The role of national libraries and their consequent building requirements in developing countries

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THE ROLE OF NATIONAL LIBRARIES
AND THEIR CONSEQUENT BUILDING
REQUIREMENTS IN DEVELOPING COUNTRIES

by

HALIMAH BADIOZE ZAMAN ALA, MLS

A doctoral thesis submitted in
partial fulfilment of the requirements
for the award of the degree of
Doctor of Philosophy
of the
Loughborough University of Technology

December 1982

Director of Research: Peter Havard-Williams, MA, DipEd,
FRSA, FLAI, FBIM, FIInfSc
Professor and Head of Department of
Library and Information Studies

Supervisor: L Durbridge, MA, FLA
Department of Library and Information Studies

© by Halimah Badioze Zaman, 1982
Dedicated to the ones I love,
Ayah and Mak, my brothers and sisters, my husband, Ku Rahman
and our son, Ku Hazran


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ABSTRACT

This work was carried out to investigate the roles of national libraries generally in developing countries and the consequent building requirements. Since the work involves studies of current trends and problems in planning or designing national libraries and their services in the developing regions (South Asia, South-east Asia, South-west Asia, Africa, Latin America and Oceania), background information on some of the countries in these regions, as well as information on the library services in general and the national libraries in particular, are given. For the purpose of this work, eleven functions which seemed to be important in influencing the design of national libraries were chosen for the questionnaire sent to the national libraries of the various regions and these are tabled in this work.

Concern for library architecture is a new phenomenon in developing countries. There is a lack of trained and skilled building technicians, a lack of experienced librarians and architects in the field, and a lack of research on building materials. Apart from these, there are various other socio-economic, climatic (e.g. monsoons, prevailing winds such as tornadoes and harmattan) and non-climatic (e.g. earthquakes) problems which have been studied.

In order to overcome these problems more efficiently, and bearing in mind the functions of national libraries, principles of building requirements for national libraries are proposed. These principles are intended as a guide to architects without imposing any restrictions to individuality of design.
ACKNOWLEDGEMENTS

I wish to thank Mr. L. Durbridge, my supervisor, who has devoted many hours to this work. His effective guidance, constructive criticisms and encouragement throughout this work is very much appreciated. My gratitude is similarly extended to Professor Havard-Williams for his invaluable suggestions and criticisms.

Several other people have helped in different ways and at different times to the accomplishment of this work. To name them all would make too long a list, but in particular, I would like to express my appreciation for the following:

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- the National University of Malaysia (Universiti Kebangsaan Malaysia) for granting the study leave to undertake this research;
- the librarians and their staff of all the national libraries in the developing countries who answered my letters and questionnaires;
- Lucy G Fontes and Joanna Andradé who helped in the translation of documents and the answers to questionnaires in Portuguese and Spanish received from the South American national libraries.
- my Malaysian colleagues who provided me with other necessary information;
- the staff of the DLIS and of the University Library at Loughborough University of Technology for the services and facilities provided;
- Mrs J Smith for typing this work.

Finally I wish to express my deepest gratitude to Rahman, a very special husband whose help, love and encouragement made it all possible, despite pressing commitments of his own.
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<tr>
<td>AACR</td>
<td>Anglo American Cataloguing Rules</td>
</tr>
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<td>ASEAN</td>
<td>Association of South-east Asian Nations</td>
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<tr>
<td>BBN</td>
<td>Bahagian Bibliografi Negara</td>
</tr>
<tr>
<td>BLLD</td>
<td>British Library Lending Division</td>
</tr>
<tr>
<td>CLAIM</td>
<td>Centre for Library and Information Management</td>
</tr>
<tr>
<td>FID</td>
<td>Federation of Information Documentation</td>
</tr>
<tr>
<td>GIP</td>
<td>General Information Programme</td>
</tr>
<tr>
<td>IBTCP</td>
<td>Instituto Brasileiro de Informacao em Ciencia e Tecnologia</td>
</tr>
<tr>
<td>IFLA</td>
<td>International Federation of Library Associations</td>
</tr>
<tr>
<td>ISBN</td>
<td>International Standard Book Number</td>
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<tr>
<td>ISO</td>
<td>International Organisation for Standardization</td>
</tr>
<tr>
<td>ISSN</td>
<td>International Standard Serial Number</td>
</tr>
<tr>
<td>JKK</td>
<td>Jawatan Kuasa Katalog</td>
</tr>
<tr>
<td>JSCLCBS</td>
<td>Joint Standing Committee on Library Cooperation and Bibliographical Services</td>
</tr>
<tr>
<td>KORSTIC</td>
<td>Korea Scientific and Technological Information Centre</td>
</tr>
<tr>
<td>LAS</td>
<td>Library Association of Singapore</td>
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<tr>
<td>MANIS</td>
<td>Malaysian National Information System</td>
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<tr>
<td>MNLS</td>
<td>Malawi National Library Service</td>
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<td>MRPRA</td>
<td>Malaysian Rubber Producers' Research Association</td>
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<td>NATIS</td>
<td>National Information System</td>
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<td>PNG</td>
<td>Papua New Guinea</td>
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<td>PPM</td>
<td>Persathan Perpustakaan Malaysia</td>
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<td>RH</td>
<td>Relative Humidity</td>
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<td>SCOM</td>
<td>Standing Committee on Microfilms</td>
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<td>Universiti Kebangsaan Malaysia</td>
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<td>UM</td>
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<td>UNESCO</td>
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<td>UNIDO</td>
<td>United Nations Industrial Development Organisation</td>
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<td>UNISIST</td>
<td>World Scientific Information System</td>
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INTRODUCTION

The National Library concept is a recent one in the developing countries. In the developed countries, national libraries have existed as such since at least the sixteenth century although some claim much earlier beginnings as royal libraries. By the nineteenth century most countries in Europe had or were creating national libraries. The typical national library was evolving, or aiming consciously to be, the finest collection of books in the country, the national book archive, and a source of national pride (1). During most of that time, until Panizzi stated the ideas of the functions of the British National Library in the later part of the nineteenth century, any discussion of role and function would have seemed strange and unnecessary. However, in modern society, the mere collection and preservation of books and their availability for consultation, are no longer all the library roles that need to be carried out at a national level in developed and developing countries alike. During the fifties and the sixties, Unesco has sponsored various symposia and seminars on library services including national libraries for developing countries: Symposium on national libraries held in Vienna, in 1958, Seminar on the development of public libraries in Asia, held in Delhi in 1955, the Regional Seminar on the development of national libraries in Asia and the Pacific held in Manila in 1964, the Meeting of experts on the national planning of library services in Latin America, in Quito in 1966, and the Meeting of experts on the
national planning of library services in Asia held in Colombo in 1967. Such meetings and discussions have highlighted the national library's fundamental role as the leader of the nation's libraries, focal point for the continued development of all library services, and provider of nationally desirable services, e.g. publication of national bibliography etc.

As with the national library concept, library architecture in the developing countries is also a new phenomenon. This thesis seeks to examine comprehensively the planning requirements of national libraries in developing countries. As a preliminary to this an examination is made of the general features of library development in the third world with particular focus on the emergent national libraries. The general planning requirements for national libraries in the so-called underdeveloped world are then presented with a view to providing a synthesis of the lessons the developed world's experience provides tempered in the light of prevailing local circumstances.

The data presented has been obtained from:

a) the published literature
b) a questionnaire sent to selected national libraries
c) correspondence with various national librarians and other institutions
d) selected visits made over a number of years (of necessity these have been confined to Malaysia, Singapore and Thailand).

The work was then developed along the following lines:
1. The term 'developed and developing countries' is preferred (to other terms such as 'Western', 'civilized' for the former and 'emergent', 'non-aligned', 'third world' etc for the latter) bearing in mind that the developing countries are by no means a homogeneous group. There are some countries such as Brazil, Malaysia, Singapore, the oil states of the Middle East and others which are developing extremely rapidly. On the other hand, there are others including all the poorest countries of Asia, Africa, Latin America and the Oceania, where the conditions for development do not exist at present and can hardly be brought into existence before the end of this century at the earliest. Levels of development of nations change with the passing of time. Some of the present members of the developing countries (especially those mentioned above) will probably soon be counted among the developed countries. However, it is thought that the fundamental roles and functions of national libraries, their building requirements and related problems will probably remain essentially unchanged.

2. The roles and functions of national libraries in developing countries can be better apprehended through an understanding of the nature and roles of national libraries generally as discussed in the Unesco seminars and symposia mentioned earlier and subsequent literature including the Parry Report (1967 (2)), the 1955 issue of Library Trends (3), P Havard-Williams' article on National and University Libraries -
Special services for special readers in 1968\(^{(4)}\) and K W Humphreys' article on role and functions of national libraries\(^{(5)}\). A brief account of the possible services to be offered by the national library is included.

3. As examination of the present economic, geographical, educational, as well as other factors which affect general library development in the developing countries is also made. An examination is also made of the functions of national libraries in these regions. Eleven commonly agreed national library functions were used as the basis of enquiry in the questionnaire. These were:

i) Collect all national publications.

ii) International exchange of publications.

iii) Collect foreign publications.

iv) Preserve rare books and documents.

v) National Bibliographical Centre.

vi) Publish national bibliography.

vii) Publish national union catalogue.

viii) Serve research workers.

ix) Inter-library lending.

x) Professional training of staff, and

xi) Library planning.

They were chosen because the activity generated by the national library functions above, are important factors in determining the size and design of the national library.
buildings. The results of the questionnaire have been summarised in Table 5.1. It is interesting to note that some functions which are considered inessential by Humphreys* e.g. professional training, library planning etc are considered fundamental and carried out by most national libraries in the countries concerned. Also, whereas the publication of union catalogues is considered fundamental by Humphreys, this task is only undertaken by 27 percent of the national libraries who answered the questionnaire. It is important that the functions and roles of the national libraries are ascertained at the planning stage, as space will have to be provided for the activity generated by these functions in the buildings designed by the architect. Chapters Two, Three, Four and Five set out the factors needing to be considered by architects when designing national library buildings in the developing regions.

4. An examination of particular problems of providing for preservation of library materials, providing for control, flexibility, expansion and fabric maintenance is also made. Special reference is made to the functional and environmental requirements for national libraries in these regions. Suitable conditions for the different types of users in the national libraries of

* Humphrey's categorisation of national library functions is used for convenience because they present a handy way of assessing and comparing performance of national libraries in the developed and developing countries.
these countries are also studied. Emphasis is placed upon determining suitable conditions for serious study and research work and for the storage of materials in order to facilitate their usefulness. These main factors are lighting, finishes, ventilation and air-conditioning, acoustics, fire precaution etc. It is interesting to note that although at present steel and wood are the only materials used for library shelving, it will probably not be long before plastics (e.g. polyacetal which exhibits high strength and rigidity, hardness, good resilience, dimensional stability and roughness etc) may be used. However, further research will have to be undertaken by local library manufacturers to determine its usefulness in library furnishing.

5. A study is also made of some natural disasters such as monsoons and thunderstorms, prevailing winds such as hurricanes, tornadoes, the harmattan, the shama1 and sharqi; and earthquakes. No works on library architecture have provided a solution to the problem of earthquakes. It is felt most recent studies on the use of natural rubber bearings already proven in the isolation of buildings from noise and minor vibrations from other sources, will probably be used before long in the future - which, if successful, will contribute to the safety of thousands of people in the developing regions.

