own quarters or functional buildings, but in some part of the administrative building or a portion of the block of a building housing some department or the other. That is why during this period we do not find many functionally planned individual library buildings. Among the three major universities established in 1857, Bombay had a functional building designed for it in 1920’s and Madras in 1930’s.

There was, however, a good appreciable awareness amongst the senior librarians and other professionals towards this aspect and a good deal of study and research in the area was generated and nice interaction among the colleagues took place.

b) Developments after Independence

During the second stage, with liberal financial provisions by the University Grants Commission, a number of academic library buildings were constructed. These were not only functional but also spacious with a variety of accommodations for users, staff, books and other print or non-print materials. Some of these buildings constructed during this period are also aesthetically pleasant and each of them has some special qualities of its own. The libraries of this phase, though properly and functionally planned lacked futuristic approach. The planners in their enthusiasm to have new buildings were overwhelmed by the magnitude of their work and could not look far into the future and accepted, whatever was available at the time. This resulted in their getting saturated early and expansions became necessary much before the anticipated time target of their useful life. Librarians and planners could not foresee the vast amount of literature to be generated in the printed form.

In fact the basic philosophy of Librarianship has changed tremendously after the 60’s. The twin phenomena of knowledge explosion and document explosion has baffled not only Indian librarians and management people but even the persons involved in the planning work in highly advanced countries and made the task of acquiring, processing and accommodating all published material in the existing libraries extremely difficult. The educational system and technology has changed rapidly in the past 40 years and introduced a
number of new techniques and methods in the present curricula of the institutions of higher learning. This has put most of the Indian Academic Libraries in a dazed stage, as it was already difficult for them to meet the demand for the useful published literature with the restricted finances available at their disposal. The question of constructing new library buildings or extending the present facilities became extremely difficult because of the acute paucity of funds.

5.2 Shape and Structure of Academic Libraries in India:

In order to meet the above challenge, a number of new ideas were adopted by a few librarians and architects. They could also experiment with some of the latest techniques and use different types of materials in the planning and designing of new library buildings. A variety of new shapes and sizes have appeared on the architectural scene. These are considered to have the quality to permit growth. Some of the typical library buildings are as follows: (see also Appendix "C")

i) Hexagonal shape of Bombay University Library  
   Building at Kalina Campus
ii) “T” shape buildings of the Poona University Library, Poona
iii) “H” shape building of the Delhi University, main Library, Delhi
iv) “□”Shape of Mysore University Library building, Mysore
v) “L” shape of the Rajasthan University Library building, Jaipur
vi) * shape building of the Bangalore University Library, Bangalore
vii) \( \square \) Swastika shape of the University of Agricultural Sciences Library, Hebbal, Bangalore
viii) Rectangular shape of Baroda University Central Library  
   Building and many others in our country following this shape:
ix) Tower – Large tower in rectangular shape of Calcutta University  
    Library building at Calcutta
x) Circular central reading room with inverted \( \downarrow \) shaped stacks  
    of Banaras Hindu University Library
xi) Cluster of Mushroom – type of construction of the new library building  
    of Karnataka University, Dharwad. (60)

These and many other common or irregular shapes are available at many other academic campuses and many new experimental designs are expected to come up, which may have more flexibility to permit horizontal as well as vertical expansion to accommodate future growth and modern trends in educational technology. With this as a backdrop we now pass on to a discussion on integrated campus planning and its impact on academic library architecture.

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60. Deshpande, K. S. Library Architecture, Timeless Fellowship, Vol.9, 1974-75. P.18
5.3 Integrated Campus Planning: Vis-à-vis Academic Library Architecture:

Integrated campus planning concept is comparatively of very recent origin and is prevalent in most of the advanced countries. A few publications have appeared, through the western press including those of the universities, highlighting the overall campus planning concept relevant to major universities. This concept can more advantageously be adopted by newer campuses being set up in both the developed and underdeveloped countries. If this concept of campus planning is adopted and followed in the overall planning of the areas for academic campuses, their libraries will also get better treatment with better location and facility. One may expect in such an atmosphere, a beautiful and functionally planned Library building worth its name.

The sudden increase of student population at all levels has also created almost a construction revolution and created a favorable climate to attract good, talented and leading architectures and designers. Administrators of Academic Campuses have gradually and slowly gained insight and recognized the value of good campus designs and real worth of the architect’s work by understanding the basic concepts of integrated campus planning. During the past 20 years or so there have been tremendous advances in this area of campus planning and huge facilities have come up under master-plans with beautiful, functional buildings for all academic activities including libraries, all at one time or in a large number of cases in rapid succession. This has given opportunities to the architects, to successfully tackle newer and newer problems.

5.3.1 Library Planning on Academic Campuses:

With the above background of integrated campus planning and development, it will be easier to assess the importance of the Academic Library Architecture vis-à-vis the campus architecture following unified building pattern of harmony, symmetry and functional utility. Such a campus planning has led to university cities.

Generally, the librarians and those involved in planning expect and consider it obvious, on the part of authorities to provide the best location or site for the academic library in the master plan of the campus itself. The expectation is quite reasonable and based on the fact that library is a common service area and its services are essential to the teaching and research and even the administrative programmes. A good sitting as well as enough provision of future expansion for its all round growth for a number of years to come, must be provided for without spoiling any of its surroundings. This is taken care of in integrated campus planning.
5.3.2 Integrated Campus Planning in India:

In our country, we still have not seen development of such a campus though some attempts have been made at Banaras Hindu University, Punjab University, Chandigarh, and Mysore University. But the concept of the planning of whole campuses on integrated planning system with harmony and symmetry has not been possible as the building activity has been spread over several decades and consequently into various phases and subsequent structures have differed in many places. Even in the institutions deemed to be of national importance as for example, the Indian Institute of Technology (IIT), though they have developed full campuses, the concept of modern integrated campus planning has been mixed up. Some of the campuses have good library buildings and Space Planning. (See Appendix "C")

In several cases in India, no proper/initial consideration has been given to library buildings while academic campuses were planned. We had only 19 Universities at the time of Independence and the number has now risen, by several-folds, to over 250 or so. In most of the cases, libraries have not been given priority in establishing them at proper and choicest sites. Sometimes even the academic library’s role in academic activities has not been considered in proper relation, inspite of the fact that the libraries play a role complimentary to teaching. The following paragraphs are therefore aims to discuss the role of planning of academic library buildings in our campuses of higher education and show how it is a vital activity.

5.4 Environmental Planning and Academic Library

5.4.1 Planning Procedure and Space Requirements

5.4.1.1 Need of Academic Library Architecture:

A nucleus of an academic library comes into being almost immediately after an academic institution, such as university, etc. is chartered by an act of parliament of the legislature of a state. A library is an essential infrastructure which is developed simultaneously with the Host University or the college, from its very inception. There will be no academic or teaching activity without the support of a library system. As a matter of fact, the library should be the first and foremost Department of instruction to be started on an academic campus. Therefore, the library is started in whatever area is available for the purpose and subsequent decisions regarding its permanent housing are left for the future, when a master plan of the campus is considered or developed. If the master plan has already been conceived, then action is taken accordingly to discuss the location, the type of library services required and the kind of architectural structure it will need. In one way or the other a new library building has to be planned to meet the immediate needs and anticipated future
requirements. We have examples in our country of Universities which started functioning in the 19th century but their libraries were started much later, in some cases after the lapse of several decades. This gap is unusual considering the importance of the library in an academic environment but this was the early developmental period of academic education and there were “sufficient reasons” for this state of affairs. The reasons were:

a) The library was a more aside – a peripheral affair. It was not considered central to the business of education.

b) Education was highly teacher-centered.

c) Universities were of the affiliating type. They were content with conducting examinations and awarding degrees.

Some of the early Universities started their library services after a number of years as mentioned below (61):

<table>
<thead>
<tr>
<th>Name of the University</th>
<th>Year of Establishment</th>
<th>Establishment of the Library</th>
<th>Library services started after the years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bombay University</td>
<td>1857</td>
<td>1864</td>
<td>7</td>
</tr>
<tr>
<td>Calcutta University</td>
<td>1857</td>
<td>1873</td>
<td>15</td>
</tr>
<tr>
<td>Madras University</td>
<td>1857</td>
<td>1907</td>
<td>50</td>
</tr>
<tr>
<td>Allahabad University</td>
<td>1887</td>
<td>1916</td>
<td>29</td>
</tr>
</tbody>
</table>

Therefore, as soon as decision is taken to have a new library building, the librarian has to take interest and set the ball rolling. He should himself move the idea of a separate, functionally planned building for the library. In case he comes on the scene after the idea has been generated by the authorities, or the users, he should get involved in the implementation of the idea. Much of the state of relationship of activities of the library in terms of location of various areas depends on the site, its location and also its relation with and distance from the other parts of the university, i.e., academic departments, administrative building, classrooms, hostels, student amenities and facilities, etc.

5.4.1.2 Modern Planning Concepts and Academic Library:

The Planning of library buildings is related to the cultural and economic conditions of a country. It depends on the academic awareness of the nation as well as its development in science and technology, as this change the social and

Cultural status and values of human beings. With the gradual growth of the country’s educational, economic and social conditions, libraries, and especially academic libraries at the university level also grow to a large extent, on the basis of properly phased-out programme.

The 20th century, especially after World War II, has witnessed tremendous development in the libraries as a result of two important phenomena, vis, knowledge explosion and the consequent document explosion. Both these phenomena are causing a great problem for the modern librarians, architects, and the administrators as to how to accommodate the influx of materials, users and new services in the library environment without carrying out any expansion or extension. We have libraries which combine both architectural beauty as well as functional design. But beauty and function are rare to achieve and therefore much detailed study and planning and follow up is needed. Proper planning becomes imperative also because of the vast sums of money involved. If we do not have a good functional library building, the very purpose of acquiring large number of useful and highly desired publications will be defeated.

Planning based development and growth of institutions, industry or the society, is the gift of modern times. The librarian’s ideas regarding the library building get converted into a concrete plan. Such a plan helps to avoid possible mistakes or shortcomings, at the initial stage itself. Any changes or alterations at a later stage would be difficult, costly and affect the harmony or symmetry of the building. Even a layman like Mahatma Gandhi cautioned librarians and library managers about the growth of library buildings on these lines.

“Plan the building of the library in such a way that it can be enlarged as the library expands without marring its symmetry. The later additions should not appear as extraneous accretions to the original building”. (62)

Therefore, all emphasis on proper planning should be given at the initial stages only, as it is the most important period of consideration, in the whole process of library building project.

5.4.1.3 What is an Academic Library?

An academic library is a common utility service for all members, students of various levels including research scholars, other supporting and administrative staff, industrialists, businessmen, the local elite who may have occasions to consult the resources of the library. In view of this, it is essential

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that:

a) The library is situated in a central or otherwise strategic place so that it makes easier for all users to approach it without difficulty.

b) Since a library makes people read, write and think seriously, it should be a little away from the hustle and bustle of the city, industrial noise, or the nuisance from vehicular traffic plying on the nearby thoroughfares.

c) It should have pleasant surroundings such as: a good view from the windows, especially looking over green lawns, flower beds and shrubs, well appointed ornamental trees laden with seasonal flowers etc. If a few beautifully designed fountains are provided around the library, it will add a more soothing effect to the tired eyes and minds of the users and will also immensely add to the aesthetic appearance not only of the library but of the entire campus.

d) A library building in addition should have an attractive exterior so that the passer-by may walk in for a unique experience of browsing, learning, reading and writing.

5.4.1.4 Planning Procedure for an Academic Library:

There are number of general principles laid down by librarians, architects, etc. for each stage of planning and designing of a building.

According to Gelfond (63) the following are the three stages of planning:-

a) Preparation of a Programme;

b) The development and approval of a preliminary programme

c) The approval of final plans and specifications.

5.4.1.5 What is a Building Programme?

The written programme of the proposed building for the library should among other things indicate the objectives of the parent Institution.

Keyes D. Metcalf (64) an authority on library architecture, summaries the purposes of a programme in the following words:

a) The preparation of a programme is the best way that has been found for the Librarians, his staff and the institution’s administration to

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determine the essential needs of the library and to make all concerned face up to them;

b) It provides the librarian with an opportunity to point out to the Institution’s administrative officers and the faculty the physical and, to lesser extent, the other formal approval of this estimate of requirements and of methods to be used in dealing with them. This approval is a matter of first importance.

c) It forms the basis on which the architect can plan a satisfactory building.

According to Bleton, Jeans (65), another expert on Library buildings “A library building programme is a statement of the requirements of a library and includes a complete list of public and non-public service areas. It describes, in outline form, the inter-relationship between various public service departments, recommends the size and most suitable location for these units and defines the most important building details”. He also adds, “the building programme is the working document which bridges the gulf between the librarian and the architect”.

Writing an elaborate library programme covering in clear, complete, precise manner, all details acceptable or adaptable by the University or Institution is a most difficult task. The librarian must note that his programme constitutes the only concrete working basis for the architect and his associates. This also links the architect to his client’s, i.e., the librarian and the authority, and he must strictly adhere to the details in the finalized written programme. If this is done, the new library building will come up as expected.

Usually a question is asked by many who are not familiar with a building programme, as to why planning of academic libraries is necessary? It is very complicated question and difficult to answer, unless one goes through the programme and reads it carefully. However, in general terms, a building programme consists of:

a) A written detailed statement of objectives, policies and goals of the library,

b) A description of the physical areas and space requirements to fulfill the objectives and goals of the library.

c) Relationships of each of these spaces/areas with the others.

d) Detailed description of the size and location of areas based on their interrelationship,

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e) Type of furniture, fittings and fixtures required in each of the areas and equipment needed. Here, the quantities of each of the items with their sizes, etc. are to be mentioned in detail for general guidance of the committee members.

f) Restrictions and limits if any, to be put up for consideration of the planning team in respect of any items and requiring special consideration and discussion. These are imposed by the site, its size, location, cost or funds available and by building codes in practice and local construction limits of Municipal Corporation, etc.

5.4.1.6 Why is a Building Programme Needed?

We need a building programme or a brief, because:

a) It spells out in a clear-cut way, the basic needs of the community it is required to serve or it is already serving;

b) It helps as a tool for the library to analyse its present services and functions. It helps also in reviewing them, at the planning stage and allow for their expansion or the introduction of new services,

c) It documents and records these (the services) so as to show what the library is doing and what it is planning to do for the benefit of its users in the future.

d) It helps the user community to be served to extend its co-operation by forcing the hands of the authorities or Governmental agencies to examine the proposal, comment on it and if suitable, provide all possible help and solutions to the problems faced, if any;

e) It helps the authorities as a basic document to proceed and request funds from local, state and central authorities, whosoever is concerned, or from all;

f) It serves in preparing the basic cost estimates for the proposed library building;

g) It helps the architect to study and visualize the needs of the library;

h) It helps in preparing the preliminary sketches of each floor of the library for the first-round discussions in the planning team, based on the Librarian’s concept and sketches, which he has made for the future library building in consultation with his colleagues. It gives to the other member of the planning team an idea of the future library for them to approve or suggest changes;

i) The programme, once recommended by the Planning Committee, and accepted and approved by the competent authority, becomes a legal document for all practical purposes for the architect to proceed further with the work of planning and preparing the blue prints of the proposed project;

j) This programme of requirements and instructions on which preliminary work has been done by the architect becomes an essential basic
document. Any changes that subsequently become necessary can be
effectected only by the authority which has approved it, may it be a minor
or a major change.

In the case of a library building programme, it compels the librarian and
his colleagues to come forward and put down their needs in writing and make a
final but long-range decision for service to the community. Such decisions will
cover:

a) Justification and need for a new library building or for an addition to the
existing building
b) Staff requirements with projections for future which may be at least in
the range of 10-30 years depending upon the local needs and conditions;
c) Changing or enlarging the present service concepts of the library;
d) Details of supervision and security in public service areas in the new
buildings
e) Details of the open and closed access areas required with the number of
documents expected to be kept in each area;
f) Future growth based on past experience and long term space expansion,
etc. This will be based on the library statistics and other data being
maintained in most of the academic libraries and especially the annual
growth rate of library materials of the past 5-10 years.

Writing and developing a sincere and honest library programme is a
soul-searching process for the librarian and his team. It critically examines
what it is doing and what it ought to do and how to do them.

5.4.1.7 Who Prepares the Building Programme?

It is quite clear from the foregoing that it is the librarian’s duty or
prerogative to prepare programmes or statements of requirements with full
justification of each item and data. Many times, in our country, the librarian
gives only scanty data and the architect develops a brief or a programme based
on this data and discussions.

It is only the librarian who can answer many questions rose by the
architect and can define several special features of the library. In fact he is the
main figure in the entire planning process and has to take the lead in order to
get the desired library building.

The architect, has no experience of library building, may not understand
many library functions. It is essential that he is given information on all such
items, viz..,
a) How many books/journals will be there and how many will be added every year at least during the next 25 years to come and if possible projections for further 25 years for an academic library;

b) How many users or readers will be there at a time including visitors?

c) Statistical projections of growth of users, etc. for a 25 year period, depending upon the nature of the teaching and research programmes and new courses to be proposed;

d) The type of equipment needed and its location for use in the rough sketches prepared by the Librarian;

e) Who will work where and what will be staff strength at the time of occupation of the new building as well as growth rate of staff;

f) What areas are to be left for future expansion and most important of all is the matter of various traffic growths and their anticipated impact in due course;

g) The exact position of the entrance and exit are to be shown with maximum details as far as possible, including check point & counter etc.

5.4.1.8 Review and Evaluation of the Written Programme:

There should be a review of the programme drawn up and discussions held in the library as well in the library committee as soon as it is ready. When the programme has been discussed at the committee, it may be forwarded to the authorities like the Syndicate or whoever is responsible for such items. Many hurdles and obstacles are to be overcome gradually and systematically as administrative approvals come through a number of channels.

The building programme, when ready, helps in selecting a suitable site for the library. If it is prepared after the site has been selected, it will have to face several constraints such as the location, the surroundings, geological conditions and other related factors. Sometimes, even after a suitable programme has been prepared, if a suitable site of the desired size and shape is not available, the programme gets modified by the circumstances. These site restrictions usually come in the way when the library building has been given the last priority in the construction programme of a campus as by that time most the land would have been used already for other academic or administrative building requirements.

Going ahead with a building construction work without a programme is like a journey to an unknown destination.
Rohlf\(^{(66)}\) mentions the following other problems if a plan for a building is admitted without a written programme:

a) The needs of the library will not have been spelt out;

b) The Authorities / Government(s) would therefore be having no idea as to what is required and for what purpose. They will grant suitable or central location, extra space, money and man-power which is being asked, only if they have knowledge of what is being asked for;

c) The architect will also be at a loss to know the library needs in terms of space, space functions and relationships of the areas and how to design the interior of the library building.

Until recently many libraries did not have any such written building programmes to help them or their architects. The practice is vogue was a question and answer session, like an interview, held between the librarian and the architect who gathered only scanty data or information. Instances are not wanting, where university administrations have, without consulting the librarians, just asked the architects to furnish blue prints for library buildings without any written programme.

In our country, a few elderly librarians have done this exercise and in a manner desired and it has resulted in some excellent libraries. However, it may be added that planning and constructing a library building without a written programme, will be a monumental mistake. A written programme, therefore, is a first step in the planning of an academic library and must be prepared, even before the selection of the site. Now let us see, what it contains or what is to be included in it.

5.4.1.9 What is to be included in the Programme?

A written building programme infact is a complete package of the very best of everything possible from the library side. It contains all the dreams of the people concerned, viz., the librarian and his colleagues, the members of the faculty and other users of the library. This programme is for a building, which is going to serve the community for many decades to come.

5.4.1.10 Site:

The programme must identify some of the essential functions and good qualities of a suitable location. These are accessibility, visibility or dominance over other structures, if already constructed, relationship with these buildings and branch libraries if any, and shape, size, geological conditions etc.

5.4.1.11 Community Requirements:

Academic libraries are expected to meet the requirements of various user communities for whom they are established. A profile of the user community and their general and special requirements needs to be given in detail. Academic libraries have to help in the intellectual, cultural, social, physical and general education and aesthetic development of the community, which they serve.

5.4.1.12 Space:

Detailed requirements of space for (i) Storing books, (ii) Displaying journals, (iii) Making reading arrangements, (iv) Staff, (v) Browsing, (vi) Displaying the catalogue cabinets, (vii) Arranging exhibitions etc. have to be given.

5.4.1.13 Computer Applications:

If a library is planning computer application for its operations and services, this should be indicated with a note on the extent of the application as this may eliminate / reduce space which is normally required for normal service operations and storage etc. The Internet division, CDnet etc. must be clearly defined in the building programme.

5.4.1.14 Transportation System:

The programme should also specifically mention needs of various types of transportation system required in library building. This includes both for books and users, staircases, lifts, as well as motorized or manual trolley movement on the same floor for horizontal shifting of library materials.

It may be pertinent to close this part with an apt advice given by Robert Rohlf (67).

"I must caution that the programme is not to be duplication of other library building programme. It is not advisable to do other than duplicate the intent. Your programme should shoot high than compromise later. Bear in mind that every square foot need not be accounted for, leave some space for grandeur. Building programmes often tend to disregard traffic, corridors, stairs and mechanical equipment allowances. You need to allow square feet for this asking your architect how much is need and then put it in your programme:

5.5 The Sitting of an Academic Library:

5.5.1 Central Location:

There may be difference of opinion on many points in the planning and designing of academic library buildings and related architectural works, but most of the authorities on the subject agree that a library should have a central location, since it is a service-oriented organization. Its purpose to serve its users will not be fully accomplished, if it is inconveniently located, and accessibility to it is difficult. In other words, a large number of users will be deprived of its frequent use, if its location is unhelpful.

Commenting on this issue, Thomsen (68) observed: “The Librarian who has won his board’s understanding of the necessity for a possible expensive but right sitting of the city’s library has won the first and perhaps the most important victory”.

This remark of Thomsen in relation to the location of a public library is equally applicable to the sitting of an academic library building.

The following guidelines for selecting a suitable site need to be borne in mind:

i) The site should be such that it will be frequented by all users or a large part of them without harming their other normal routine teaching, research or study-oriented activities

ii) The site should have good approach roads, for vehicular traffic as well as for pedestrian traffic.

5.5.2 The Choice of Site:

The location of the library on a university campus should finally be decided when the so-called ‘key plan / master plan’ is being drawn up. In other words, before the construction of specific university buildings for established programmes, comprising teaching buildings, research laboratories, student residences and restaurants, sports installations and possibly, administrative buildings and staff quarters, commences the site for the library must be selected. “Only too often, unfortunately, the library has to be sited in an area already covered by many buildings; the choice of its position must thus inevitably be the result of compromise solution which does not enable the interests of all concerned (students, teaching staff and librarian) to be given equal consideration”.(69)

5.5.3 Design and Site Criteria:

Langmead and Beckman (70) have given certain design and site criteria which are very relevant, for the site, to be selected.

"The programme should contain a brief statement concerning the site of the new library and any design parameters which have been suggested to the Architect, so that there will be no misunderstanding in the academic community when construction begins. If the site has been selected – and this is assumed to be the situation in most instances – the following points should be mentioned:

- Relationship to campus master plan,
- Disposition of existing buildings on the site,
- Urban parameters within the master plan (i.e., sculptural volumetric),
- Relationship to the user (i.e., book delivery, garbage pick-up),
- Staff access,
- Parking.

5.5.4 Site Location:

According to Thompson (71) "Libraries which form part of a larger organization in a building complex will seldom have much say in the choice of site. In a university, the master plan will probably have foxed the library site".

"When the problem concerns a site for a separate building and the librarian has a choice, he will discover that he has to deal with many agencies before he is able to persuade the authority to accept what he has chosen. A planning officer may be responsible for a local development plan; the surveyor to a university may have strong views on library sitting; other competing interests may be met when a suitable site is found. In most cases, there will be officers to be consulted, committee to be persuaded and some oppositions to be overcome before a suitable site can be secured, but first the librarian must be clear in his own mind what feature of a particular site are important to him".

Another experienced librarian Chitwood (72) says “The selection of a site for a new library building is often one of the most difficult and enemy-producing decisions which has to be made. The agony unnecessarily prolonged, largely with the hope that the opposition will forget; it won’t and the courage to make the decision should be expanded as soon as possible”.