6. Functional and environmental requirements are shown to lead to certain design criteria. Public, staff and services and storage requirements are individually examined and recommendations
proposed in Chapters Eight, Nine and Ten respectively. It must be emphasized that no attempt can be made to produce an ideal solution to the problems of planning a complex building which is the large modern national library, especially in the developing countries, where great problems are encountered. It is hoped that the principles proposed will perhaps offer a guide to the architect without imposing any restrictions upon individuality in the design of national library buildings in developing countries.
REFERENCES


CHAPTER 1
NATIONAL LIBRARIES: THEIR NATURE AND ROLES

1.1 Introduction

It is tempting to think of national libraries as a well established category of library, like public, university or special libraries, occupying similar positions and fulfilling similar roles in most if not all countries. National libraries are however surprisingly difficult to define, and they exhibit great variety in size, nature and function. Also, in some countries there is no clear dividing line between planning the National Library and its services, and planning the nation's library services - various libraries in these countries may be fulfilling national roles to a greater or lesser degree. Some countries have neither a National Library nor a national library system; in many countries, the National Library is by no means the largest or the best library; and in some federal nations, each state has its own 'national' library. This chapter deals briefly with developing the concepts of the national library (it must be borne in mind, that the very concept of a national library, apart from those in a few older countries, e.g. Britain, France, is remarkably recent) which were greatly stimulated by a series of seminars, meetings and studies funded by either Unesco or other bodies on or relevant to national libraries, covering various areas of the world. These were:

ii) 1955, Brussels - IFLA and International Congress of Libraries and Documentation Centres.

iii) 1958, Vienna - Symposium on National Libraries.

iv) Library of Congress Study.

v) 1955, Delhi - Development of Public Libraries in Asia.


viii) 1967, Colombo - Unesco Meeting of Experts on the National Planning of Library Services.


x) 1968, Havard-Williams' Study on Special Services.

xi) 1969, Dainton Report.*

Attempts made by several people to define the national library are also considered in this chapter. The 'general services' offered by national libraries, such as acquisition, bibliographical activities, reference services, protection and conservation of documents, professional training of staff, role of the national library in science and technology and cooperation are looked at in some detail. However, the actual services and functions offered by national libraries in developing countries will be studied in great detail in Chapters 3 and 4.

* Bibliographic citations follow, when more detailed reference is made to each.
1.2 Developing Concepts of the National Library

National libraries, in essence, if not in name, have existed since at least the sixteenth century, though some claim much earlier beginnings, usually as royal libraries (and some are still called by this name). In the nineteenth century, several countries in Europe, consciously created national libraries, but more often they developed from pre-eminent existing collections, or labelled such collections as national libraries and gave them national status. By the twentieth century, the mere collection and preservation of books and their availability for consultation, did not constitute all the library roles that needed to be carried out at national level and thus additional national functions began to be performed by existing libraries, individually or in cooperation or by newly created national organisations. For instance, national bibliographies by this time became established or were reorganised, and not all of them were produced by national libraries. Inter-library lending, though at first in the 1920s a small activity, became too large for national libraries to handle alone. Also the needs of science and technology, and medicine became pressing and could not be met by the humanistic book (1) museums that many national libraries essentially were and some remain. It is not the intention to look in detail at the historical development of national libraries, for which an enormous range of literature exists.

In the last 25-30 years, extensive discussions on the nature and functions of national libraries have taken place*. But what

* Please refer to items (1-50)
is a national library? Do all national libraries perform the same functions? How does a national library in a developed country e.g. the United States or United Kingdom etc differ from a national library in a developing country e.g. India, Africa or Malaysia? And further consideration of a national library with its role as an institution is relatively recent\(^{(2,3)}\). Yet, it is not possible to find one complete or any all-embracing definition, because it is a changing concept. As Arundell Esdale said "the idea of a national library has over a century, and for longer still if we consider it rightly, been expanding" and that "uniformity is not to be expected"\(^{(4)}\). How rightly David Mearns describes national libraries: "wonderously complicated organisms; that whereas some among the new institutions were frankly imitative, most are conspicuously differentiated one from the other"\(^{(5)}\). Sir Frank Francis states that "speaking broadly, the national library in any country is the library which has the duty of collecting and preserving for posterity the written production of the country"\(^{(6)}\). Ib Magnussen remarks that "one can talk of national libraries in a limited and in a wider sense". In a limited sense, Magnussen amplifies "a national library is the central book museum of a country". In a wider sense, national libraries "may be more than one library in a country which is a depository library of all printed publications of the nation"\(^{(7)}\). He also states that "as a rule" national libraries "are government-subsidized, or at any rate under public control and, in one way or another, they place their collections at the disposal of the whole country"\(^{(8)}\). Tyulina's definition reads: "A library
is called a national one, when it is the official depository of printed works; a general access library, an information-bibliographical centre and a centre of coordination, planning and simulation of the entire library system of the nation"(9). In a paper on national libraries, Godfrey Burston, comments that "so called national libraries have very distinct personalities and they may or may not be specifically designated national"(10).

Thus, it appears that there is no general consensus in the definition of national libraries. Indeed, national libraries are so varied - for example, if one assumes that a national library is to serve the whole nation, how would one then categorise those national libraries which serve part of a whole nation, for example, the National Library of Wales or the Bayerische Staatsbibliothek (Bavarian State Library) in the Republic of Germany? Then, if one assumes that the collection in a national library should be comprehensive, how would one explain that national subject libraries, for example, the National Library of Medicine in the United States and the Slovak Central Technical Library in Czechoslovakia? Then again, if one assumes that national libraries are for research and reference only, how would one then justify those libraries which lend, for example, the National Central Library in Great Britain before the formation of the British Library in 1973 or the National Central Library in Korea which serves mainly school pupils. What about those national libraries which also combine the function of lending libraries, for example the National Library of Singapore and the National Library in Calcutta, India?
It is due to the very complicated nature of national libraries that caused the Unesco Symposium "not to formulate definitions of the term 'national library' at the outset but rather to identify and evaluate the activities"(11) and functions undertaken by such libraries. Esdaile devoted the book National Libraries of the World, to 42 libraries in 32 countries. F J Hill in 1957, completely revised Esdaile's 1937 work(12). Both Esdaile and Hill give their readers an overall view of several national libraries, but do not offer a clearer notion of the distinctive role and functions of a national library. In 1955, a special issue of Library Trends devoted to "Current Trends in National Libraries" attempted an evaluation of the functions and activities of national libraries. The following functions were discerned as being most characteristic of national libraries:

1. these libraries are recognised as the repositories of records of their own people's literature;
2. the collections, which are universal in scope, are augmented by legal deposit and international exchanges;
3. the collections are the principal source of information for the compilation of current national bibliographies;
4. many national libraries are compiling union catalogues of books and other materials;
5. the optimum national library is considered a libraries' library, adopting technical standards, establishing codes of practice, and providing centralised cataloguing services;
6. national libraries are pioneering in innovative techniques involving microfilming and photoduplication;
7. national libraries prepare exhibits, sponsor lectures and concerts, and publish bibliographies;

8. in some national libraries, schools of library science are conducted(13).

It is useful to note here that all except six of the libraries surveyed by Library Trends were in Europe and Latin America.

A study was later sponsored by the Library of Congress where the following twelve functions of eleven national libraries were enumerated:

1. the acquisition of the nation's output of materials by means of legal deposit;

2. participation in international exchange;

3. service to other libraries in the nation by catalogue card distribution;

4. the compilation of the union catalogue;

5. provision of general reference services;

6. special reference services for the legislature and government;

7. lending services;

8. photographic reproduction service;

9. the publication of a national bibliography;

10. a general publications programme;

11. legal responsibilities for other libraries in the nation, and

12. additional services such as library training and archival responsibility(14).
As can be observed, most of the functions described in the Library Trends survey, are subsumed in the Library of Congress enumeration. The principal focus of the Library of Congress study was "a comparative analysis of the functions which national libraries actually performed"(15).

The International Federation of Library Associations (IFLA) realised the necessity for the exchange of views between prominent libraries of the world and instituted its National and University Libraries Section. The groundwork prepared by IFLA and the International Congress of Libraries and Documentation Centres held in Brussels in 1955 was a necessary prelude to evoke the catalysis provided by Unesco, in sponsoring a meeting of authorised representatives of certain 'national libraries' or libraries having analogous functions, to establish a broad outline of a general policy of collaboration. This was the perspective of the Vienna Symposium on National Libraries held in 1958.

It is more than twenty years now since the International Symposium on National Libraries. The Symposium attempted to define a national library and to "outline the tasks which every country should undertake both in its own interest and in order to retain its due place in the international network of cultural relations"(16). The Symposium did not concern itself solely with functions actually performed but also with standards to which national libraries could aspire. Chapter 7 of the Vienna Symposium classifies its recommendations under the following headings:
1. **Building and Premises.** The major recommendations made is that "the only acceptable site for the national library is a central one; subsidiary depots away from the main library are usually the result of some practical necessity ...(17). Also, it stated that "only one reading room is not to be recommended; it is better to have several rooms for different purposes. The installation of exhibition and lecture rooms is particular important"(18).

2. **Staff.** The major recommendations are as follows:

i) "The professional status of librarians should be considered as equivalent to that accorded to careers at universities. Librarians should receive the same treatment as workers in other academic fields, particularly as regards salaries, hours of work, vacations and travel"(19).

ii) The number of librarians dealing with a special field and capable of serving as intermediary between librarians and research workers should be increased.

iii) Theoretical instruction of senior staff should be undertaken by librarians and the practical work should be conducted in the national library or in other large libraries.

iv) Adequate funds should be provided for the exchange of foreign travel of librarians. Governments should facilitate such exchanges and study-tours, particularly for their own librarians.
v) Annual meetings of specialists from the various libraries should be held to exchange views on specific themes.

3. Finance.

i) Maximum flexibility should be promoted in the use of funds in the library budget, allowing for transfers within the budget and for the carrying over of funds from one year to another.

ii) The National Library should have special funds at its disposal to acquire at very short notice works of capital importance for the national heritage.

4. Acquisition

i) The National Library should "acquire and conserve the whole of the national production of printed material" (20). Wherever they may be stored, the national library should have a record of such material.

ii) A very significant recommendation is that the national production should be preserved in its original form; micro-copying particularly of newspapers, should not be regarded as a justification for destroying the original.

iii) It should also collect printed material concerning its country, no matter where these are published, and should be responsible for coordinating efforts to obtain the foreign literature the country requires.
iv) Legal deposit regulations should make due provision for privately printed material.

v) The National Library should promote adoption in its own country, of common rules for the compilation of catalogues, due consideration being given to the recommendations of IFLA.

5. Bibliography

i) The national library is responsible for the bibliographic services of its own country. It should coordinate bibliographic activity, establish standards, proposed methods for the training of bibliographers, and see that bibliographical work is performed in a satisfactory manner and by the most suitable agencies.

ii) It should prepare bibliographies based on its own collection, including in particular, catalogues of monographs and incunabula.

iii) It should undertake current national bibliographies and retrospective national bibliographies and specialised bibliographies.

iv) The current national bibliography should aim at a total coverage of the country's production, irrespective of language, and should include official publications, newspapers and periodicals, maps, atlases and musical scores. All these should be listed in the national bibliography or in specialised bibliographies, and in the case of unprinted theses, an indication should be given as to
where the original is deposited.

v) The national library should have a full accurate knowledge of all sources of bibliographical information. It should publish or encourage the publication of a guide to sources of specialist information. Information should be given free of charge except when required for commercial purposes.

vi) The national libraries should send to Unesco a list of new publications issued in the country annually.