5.5.5 Provision for Future Expansion:

An academic library grows very fast; therefore, the site allotted to the library should be sufficiently extensive so that in future, the library may be in a position to expand horizontally. It is always preferable to have a large site with the above quality, even with slight inconveniences, than selecting a site which is already compact and surrounded by other buildings and allows no chance for extension and expansion horizontally. In certain cases, the academic libraries have been located in large open fields or spaces, with necessary approach roads and other facilities. But such appropriate type of provision is normally not possible in an institution located either in the heart of an urban area or near to it. It is only possible, if they are located far away from the cities, which again causes a lot of problems, if they are not fully residential in their character. If a small site, which is centrally located, is selected, only vertical expansion is possible. It is costly to erect buildings beyond certain heights and to maintain them properly with facilities of lifts and elevators etc.

5.5.6 Peaceful Area:

One of the important factors to be taken into consideration in locating academic libraries is to provide as peaceful and quite atmosphere as possible for its readers. The site to be selected should therefore be such that it is not harmed in heavy traffic of vehicles and people from all sides. The library location should be declared by the authorities as silence zone.

5.5.7 Site Orientation:

Site orientation is a very important factor in the construction of the building and the architect would like to examine the possibilities of the site for having a proper building orientation.

Sharma (73) says that “It should be possible to have the maximum number of windows facing north in the northern hemisphere, and facing south in the southern hemisphere. Northern light is steady throughout the year and

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does not expose readers to direct sun rays. Glare less and even light is ideal for reading."

5.5.8 The Shape of Plot:

It has been universally accepted that a rectangular land is most suitable for a library building than a square or some other shape. Rectangular plots enable the creation of suitable buildings in which a library may function with efficiency and by reducing traffic patterns.

However, Feulkner Brown (74) "A compact building will assist the Librarian in many ways. Theoretically travel distances will be reduced to a minimum, if the building is cube and on entry users are brought to the centre of gravity. Books, staff and readers will need to move shorter distance in a cubic building than in a linear building or one extended by moving away from a deep plan. There is also a bonus in economy of consumption of fuel and energy".

5.5.9 Geological Considerations:

Suitability of the site also depends on certain geological conditions of the land. If it is hard and rocky, it may permit construction of a heavy load bearing multi-storied library building with extra cost of excavation of stones but if soft and sandy, it may need costly pile foundation work. Soil stability and other tests are necessary before finalization of the site.

5.5.10 Role of the Librarian:

It must be presumed at the outset, that a qualified and experienced librarian has already been appointed for the Academic Institution and he is ready to take up the work of the planning of the new library building etc. If no librarian has been appointed, it is extremely necessary to appoint a librarian or obtain the survives of a competent and experienced librarian who can handle the work of planning a new library building. It must be noted that no planning is to be undertaken under any circumstances before the appointment of the Librarian, if a satisfactory and good library building is desired to be constructed.

Modern library architecture is based on the concept of open access system, under which readers are allowed completely free access to visit any desired areas, where books and other reading materials are stored and organized properly for study, expecting a few areas, where highly valuable publications such as manuscripts and other documents etc. are kept under reserve and can be obtained only against specific requests. In addition to this, the aim of today’s library is to provide quick, efficient and satisfactory services to one and all that come to the library for study, recreation research or search of knowledge and truth. These things could be well explained and organized by the librarian only.

The librarian, whether he is new on the job or experienced in planning, has essentially to take the lead in the architectural planning of a new academic library, or of an extension of existing building, which is fully occupied and needs additional area.

Such an opportunity should be accepted and be fulfilled with perfection. The librarian has to study a lot of material on library planning and designing, including present codes and practices followed in our country or in the state on building construction practices. He has to visit some similar institutions in and around his country to observe and see in depth, the working of various library systems and their services. He has to take down proper notes, sketch down the organization of services in his own way. Allocation of library spaces, location of the various services, typicality of furniture and minute details about the types of collection are very important for him. In addition, he has to look to various communications and control system, so as to create, as far as possible an enviable environment. The librarian has to take a leading part in the creation of a library building. Indeed he is a key figure in the library building committee and has to play a pivotal role in the planning process. He has to arm himself with facts and figures regarding what be proposes to have in the new library building. He should take maximum care about the facilities for the disabled (handicapped people). [See appendix "A"]

To make himself worthy and indispensable he has to take a number of steps such as:

i) Study deeply the aims and objectives of the University for which he is planning a library;

ii) Study in detail the various courses and curricula of the institution;

iii) Know his clients well, i.e., Faculty Members, Student community, other supporting staff and the visitors who come to use his library and their needs.
iv) Have full details of the number of students. Faculty members and other supporting administrative staff as well as student and faculty ratio;

v) Know in terms of his library resources and services so as to have all the figures ready with him;

vi) Know as much as he can about the latest technological development applicable to modern libraries;

vii) Make a detailed study of the growth rate of the present library collection, student enrolment in the campus and be in a position to forecast on the basis of this date, projected future growth, which may be needed for the development of the library services for the next 25 years to come at least;

viii) Familiarize himself reasonably well with the recent trends in library architecture;

ix) Have some floor plans and sketches ready. These should be based on his visualization and concept of modern library services, on which he must have some preliminary discussion with his other professional colleagues;

x) Study building site, if already fixed, and obtain the details of its size and know construction limits, etc. if any, imposed by the local authorities and if possible, obtain limit restriction and other connected details from the Municipal Corporation, etc. He should study and bring to the notice of the Committee, how the proposed siting of the new library building will have effect on its use by the student and faculty by giving justifiable details from all angles;

xi) Obtain names and addresses of the renowned architectural firms of the area / region, who are proficient in library architecture;

xii) Obtain addresses of experienced library building consultants and recommend their names in order to priority and place before the library building committee, if the need be there to appoint such a consultant,

xiii) Suggest a separate interior designer, if the architect is not in a position to undertake such work;

xiv) Prepare a preliminary building programme and sketches etc. of the proposed library building in consultation with his colleagues for submission to the planning team.
5.6 Study of Literature Pertaining to Library Planning and Architecture:

It will be worthwhile to lay emphasis here on the subject of the study of literature pertaining to library architecture by the librarian, as it will influence his process of thinking and planning. The points mentioned above are of a cursory nature and deeper study is something else, which alone brings fruitful results.

If possible, the Librarian should also provide some relevant literature on the subject to the other members of the planning team such as the Vice-Chancellor or the Director, Deans, Engineer, etc. to enable them to grasp some of the problems. This will result in fruitful interaction and lead to a good and healthy discussion while the planning team is having discussions, at the preliminary stages. In case, it is not possible for the committee members to study the vast amount of literature available, the librarian should try to give digests of important articles and copies of relevant portions on important aspects of library building – planning and architecture to facilitate the committee members in their efforts to become effective and helpful partners of the planning process. The librarian should also learn and acquaint himself with the technical vocabulary of library building planning and civil engineering, which will help him in understanding the meaning and connotation of the terms used frequently by the architect, the engineer and the builder, etc.

5.6.1 Importance of the Librarian in Building Planning, etc.

In advanced western countries, the academic librarian enjoys very wide powers in respect of his library administration. When the times for extension of the library building or the question of construction of a new library building comes, he again has very wide powers to take decisions on his own on many matters including the building affairs. In these countries, the librarian has obtained recognition from the authorities and enjoys their full confidence. In the Indian context, it has happened in some cases that the librarian has not been able to put across his views because of the lack of status and also because of his own inability to convince the authorities and committee members of his special requirements.

The librarian must note that it is he, who, with his team, has to work in the building for a long time to come, which is created by the architect and therefore he should be careful and not leave everything to the discretion of the architect. He should discuss everything in detail with his architect from the preliminary sketches to the final working drawings. He should also visit the construction site frequently with his colleagues and the architect and the builder to see that the construction work is going on as planned and put in the final drawings.
The librarian must note that he and the architect will have to work
together from the moment the architect steps in the planning team after his
selection and appointment. They have to work in close co-operation and as
united as possible throughout the process of planning, construction and
completion of the building. They have to understand each other’s point of
view and critically examine the same in the light of what is expected out of the
new architectural creation.

The librarian should try to study and apply in his planning, the concept
of space which is a key to good architecture. With spaces, he can match space
requirements or rearrange his moves. He has to be a good architect skillfully
with his unbeatable arguments of utilitarian space arrangement and proper
placing of equipment and seating arrangement etc. in various areas. For this
purpose the librarian should develop the ability to read the drawings and
blueprints.

Every librarian desires a functional but beautiful library building and
therefore he certainly has to accommodate to a little extent some of the
aesthetic elements, without which the library building will not be attractive. In
fact he should be happy to have such aesthetic values, which the architect
desires to add or create by his experience using, right proportions, choice of
good materials, effective light sources, use of pleasing shades of colours for
roofs and wells and nice soft flooring and comfortable furniture. The Librarian
with the help of University Authorities should appoint a Consultant, who can
advise him on day-to-day’s affairs of the construction.

5.6.2 Role of the Architect

In the year 1886 writing about the role of the architect, C.A. Cutter
stated that the architect was the natural enemy of the librarian. Later in 1946
another authority, John E. Burchard (75) writing in the same strain remarked
that “persons about to build library buildings in university or college appear to
be haunted by three specters; the specter of the architect, the specter of growth
and the specter of change”. The times have been changed and it is normally
not possible for the architect to carry out his work of planning and designing of
libraries without the advice of the authorities of the academic institutions and
the members of the planning team. The librarian and his team are now very
much aware of their role and are jealously guarding the functional approach
and they lay less emphasis on ornamentalization of the library buildings. They
are ready to fight the battle in this context, with all concerned, who oppose the
functional creation of library buildings. The stand of the librarians is well
known now to the architects and therefore their approach has also changed
under the circumstances.

75. Bleton, Jean: “the Construction of University Libraries; How to Plan and Revise a Project”, UNESCO Bulletin for
The architect has to work with the librarian, without whose assistance and briefing it may not be possible for him to understand most of the intricacies of the functions being performed in an academic library and the suitability with which the spatial arrangements are required to be organized. He has to tone down his professional expertise to get the best out of librarian and his colleagues for the successful and functional creation of the library. In view of the above, the appointment of the architect is of the utmost importance in the whole process of library architectural planning and its success.

Thompson (76), has mentioned that “An architect is unlikely to design a satisfactory library building without first understanding clearly its functions and proposed methods of carrying out that function. The information, he receives from the librarian, will guide him in detail, but there is danger that in providing the information, the librarian will assume that the architect is familiar with the type of library to be built. Different types of libraries have different spatial and environmental emphasis and it is only too easy for an architect to assume that his experience in designing one type of library can be used, with only small adjustments, in designing another”.

Keyes D. Metcalf (77) also says “A great architect and a first class librarian will not ensure a satisfactory building; the result may depend on the effectiveness of their team work than on the natural ability and competence of either or both”.

The librarians must be able to spell out their requirements and problem before the architect can do his part. He cannot plan unless he understands the building’s needs / functions, thoroughly. He needs to be provided with complete and precise information as to what the librarian would prefer to have. Architects have a different professional attitude as is evidenced from the following statement by Ellsworth (78).

“Architects planned libraries prior to 1931 and the concept of the functions was that the entire building, and each part of it, even the corridors, was to be superlatively beautiful, a work of art”.

However the days of monumental construction, with gigantic entrances, with huge and high rising pillars, very high ceilings and other ornamental and decorative structures are gone. This was possible when money was no consideration and services were yet to be clearly spelt out.

But with the changed circumstances, co-operation has developed between the librarian, the architect and others. Testifying to this change, Thompson (79) says that the architect is now the leader of the team. He, with his assistants, will visualize the future building both as a machine and as an aesthetic contribution to the life of the community. He will have overall responsibility for creating suitable environment for the function, for the visual impact of the building, for its engineering efficiency. He carries a great responsibility for the safety of all who will use it throughout its life. He will not simply devise a library building according to instructions received but will review the whole project and its intentions, he may be able to make fundamental and original proposals which can give the authority an opportunity to improve the impact, offer new amenities or obtain greater financial viability.

5.6.3 Selection of the Architect:

It should be clearly stated that appointing an architect undoubtedly is the privilege and sole responsibility of the University or the Institute in whom such powers are normally vested. The authority may delegate such powers to a very senior member of the Academic Staff or Administrative Staff whomsoever they feel will be in a position to handle this aspect justifiably. It may be noted that much of the success of the entire project of library building construction depends on the choice of a right architect. When such is the importance of the appointment, all personal and political considerations have to be set aside and pure merit is to be given due weightage for bringing in a master-craftsman – the architect with suitable experience in the field.