6. New Methods. The recommendations seem to be directed to Unesco asking it to explore new methods and techniques of information storage and retrieval. In this direction, Unesco has borne rich fruit, largely on the international plane, in the shape of UNISIST which is supposed to stimulate programmes like NISSAT in India and MANIS (Malaysian National Information System) in Malaysia.

7. Photocopying. The recommendation that Unesco should pursue its programmes of microfilming archive documents in countries not equipped for the purpose, has already borne fruit.

It can be observed from the Library of Congress Study and the Unesco Symposium that they both agreed on four major functions:

1. that the national library should acquire and conserve the whole of the national production of printed material,
2. the national library is responsible for the production of a current national bibliography,
3. the national library should maintain a Union Catalogue of materials available in its own country, and

4. the national library should participate in international loans and exchanges.

The Unesco Symposium was largely European and American in character, with Iran coming into the picture as appointee of the host country. The Council of Europe, the International Atomic Energy Agency, the International Federation for Library Associations, the International Federation for Documentation and the British Council were also there as observers. However, the poor relations from Asia were not invited, evidently on the presumption, which in some ways was justified, that the situation in the Asian countries had not developed to such an extent as to make participation relevant, though the invitation to Iran was an interesting exception! (20b).

The functions of a national library and its place in a national library service with particular reference to Asia were first discussed in the Unesco Seminar on the Development of Public Libraries in Asia held in Delhi in October 1955. It was noted at the seminar that the terms "national library" and "national library service" are very often loosely used and it defined the functions of the national library as follows:

"It should collect all literary and related materials concerned with the nation both current publications under copyright deposit and historical materials; be a conservatory of materials concerned with world culture and the natural main source in the country of such materials for scholars and research workers; act as the authority for the compilation of the national..."
bibliography, this stemming naturally from its functions as a copyright deposit library; serve as the focal point and organising agency for national and international book exchange. (21)

Although the above are the major functions, the following were also considered desirable for proper coordination:

It should be the agency to compile and maintain National Union Catalogue, again arising from its function as the copyright deposit library. It should provide bibliographical services to parliament and to government departments. In addition, it should assume general responsibility for initiating and promoting cooperation and forward planning in all matters between itself and other libraries in the performance of the above functions, especially in relation to university and special libraries. (22)

It was also noted in the Seminar that what should constitute a viable unit of service for public libraries would vary with local circumstances; in some cases the public library service could be based on the local government structure; in others the central government would be responsible. In such instances, both the public and the national library could be serving the entire nation and could thus be logically combined into one institution. Thus, it was agreed at the seminar that "in some countries, particularly smaller countries, the functions of the national library and the central library board should be integrated for better and more economical development" (23).

Perhaps this seminar had an effect. The next decade resulted in quite a few significant developments in the national library field in India, Japan, Australia, Ceylon, Pakistan, the Philippines and other countries, and encouraged Unesco to organise a Regional
Seminar on the Development of National Libraries in Asia and the Pacific Area in Manila in 1964, exactly 6 years after the Vienna Symposium. A very pertinent observation made is that "there are common economic, staff training and bibliographical problems; problems of acquisition, linguistic problems and those consequent upon the poor physical quality of book production and damaging climate" (24). A peculiar feature of many national libraries in Asia is the provision of public library service. The following statement is indicative of the concensus of opinion in the Manila Seminar and is noteworthy:

The sharing of common difficulties and the pursuit of common aims in providing facilities for the preservation of mankind's national and international cultural heritages, together with facilities for scholarly research and for the support of educational programmes, are things which can plainly lead to a larger international understanding. If with them are combined youthful zest for development and the wisdom and cross-fertilization of ancient civilizations, the future promises well. (25)

The basic functions of national libraries as summarised at the Manila Seminar in 1964 are:

1. to provide leadership among a nation's libraries,
2. to serve as a permanent depository for all publications issued in the country,
3. to acquire other types of materials,
4. to provide bibliographical services,
5. to serve as coordinating centre for cooperative activities,
6. to provide services to government. (26)
It was also considered at the Seminar that it is preferable for the national archives to be "administered independently but in close cooperation with the national library" (27). It also agreed "that legislative reference services are an essential adjunct to enlightened government and the pre-requisite finance and facilities must be made available whether the service is offered primarily by the national library or by an independent unit answerable directly to the legislature" (28). With regard to the role of the national library in the fields of science and technology it was recommended "where circumstances permit, the national library should assume its proper responsibilities in the fields of science and technology, since these differ in degree rather than in kind from its responsibilities in other fields. These responsibilities in no way diminish the importance and duties of specialised libraries" (29).

However, the Unesco Meeting of Experts on the National Planning of Library Services in Asia, held in Colombo in December 1967, laid special stress on the role of the national library as:

*an active organisation with dynamic leadership geared to a triple purpose:*

- a) preserving national culture
- b) developing by all appropriate means, systems and procedures which will make available the total library resources of the nation for the benefit of the whole national community
- c) establishing relations with libraries of other countries. (30)

Humphreys (1966) (31) has divided the functions of national libraries generally into three categories - essential, desirable and inessential. The essential functions of a national library are:
1. The outstanding and central collection of a nation's literature.
2. Depot legal.
3. Coverage of foreign literature.
4. Publication of the national bibliography.
6. Publication of catalogues.

The desirable functions of a national library are:

1. Inter-library lending.
2. Manuscripts.
3. Research on library techniques.

Finally, the inessential functions of a national library are:

1. International exchange service.
2. Distribution of duplicates.
4. Professional training.
5. Assistance in library techniques.

The functions which a national library should carry out are also listed in Chapter 7, 'The National Library' of the Parry Report, 1967(32) as follows:

1. The outstanding and central collection of a nation's literature.
2. The most important collection of books received under legal deposit or under the terms of the Copyright Act.
3. The fullest coverage of foreign literature.
4. The publication of the national bibliography.
5. The national bibliographical information centre.
6. The publication of catalogues of material in the national and in the country's libraries.
7. The centre of inter-library lending.
8. The initiation of research on library techniques.
9. The centre of the country's international exchange service.
10. The centre for the distribution of duplicate material.
11. The centre for professional training in librarianship.
12. The centre for bibliographical and other assistance to libraries of all kinds.
13. The planning centre for the country's library service.*

It is also worthwhile to look at the functions of the British National Library as stated in the Report of the National Libraries Committee under the Chairmanship of Dr F S Dainton, 1969(33). (See the principal recommendations summarised on pages XII-XV).

The study of the functions of the national libraries of the world reveals a richly varied pattern(34) in practice. For instance, in Switzerland, the national library has been designed to weld together the diverse cultural heritages of the multilingual and multiracial population. On the other hand, the National

* It is perhaps worth noting that in the Parry Report (para 299, page 81), 1-6 are 'fundamental', 7-8 are 'desirable', and the remainder, 'could if necessary, be undertaken by other agencies'.
Library in Holland, has the prime responsibility of building up a research collection with an international coverage\(^{35}\). However, despite its varied nature, the importance of the national library is undisputed. David Mearns describes it as "the libraries' library"\(^{36}\) and Herman Liebaers notes that "the main characteristic of a national library is without any doubt the leading place it occupies compared with other libraries in the country"\(^{37}\).

If the national library is important in a developed country, it is undoubtedly even more so in a developing country. Whereas in a developed country, other types of library services may very well be adequately developed, in a developing country, library services may be in a rudimentary stage, or in some cases, not even in existence at all. It is in a developing country that the national library may make its presence and impact most effectively felt. Researchers on national libraries see the ideal as being the libraries which are the centre of a network of libraries within their respective countries; guiding and inspiring other libraries, being the centre of a national and international system of cooperation, producing basic bibliography and providing scope for the training of future leaders of the library profession". Knud Larsen, in his national bibliographical services (Unesco, 1955)\(^{38}\) drew up a blueprint for such a close knit system in a work which has had considerable influence upon the development of national libraries and national library services in the developing countries.
National libraries are an important element in the national library network. In recent years, the concept of the General Information Programme (GIP) has been arrived at as the best means of maximising the availability of all relevant information for all sectors of the community and for all categories of users(39). To coordinate NATIS, it is highly desirable that a central coordinating body (or bodies) be set up. It is not unexpected that in some countries, national libraries, because of their unique role in the national library network, are chosen as the coordinating bodies. Venezuela is an example and if MANIS (Malaysian National Information System) is adopted, the National Library of Malaysia will take up such a role.

Therefore it can be concluded that it is difficult to lay down the functions uniformly performed by national libraries. No longer can one describe a national library as merely the preserver of the cultural heritage and the centre for bibliographical services. These functions will still be theirs, but increasingly the true 'national' library will support the goals of the nation whatever they may be. In assuming this vital role, each national library will take on the colour, the style, and uniqueness of the nation it serves. As Cole says:

There are many concepts of the possible functions of a national library. The ideal will be shaped to the needs of the nation the library is designed to serve. (40).
1.3 Possible Services Offered by the National Library

Services offered by the national library of a particular country are carried out to fulfil certain purposes and to meet certain basic objectives. It is felt useful to list these with some comments on the services provided or projected at the present time. It must however be borne in mind that not all these services are carried out by all the national libraries of the world.

1.3.1 Acquisition

Acquisition in a library is the means by which additions are made to the library collection\(^{(41)}\). It is perhaps the most vital operation librarians undertaken, because without acquisition a library will stagnate and perforce become a museum. It is generally agreed that the national library has the ineluctable responsibility of acquiring all printed material published in a given country\(^{(42)}\). Besides the literature produced within the country, materials dealing with the life and culture of the country which are produced outside the country should also be the subject of collection. However, the national library should be made free to select and eliminate any of the ephemeral material (e.g. commercial material) according to its own established principles. Then again, if for any reason, certain types of printed material (e.g. material of purely local interest, for instance, regional editions of newspapers) were acquired and stored in other institutions in the country, the national library should acquire a record of them.
The acquisition of foreign publications was considered far more complex, although it was recognised at the Symposium on National Libraries in Vienna and the Regional Seminar on the Development of National Libraries in Asia and the Pacific in Manila, that the national library was under the obligation of collecting foreign material concerning the country, no matter where published. This aspect of acquiring foreign materials about one's country is particularly important in the newly independent countries. A great number of the materials on these countries may have been taken to and kept in other countries. Efforts through diplomatic channels could possibly be made to bring these national items or at least copies of them back to the original country. As far as foreign publications not directly relating to a country are concerned, it is felt that the only possible solution is the policy of national coordination of acquisitions which the national libraries usually tend to favour. Broad subject areas could be divided up, so that large libraries in the country can concentrate upon assigned subjects. The Farmington Plan (which is now defunct) in the United States, the Scandia Plan in Scandinavia and the Programme of the Deutsche Forschungsgemeinschaft in West Germany are good examples of this concept.

The disadvantage of this kind of policy are due to the fact that human knowledge cannot be neatly and clearly divided. Therefore, there is bound to be a certain amount of duplication, or even lacunae in the coverage. Then again, in the developing countries, libraries may compete with each other in attempting to
obtain what appears to be the more important and more prestigious subject areas. Sometimes too, a subject may not be assigned to the library where it should properly belong.

Apart from acquiring foreign materials through financial resource, such publications can also be acquired through gifts and exchanges. Many government reports and documents which may not be in the ordinary distribution network are obtained in this way (see page 48 on Internal Exchange Service). No one library can be expected to cover extensively and intensively, all foreign literature. As Sir Frank Francis has aptly pointed out when commenting on national libraries:

*I believe that size (coupled with complexity) is an unexpected enemy of library service. Up to a certain point, size increases the value of a library and engages the respect of its users; beyond that point, it has to be controlled.* (43)

The acquisition of manuscripts involves problems of selection and decentralization. In most countries, responsibility is divided between the national archives, the national library and local libraries and archives. However, while recognising that national arrangements must take account of this distribution of work, the Vienna Symposium considered that the national library had the responsibility of collecting and maintaining a central inventory of contemporary manuscript collections(44). In recent years, it has been the tendency to house and preserve manuscripts in the national archives instead of in the national libraries. Of the twenty-one national libraries which answered questionnaires in
connection with the Colloquium on National Library Buildings in Rome in September, 1973; only nine claimed to have fulfilled the archival function\(^{45}\).

Any method of acquisition exists to obtain for a library material needed in as expeditious a manner as possible and to make it available as soon as possible\(^{46}\). Library materials in the national libraries are acquired through various sources:

a) legal deposit;

b) international exchange programme;

c) occasional gifts; and

d) purchase.

Acquisitions by (b) and (d) mean that selections would be made within the framework of financial resources of the library, the needs of the clientele, subject coverage, space, staff and proximity of other libraries. Enforcement of legal deposit as a means of acquisition of materials into the library defies all the above considerations since every book published in that country should be acquired free of charge. Sources (c) and (d) will not be discussed as they are not unique to national libraries alone.

a) Legal deposit

The brief discussion will centre on several main topics: (1) The tradition and origin of legal deposit, (2) What is subject to deposit? (3) Who is obliged to deposit? (4) What are the penalties incurred on non-compliers? and (5) What can be done with the deposit?
Tradition and origin of legal deposit

Legal deposit has a very long tradition and it is interesting to look briefly at its origin. It is believed that it all began when the art of printing was invented and books no longer had to be copied laboriously by hand. A French King Charles I, who took a kingly pride in the library work of his time with his celebrated Ordinance de Montpellier of 1537 made it obligatory for every publisher and printer in France without exception, to forward to the learned Abbe Medlin de Saint who had charge of the Royal Library at Blois, a copy of every newly published book irrespective of author, subject, cost, size, date or language and whether illustrated or not. It was understood that the books acquired in this manner were to serve as a permanent and tangible record of the literary output of the nation. Thereafter, successive French monarchs took great pride in watching the collection grow by this means. The French and other princely collectors were not only quick to see the possibilities contained in this new procedure of increasing their collections but also, at the same time, grasping and keeping control of the new and dangerous medium: the printed word. Censorship was therefore a prevailing reason behind many of the early ordinances (e.g. the French Montpellier (1537) mentioned earlier, the Swedish and Danish regulations of 1661 and 1623 respectively) and it still has its role to play in many parts of the world. Along with censorship as a purpose of deposit went the granting of certain privileges, particularly a printer's licence, on condition that
the privileged person would undertake the duty of deposit. For instance, this was the case with Switzerland. However, in 1905 the court of appeal ruled this system to be incompatible with the right of freedom of trade laid down in the federal law. Consequently, Switzerland is now one of the few nations in Europe which has no legally founded deposit arrangements; legal deposit here is voluntary with the result that publishers freely present copies of all new books they issue to the Schweizerische Landesbibliothek\(^{(47)}\).

The development of publishing gradually made another kind of privilege more focal i.e. the protection of author's exclusive rights to their production. Governments found themselves willing to provide some kind of protection against pirates, but to be able to do so they had to know exactly what they were protecting. Thus, copyright was often granted on condition that one or more copies of the work in question were delivered to the proper government agency. Examples are found in France (Act of 19 July 1793) and other countries whose legal systems derived from the French: e.g. Belgium and Holland. However, the revised Berne Convention of 1908, by stipulating that the enjoyment of the author's right shall not be subject to any formality, forced its signatories to amend such legislation, if they had not done it earlier. In France, amendments during the 19th Century had meant a return to legal deposit on other grounds. In Belgium, legal deposit was abandoned by the revision of the Copyright Act 1186 and not introduced again until 1965. In Holland (which joined the Berne Union 1912) the Act on Authors adopted 1912, also quitted deposit as an undue copyright condition, while nothing up to this day has come to replace it\(^{(48)}\).
In the United Kingdom, legal deposit began with Sir Thomas Bodley's agreement with the Stationers' Company in 1610 which gave the Bodleian Library the right to receive free copies of all new books printed by members of the company (48b). Today it is still based upon Article 15 of the 1911 Copyright Act, which was not repealed when in 1956 a new Copyright Act was substituted for the rest of its provisions. Here, deposit is no condition of copyright protection. To look at countries where it is still the case, one has to look beyond the circle of Berne Union members. For example, to the United States, where according to the US Copyright Law (title 17 of the United States Code, 1909) legal deposit is still linked to the acquisition of copyright insofar as the copyright secured by publication of the work with the notice of copyright of (c) shall become void if the author fails to deposit two copies for the Library of Congress - which should continue to be the obligation of the owner of copyright, subject to a fine and compensation - should not be a condition of copyright. For other reasons, the revision has been postponed several times and by 1973* it was not yet effected.

Gradually, the concept of a national library, or least a national department within a larger research library, as the archives of the spiritual heritage of a nation - which was in fact already decisive to the author of the Montpelier Ordinance - became prevalent in many countries as they grew conscious of the importance of having a national literature. Today, legal

* When the paper by Bourgeois, Pierre was written, see op cit.
deposit may have several aims: to protect the rights of authors, to maintain a system of press censorship and to ensure the preservation of the nation's literature in a national library.

Whatever the aims or purposes of legal deposit are, in every country at least one copy of every printed or published material should be legally required to be deposited in the national library.

What is subject to deposit?

Audio-visual media and the safe keeping of their records is of course a crucial problem today. However, these questions are highly complex and it has therefore been necessary to leave them outside this study and limit it to deal with conventional printed or near print publications, characterised as human expressions rendered visible by means of graphic signs on paper or similar material. However, it must be borne in mind that in future more audio-visual materials will be subjected to legal deposit especially in the new legal deposit Acts of the new developing countries.

As a reminiscence of the days when the printing press was the one and only means of multicopying human utterances, legislations throughout most parts of the world have simply defined the object of deposit as 'everything printed' or given similar definitions. This has the advantage of providing a fairly complete collection of everything that has been printed on paper i.e. if this is considered an advantage. It may on the other hand lead to rather absurd consequences. For example, if one looks at one of the Scandinavian legislations which states 'everything printed' it
would mean that if one who is living in this part of the world has written a small account of one's life and success, intended as a greeting for one's friends and relatives on a special occasion and therefore printed, one should realise that anybody will be allowed to read this account in the Royal Library and the State Library in half a year's time, unless one takes the initiative of requesting it to be kept secret in the library for a minimum of one hundred years. One has no legal means of preventing it from being included in the collections of the libraries. Such definitions have inevitably led to considerable problems along with the development of other kinds of multicopying techniques. Although the Finnish and the Norwegian texts take 'similar methods' or 'otherwise multicopied' into their definitions, discussion has been equally vivid in all four countries in the area, who have felt the same need for broadening their definitions along the established lines, i.e. by enumerating the different new methods and deciding for each whether they may come within the purview of the law.

Publication, meaning the act of publishing must be understood in a broad sense of the word, for example, as defined in the Danish Act (1961) on the Authorship of Literary and artistic words. Its Article 2, 3rd paragraph says, "The work is made available to the public when it is performed in public, or when copies of it are offered for sale, lease or loan, or otherwise distributed to the public or publicly exhibited. The performance of work before a large group, at a place of business otherwise regarded as being not open to the public, shall also be considered
as a public performance". This would imply that presentation to other limited groups could not be considered publication, and there would be good reasons for that. It should not be tolerated anyway, that prints "of a specifically confidential and private character, only intended for a certain small group of persons available ..." are demanded for deposit and made to library users unless the person obliged to deposit them positively requests them to be kept inaccessible for a certain period up to 100 years (Danish Act 1.7.27 Article 2, 2nd paragraph). The onus of proof in such cases of doubt should always rest with the library.

In cases where a publication (usually it is a book) is banned or censored it should be included in the normal deposit but retained separately from the other material and not made accessible to the public until, if ever, the ban is lifted(49).

The number of copies to be deposited of each item should be very limited. In principle one copy would serve the purpose of safekeeping national literature as well as making its bibliographic record. (In Belgium, legislation has gone no further). However, a duplication of the national literature might be considered a reasonable safety measure, provided the second collection is kept in a separate building and preferably in another town than the first one. If more than one copy is being deposited, it would seem advisable to ask no further than two, but for all practical reasons, one should treat the two as one: receipt, control, cataloguing etc should be handled in one process and only afterwards should the two be geographically separated. As
for the nature of the copies required to be supplied by legal deposit, it is assumed that all items must be complete and perfect and in the usual state as retailed to the public. Where a work is produced in a normal and a 'de luxe' edition, the national library should receive copies of both editions. Publications which are subject to deposit in the developing countries will be discussed and illustrated in Chapter 4.

Who is obliged to deposit?

If one looks at the history of legal deposit, one will find that almost every link in the chain between the author and reader has somewhere or at a certain time been subject to the obligation of deposit, perhaps with the exception of booksellers. Today, the tendency is towards making the publishers bear the main responsibility, and even where the obligation is with the printers, these are often entitled to make the deposit at the expense of the publisher. According to the Belgian Law however, authors may be held responsible when their works are published outside the country. Making it the responsibility of the printer is perfectly natural as long as the object of deposit is everything printed and nothing else. However, as more and more legislations are moving away from this square principle, either by extending their scope to other graphic procedures, by limiting it to certain kinds of publications, or both, the more reasons will be found for bringing the publishers into the scene.

The publisher as the depositor has the advantage of providing
the national library or other institutions which 'act' as a depository library, with the complete edition of any work as it is offered for sale and facilitates the deposit of works produced by photographic reproduction or in near-print form. On the other hand, it is estimated that only about half a country's total book production - quite apart from near-print - is issued through commercial publishing firms and that other channels must be used to get hold of most of the second half among which are the highly important official publications.

Nowadays, when book trade bibliographies are well established and form an important basis of the national bibliographies of various countries throughout the world, it would be wise to make the publisher responsible for deposit. However, not all countries are likely to accept publishers as exclusively responsible mainly because of the traditions in some countries for a large quantity of ephemera and near-print publications. A combined obligation would seem better to meet the demands of today. This is evident for example in Denmark, where the printer or multicopyist might be requested to deposit all publications of less than seventeen pages and other publications insofar as the publisher's name does not appear on the title page (these publications are usually not included in the book trade bibliographies) while the publishers supply books issued by themselves. In Britain, the British law requires the publishers' name to be stated on all publications (it helps to prevent libel etc). There is good reason for making the publishers responsible for deposit in developing countries, because the printers, are usually not well-educated and may not
be able to understand the complexity of the legal stipulation and legal deposit forms. However, there is also an argument for making printers responsible in these countries. One obvious reason is that, while printers, equipped with printing machines and soon, have permanent premises with which a national library can maintain contact, publishers in the developing countries are sometimes fly-by-night businesses.