5.7 Interior Designing and Aesthetics

5.7.1 Aesthetics:

Aesthetics has become now a discipline in itself and can be called in broader terms “the study of beauty” and covers under philosophy of art, criticism of art and its psychology and sociology, etc. It has also been called the science of the beauty.

Aesthetic is related to many disciplines including library science. In library science, aesthetics has close relation with building design, architectural work, interior planning, designing and decorating, furnishing and equipping etc. It creates a visual impact like any other art but it should not be mixed or confused with art, as it is a philosophy as well as a scientific discipline. Creation of something in an environment is a science in itself but when, it makes a pleasant visual impact it also becomes an art.

79. Thompson, op. Cit., P. 19
Stressing the need for beauty as opposed to function in a library building, Metcalf (80) says “A building, even if handsome to look upon, will always be regretted if it is not successful functionally just as will one which is successful functionally but unattractive or some extreme in its architecture that it becomes outdated while still youthful. This does not mean that a good library building must be traditional in style, quite the contrary – the use of imagination and contemporary outlook in the planning and design may make significant contribution towards the success of the building”.

5.7.1.1 Some Other Elements to Create Aesthetics:

5.7.1.2 Colour Scheme:

Colour plays a very important role in creating desired aesthetic effects in any building and especially in an academic library and therefore the colour scheme should be carefully prepared depending upon the areas and its users. Ceilings also require special colour treatment to cover up any deficiencies of plastering etc. In this case of false ceiling, for air-conditioning, coloured panels may be used. Colour pattern should be striking and should provide visual effect on the user’s mood. The selection of colours can be anywhere from light pastel shades to bright colours or combination of colours.

5.7.1.3 Furniture Etc.

Library furniture needs very careful planning and its type and quality differs from area to area. Comfortable furniture capable of providing relaxation may be needed in the lounge, whereas in the reading areas and in the stack rooms seats provided for the readers may be entirely different pattern. Reader’s cubicles or staff cabin need entirely different treatment. However, whatever type of furniture is selected, it should be such a design that users may feel comfortable and pleasant. The tapestry provided should be of pleasing pattern, matching with the needs of the area and the mood of the users.

It may be added here that much of the décor of library interior mainly depends on furniture and other equipment, its proper selection and placement. It is always better to order all items of furniture as one set.

Metcalf (81) says “If results are to be satisfactory and effective aesthetically, these and the structure must be planned as a single unit, not as separate entities. If old style is suitable, it should be used and change should

81. Ibid
not be done in the style of furniture merely for the sake of change or accommodating something, which is very ultramodern but not as such which give wide user acceptance. A good architect, who is also an interior decorator can certainly bring something really beautiful, durable, comfortable and of course as required by recent trends in choice of design and use of materials”.

5.7.1.4 Equipment and Its Location:

If any equipment is to be kept in any of the areas of the library, it should be placed in such a way that it does not hamper the normal flow of traffic. Such equipment if motorized should not make noise, while in operation and its wiring should be concealed and not visible and open.

5.7.1.5 Floor and Floor Coverings:

A variety of coloured flooring materials or floor coverings of good quality are available in various designs and patterns. Good, soft and pleasant looking flooring material may be used. In case, the library is going to be carpeted, the choice of colour should be left to the interior designer.

5.7.1.6 Electrical Fittings and Fixtures:

Whatever electrical fittings and fixtures are used they should be of good dainty design and provide comfortable, subdued or medium light reflectance as desired. Naked bulbs or fluorescent tubes are neither good for the eye nor for aesthetic appearance and therefore these should be provided with proper shades and covers in attractive designs and colours. There are a number of streamlined, aesthetically beautiful and colourful electrical fittings, now available in the market and they are not detrimental to the quality of light and are also comfortable for users.

5.7.1.7 Use of Coloured Laminates:

A variety of laminates in various designs and patterns or plain shades are available and if used on the table tops, reading desks, counters, etc; they add charm and beauty to the interior appearance. These can be used either in single colour or in multi-colour patterns or in any pleasant and appealing combination.

5.7.1.8 Curtains and Draperies:

Curtains and other draperies should also be selected with great care and their colour, etc. They should be charming. They should be of light pastel colours and easily cleanable. These items are necessary in libraries for controlling the glare and intensity of sunlight.
5.7.1.9 Walls and Wall Coverings:

One must not forget the walls of the library, as they deserved a special treatment in interior designing and aesthetics, other than holding the roofs intact. If there are open walls without any racks, etc., they should be used for hanging beautiful paintings and if large enough and near the entrance or in the entrance hall, good artistic murals could be got painted, depicting some theme based on the Institute’s programme or pertaining to the area where the library is situated. In some cases, wooden panels, plywood boards or hardboard, etc. may be used with provision of display of books and posters, etc. after painting them with good colour.

5.7.1.10 Ceilings:

Ceilings also need careful treatment. Sometimes ceilings are covered with artificial materials for false roofing for air-conditioning. These covered ceilings are also found absorbent and work as good sound proofing medium in the library.

5.7.1.11 Shelving Equipment:

Major visible portion of the library, whether these are stack rooms, reference rooms, special collection areas, or the reading rooms, all are filled or linked with one or the other types of shelving equipment, either for storage or for display. Normally, racks are double sided. Single sided racks are placed along the walls wherever necessary. Whether they are made of steel or wood, they should be adjustable and painted nicely in suitable colours to match and blend with the general aesthetic schemes of the library.

5.7.1.12 Lounges:

Beautifully designed lounges spread in important areas, throughout the library with colourful and comfortable sofas, low height chairs and centre teapots to match with low height, nicely polished book racks containing light and special refreshing reading material, add charm to the library environment. Such areas are preferred by senior users and they provide informal reading arrangements.

5.7.1.13 Open Courtyards:

Providing open courtyards inside the library, depends on the shape and size of the library building. If there is any possibility, these could be considered and provided. Such courtyards may be used for providing green lawns or planted roses and other flowering plants which are beautiful to look at. Open courtyards provide better air circulation and bring in the desired natural
light. The provision of open courts may cost more as it adds more walls but is suitable for our country, where energy required for air-conditioning is very costly and cares and in due course expenditure on air conditioning may exceed even the cost of extra walls.

5.8 Other General Guidelines for Academic Library:

5.8.1 Planning and Designing:

An academic library has to meet the needs of a variety of groups of users such as, Faculty, Students, Visitors, Staff of the library and other departments as well as members of the different industrial, business and educational organizations and the elite located in and around the campus or the city where such library is located. Accordingly, it has to arrange its various general as well as specialized services in such a way that it provides maximum satisfaction to all these classes of users. This can be achieved only if utmost care has been taken from the earlier stages of planning, designing, constructing, finishing, furnishing and system designing for service to the completion of the building work. But for achieving this type of smooth operation of systems and services, one requires sound guidelines based on solid experience. Such guidelines will be helpful to all those involved in the planning of a new building.

Prof. Deshpande (82) has enunciated some basic principles or guidelines. He has called them as “Sutras”. Out of “Hundred and One Sutras” mentioned by him, fourteen “Sutras” or guidelines are very relevant to academic library architecture and therefore these are being reproduced below:

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<th>Sr.No.</th>
<th>Sutra No.</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>27</td>
<td>The Library Building should be the first building to be constructed on the campus.</td>
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<td>2</td>
<td>28</td>
<td>It should be centrally situated</td>
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<td>3</td>
<td>29</td>
<td>It should be within the easy distance of all the departments and the Hostels.</td>
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<td>4</td>
<td>30</td>
<td>The University Librarian, the Architect and the University Engineer should together plan the building.</td>
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| 11     | 37        | The ground of all the floors shall be at one level, so that trolleys could be conveniently moved from one hall to the other. The building should have the following amenities; a) Water Coolers, (b) Book lift provided in the stack room (c) Inter-communication system, (d) Fans (e) Good general lighting for the
passages and lounges (f) Special table lamps for all reading tables (g) Focusing lights for the stacks. The rare books room should be air-conditioned.

12  38  In the first instance, the building should be capable of taking in about 3 lakhs of volumes.

13  39  Seating Accommodation should be made for at least 30% of the potential users of the Institution.

14  40  Top priority should be given to the library staff in the general allotment of quarters as some members of the staff have to attend the library at odd hours.

It will also be worthwhile to recall in this context the very interesting work done by McClarren and Thompson (83) in the field. The authors have prepared certain steps, sequences and specific factors to be considered in the planning and constructing of a new library building and called them the "Architectural Checklist". (See also Appendix "A")

While many of the points presented in this check list are applicable to any type of library construction, the checklist has been prepared specifically for the planning and construction of a new public or academic library building. The checklist consists of twenty-four major steps and several sub-steps. However, for the purpose of study only the major 24 steps are being reproduced here in brief:

i) Initial suggestion to build,

ii) Decision on suggestion to build,

iii) Designation of responsibility for planning the building and for conducting and supervising various other activities in the construction,

iv) Study of library's community,

v) Selection of architect, consultants and others to be employed by owner,

vi) Preparation for actual planning,

vii) Preparation of building program statement,

viii) Development and execution of financing plan

ix) Survey, selection and acquisition of site,

x) Development and execution of publicity campaign,

xi) Preparation and approval of schematic designs,

xii) Determination of built-in and other equipment requiring special consideration in construction,

xiii) Preparation and approval or preliminary drawings and outline specifications,

xiv) Preparation and approval of working drawings and detailed specifications,

xv) Selection and specification documents for movable furniture and equipment,

xvi) Preparation of contract documents and advertisement and receipt of bids,

xvii) Planning ground-breaking ceremony,

xviii) Award of contract of confirmation of purchase, signing of contract and establishment of construction and delivery schedules,

xix) Conducting in-construction activities,

xx) Planning for post-construction activities and procedures,

xxi) Final inspection and acceptance of the new building,

xxii) Movement to new building,

xxiii) Dedication,

xxiv) Post-acceptance activities.
Beyond this above list there are several qualities that have been identified as important for library buildings. The below mentioned list dates back from the 1960s and is attributed to Harry Faulkner-Brown, a British architect who designed many award-winning library buildings around the world. (84)

A library should be …

1. Flexible  
2. Organized  
3. Compact  
4. Comfortable  
5. Accessible  
6. Constant in Environment  
7. Extendable  
8. Secure  
9. Varied  
10. Economic

While these concepts are still relevant today, changes in the way these terms are used, together with changes in the wider service environment (including the use of information technology) indicates the need for revision.

Andrew McDonald has provided a revised list, suggesting that academic library space should be:

1. **Adaptable** - for example, floor loading sufficient for books stacks throughout the building and wiring provision for connecting all readers places of networks.

2. **Inviting and accessible** - including compliance with requirements for disabled access, and consideration of 24-hour access to meet user demand and reduce overcrowding.

3. **Varied** - to fill a range of library and related functions (including training and teaching) and to satisfy the different needs and preferences of individuals and groups.

4. **Interactive and well organized** - to optimize use of space and to promote interaction.

84. Sheila, Corrall and Antony Brewerton - cited on page 216
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84. Sheila, Corrall and Antony Brewerton - cited on page 216
5. **Conducive** - facilitating access to information and reflective work over long period.

6. **Suitable and environmental conditions** – acoustics, lighting, temperature and humidity for the comfort of readers, efficient operation of computers and Preservations of materials

7. **Safe and secure** - paying particular attention to requirements for non-standard working hours, noting that security often conflicts with convenience, aesthetics and safety.

8. **Efficient and environmentally appropriate** - minimizing running and maintenance costs, delivering value-for-money, and conforming to environmental policies and standards.

10. **Suitable for information technology** - with cabling specified to accommodate future requirements, taking advice from computer specialists and networking experts. (s4)

These qualities are equally relevant to any space planning project, large or small - for a new building, extension, refurbishment, adaptation, or just making better use of existing space.

The Sutras, the checklists and the Ten qualities provide the background education and guidelines for the library building planner. The principles implied in the above can be applied in varying degrees to various categories of library buildings and are appropriate and advantageous in creating buildings designed to give a high degree of satisfaction to the users.