What are the penalties incurred for non-compliance?

There is considerable variation in the number of copies which are deposited in national libraries or other depository libraries, ranging from one in a few countries e.g. Japan to as many as forty-one copies of certain kinds of material in the USSR. Also, in some countries the number of copies of periodicals, official publications, and non-book materials (e.g. films and sound recordings) deposited differ from those for books. In order to secure legal deposit, penalties are imposed for non-compliance. Again, there is no uniform method of carrying this out. Some countries impose the confiscation of the whole edition of work and in some countries, imprisonment can also be imposed. In Great Britain, for example, copies of newly published books must be deposited with the British Library and with the Libraries of the Universities of Oxford and Cambridge, the National Library of Scotland, the National Library of Wales and the Library of Trinity College, Dublin, if demanded by those libraries. Any publisher guilty of non-compliance will be forced to deposit fifty copies of that publication, while the similar offence in Nigeria carries
a maximum penalty of a fine of N100. Zaire imposes a fine from 6000 to 36,000 francs and up to eight days imprisonment. The penalties incurred vary from one country to another as the examples cited may indicate.

What can be done with the deposit?

Legal deposit is perhaps the cheapest means of acquisition of library materials since the publisher/printer of every publication in the country shall within a specified time deliver at his own expense to the depository library specific number of copies of publications published. But are these deposits used 'rightly'? In principle, the legal deposit copies should be regarded as museum pieces and be subject only to the most restricted use. Some may dispute this and say that it is a great mistake to preserve these materials or treat these materials as reference only material. However, it must be realised that volumes that may be needed for everyday use should be purchased like all other books for library's use: the cheap provision of study books is outside the purpose of legal deposit. Still, if two copies are deposited to national libraries, it would be wise to use one for normal purposes (probably housed in the lending division of the national library) and preserve the other (ideally it should be housed separately as mentioned earlier on page 38)*.

* The deposit systems of the developing countries are tabled in Chapter 4.
The brief discussion will centre of the following topics: (1) the tradition and origin of international exchange of publications, (2) the role of international exchange in the library system (3) the position of the national library in relation to a country's publications exchange programme and (4) current exchange problems.

Tradition and origin of international exchange of publications

The international exchange of publications which at present is so widely diffused and demonstrating continually growing tendencies of further development is based on the achievements of a tradition lasting for several centuries. Although its origin can be traced from the mediaeval and Renaissance epochs, international exchange in its present form came into existence during the 17th and 18th centuries and its early stages are connected with the formation and rise of scientific societies. The development and progress of scientific research together with the gradual increase in the number of scientific publications (especially that of scientific periodicals) resulted in an intensification of mutual exchange contacts between institutions and organisations. A distinct tendency in the direction of normalisation of the principles and objects of exchange soon became apparent. This happened on the basis of mutual agreement between institutions or states which led to general settlements on an international level, as expressed in the Brussels conventions of 1886.
After the second world war, the tendency towards far-reaching specialisation took place in all major fields of knowledge, sometimes even within very narrow sectors of particular branches of the sciences. Parallel to the development of science and to the dynamic advance of technology specialised scientific workers and research institutes increased in numbers. The holdings of traditional and modern forms of transmission of scientific thought and information concerning the results of investigations multiplied on a world-wide scale. There was at this time, a distinct tendency towards a closer international collaboration in the form of bilateral or group contacts. Also after the second world war, new states had been formed and the problem not only of shaping their political and economic existence, but also that of organising their own scientific life from the beginnings stood before them. It is amidst these factors, among others, that international exchange of publications in the last quarter of the century grew. The exchange of publications as one of the traditional forms of acquisition and augmentation of library collections has therefore lost none of its immediate interest today. Instead the development of exchange grew stronger, introducing important factors leading to further discussions on the subject of formalising collaboration on an international scale (e.g. the convention concerning the international exchange of publications, 1958).

The role of international exchange in the library system

The role of international exchange in the library system and its rank among other means for collection building, depends on many
factors. Among them Jabłonski states the following questions occupy the foremost place:

i) What kind of publications are at the disposal of the library for international exchange;

ii) What can be received in return from abroad for these publications?

iii) Does what it receives on an exchange basis satisfy the needs (and in what degree does it satisfy the demands) of persons using the library? (51)

These are generally concerned as principles of immediate interest for the activities of a library (irrespective of the size of its collections) and also for those of a group of libraries or for the whole library system of a country. For instance in the scientific field, the scientific standard of a publication designed for international exchange, its subject and the language in which it is published determine in a distinct manner, its exchange value. Thus, the more valuable a publication from the point of view of content, the more generally known its language throughout the world; the greater the possibility of obtaining by way of exchange the foreign publications which are sought by the clientele.

It should be borne in mind that the process of international exchange of publications can proceed in (a) a centralised or (b) a decentralised manner. In the case of the former, all problems are concentrated in a single distributing centre, supplying centrally publications obtained by means of exchange to an entire system of libraries belonging to one organisational section. The
distributing centre (taking in consideration the special needs of the libraries) undertakes itself the decisions concerning the choice of the most fitting partners for exchange purposes, the quality and volume of consignments and also the subject matter of exchanges. The latter grants liberty of action to the libraries and allows them to conduct their exchange in a manner best suited to their interests and needs. However, both these systems can exist parallel to each other in a single organisational system. For example, in the Polish Academy of Sciences at the side of which the Distribution Centre of Scientific Publications is active. The Centre conducts an exchange of the central publications of the Academy, as well as those that are not distributed by particular institutes. All other publications are exchanged in a decentralised manner by particular libraries or institutions, subordinated to the Academy. In this case the Distribution Centre only assumes coordinative functions. It must be borne in mind that both centralisation and decentralisation of international exchange have their advantages and disadvantages.

a) The advantages of the central system are:
   i) it furnishes a possibility of coordination of exchange activities and is sure to facilitate the conclusion of general agreements; and
   ii) it is easier to reach an understanding with a single distributor than with a number of contracting parties.

On the other hand, the disadvantages are:
i) it is exposed to a bureaucratisation of its activities; and

ii) more important, it is separated from the daily practice of particular libraries and cannot always realise efficiently their policy for collecting publications.

b) The advantages of a decentralised system are as follows:

i) the possibility of a more relevant choice of partners, a more national selection of foreign literature, and the possibility of a more rapid supplementation of items lacking in library collections are promoted.

ii) constant contacts with foreign partners takes place in a decentralised system which is a necessity for a successful exchange.

iii) it consists of a close collaboration of persons and institutions with related interests which results in a profitable exchange because of its less official and a more direct approach.

On the other hand, the disadvantages of a decentralised system are:

i) it is exposed to particularism, sometimes to dispersion, to activities often isolated from superior, more general policy.

Thus a decentralised system, if meant to act relevantly and suitably must be centrally coordinated.

The important role of international exchange in general (irrespective of whether it is a centralised or decentralised system)
in a national policy for acquisitions cannot be denied. Also, although international exchange is sometimes more expensive than purchase, some countries, especially developing countries have to use exchange as a method of acquisition because of conditions such as limitations on foreign currency.

The position of the national library in relation to a country's publications exchange programme

The position of the national library in relation to a country's book exchange programme has been a subject for discussion for many years. There is a strong view that all exchange activities should be centralised and a very few forceful views which favour complete decentralisation (see pages 45-47 on centralised and decentralised exchange systems). It is possible to divide publications for exchange into two types: (a) official publications and (b) other types of publications. Ideally, the national library should always be the first recipient of type (a) publication (i.e. Government publications) from abroad. It would be advantageous if these are sent automatically and free of charge to the national library, in return for similar material sent directly by the government stationery or publications officer to the other countries. As for type (b), a national exchange centre (housed, perhaps in the national library and even under the aegis of the national library) may be made responsible for their distribution. It is a known fact that this type of publication is usually published or issued by universities and research institutions. Therefore, exchanges are usually arranged directly between university libraries having
similar interest. University libraries very often develop extensive exchange programmes on the basis of the publications of their own university presses and are thus in a strong position to make their own arrangements. The situation is the same with research institutes; they prefer to send their publications direct to establishments that share their interests abroad.

There are various examples in which the national library is 'involved' in one way or another in the exchange programmes. For example, in Hungary, the National Exchange Service is part of the Szechenyi National Library and is financed by it. The centre also conducts the National Library's own exchanges. In Iceland, the National Library in Reykjavik is the national centre for the exchange of official publications. In Portugal, the Service Portugues de Trocas Internationalis or the Portuguese Service of International Exchange, is part of the national library. The centre not only exchanges official publications and receives for exchange purposes a varying number of Portugal's official publications from the majority of government offices, it also supplies information on exchange opportunities. In Sweden, the exchanges are decentralised in that on request, the Royal Library may serve as dispatch and distribution agency for incoming material, bearing all costs of transport. It also handles the exchange of official publications with the Library of Congress (Washington) and it also supplies information on exchange opportunities but does not attempt to coordinate exchanges. Lastly, in Turkey, the National Library, Exchange and Gifts Division conducts the exchange of the library.
It is responsible for the exchange of official publications (although many government offices maintain exchanges of their own). It also supplies information on exchange opportunities and on the availability of duplicates in Turkish libraries and abroad.

Exchange problems

Among the practical problems that confronts the national exchange service, that concerning the methods and costs of forwarding materials abroad is one of the most pressing. In some countries, postal rates for internal distribution are specially favourable and has been suggested that an internationally agreed standardised charge for international exchanges between libraries ought to come into being. A handicap to effecting this proposal is the poor postal services in a number of the developing countries. Perhaps an ideal for the future would be internationally agreed freepost for exchanges.

The other problem is the economics of exchange. A working document on the efficiency of collective consignments (53) presented at the Proceedings of the European Conference held in Vienna in 1972, compares the annual costs of transmission through an exchange centre with the fictitious direct dispatch of the same number of units and comes to the conclusion that central transmission is less economic than direct dispatch. This result is directly contrary to the opinion expressed in the Unesco Handbook on International Exchange of Publications (54). Due to the
fact that the investigations were limited to some European countries, the conference resolved that further investigations should be made.

Then there is the problem of establishing the value of publications received by and sent on the exchange system. It would be useful to look at the paper presented by Maria Razumovsky (55) on this matter. The other problem that needs to be overcome is the problem of non-standardisation. It is generally accepted that international standardisation is difficult to achieve, but the effort ought to be made.

International exchange began in Europe and the United States and today it has spread (not yet fully) to countries in other parts of the world. The problems faced by developing countries will be discussed in Chapter 4.

1.3.2 Bibliographical Services

a) As provider of national and other bibliographies

i) Publication of the national bibliographies

As mentioned earlier, this service can be considered as an obligation for the national library as a result of legal deposit privilege. Since the national library receives at least a copy of every 'publication' published in the country, it is therefore the ideal institute to produce a current national bibliography. However, it is a known fact, that in many cases, (particularly in the developed countries of Western Europe) publication is ensured by other methods e.g. by the book trade. In some countries, special
bodies are set up to compile the national bibliography. In Eastern Europe however, the publication of the national bibliography is the undisputed task of the national library: a task which is understood in a very broad sense indeed - to cover not only specialised bibliographies but bibliographies of articles published in periodicals and newspapers. It is due to this diversity of practice, that the Unesco Symposium held in Vienna considered that it might be the duty of the national library staff or an independent bibliographical institute to produce the national bibliography (the latter being justified only where special conditions required it). Production by a semi or quasi-independent institute is perhaps desirable to ensure a speedy and regular issue (a requirement by the commercial interests concerned, including the book trade).

The advantages of producing a current national bibliography are obvious. The literary output of the entire nation could be seen at a glance. Therefore, this could be used as an aid in book selection. Furthermore, the national literary heritage would be forever recorded and preserved. It is a pity therefore that in a number of developing countries, such an important task has not got off the ground.

Ideally, the current national bibliography should appear weekly and be cumulated into monthly, quarterly and annual volumes. Standard cataloguing codes should be used, so far as practical. For the developing countries which are not using alphabets, romanised transliteration along with the originals could be
produced. However, if some developing countries have difficulties in producing a national bibliography, outside help from international organisations such as Unesco is possible.

ii) **Publication of catalogues**

Due to the fact that the national libraries created during the past centuries possess most of the earlier printed material, it means that they are thus best qualified to produce a general retrospective national bibliography when the need arises. Such a task cannot so easily be given to an independent or a semi or quasi-independent institute which has neither the basic stock nor the Union Catalogue which the national library usually has. But such an undertaking entails a great deal of finance and an experienced staff, and it is therefore not practical. There is additional stumbling block in the developing countries in that the retrospective materials are not available in the country.

Thus, if for practical reasons, the retrospective bibliography cannot be published, the catalogue of the national library could alternatively be published as a substitute. Not only should a catalogue of books be published but also that of periodicals and other materials. If possible, the national library should sponsor the publication of a national union catalogue of periodicals. This in fact is being undertaken by some national libraries in the developing countries.
iii) Publication of specialised national bibliographies

In the case of the production of specialised national bibliographies, it can be produced by the national library (based on its own stocks) but they can be produced by specialised bodies, for example learned societies or scientific institutions etc. In cases of the latter, the main responsibility of the national library is to guide the bibliographers, supply them with the necessary documents and see that their activities are reasonably coordinated. What would be a fitting task for the national library, is to compile and publish at regular intervals a bibliography of bibliographies issued in its country. Such lists are already appearing in some countries, but, where they are not, national libraries should fill the gap.

b) As a national bibliographical information centre

It is generally accepted (due to a number of reasons) that the national library is the institution that is best qualified not only to compile current and retrospective bibliographies but also to serve as a bibliographical centre. Among the reasons are:

1. Its collections are generally far larger than those of other libraries in the country. Even in countries where this is not the case, it is in its collections that the material for a national bibliography is to be found. Its catalogues are therefore, a major source of bibliographical information.

2. The national library often keep the 'records' on which the current national bibliography is based. It is important that
these records are kept either indefinitely or for a reasonably long time because they form an important source of reference. Moreover, by compiling specialised indexes and enumerative and analytical bibliographies of its own holdings, or better still, its own and those of other libraries, it can anticipate requests for information in certain cases.

3. It is usually the national library of each country that possesses, in addition to the union catalogue, the best collection of bibliographies, works on librarianship and related publications. If it does not, it should make it its business to acquire as full and up-to-date a collection of these works as possible.

4. Then again, the national library has the trained staff required for it to serve as a centre of bibliographical information; very often, it is the only institution in the country to combine all three requisites: stock, staff and catalogues.

5. Last, but not least, by virtue of the fact that the national library enjoys the privilege of legal deposit and maintains contacts with other countries through exchange programmes, it is advantageously placed in the centre of the national bibliographical network. Libraries within and outside the country are able to come to it for bibliographical information. Despite its abundant resources (as noted in a previous section), the national library may not be expected to be comprehensive.
In such cases, it can act as a national referral service centre. Its duty is to receive the enquiries and pass them on to the appropriate specialised library for reply. This referral type of service is particularly useful in the developing countries where national libraries are still in their embryonic stage. It should therefore publish and encourage others to publish guides to sources of specialised information. The national library should also keep up-to-date a central register of bibliographies compiled by other libraries in the country and should make arrangements for it to be published from time to time.

In a national library with a lending department, close cooperation should be established between that department and the information department. Also, where a national library has relations with a national lending service outside itself, there should be close cooperation between their service and the library's own information department.

c) Cataloguing and Classification

The Statement of Principles of the International Conference on Cataloguing Principles, 1961 was considered at the Regional Seminar on the Development of National Libraries in Asia and the Pacific area, held in Manila, in 1964. It was agreed then that the national library has the responsibility to promote agreement in cataloguing and adoption of the Paris Principes insofar as they are applicable to the needs of the particular language. The cataloguing situation in most developing countries is a
complex one, due to the multi-lingual nature of the collection in these countries. The difficulty of transliterating authors' names into the romanised script, the absence of surnames for certain ethnic groups, the different spellings of names, the great variety of titles and terms of address used, are but some of the problems faced in cataloguing of publications in some of the developing countries. The National Library of Malaysia has set up a committee, 'Jawatan Kuasa Katalog (JKK)' (Cataloguing Committee) to study some of these problems. Rules for Malay names and also Chinese names are generally not adequately covered in the AACR. Thus JJK took the responsibility of looking into the matter and the rules for Malay and Chinese names should be ready soon. A list of Malay titles was also prepared by the JKK in 1978 and it should also be ready soon. The absence of standardised spelling for Malay and Arabic names in Jawi script means that a Jawi transliteration table is necessary to create uniformity in the spelling of Malay and Arabic names in Jawi script and consequently a uniformity in name entry. This matter is being investigated by JKK and the 'Dewan Bahasa dan Pustaka' or the Language and Literary Institute in Malaysia.

Thus, in the developing countries, a modest start by the national library in cataloguing services may be in devising cataloguing rules for materials written in the vernacular, and in setting standards for other libraries to follow.
1.3.3 Reference Services

The term 'reference service' is rather elusive to define, because of its all embracing nature; every facet of librarianship is geared to meet the needs of readers in the widest sense. Attempts to define reference service have been vague and generally there have been statements of the main objective rather than definitions of content or scope of reference activities. Rothstein defines reference service objectively "as the personal assistance given by the librarian to individual readers in pursuit of information"(56). This personal assistance to readers in pursuit of information is the modern concept of reference service. Reference work consists of two types: direct and indirect service. The American Library Association in its Reference Standards has cited two main aspects in direct reference. These include the following:

i) Instruction in the use of the library. This aspect ranges from the use of the catalogues, bibliographies and assistance to readers in interpreting the contents of materials in the library's collections.

ii) Information service. This service ranges from answering simple questions from basic reference sources to providing information based on research in the library's collection to more sophisticated library users. In the main, this would consist of finding specific data, interpreting other material, translating, abstracting and literature searching.
The indirect reference service consists of behind-the-scenes activities which involves the selection, organisation of materials and the compilation of bibliographies and other cooperative measures to acquire the information which would promote the reference process and technique.

The reference services provided in a national library should be in keeping with the function of that library and this is generally based on national policies. In discussing the reference services provided in a national library, three aspects will be dealt with. They are as follows:

a) Services to the government departments, legislative assembly, etc;
b) Documentary reproduction; and
c) Inter-library lending.

a) Services to the government departments, legislative assembly etc

Apart from providing reference and information services to the general public (which also includes research workers, students, teachers, lecturers), national libraries should also provide such services to the legislative assembly, government departments and commercial and industrial firms.

The types of legislative reference service which may be provided by the national libraries are the provision of factual data; the presentation from published sources of arguments for or against a given proposition or arguments in support of pre-
determined actions; and assistance in speech writing both within and outside the legislature. Due to the fact that information is almost always required to be supplied at very short notice, the research staff should have ready access to a highly organised collection of reference tools and a wide variety of vertical file material supplemented by the tools of micro-reproduction and an efficient messenger service. The legislative reference staff should consist of not only professional librarians, but also specialists in various fields. Above all else, the staff must be impartial and discreet and in no way directly involved in public affairs. In the United States and Japan, (the Library of Congress and the National Diet Library respectively) the legislative reference service forms an integral part of the national libraries of the respective countries. However, this is by no means a universally desirable pattern. Although reference services to government departments, legislative assembly etc are provided by the national libraries of some developing countries e.g. the National Library of Singapore and the National Library of Malaysia, they are only on a very small scale due to a lack of up-to-date current indexing services, a lack of reference tools and a lack of professional staff and specialists in the national libraries of developing countries.

b) Documentary reproduction

Documentary reproduction has two aspects: one in furtherance of acquisition policies, and the other in furtherance of scholarly activities in research. However this section will deal only with the latter. In such a case, due regard must be paid to copyright
legislation; the interests of the author and publisher must be reconciled with those of the scholar and the researcher. For the most part, photographic reproduction is permitted provided that the copy is for private study and not for publication. Specific legislation relating to documentary reproduction as in the Federal Republic of Germany and the United Kingdom, is likely to have a limiting and restrictive effect. Libraries are much better placed in countries where reproduction is sanctioned by a general 'fair dealing' clause. Governments should be urged to adhere to the International Copyright Convention and to frame their regulations relating to documentary reproduction as liberally as possible and with a minimum of prescription.

As a necessary adjunct to both reference service and inter-library loan service a documentary reproduction service should also be provided in all national libraries. However, it is only quite recently that such a provision has been made in most developing countries. In Malaysia for instance, it was not until 1974 that a copying machine was made available in the premises of the National Library of Malaysia. Prior to that, copying from materials in the holdings of the National Library had to be processed elsewhere. Facilities of a more sophisticated nature, including micro-copying are available today.

c) Inter-library lending

There are arguments as to whether a national library should assume a lending service and if so how extensive it should be. It is thought however, that the national library, with its
comprehensive and rich book-stocks, many bibliographical aids, and experienced personnel, should be involved in inter-library lending. This of course pre-supposes that the copies that the national library receives through legal deposit are sufficient to enable it to carry out this service without adversely affecting its conservation role.

Inter-library lending is perhaps a more recent development in the developing countries. The national libraries in these countries are more often than not newly created and therefore have a modest collection. Because of this, the national library is sometimes left out of the inter-library lending system. In this case, it is usually the university and the special libraries, which play a more active role.

The real and potential role of the national libraries in the business of inter-library lending is often clear enough. They can for example, with cooperation from other libraries in the country, set up national union catalogues to facilitate the process. Union Catalogues are expensive to set up and maintain, but the need is obvious and the place for it is often logically in the national library. It follows that where this happens, then the procedures for inter-library lending should become the national library's responsibility.

1.3.4 Professional Training of Staff

The functions of any library cannot be adequately performed without a trained staff with varying degrees of specialisation
and skill; competent to carry out supplementary tasks and to deal at the appropriate level with persons using the library.

Training in developing countries involves special problems:

i) the recruitment of adequately equipped trainees;
ii) the use of textbooks and library tools in foreign languages;
iii) the fact that experience gained abroad may not be applicable at home; and
iv) the need for specialists in many languages and subjects of special interest to the particular country.

Although it is desirable that each country should be able to provide training in librarianship, both the advantages and disadvantages of training abroad should be recognised.

Due to the national library's advantages in possessing an experienced staff and a large collection, it is perhaps favourably placed, to provide professional training. For example, in New Zealand, a formal library school is part of the National Library of New Zealand in Wellington.

It is thought that in those developing countries which do not possess library schools, the national libraries could assume a more active role in this function, by providing not only in-service training for its own staff, but also for personnel working in other libraries. National libraries should also take the lead in organising exchanges of personnel between different types of libraries and between different countries.
1.3.5 Preservation and Conservation of Documents

The question of protection and conservation is basic to the tasks of a national library. Basically, there are four kinds of potentially destructive factors:

i) temporal;
ii) climatic;
iii) insect; and
iv) human.