**5.9 Evaluation of Space Planning and Layout in University Libraries of Maharashtra**

**5.9.1 Space requirements for various library activities:**

Space requirements of an University library have to be worked out on the basis of (a) the size of the collection to be held it (b) number of students to the enrolled (c) number of faculty and other users expected to visit regularly (d) types of services to be provided and (e) anticipated growth rate of acquisitions and users. Space provision made in the beginning should be sufficient at least for a period of 20-25 years without any expansion in the changing information technology scenario.
5.9.1.1 Space planning in University libraries:

Space is required for displaying books on the shelves, for readers to consult them on premises in some privacy, for readers to move about and for the staff to attend to the organization of the collection. This clearly brings into picture that space is required for four basic elements of the library system i.e.

i) Users
ii) Staff
iii) Books and Periodicals
iv) Equipments
v) Electronic Gadgets

Space requirements for all the above items are of prime importance to the library for discharging its functions properly and systematically. Allotment of space to various library activities is very complex in nature and requires considerable study and research by the planning team in information technology scenario. (See also Appendix "A")

5.9.1.2 Space Calculation:

Calculation of the amount of space required for books, readers, staff and activities is essential for the planning of the library. The librarian knows what he has and therefore he can plan for what he is going to have in the future. It is usually not difficult to assess and predict future growth of books and readers. Book collection is predicted on annual accessions and the growth of student population from University records, depending on past trends of enrolment and new courses to be introduced in the near future. Growth of the teaching staff or the faculty can be worked out easily, as every academic institution has a set of rules for student faculty ratio. The librarian can also consult alumni associations for their opinion on some of the important aspects in connection with the seating arrangement and space availability in the Library.

The Librarian can then apply a standard approved formula to convert this space need into actual square footage. Reading areas must be planned in such a way that they should look attractive, be comfortable and peaceful. They should not only attract but tempt readers and induce them to make maximum use of library. Present day readers are conscious of all these factors as they are directly involved and therefore demands for such facilities are justifiable and the library should fulfill its obligation to its readers. Good reading environment helps in promoting serious study and research. The planning team should therefore give these aspects their utmost attention. Various types of readers are to be identified and their needs are to be assessed, so as to provide to each group general or special reading space, including special rooms and
furniture; computers; printers and other electronic gadgets etc. Most of the users come to the library for the following three tiers of study:-

i) Browsing
ii) Reading, Reference and
iii) Research

The academic librarian is aware that not all the students who enroll would be coming to the library in full strength. No library, in an academic field, has ever provided 100% seats to its users, if it has a reasonable population of users. Various percentages have been used in different libraries and percentage of seats provided to students of various categories and members of the teaching staff are not identical. Opinions expressed by experts are also different and there is no general consensus on this aspect. One thing may be agreed that research workers definitely need special facilities for concentrated reading and while they are writing their dissertations, they along with other postgraduate students who are similarly engaged may be given enough secluded peaceful reading space. The faculty also requires some provision though most of the teachers borrow heavily and prefer reading in their homes or departmental cabins.

Previously, library stacks were confined mostly to high-density book stacks. Most of the readers were accommodated in large reading rooms. A few reference books however were displayed in reading areas. The users were supposed to requisition the required material for reading purposes from the stacks. This type of segregation is now out-dated and seen less frequently in the libraries. The present aim of academic libraries is to bring readers and books together to a great extent and keep most of the areas in open access but under suitable control. Some exceptions will of course be there to the open access and certain areas will definitely remain restricted even in an open access library and may have a few seats or no seats at all. Such areas are special storage rooms of manuscript collection, rare book collection, rare documents of national importance and less used book collection, which are normally housed in the basement of the library under compact storage. Books needed from these collections may be called by the users.

Having said all this it would now be worthwhile to take note of the opinions of librarians regarding the provision of space for reading in libraries.

Metcalf(86) observed that after 1950 he learnt that 50% of students are found in some of the academic libraries but these are located in rural areas, in small towns and are usually co-educational.

Students of professional schools, who are more libraries oriented require more seats. Normally student of Arts including Humanities and Social Sciences, Law, Medicine etc. make more use of the library than students of Science and Engineering.

According to Metcalf (87) space may be provided as follows:-

25 sq. ft. per head for undergraduates.
30 sq. ft. per head for graduate students.
35 sq. ft. per head for graduate students who are writing dissertations etc.
40 sq. ft. per head for graduate students, if closed carrels are provided.
75 sq. ft. per head for faculty in individual study rooms.

He considers 20% seats are enough for undergraduates and 50% for Post-graduates. Provision of seats for faculty members and its percentage has been left out by him for consideration by the individual library committee.

In U.K. “It has been recommended the proportion should be at least 30%. Contrary to some expectations, it has been found that the use of the library is increased by a rise in the proportion of students living close to the University Centre”. (88)

In U.K. rough estimates of space are made on the basis of the following standards:

25 Sq. ft. per each reader.
100 Sq. ft. per staff member.
60 Sq. ft. for each 1000 volumes for storage.

In addition to this, 40% of the total calculation of space arrived at on the basis of the above is to be added for architectural space (which are non-assignable) for staircases, lifts, toilets, A/c ducts, sanitary facilities, water pipe and corridors etc. (89)

87. Metcalf, Ibid, P. 101-102
In India Prof. Deshpande (90) has given the following formula to calculate various space requirements:

i) Stack Rooms : 1 lakh books: 10,000 sq. ft.
ii) Readers : 25-sq. ft. per reader
iii) Researchers : 100-sq. ft. per researcher
iv) Staff : 150-sq. ft. per member.

Traditional pattern of multi-occupation large reading table is also changing fast. Readers now prefer small tables with suitable chairs, comfortable for long reading hours. Such tables may be provided wherever possible in various parts of the library building. There are many ways of organizing the seating arrangement with book stacks and other material. While designing the interiors, the various types of furniture could be designed according to the needs of the users as well as to match the décor of the particular area and the seating arrangement could be made accordingly.

5.9.1.3 Space for Users

Space for users is mainly in the form of providing spacious seating arrangement in the library. When the space is provided and organized for the readers, it is normally based on 2 decisions:-

The librarian or the Library Building Committee will have to decide what type of accommodation is to be arranged for its users, such as: - general provision of seats in large reading halls with multiple type of seating arrangement or individual or two-seater arrangement, spread through out the various stack rooms and other places where reading materials are displayed on stacks, irrespective of the category of users.

Second arrangement of seating is based on hierarchical system under which Undergraduates, Postgraduates, Research Scholars and Faculty members are provided the required space separately. This is an important factor which deserves careful decision.

This type of arrangement is on the basis of rank to some extent and may not be appreciated by users will liberal views. According to them, the user’s area will be both the undergraduate and Post-graduate students.

5.9.1.4 Space for Students:

Undergraduate students now a days are more demanding but still they do

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not ask for special study carrels or assigned areas but would definitely appreciate and prefer reading space carrying with it some sense of privacy. Undergraduate work normally does not demand assigned space. This aspect can be borne in mind by the planning team. Post graduates (graduate students in American Parlance) surely need special areas and reading stations in the form of carrels or small closed areas, where they can keep their material locked while they are away. These should be glass door type and the library staff may be in a position to see through them. Research Scholars and Postgraduates students, who have to write theses, need more space and this should be provided in an academic library.

5.9.1.5 Space for Faculty:

Provision of space for faculty in an academic library depends on the nature, size and character of the university as well as on the facilities already available in their departments/sections or in other areas of the campus. These are cubicles or study rooms in the faculty complex for study and discussion with students. Such facilities are also available in a large academic library for members of the teaching staff and extra provisions are to be made, if such facilities are limited in number, in the departments or in the faculty complex.

5.9.1.6 Space for Visiting Faculty and Other Scholars:

Interaction between the Institutions of higher learning and with the industries in India and Abroad has created a new set of users in the form of visiting faculty member’s etc. These visiting faculty members now-a-days are frequently found in academic campuses under faculty Exchange Programmes or as Specialists, invited to work as visiting facility on teaching assignment of specialized nature.

In addition to this, Research Scholars also visit for Library work in other universities and they also need some facility. Requirements of these are to be assessed and provision made for each category of such visiting faculty and Research Scholars.

5.9.1.7 Space and User’s Behaviour:

According to Cohen & Cohen (91) “Any building that works well integrates function, usability and attractiveness, to varying degrees. These are the important elements to consider in planning any change of space. But in order to do so, to make space really work, whether in the library, the office, or the home, it is necessary to understand how, infact, humans feel about space

and how they act within it. With that knowledge, it is possible to rearrange space so that it works better for people and people work better within it”.

Most architects and designers traditionally have no time or the inclination required to involve themselves or their staff members in such research. As such most of the work in this area has been done by psychologists or consultants can certainly have tremendous influence on the activities and attitudes of the users within a particular space in a library. This type of research is being done mainly by observing user behaviour within a space. Asking questions directly or through questionnaire yields little result as to how space affects or influences people. It is a question which is unanswerable as it is beyond the awareness of an individual – because he behaves in a particular way unknowingly without going into the details of his environment.

5.9.2 Space Provision for Users:

Major decisions of space allocation for readers are usually made on the following 2 best considerations: -

i) How many people will be accommodated in the library for seating purposes in all its reading, reference and stack areas, taking the maximum strength at any given time and their percentage under each category, such as Undergraduates, Postgraduates, Research Scholars, Faculty Members and Visiting Faculty and Members of the public etc. using occasionally, the library services.

ii) Quantum of space is another important aspect and it has to be decided initially, as to how much space is to be allocated to the users under different categories depending upon their needs.

Studies made in several Canadian Academic Libraries indicated the following as acceptable standards: -

Undergraduate : 25 Percent of the enrolment

Graduate (i.e., Postgraduate and Research Scholars) : 50 Percent of the enrolment

Faculty : Upto 25 percent of the strength.

Every reader needs private territory/space for reading purposes. In this area, he desires not to be disturbed by anyone, including fellow readers, passing from the side or by the movement of furniture arranged nearby or by any means of auditory or visual distraction. Keeping in view of the privacy of the students and the needs to allow sufficient space for circulation, space
allocation adjustment has to be made. The following square footage assignment per person has been used in many western academic libraries and is considered to be more than enough: (92)

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Square Footage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate space</td>
<td>30 sq. ft. each</td>
</tr>
<tr>
<td>Graduate space</td>
<td>40 sq. ft. each</td>
</tr>
<tr>
<td>Faculty space</td>
<td>50 sq. ft. each</td>
</tr>
</tbody>
</table>

(Private enclosed office cubicle or study rooms) No specific mention (Any suitable provision between 100-150 ft.)

The University Grants Commission, India, has made certain recommendations for different types of buildings for University Campus including library buildings. These recommendations deals with space provisions recommended for Library Buildings.

According to Metcalf (93) “many different types of accommodations are available to the present day reader”. The different type of rooms and reading areas in common use today in academic and research libraries are as follows:-

i) Audio Visual / Projection  
ii) Reference  
iii) Bibliographical collection  
iv) Current Periodicals  
v) Newspapers  
vi) New Books  
vii) Reserve Books  
viii) Rare Books and Special Collections  
ix) Manuscript  
x) Archives  
xii) Public Documents  
xi) Maps  
xiii) Micro – Reproductions  
xiv) Music  
xv) Fine Arts, Picture and Print  
xvi) Divisional Libraries within the main library  
xvii) Browsing

xviii) Smoking
xix) Conversation / Conference
xx) Segregated and desegregated reading areas.
xxi) Typing
xxii) Seating Accommodation for study, rather than for library use.
xxiii) Overnight study
xxiv) Seating accommodation in the book stacks
xxv) Seminar rooms
xxvi) Computer Terminal / On-line Terminal room and so on.

5.9.3 Provision of Space for Staff and Activities

Sufficient airy and proper accommodation for the entire library staff is of utmost importance. Good and efficient services depend largely on the spacious and appropriate work area allotted to each member of the staff, depending upon the nature of the duties being performed. In some libraries, work space for staff has been given least priority; it therefore becomes difficult to get suitable space mobilized later, even by sacrificing some activities and the area required for their performance.

Metcalf remarks "If experience over last 50 years applies today (and there is no reason to believe that it does not) it seems fair to say that in most library buildings, accommodations for the staff tend to become inadequate before those for books or for readers". Such situations are either due to the modesty or the timidity on the part of the librarian or to a failure to anticipate growth in staff to acquire and process new materials and to provide public service. In any event, the library staff quarters all too often, are congested and the resultant crowding hinders its active work. Proper, careful and clever provision of space could solve many such problems of the staff areas.

While proposing for staff space in various departments and sections, the size of staff and projected increase in each department may also be mentioned. If this is included with reasonable justification in relation to acquisition programme and comparative study of similar other libraries in the region or in the country, it will have a definite impact on authorities. If a building programme incorporates fairly extensive details of such items with the nature and number of estimated areas required, it will not only help in making suitable provision but also avoid future complexities. These details provide guidance to the architect to understand the problems of the space requirements of the library staff.