Modern documents constitute a special problem in that the paper used is often of poor quality. There is little that librarians can do to make good this deficiency except perhaps to encourage the use of very durable paper for documents of any significance.

In the developing countries, climatic conditions are exceptionally inimical to the preservation of library documents. The most serious damage arises as a result of wide variations of temperature and humidity. Ideal conditions necessary for the protection and preservation of library documents will be discussed in Chapter 6.

Microfilming is important because of its role in the preservation process as well as facilitating research\(^{(57)}\). The microfilm is able to record the text of manuscripts and other fragile material in a compact form which if stored in appropriate conditions, had assurance of permanence (though this fact is today doubted). In relation to other methods of preservation, it is faster to produce, cheaper to store and compares well in terms of operational costs. Additional copies can be made and stored
in one or more locations so that damage to or destruction of the original still ensures preservation of the material in another form. This is of particular importance in times of war or in areas liable to natural disasters. For materials in fragile condition, the use of the microfilm copy can save the original from wear and tear. Unesco mobile units are prepared to undertake projects in some of the developing countries at the specific request of governments. Further information on microfilms, e.g. ideal conditions for storage, special reading rooms for consultation, etc will be dealt with in Chapter 6, Section 6.2.6.

1.3.6 Role of the National Library in Science and Technology

The experience of the national library in a developed country for example, the Library of Congress in the United States would seem to show that a national library has duties in this field. This implies adequately trained staff, (trained i.e. in science and/or librarianship) and comprehensive science collections, especially periodical material. A more modest unit, as a division under the umbrella of the national library could be developed in the developing countries, to exploit effectively the total information resources of the country. (Every care should be exercised to prevent at the formative stage, the development of an independent centre which could represent a drain on the already limited resources of the developing countries).

If such service is to be provided by national libraries in the developing countries, the following major services should be provided:
i) to locate and, where necessary supply, either in photocopy/microform, any document needed for their work by scientists and technologists of the country which they have been unable to trace in the collections available to them;

ii) to establish (and if possible, to publish) a national union catalogue of scientific and technical periodicals;

iii) to devise and supervise a programme for the cooperative acquisition of scientific and technical periodicals in the country;

iv) to compile (and, if possible, to publish on an annual basis) an up-to-date register of current research in the country; and

v) to publish a regular list (preferably with abstracts) of current articles, papers, reports etc of scientific and technical works in the country.

Not all countries locate their chief scientific information in the national libraries, and no national library can handle all the services alone. It needs to draw upon or refer to other libraries. Traditionally, national libraries have avoided heavy responsibilities in science, but it is felt that if the national library can take on this work, it should do so. It should be noted that the responsibility of the national library in science and technology will in no way diminish the importance and duties of specialised libraries.
1.3.7 Cooperation

The national library should assume responsibility for initiating and promoting cooperation between itself and other libraries, nationally, regionally and internationally. This is perhaps more difficult in the developing countries than the developed countries, owing to enormous social and cultural differences, problems of illiteracy and the diversity of vernaculars in the former. An important task is the planned acquisition of foreign materials based on a policy of national coordination on the lines of the Farmington Plan, the Scanida Plan and the programme of the Deutsche Forschungsgemeinschaft (mentioned earlier on page 30).

The national library of the developing countries should also promote various other schemes of library cooperation, like interlibrary dissemination of information, union catalogues, and interlibrary loans between itself and the other libraries in the country, so that the group of libraries may be able to provide a better reader service than any one library could have done by itself.

In the field of regional cooperation, efficiency and economy can be achieved by coordinating acquisition of foreign, less used and expensive literature in neighbouring countries with common cultural affiliations. A cooperative acquisitions programme for Malaysia and Singapore was proposed by Khoo Siew Mun at the Conference on National and Academic Libraries in Malaysia and Singapore sponsored by the Persatuan Perpustakaan Malaysia (PPM) or
the Library Association of Malaysia and the Library Association of Singapore (LAS) in March 1974. No great degree of cooperation between the libraries of the two regions have taken place so far. A certain amount of informal contact and cooperation exists through librarians being friends and colleagues, but as yet, no formal structure exists for a fully coordinated plan of library cooperation in any one of the library activities. Many of the literary treasures of the Asian and Pacific area are now housed in libraries in other parts of the world and the only way to make them available in the country of origin is by a coordinated system of microfilming.

Internationally, national libraries should subscribe to the IFLA Agreement in International Library Loans, should contribute data to Unesco's Index Translationum and to Unesco's major Project on Mutual Appreciation of Eastern and Western Cultural Values. They should also participate generally in the activities of IFLA and the International Federation for Documentation (FID).

It has been found however, that in developing countries, because of socio-economic and political diversities, and educational levels of achievement, "international and regional cooperation to solve common library problems are rather limited". Lim Huck Tee goes on to conclude that:

*Even in Malaysia and Singapore, with their common colonial heritage, and history, we have found it extremely difficult to carry out cooperative projects in the library field.* (60)
1.3.8 Library Planning

Ideally, the national library should be in the centre of the national library network, coordinating all types of libraries, and planning for library development in the country.

This service, if provided by the national library is even more important in the developing countries. It was suggested in the Seminar on Public Libraries in Asia, held in Delhi in 1955 that the 'national library' should be made "a department of the Central Library Board" and that the "Librarian of the national library would be a suitable member secretary of the Central Library Board" (61).

Summary

The definition of a national library has been found to be elusive and subject to change. Various conferences, seminars, reports and studies carried out by individuals or organisations reveal that the functions and services of national libraries are richly varied, largely due to the different backgrounds of the nations that they serve. Possible services that may be undertaken by national libraries are as follows:

i) Acquisitions;
ii) Bibliographical services;
iii) Reference services;
iv) Protection and conservation of documents;
v) Professional training of staff;
vi) Special concern for services for science and technology;
vii) Cooperation; and
viii) Library planning.

It should however be borne in mind that in developing countries, some of the 'possible services' that may be provided by the national libraries are more essential than others. Priorities will have to be ascertained, depending on the background and the needs of the nation as a whole.
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2.1 Introduction

Various attempts have been made to define the conditions common to all developing countries (the terms used to describe them have been discussed in the introduction, and they are well documented by Hodder(1), Bernstein(2) and Finsterbusch(3): For instance, Hodder pinpointed the common characteristics as the following:

i) low life expectancy at birth;
ii) high infant mortality rate;
iii) poor health conditions of the population;
iv) widespread illiteracy;
v) low per capita output, together with poverty and indebtedness;
vi) subsistence production generally important;
vii) economies nondiversified and geared to primary sector;
viii) little manufacturing industry;
ix) no large-scale application of scientific and technological methods to agriculture and industry; and
x) narrowness of markets(4)

Dean(5) has also presented a list of common characteristics generally like Hodder's. He points out, however, the dependence of developing countries on expatriate manpower, a one-crop economy, a high unemployment rate, poor internal communications, and a tropical
or semi-tropical ambience. Havard-Williams however, has made the following generalisations:

i) low gross national product,

ii) limited educational and training facilities,

iii) high illiteracy,

iv) limited communication facilities and technology generally.

However, he states that there are of course considerable variation between these countries (6).

Therefore, developing countries are, first, the rule rather than the exception, in a world where the population living in conditions of scarcity and permanent want far surpasses that living in the comparatively welfare conditions of the developed countries. It has been estimated that in 1980 the former amounted to 3.25 billion, whereas the population of the affluent countries was less than half (i.e. around 1.2 billion). Second, developing countries display a gamut of historical, social, economic and cultural features which, although related to similar features in developed countries, can be understood only when examined without cultural bias and historical prejudices.

It is important for architects (particularly foreign architects) to understand clearly the background of the country, the libraries generally and most important of all, the background and functions of the national library, in order to design a satisfactory and functional national library building. This chapter attempts to study the brief background of some developing countries representing the different regions (Asia, Africa, Latin
Chapter 3 will discuss the libraries in these regions while Chapters 4 and 5 will study the background and functions as well as roles of the national libraries in these regions, respectively. However, architects from developed countries should remember when designing libraries in the developing countries that conditions in the latter are difficult to generalise about: for instance, if one talks about Africa - is one thinking of West or East Africa? Even within regions, there are sometimes considerable differences: compare for instance Francophone and Anglophone West Africa. Even within countries, as indicated by Peter Havard-Williams\(^{(7)}\), there are differences. For example in Nigeria, there are nineteen states because of local distinctions and differences. Also, it must be remembered that 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 in a particular country can be used, with minor adjustments in designing another type in another country\(^{(8)}\). Thus, it must be emphasized that there can be enormous variations within each category for "Fundamentally, a library is not a building but a service organisation".\(^{(9)}\)

There are undoubtedly differences within the regions, and even within countries. Yet, there are certain common factors that can be studied and observed. These are discussed under the headings: Geographical and climatic, economic underdevelopment, ethnic complexity, literacy problems, domestic publishing problems etc.
2.2 Geographical and Climatic Factors

There are wide ranging variations of climatic as well as geographical conditions in the developing regions: from areas of aridity to monsoon and to constant tropical humidity. Within South-west Asia (the Middle East) in itself climate varies. For example, the climate of Iran is one of great extremes: temperature varies from $-27.8^\circ C (-18^\circ F)$ to $55.6^\circ C (132^\circ F)$ in parts of the central plateau where some of the highest temperatures have been recorded; Saudi Arabia is one of the hottest regions of the world where temperatures in the interior average $44.4^\circ C (112^\circ F)$ in the summer but frost and freezing occur in the winter; Turkey's climate is also characterized by great extremes and wide temperature variation between regions and seasons - sometimes over $50^\circ C (122^\circ F)$; the Mediterranean (e.g. Jordan), Black Sea and Caspian Sea coastal zones and some of the hill and mountain areas are the only sections that can be classed as humid.

In South-east Asia, on the other hand, the countries (for example, Thailand, Indonesia, Malaysia etc) experience high temperatures most of the year and have a generally high rainfall as a result of the torrential rains or the monsoons. The climates of the Latin American region are predominantly tropical or sub-tropical in nature. However, there are certain features of the temperature conditions that deserve attention. They may be enumerated as follows:

i) prevailing equability over most of the region;

ii) almost the whole of the inter-tropical belt has temperatures of above $21^\circ C$ throughout the year;
iii) the cold Humboldt current causes a distinct bending of the isotherms at all seasons towards the equator;

iv) the highest temperatures are not to be found in equatorial latitudes but in areas to the north and south;

v) the high average temperatures throughout the year in the vast area of Amazonia.

Like the South-east region, a high degree of humidity exists in the swampy, forested lowland of Amazonia which makes the air oppressive and the climate enervating. When compared with the continent of Africa, only a small proportion of its total land area is deficient in water or rainfall. Arid and semi-arid conditions are restricted to such areas as: the north-western portion of Mexico, the shoulder region of north-eastern Brazil, Patagonia and northern Chile and Peru. Severe droughts occur in some areas (e.g. the semi-arid region of north-eastern Brazil) which lasts over one, two, or even three years causing extreme distress. Unlike the other developing regions, the Oceanic region has no great extremes, as the thermometer never reaches 100°F and never falls below 60°F, except occasionally in the extreme south. However, average temperatures are high, being about 80°F.