The architect may have further detailed discussions with the librarian on the type of internal arrangements which he is going to make including installation of the equipment etc., if any, at the particular points in the work areas.
Generally, space for library staff is required in the following areas,

i) Technical Services  
ii) Public or Reader Services  
iii) Administrative Services including Conference and Meeting Rooms.

The library routines and technical processing activities are mistaken for clerical type of work and therefore the authorities and the building committee tends to impose lower space standards for library workers. Library services are different and highly academic and sophisticated, involving use of special equipment and gadgets. Sizing analysis based on clerical standards is most inadequate i.e., 50 sq. ft. per worker and 150 sq. ft. per head of the department. Library staff needs more space to keep and accommodate their reference material, constantly required, in their areas only and the requirement of space is in relation to the activity or function performed.

Many librarians have indicated, by their experience, that space assigned or allocated to library staff is much less than the normal requirement. Langmead and Beckman (94) have recommended staff space as follows:-

180 sq. ft. per staff  
250 sq. ft. for Chief Librarian’s Office  
500 sq. ft. for Conference or Meeting Rooms etc.

Bareither & Schillinger (95) have recommended that the library staff service space be determined by assigning space equal to 25% of the space assigned to readers.

According to Thompson (96) “there is a fundamental difference between local work areas in public service sectors where immediate needs are met (the handling of new books, minor repairs etc) and work rooms for the centralized operations common to the whole library or the whole system”.

Adequate space allocation for the following staff areas may be necessary.

i) Arrival, Receipt, Sorting, Shelving, Distribution of Books, Periodicals and other materials.  
ii) Checking and Accessioning etc. of books and periodicals.  
iii) Classification

iv) Cataloguing  
v) Processing  
vi) Office Staff  
vii) Documentation and Reproduction  
viii) Maintenance Staff  
ix) Lecture / Seminar Rooms for staff discussions  
x) Committee or Conference Room  
xi) Staff Entrance  
xii) Staff lounge and Rest Room with Kitchenette etc.  
xiii) Staff lavatories including special provision for women.  
xiv) Book preservation laboratory (Bindery)  
xv) Photographic and Printing  
xvi) Xeroxing  
xvii) Audio – Visual Room / Listening Rooms  
xviii) Store Room etc.

Metcalf (97) has mentioned the following provision for staff.

a) Administrative Staff:

1. 125 to 150 sq. ft. in a small library  
2. Chief Librarian – 400 sq. ft. in a very large library  
3. Assistant Librarian – 125 to 250 sq. ft. each  
4. Secretaries – 125 sq. ft. each and space for reception room  
5. Administrative Assistant 125 to 250 sq. ft.  
6. Other administration staff – 100 sq. ft. plus space for files, stationery and cabinets etc.

b) Public Service Staff:

1. In-charge of the Circulation and Reference Dept. 25 sq. ft. to 250 sq. ft.  
2. Professional Assistants – At Desk – 125 sq. ft. Other Staff – 100 sq. ft. each.

The above are in addition to the space occupied by the counters, reference and inquiry desks and registration desks etc. Sufficient open space in front of these counters and desk is very essential and must be provided. A minimum of 200 sq. ft. or more is desired.

c) **Processing Staff:**

1. All Sections – 100 to 125 sq. ft. each staff member plus 25 to 50% extra for in-charge.

For processing only, space provision of 125 to 150 sq. ft. per staff member will take care of any additional staff in this area.

d) **Maintenance Staff:**

The staff associated with maintenance and upkeep needs special storage areas for their material and therefore the provision of 100 to 125 sq. ft. for each staff member of the maintenance will be sufficient.

The space provision for the areas not mentioned but required to be made according to the needs, if no standards for certain areas are available.

**5.9.4 Accommodation for Books and Non-Book Material:**

"Readers and Librarians are much more compressible than books, and more libraries have become overcrowded and impossible to administer because of inadequate book stacks than because of inadequate reading or administrative space or so it has seemed" noted, Merrit (98) in his review of problems of storage.

Burchard (99) and others say "since the library exists to make books accessible to the users, the decision, as to the relation between the areas where books are stored and the area where the books are read is basic. Rigid segregation of readers and book stacks seems to be giving way to a philosophy of library use which calls for greater ease of access to books and for an intermingling of reader and book space.... The philosophy of books use which determines, whether book and reader areas are to be segregated or intermingled or just exposed will also in large part, determine the character of building". They have further identified five general variations of stack location in existing and projected buildings....

i) Rear Location,

ii) Centre Location,

iii) Vertical Location,

iv) Peripheral Location, and

v) Divisional or Compartmentalized Location.

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Each of the above stack location has its own advantages and disadvantages and depending upon the local needs, availability of space and staff, and a proper decision could be taken by the librarian and the authorities as to what type of stack location will be adopted by them. However, as mentioned in the first para itself, the convenience and greater ease of access to the books by the reader should be the prime factor in deciding this important aspect of library planning.

"Housing the enormous resources of a Modern University library presents a difficult problem to the library administrator. The book stacks which constitute the greater reservoir of the library must be large enough to accommodate the present resources and future acquisitions. They should be so designed and equipped as not only to house the collection but also to facilitate their use. Their location, lay out, construction and equipment must carefully be planned to meet current and future requirements and housing and efficient services" said Wilson and Tauber. (100)

a) **Size of the Book Stacks**

The size of the book stacks depends upon the size of the book collection proposed to be had at any given time. This includes the present books and other material and their projected growth over a given period for which the provision is to be made. In addition to this, it also depends on the policy of the university as to what should be the ultimate size of the building proposed to be constructed. It may not be possible for the authorities to go on extending the building after its saturation.

The construction of the building, which is a load bearing affair, is very costly and therefore the authorities and the architects would like to know at the initial stage itself, the size of the stack area, depending upon the two factors mentioned previously i.e.,

i) number of books and other publications presently held and

ii) those expected to be had after the end of 10, 15, 20 or 25 years for which planning is projected.

No library authority will agree to provide space for stack rooms without proper justification as these are high density load bearing areas and construction costs are much more than for any other library areas. The library staff can bring to their notice that book collections have a tendency to grow very fast and surpass any estimates made, as the number of worthwhile publications is continuously increasing day by day. There was a time when people were satisfied with a few books, but now the demands are increasing

and even in highly specialized subjects, a large number of books are appearing regularly and all relevant material has to be acquired in order to make the library responsive.

Metcalf (101) says "while in most libraries accommodations required for seating readers and for providing service areas for them and housing for the service staff make the greatest demands on library spaces, the square footage for housing the collections, including those shelved in reading areas and space for non book collections runs a closed second, and may even exceed it in a few libraries having very large research collections and limited clienteles".

Longmead & Beckman suggest that the following information may be collected while planning the book stacks:

i) Planned collection size;
ii) Ratio of book to non-book material;
iii) Method of shelving the collection; (e.g. Shelving by classification, Size or chronological arrangement)
iv) Definition of a volume and the title as accepted by the specific library;
v) Rate of growth of collection; (it is highly desirable to know not only the growth rate of entire collection, but also of individual subject or classification within the collection itself);
vi) Is compact Storage planned for any part of the collection? (102)

b) Ultimate size of collection:

In some of the countries, such as U.K. and India, some work has been done for arriving at the ultimate size of collection of an academic library so as to avoid future expansions or extensions etc. of the building which are causing enormous architectural as well as managerial problems.

In India, as early as in the year 1958, the University Grants Commission had appointed a committee under the Chairmanship of the distinguished Librarian – Scholar, Dr. S. Ranganathan to advise the UGC about the development of academic libraries and their organization. In its report, the committee recommended an upper limit to the size of an academic library in these words: -

"Another benefit has come to the architecture of University and college libraries from the experience of business libraries. Intensive documentation service for a relatively small clientele and ruthless weeding out of outmoded materials, be they books or periodicals, have led to the concept of a

rapidly reached limit to the size of such libraries. This experience of business libraries is leading to a new approach in respect of all service-libraries, academic or public. These two concede the possibility and the desirability of weeding out obsolete books. The idea is to have such books sent for deposit in a dormitory library to meet the occasional demands from antiquarian readers. To facilitate this, each country should have regional and national central libraries to provide accommodation for such dormitory collections. The fact is that the fifth law — "A library is a growing organism" has different messages for the regional and national central libraries on the one hand and all the service libraries on the other. To the former it says, "keep growing for ever is a child". To the service libraries, on the other hand, it says "your growth should soon be like that of an adult by replacement and not by increase in size". In other words an upper limit is now accepted to the size of the building for all kinds of service libraries. The limits for University and College libraries may be set as for 3,00,000 and 5,00,000 volumes respectively”. (103) This recommendation was made when the number of books being published was quite handy and knowledge explosion was just being felt. In view of the recent developments, it is felt that the maximum collection for University Library may go up to 9 million and that of a college to 1,00,000.

In U.K. before the publication of the Atkinson report, there were very few libraries such as Oxford and Cambridge possessing more than 2,00,000 volumes. Most of the other Libraries, on an average, had only 4,00,000 volumes, and therefore the upper limit on the size of an academic library was not raised. In USA no such limit has been imposed so far on academic libraries.

Atkinson’s report to UGC has enunciated a method based “self-renewal” system for an academic library, under which a suggestion has been made to discard an equal number of volumes, which are being added to the library so as to maintain a constant holding of useful current material. The report in detail is being discussed elsewhere in the thesis.

There are two formulas which can be used to calculate the size of the areas required for the collection:

i) Linear System: - (Six volumes per linear foot).

This allows for future expansion, and indicates that a single faced standard section of shelving three feet wide, seven and a half feet high with seven shelves can hold 125 volumes. Double faced would hold 250. This standard does not make allowance for aisle, traffic or circulation space.

ii) Volumes per square foot:

Formulas suggesting between 10 and 15 volumes per square foot can be used. This 15 volumes figure will give an adequate distribution of standard sized stacks based on a four foot six inch spacing of the stacks, centre to centre, with no room for interspersing of study stations. The ten volume per square foot gives additional space for study stations allows for reasonable expansion of the collection, and is more satisfactory that the 15 volume figure for an open shelf library in a college or university.(104)

As the total collection increases, it may be possible to decrease the amount of expansion space on each shelf so that in a large library, or in a library with clearly allocated stack space, the following formula may be acceptable.

First 150,000 volumes : 10 volumes per sq. ft.
Second 150,000 volumes : 11 volumes per sq. ft.
Next 300,000 volumes : 12 volumes per sq. ft.
All volumes in excess of 600,000 vols.: 13 volumes per sq. ft.

The following four different formulas may be used for estimating the capacity of shelving: -

i) A standard method for figuring volumes capacity is 15 volumes per square foot of floor space.

ii) Stacks of the standard height of 7’6” in the clear, two volumes per cubic foot can be used as a safe estimate.

iii) Six books to a running foot of shelving, or 126 books for a 3 feet section, 7 1/2 feet high, is a safer figure to use than 7 to a foot and 147 or 150 for a section in a college library, if pamphlets are not included in the count.

iv) In most cases none of the methods just used is as satisfactory as one based on the exact measurements of the present collection. One should find out, how much standard single-faced section, 3 feet wide and 7 ½ feet high would be required to house the present collection, if every inch of space was to be used. Then 50 percent may be added to that number to obtain the figure for comfortable storage of the present collection. Finally, enough sections may be added to care for growth over the period for which the plans are being made.

According to Metcalf, "there is disagreement in regard to how many volumes can be stored in a given amount of space and the optimist who tends to overestimate the number often prevails". (105)

Book space requirements: In order to decide how much space will be needed for books in the book stacks of a new building, eight basic questions should be considered, in short they are:

i) What is a volume? It must be answered in order to determine how many are to be provided or how much space a given number will require? No common definition is possible as some libraries consider 50 pages or perhaps 100 pages a volume and if lesser, it is considered as a pamphlet. The general conference of UNESCO (1964) defined a pamphlet as "A non-periodical publication of at least five but not more than 48 pages, exclusive of the cover pages". (106)

ii) How tall and even more important, how thick is an average volume? This is also a very complicated question as thickness depends partly on the type of library land also on subject and partly on binding policy for periodicals etc.

iii) Is there a satisfactory formula for capacity that can be used? Many different formulas have been used to determine space requirements. They vary widely. Any suitable formula could be taken by the library planning team.

iv) Are the books to be shelved primarily by the subject with perhaps a limited amount of segregation by size for outsize volumes, or primarily by size? Usually the books in academic libraries are arranged by subject, excepting a very few oversize books.

v) How much space is occupied by the present book collections? This question should be answered to give a firm basis on which to make further computations. It is also safe to measure the collections in terms of the number of standard 3 feet wide, 7½ feet, high sections that they would fill, if each shelf were filled to capacity.

vi) At what rate are the collections expected grow in the years immediately ahead? Any formula used for this purpose must be based on (a) the nature of collection (b) the present rate of growth and (c) changes in that rate, which can properly be expected. This one is a difficult problem.

How does the library propose to fill its shelves before the situation is considered intolerable?

How long should be the new building is expected to be adequate, before it is replaced or enlarged?

A few of the areas for which space has to be provided in a new library building have been mentioned but there still remain a great many small large space problems with libraries. It has been mentioned again and again that anything imaginable in services with books and other non-book material containing information useful for students and the faculty, accommodation for it has to be provided in the library. The librarian, by his imaginative ideas and dynamism, can introduce a variety of services, which may need provision of space, either in the related areas or elsewhere which have not been mentioned.

5.9.5 Space for Equipment:

Space needs for various equipment to be used has to be met as per requirement. (See Appendix "B")

5.9.6 Flexibility, Extendibility and Modular System in Modern Library Architecture:

We live in a world which is fast changing. Library planning and its architecture should therefore reflect a futuristic outlook and possibilities incorporated to adapt to the changing needs and situations of the times to come.

Library building should be made so flexible that any part can be used for any purpose of interchangeable activities and there are a number of characteristics of such a flexible construction. Metcalf has summed up these as follows:

i) Atmospheric and other comfort conditions, such as ventilation and lighting, must be suitable for any of these purposes.

ii) Floor must be capable of bearing loads upto 150 pounds per square foot, which is the bookstack requirement, in all areas of the building.

iii) Floor heights must be adequate for any of these purposes, preferably not less than 9’ 4”.

iv) All library areas must be readily accessible, it is undesirable to have load-bearing interior walls in places where they might interfere with traffic patterns letter.
v) Interior arrangements must not seriously interfere with satisfactory capacity for books, for readers, and for shelving. (107)

However, getting complete flexibility is of a national result, as the entire library / or the library structures even of a single story, are supported by pillars and columns at desired distances to create modules of specified sizes, which limit the flexibility. Multi-storied buildings will have many mechanical installations for transportation, air-conditioning etc. and will also limit flexibility to some extent.

Let us examine some of the opinions expressed by other authorities in regard to flexibility, Sayers in his writings from 1944 stresses on the need for flexibility so that each generation can be free to solve its own problems. (108)

Writing in 1939, Walter stressed that university functions are changing rapidly and that, "Elasticity of use and ease of modification of specific parts of the building.... are the most outstanding needs of a university library building that will serve the future as well as the present". (109)

While analyzing the needs of the library of the University of Colorado in 1937, Ellsworth felt that internal flexibility was essential. This led him to look into the 'unit' planning suggestions of Mc Donald. (110)

Kilham who served on the Princeton Trustee Committee in 1944, remarked, while commenting on the library building, that the building lacked flexibility. (111)

Merritt observed in 1947 that, "the recently growing tendencies favoring making many books available to all readers is forcing an evolution in library design toward buildings with greater internal flexibility". (112)

Holdsworth, speaking of the University of Melbourne Library in 1946 hoped that, "it be as flexible and adaptable as possible, that it be a library with almost completely open accessibility, and that it shall be comfortable to work in an aesthetically pleasing". (113)

Florida State University believed that, "since the mechanical and technological discoveries of this age necessitate frequent changes in library procedures the building is designed with simplicity of structure that gives maximum flexibility". (114)

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108. Sayers, W.C.B.: "Library buildings after the war" Library World, 46, 167-8, June, 47, 4-6, July 1944.
110. Ellsworth, R.F. : "A Library for the University of Iowa", School and University, 16, 1944, P. 98.
114. Florida State University, Tallahassee, Brochure Issued at Time of Library dedication.
Faulkner-Brown, a renowned British Architect, who has a number of prize winning library structures to this credit, has expressed the view that “flexibility is one of the qualities of a library building which has high priority in the hierarchy of its desiderata”. (115)

“Flexibility of course does not mean that the structure is flexible and will bend or move under stress. A flexible Library building is one which permits flexibility in the layout of its planning arrangements, with structure, heating, ventilation and lighting arranged to facilitate adaptability”. (116) This flexibility could be obtained by spacing out columns at regular intervals or reducing the number of columns with a long span beams and by designing the floor to carry heavy book-shelves. This is so enable movement of departments, issue desks, bookshelves, reader places or other library functions to any part of the building. Better flexibility is achieved when floors are level, without steps and when the heating ventilation and lighting allow re-arrangement without alterations, but maintain suitable environment. Permanent walls of the building will remain only in the form of ‘cores’ and the other walls will be reduced to the bare minimum.

The visual privacy in the environment is achieved by varied furniture arrangement, where book shelves provide indigenous screening. Aural privacy is achieved by acoustic material on floors and ceiling. Noise levels of normal conversation are absorbed in a satisfactory manner and are not distinguishable beyond 4 meters of distance. In such an open plan building design, flexibility to cater for adaptation, re-allocation of the departments and activities is achieved at lesser cost. Sometimes these are achieved merely by moving furniture and bookshelves. The problem comes only when the furniture is fixed or is built-in or built of brick, steel or reinforced concrete. It will not allow any changes. The open plan flexible library also reduces the number of staff to be appointed as visual control is easier and cost is economical. It could be seen that the open plan has many advantages, enclosed rooms disappear, or are drastically reduced in number, and the departments are in loosely defined areas, informally arranged in relationship to each other.

Flexibility which is the greatest of modern architecture enables academic and other libraries to adopt this technique to the ever-changing needs and conditions, arising out of frequent changes in the policies, procedures, systems and curricula of the institutions.

a) Modular System

It has been observed that the modular concept provides much better flexibility inside the library as well as outside, if horizontal or vertical
expansion is possible. The system was originated and pioneered in 1930 in USA by Angus Snead MacDonald and promoted by Ralph Elsworth and Keyes Metcalf, described by the letter its advantages are as follows: -

"Under the Modular system... a building is supported by columns, placed at regular intervals, nothing within the building is weight bearing except the columns, though the outside walls may be. It follows in theory that nothing within the building is fixed and immovable except the columns, though in fact it is generally impracticable, if not impossible to shift the location of stairways, elevators, heating facilities ducts and plumbing". (117)

The entire library consists of a series of modules and can be described as "A rectangle - usually, but not always a square - defined by four adjacent columns, is known as a bay. The modular building, then, is made up of identical bays, any one of which may be furnished as a part of a reading area, filled with ranges of shelving, or divided by partitions into offices, or combinations of two or even three of these may be used. No difficult structural alterations are required when a bay that has been serving one of these purposes is assigned to another". (118)

Metcalf further sums up the advantages of the modular system by saying that "a building consisting largely of space that can be used for almost any purpose without extensive or expensive alterations should in the long run, save money and prevent complications which so often arise as space requirements changes". He does comment, though, that the modular system is not without its faults. The most fundamental of these, according to Metcalf, is that no one column spacing or bay size is ideal for all purposes; what is an ideal module for book stack may not be equally ideal for another function. Other faults of the system are obvious to any visitor to be a modular library. One is that the columns demanded by the system are rarely unobtrusive; in extreme cases, indeed, they offend both the eye and convenience (a column occurring right in the middle of an office is not unheard of, for example). Another is that the rigorous application of a standard module seems often to rob the architect of the chance to achieve handsome proportions in a building. It is shocking to realize, on entering an older building with good proportions, how frequently this agreeable quality is to be found in modular structure.

The proper sizing or dimensional details of the modules, used in various academic libraries, differ extensively and no module has yet been found perfectly suitable for all kinds of libraries, and therefore depending upon the local needs, the librarian and the architects under various constraints, have provided their own specifications of sizes of modules, to meet their needs.

The sizes of the modules normally range between 18’ x 18’ and 25’ x 25’. Some other libraries, might have used bigger dimensions, depending upon their good column spacing and strength of the material used but most commonly used modules range between minimum and maximum size limits as above.

Most of the major librarians in Great Britain during the past 40 to 50 years were constructed on modular or flexible principles to permit great extendibility and adaptability which is the ideology of new academic Librarianship. Vaughan says “Almost without exception the new building, were consciously designed on modular or flexible principles and differed greatly form the traditional academic library of the past”. He further states that the various academic libraries built-in Britain between 1920 and 1960 were all constructed according to the fixed function principle”. (119)

Flexibility is regarded as necessary above all because of a belief in the changing nature of higher education, library service and library technology. The point is spelled out particularly clearly in the brief for Edinburgh University Library, 1962.

“The Building must be expected to remain the chief library of the University for a long time. It is not possible to forecast the development of the university or the pattern of the library use vary far in advance; technological advances will quite possibly alter the character of library service already developments in micro-texts, telex, tape-recording and close circuit television are seen to have implications for libraries. This consideration makes essential the planning of the building in modular terms, with non-load bearing interior walls, uniform-ceiling heights, and with all floors capable of bearing stack weights. To ensure flexibility each module should have the possibilities of separate ventilation, light and power”. (120)

5.9.7 Spatial Relationship in Academic Libraries:

General Problems of Organization

Every librarian has to organize his library activities in order to priority of better and efficient functioning from the technical point of view as well as the User’s point of view. He has to undertake his priority ratings of the activities in relation to spatial allocations in his primary brief itself. He has to arrive at a proper solution and clearly mark areas, which are interdependent on each other. Their close or overlapping association will improve functioning to a great extent and provide much better facilities and services to the readers. The concept of spatial relationship is the gift of modern Librarianship. This

120. Ibid. P. 282.
concept is an outcome of the open access system and of intermixing of users with books in most of the areas as far as possible to save the time of the readers. Appropriate location in the major service points in a academic library is a matter of great importance. If these are not located very conveniently, where users can walk in and ask for what they need or obtain themselves, they may try to avoid the use, unless it becomes an absolute necessity.

Location of circulation counter, inquiry and registration desks, catalogues and bibliographical tools etc. nearest to the entrance is favoured to avoid long travel by the readers. Other arrangements in the library at different floors are also be made as per user’s requirements and preferences.

Staff activities, other than those of service points mentioned above also need considerations in planning while spatial relations are being worked out. Technical processing staff should be so located as to permit quick approach to the catalogues and other bibliographical tools to perform their duties properly without traveling long distance on the same floor or other floors. Acquisition or procurement unit also needs allocation of space nearer to the above facilities as they also use the catalogue and other reference tools in their day to day work. The main study area or major reading room, if possible should be located on the ground floor or the main floor, whichever, is housing the above facilities and permit direct entry of users into the library from the main entrance.

Thompson says "in large projects, which inevitably be multi-storey, the architect has to conceive a relationship between large masses of books and large number of readers, which will give the required degree of freedom of access. In the case of a very large closed stack system, he will wish to keep the mass of books housed closely together for space economy and he will study the various classical alternatives of relationship with reader and space". (121)

Thompson illustrates five such plans:-

i) Reading room above and Bookstacks below,
ii) Central reading room surrounded by Bookstacks,
iii) Reading room in front and book stacks behind,
iv) Book stack in the form of a tower,
v) Central book stack with surrounding reading rooms. (122)

In all the above arrangements, convenience of the users has been borne in mind.

It will be of great help for planning purposes if the librarian prepares organizational charts showing graphically how he organizes the library resources, its services and the personnel for obtaining maximum value to the architect and other members of library building planning team.

Githens suggests that "relationship can be illustrated by a series of overlapping circles. One circle will represent the charging desk and another the catalogue. A third representing reading room will have a connection with each of the others – people will have to go from one to another. The cataloguing room must have connection with the catalogue, it does not need to be connected with the reading room... we must enter with a series of circles, which represent organic and not geographical relationship. The geographical plan can be re-arranged in sorts of ways but the organic plan keeps our mind intent upon the necessary relationship" (123).

An academic library is normally a multi-storied building. Each floor has to be organized on certain logical basis. The librarian should clearly mention the relationship of each department / section in order of priority on each floor. Areas most commonly used by readers or coming in immediate contact with readers, will be at the main floor i.e. Ground floor. However, provision for serious readers has to be made at any quiet place on any floor above the main floor if suitable lifts etc. are available, so that the readers will not have to climb long rows of steps and get tired and also waste their precious time.

Spatial relationship is based on the principles of SYSTEM ANALYSIS - a modern conceptual approach – to study and determine the proper and smooth functioning of each of the activities. In other words, it provide the opportunity to study a library as a whole system and its major functions in relation to its parts and how the parts function in relation to its host i.e. main system, is studied in detail.

It is an industrial engineering approach but has applications to almost all-prevailing systems, large or small, sub-system and sub sub-system. In a library, its applications, are wide, they especially play a better role in spatial relationship.

Under this system, time and motion study is conducted, which will be of value in determining the location and relation of various areas more frequently used by readers in their proper sequence and movements of staff from various desk duties to their work places and vice-versa. How much time is being devoted in movements under each process and how much time can be saved by re-organizing space in their proper service relationship, could be ascertained by

the systems approach to such problems. The librarian can plot such time schedules on graph himself or he can take the help of an expert. However, it is better to have this study done much earlier and at the start of the planning process itself.

User's behaviour always indicates that they prefer things which are available easily and quickly, without much effort on their part and would be contented with the nearest even while sacrificing the better, which may be available a little way but at some inconvenience. There is no better place than a library to observe such human behaviour. In view of this, and the service motto of the modern academic library, spatial relationship has attained greater importance.

According to Metcalf answers to the following questions, will bring out many of the problems involved in spatial relationship:

i) What public services should be close to the entrance lobby? At least the control, circulation, reference and reserve book desk, the public catalogue, reference, bibliography and current periodical collections, as well as stair-wells and public elevators or escalators, if either or both of them are to be used, should be considered here.

ii) Should the quarters for the processing department be on the same level with the services listed above? If the space cannot be found for all of them there, should they all be housed elsewhere, or they be divided with accommodation for those working regularly with the catalogue on the central service level and others elsewhere?

iii) What should be the relationship, as far as space assignments are concerned, between shipping and receiving room and the acquisition department?

iv) Should the Administrative Officers be on the same level with the Control Services? There is a great difference of opinion over this.

v) If the library is to include an exhibition room or a rare book room to which it wishes to attract visitors, especially friends of the library, should this be placed near the entrance so as to be readily accessible or will quarters elsewhere, in a quieter location, be satisfactory?

How important is it to place a large percentage of seating accommodations on the entrance level, or if that cannot be arranged, on levels, up one or down one, with the entrance to avoid unnecessarily heavy traffic on stairs or elevators. (124)

124. Metcalf, cit. P. 92-94
"What library services are most popular, how should they relate to one and other in space, and how do they relate to their satellite departments? Are any of these services or departments expected to expand at a quicker rate than others? Are any expected to be phased out over the next few years of substantially reduced in size? All this information must be gathered and the relationships charted. In this way, the Librarian can relate spaces in the library for the most efficient operations" (125).

Spatial relationship is one of the very important aspects of library planning, and the Librarian is the person who has to study the various library activities, users’ behaviour and provide proper relationship of activities in the library. The fourth law of library Science – “Save the time of readers”, should govern the philosophy behind this arrangement as the library is for the readers and its design should be such that it really saves the time, and not claiming in theory alone. In an academic library, a large number of freshmen come every year and witness a complex system for the first time including reading areas, unique services and the huge book stock. They get a little confused if they have to wander here and there inside the library. The spatial or activity relationship should therefore be organized in an assembly line system, so that the reader could approach any point which they desire to visit.

5.10 Traffic Flow and Its Control

The smooth and proper functioning of a University Library depends on proper planning of traffic flow inside the library and its desired control in all library areas. Modern library buildings are service-oriented structures and are heavily used by their clientele. This use definitely brings rush into the premises. Serious planning of Traffic has therefore to be done at the early stages of preparing the blue prints. As essential characteristics of a highly functional academic library building is to provide with ease, access to all its areas, without disturbing any reader, staff member or arrangement of library material and with the least possible effort and time. While planning essential service areas, staff and student areas or stacks of various types of traffic patterns, emerging in each area, passing through the area and dispersing in other related areas need to be taken into account. Satisfactory traffic flow planning goes into the final form of plan but remains a constant factor from the start itself. Traffic pattern in a large university or academic library is not limited to one floor or one area alone. It spreads throughout the ground floor and other floors and requires both horizontal as well as vertical planning or communication and transport organization as these areas are expected to be used by all, without causing undue delay in queues, making noise and disturbing or distracting others or making work of staff engaged in various

duties difficult. Prof. Deshpande says, it would be necessary to avoid all conflicts in the three traffics, viz.

i) The traffic or readers

ii) The traffic of books and other &

iii) The traffic of staff (126)

5.10.1 Internal Traffic

Readers need not be made to walk through the areas where the staff is engaged in the selection, ordering and processing of books nor should the staff attached to the "green room" of the library, be a nuisance to the readers by parading through the reading rooms every now and then. Such parades besides being noisy inspite of carpeted flooring constitute visual distractions. The traffic of books has also to be managed in such a way that the books follow the assembly line method. New books are received in the library at one end and then they are processed and passed on to the reading rooms without bumping into either the readers or the staff unnecessarily.

We have to ensure that an easy and smooth flow of all the three traffics are maintained throughout the working hours of the library. This becomes more important especially during peak hours of library services, when classes are off and both teachers and the taught are free to utilize their time in their library for furthering their academic pursuits. The Librarian, responsible for the planning of a new library, should make it a point to note in his preliminary brief and mark various flows mentioned above with different colours showing different traffic flow patterns - originating at entrance and terminating again at exit. Total and complete care has to be taken in this way for all areas and floors involving all types of traffic and marking them very clearly, thus avoiding criss-crossing the path of each other. Occasional crossing is necessary and unavoidable, but it is also to limit such criss-crossing by creating separate zones, lanes, ways and separate material and staff entry and exit. In a large library the staff has a separate entry and exit point at specified hours only. However, the prime concern of an academic library is the user and therefore he should not be inconvenienced at all by moving noisy book trolley / book trucks in between the reading rooms, lobbies and stack rooms, where the readers are busy in their concentrated efforts of academic activity. If it is found necessary, to move staff or material in between concentrated areas or reading or browsing room occasionally, it should be done at non-peak hours. Even the slightest noise from communication tools and related activities, distracts users attention inside the reading rooms etc.

Prof. Kaula (127) has referred to work flow to determine the functional basis of each activity. According to him this flow includes:

i) User flow  
ii) Materials flow  
iii) Service flow  
iv) Operations flow  
v) Storage flow and  
vi) Control and supervision flow

However, these points could be easily condensed in the trinity of 3 flows mentioned by Prof. Deshpande earlier.

In addition to the above, it may be necessary to consider traffic problems relating to areas where highly valuable and vulnerable material is stored. Thus there would be two types of areas viz.

i) Unrestricted areas where books, periodicals, reference books (in the reading rooms), textbooks are displayed and music and Audio Visual rooms etc.

ii) Restricted or completely closed area: - These are where manuscripts or material of long lasting value but not available now, such as Incunabula etc. obtained by or provided to the library for safe custody by the Government or by individual donors, are displayed.

The flow of traffic starts congesting both at the entrance and the exits. It also starts from these points and ends here only. At the entrance people gather to gain entry into the library much ahead of the opening hours and wish to finish their work as quickly as possible or disperse or proceed to various desired areas. After completion of their work, may be to return borrowed material, or reading, or reference or browsing or borrowing, they again return to the exit point and wish to be out of the library at the earliest possible time. Traffic control at this point becomes very critical. The library staff has to handle it with care, caution and keeping in view that major problem viz. The security aspect.

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5.10.2 External Traffic

So far we have discussed only the internal traffic pattern and its control but the times are changing fast and while developing an academic campus, it becomes necessary to develop traffic systems for the entire campus taking into account the peculiar problems of the academic library, its heavy use and the traffic flow around it. The population of the academic campuses has been growing exponentially making it difficult for the campus people to move and approach the library directly without crossing vehicular traffic on their way. With a view to providing better vehicular and pedestrians traffic flows around the library, the following points may be considered:-

i) Pedestrian Traffic

Academic campuses are growing and sometimes overflowing with the staff and student population most of them are either pedestrians or cyclists. They need special care, and provision of pedestrian paths or roads becomes necessary. This should be provided properly but a little away from the library. Besides, if there is no road for pedestrian traffic from all around the campus, people trend on the beautiful lawns and flower beds and spoil them. Design of such external traffic systems including parking areas is to be taken into the integrated plan of the library surroundings.

ii) Vehicular Traffic

It may also be worthwhile to mention that personal transport systems are improving. People have become time conscious. The dictum “Time is Money” has been accepted by the academic community too. Not only faculty and other users, but also a number of students are using now-a-days, motor cars, motor cycles, scooters, mopeds, cycles etc. while coming to the campus from outside. Even inside a large and sprawling campus, use of such vehicles has become a common affair. This poses some problems of arranging special vehicular traffic facilities such as: - Provision of Car, Scooter parks, slightly away from the library which is a silence zone.

5.10.3 Supervision and Control

The control desk is the central nerve of the library security system. Security checks are located or connected with these areas for protecting the collection of the library from theft or vandalism. Though it adds to the cost, it is worthwhile to plan a good security system at the construction stage itself. Addition of a security system at a later stage is not only difficult but also expensive. Control desks are necessary on all floors at vantage points from where one could oversee the area under one’s supervision. A proper security system which may have suitable entry and exit gates for users and which does
not take much time in checking and clearing is necessary. The system may have any of the following:

i) Turnstiles for entrance and exit separately,
ii) Plastic ropes on stands used as a dividing line for incoming and outgoing traffic.
iii) Low wooden partitions or single brick low height walls of 24” to 30”
iv) Electronic scanning and checking the latest device in the field.

5.10.4 Communication and vertical transportation facilities

Readers and books have to be transported from one floor to another. Appropriate means of transport therefore become necessary and may be included in the preliminary stages of planning. This requires special architectural considerations so that valuable space is not wasted, the facilities are provided at suitable locations, the aesthetics of the library is retained and the time of the users is saved in traveling long distances. These include main stair cases, passenger lifts, and escalators, booklifts, conveyor belts, pneumatic tubes etc. for transportation and external and internal telephones for staff, telephone booths for patrons, public address system, telex and teletype equipment and computer terminals, warning bells etc. In addition, emergency exits and lifts are to be provided as per local municipal requirements and codes in practice for multi-storied library buildings. The communication system should be so efficient as to make sure that no reader is left in the library at the time of closing, by giving a proper warning bell.

The numerical strength of such facilities depends on the volume of the traffic and this should be properly assessed as any addition later becomes difficult to accommodate.

5.10.5 Noise and Other Distractions

Distractions due to noise and other nuisance have to be kept to the barest minimum. The readers’ attention is diverted or distracted by two major factors:

(a) Auditory distractions due to sound etc.

Even the ordinary movement of the communication systems such as: lifts, sound of people walking in the aisles or up the stair-cases, typewriting and telephoning in other areas etc., slight movement of chairs, thumping of books on the tables, movement of book trucks, distract the attention and therefore as far as possible noise and confusion should be kept out of reading areas.
(b) Visual distraction through sight or vision

Enough seats may be provided with sufficient space in between and partition in front of the table so that the user's attention is not diverted. Seats near windows may cause visual distraction and should be on higher level than the vision areas of a seated user. Clear and wider traffic lanes will also discourage disturbance and distraction caused to users. Heavily used material should be dispersed in different areas so that the users are not disturbed in the stack rooms.

5.10.6 Guides / Signs

In addition to providing good traffic patterns for staff, books & users, the library architect or interior designer or both in consultation with the Librarian should design suitable signs and guides which will automatically assist the users, especially new comers, to understand traffic patterns of the library and guide them to the card catalogue or PC's, to the reference and inquiry desk, to the circulation counter, to specific books stacks without the help of the Library staff.

According to Langmead and Beckman it is essential that a user can find his way into the building and to the bibliographic services within the building with little difficulty. This very largely, depends upon the design expertise of the architect. The architect and the Librarian have both failed in their purpose if for example:-

"A large number of signs are necessary to direct a new user from the front door to the card catalogue or if after designing a sign program, it is still necessary for library staff members to replace hand written notice on walls or columns"(128).

Guides, signs or large indicating boards with the arrows showing locations etc. should be prepared in pleasing combinations of colours, beautiful in appearance and attractive to look at. These should be properly displayed to catch the eyes of the readers as soon as they enter the portals of the Libraries.