Jarrett states that there are three factors which modify the picture of the African continent which has a hot 'waist' and which gets progressively cooler away from the tropics:

i) the size of the continent;

ii) altitude; and

iii) ocean currents(11).
Apart from the heat, humidity and heavy rainfall (e.g. monsoons, wadis, etc.), the developing regions also experience various prevailing winds that affect buildings in these countries. For example, the cyclonic storms or hurricanes and tornadoes of South Asia, the cyclones of South-east Asia. Iran suffers from two strong summer winds: the shamal in the North-west and the "wind of 120 days" in the South-east, blowing with destructive velocities of up to 160 km per hour (99 mph), intensifying the heat and eroding the soil. Turkey (around the Aegean) in the summer is tempered by the northerly Melteni, or Etesian wind. Both Iran and Turkey periodically suffer from severe blizzards in the winter. In Iraq, the prevailing winds found are the North-westerly shamal, and the southerly sharqi or sirocco and often accompanied by dust storms. Jordan suffers from the khamsin, a sirocco like wind accompanied by dust clouds. West Africa suffers from the strong wind called harmattan which blows from the Sahara in the winter. The Samoa, Tonga, Fiji, New Hebrides and New Caledonia of the Oceanic region experience severe hurricanes mainly from January to March, with an average of three gales per year. It should be noted that the heavy rainfalls as well as the prevailing winds have caused serious damage to buildings in these regions. For example, the rainy spells of more than usual length have been known to cause the collapse of many buildings in South-west Asia (the Middle East) made of sun-dried brick, which when saturated simply disintegrate into piles of mingled mud and debris. Non-climatic factors such as earthquakes are also prevalent in some of the countries in Asia, Africa, Latin America and Oceania. These geographical facts
have not only affected the development of libraries in these regions but they cannot be overlooked when designing library buildings in these regions.

The physical communication problems in the developing regions also pose a serious problem. For example the islands of Indonesia are very scattered and separated by deep and extensive seas, which makes communication very difficult. The physical characteristics affect adversely the planning and implementation of library services. In physical terms too, Africa's land surface ranges from 440 feet below sea level to nearly 20,000 feet above sea level; lofty mountain ranges and volcanic cones contrast sharply with endless undulating plains and plateaux. Because the continent is sparsely populated (other developing countries also share this problem), it affects communications in the country which in turn affects libraries. This for instance, makes a library system of subject specialisation or system of specialisation in general impossible. In a developed country like the United Kingdom for example, such a system is possible, because of the good communication system that exists in the country. It should be noted that the difficulties and expensiveness of constructing rail communications in the continent of Africa have also affected the development of library services.

Another feature of the physical geography of some developing countries, particularly those in Latin America (e.g. Guatemala, Honduras, etc) that is significant is soil erosion. Torrential rains on steep slopes play havoc with the soil if the vegetation cover on the cultivated lands is removed - and sheet erosion and
gullying have devastated many areas. One of the causes of soil erosion in the region is perhaps the system of shifting cultivation practised by the primitive Indian groups. The system worked reasonably well in former times in regions where the rainfall was not excessive and the population density was low. In areas such as Guatemala and parts of Mexico however, the land did not get a chance to recuperate because of the pressure of population, thus the system eventually caused the near total destruction of the land. Again, according to Butland, in Chile:

Experts estimate that 10 million acres have been affected by erosion, the worst areas being the coastal zone of the Mediterranean and North forest Chile from San Antonio to Valdivia, and the Arauco-Temuco zone where fires to clear new land have led to destruction of valuable forests and the protective soil covering. (15)

Although the situation in Argentina and Uruguay is not serious, Russell stated that:

There are ominous reports that a 'dust bowl' from the arid west is spreading eastward into the productive country. (16)

Therefore in making the choice of sites for libraries (national or other types) architects should always consider this factor, especially when the buildings are to be built in the countryside areas, although land in these areas is usually cheap.

Concluding, one can say that the geographical, climatic and non-climatic factors of the developing regions affect the library
services available in the country either directly or indirectly. It should be remembered that library buildings in the developing regions have to be constructed with the specific geographical factors (both climatic and non-climatic) in mind. Equipment such as air-conditioners and dehumidifiers are essential in library buildings in these regions. (Although heaters are sometimes used in combination with air-conditioners in some Middle East and Latin American countries). Also, it is generally more expensive to refrigerate than heat a building; a factor of some importance for the preservation of library materials.

2.3 Economic Underdevelopment

Economic development in the developing countries has been very slow except for some countries, as indicated by Bauer and O'Sullivan's list of the more advanced developing countries in their paper in 1977:

... among third world countries which have enjoyed rapid economic growth are South Korea, Taiwan, Hong Kong, Malaysia, the Ivory Coast, Kenya, Brazil, Columbia, Mexico, Venezuela and, of course, the oil states of the Middle East. (18)

Studies of the developing countries in this work reveal that linked with the geography and the world history to date, the economies of most of the developing countries are very poor indeed. For instance, as stated by Jarrett:
the most obvious feature of the present economic situation of Africa is its general poverty, though it is equally obvious that there is considerable variation from one area to another. (19)

Their economies are generally based on agricultural produce.

For example, agricultural production provides a large proportion of Brazil's export earnings, the principal export crops being coffee, sugar and soya beans. Malaysia, which has one of the most impressive economies in Asia after Japan and Singapore is noted for its agricultural products; rubber and palm oil. The rubber industry provided about 20 percent of the total export earnings in 1975, and is the chief employer of labour in Malaysia. Agriculture (shifting agriculture to be precise) supports over two-thirds of the total population in Malawi and increasing amounts of tobacco are grown as a cash crop. Although in Iraq, oil is the most important sector of the economy, over three quarters of the population still continue to depend on agriculture for their living. It should be noted that Iraq is using some of its oil revenues in a programme of industrialisation, but is experiencing some difficulties with bottlenecks at the ports and shortage of skilled manpower. In Iran, oil is also the most important sector of the economy. Iran is one of the world's leading oil producers and the massive revenues have been instrumental in developing the rest of the economy. Although manufacturing industry now predominates over agriculture in the gross domestic product the majority of the Iranian people are engaged in agriculture. Research to explore new techniques for the purpose of increasing production is part of the investment input. Thus one finds that special library
development in most developing countries reflect the developing of principal products already mentioned above.

More recently, increased emphasis has been given to industrial development in the developing countries. For example, in Brazil, in 1974, manufacturing had risen to over 20 percent of Brazil's GDP. Industrialisation is likely to lead to the opening and development of Brazil. As commented by Professor D Stamp on his visit to Brazil in 1957:

Anyone who visits Brazil can scarcely fail to come away with the impression that here one of the giants of the earth, which has been sleeping for some time past, is now awakening and developing with quite different incredible vigour. It is a country of vast resources of land, vast resources of minerals and a vast potential for people and production. (20)

Perhaps, in the not too distant future, this promise, long hoped for in Brazil, will materialise. In Jamaica, despite the importance of sugar, bananas, coffee*, cocoa, tobacco, citrus fruits etc, secondary industry and the mining and processing of bauxite are becoming increasingly important. However, Jamaica still has serious economic problems. Natural disasters such as droughts, hurricanes and plant diseases combined with the uncertainties of the world marketing conditions have led to periodic booms and slumps.

Singapore, unlike its neighbour Malaysia, is not endowed with any significant natural resources. Its economy depends heavily on

* Coffee production has declined but the famous "Blue Mountain" coffee, fetches high prices in the world market.
<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>YEAR</th>
<th>POPULATION (1000)</th>
<th>YEAR</th>
<th>SURFACE AREA (km²)</th>
<th>YEAR</th>
<th>DENSITY OF POPULATION (to 1 km²)</th>
<th>YEAR</th>
<th>PER CAPITA GROSS DOMESTIC PRODUCT (in US dollars)</th>
<th>YEAR</th>
<th>TOTAL BOOK PRODUCTION PER YEAR (No of titles)</th>
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<td>77</td>
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<td>77</td>
<td>13</td>
<td>78</td>
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<td>75</td>
<td>12,296</td>
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<tr>
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<td>77</td>
<td>596</td>
<td>77</td>
<td>18,274</td>
<td>77</td>
<td>33</td>
<td>78</td>
<td>1,287</td>
<td>75</td>
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<td>77</td>
<td>214,969</td>
<td>77</td>
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<td>76</td>
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<td>76</td>
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<td>190</td>
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<td>75</td>
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<td>77</td>
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<td>77</td>
<td>27</td>
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<td>10,991</td>
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<td>190</td>
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<td>70</td>
<td>72</td>
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</tr>
<tr>
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<td>75</td>
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<tr>
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<td>77</td>
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<td>77</td>
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<td>13</td>
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<td>71,740</td>
<td>77</td>
<td>48</td>
<td>70</td>
<td>151</td>
<td>--</td>
<td>--</td>
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<tr>
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<td>77</td>
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<td>76</td>
<td>2,594</td>
<td>75</td>
<td>577</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>77</td>
<td>13,971</td>
<td>77</td>
<td>65,610</td>
<td>77</td>
<td>213</td>
<td>77</td>
<td>244</td>
<td>75</td>
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</tr>
<tr>
<td>Uruguay</td>
<td>77</td>
<td>2,846</td>
<td>77</td>
<td>176,215</td>
<td>77</td>
<td>16</td>
<td>76</td>
<td>1,237</td>
<td>75</td>
<td>481</td>
</tr>
</tbody>
</table>

commerce, servicing and manufacturing. However, it maintains as can be observed in Table 2.1, the highest per capita gross national product (in US dollars) among the developing countries.

Economic development (or underdevelopment as is the case in most developing countries) affects library development. Logically, if there is more money, there will be less argument over the funding and building of libraries. Independence has brought with it many and varied problems. Economic development, apart from education, housing, health and transportation are the priorities in the national development plans of these countries. Library provision is usually regarded as a kind of cultural luxury in these newly independent countries. There comes a time when the government has to decide whether to have its library housed in cheap and effective buildings or to start library buildings that will last so as to save money in the long run. Which is important? Purpose-built libraries would be the solution to developing countries; they are providing well planned, flexible and capable of expansion. Therefore, in the developing regions, especially in this period of economic stringency, librarians must know how to plan for new services and architects must house these services (old and new) within the space the available money will buy for them.

2.4 Ethnic Complexity

Almost every region and country studied presents this problem. Ethnically, India for example is one of the great melting pots of the world, and its racial diversity is perhaps the most complex to be found anywhere outside of Africa. The great majority of the
population belongs to the caucasoid family. The Dravidians of South India are believed to be the descendants of the Alphines, the Mediterranean branch of the Caucasoids, while most North Indians are believed to be Indo-Nordics. The former constitute 25 percent of the population and the latter 72 percent. The aboriginal inhabitants of India constitute today 3 percent of the population.

There are three ethnic alien groups, which although numerically insignificant, are prominent in national life:

i) The Parsis, literate, wealthy and socially advanced, they dominate, the economic life of Bombay and its environs.

ii) The Jews, whose numbers are being depleted every year through emigration to Israel; one group of Jews known as Beni Israel, who fled from Arabia following their expulsion by the Caliphs and another group of Jews came from Iraq who are divided into two castes: white Jews and black Jews.

iii) The Anglo-Indians, descendents of mixed marriages between Europeans and Indians receive special protection as a minority of the constitution. Most of them are well integrated with the other Indian communities.

Apart from these, there are also the substantial Western communities in every large Indian city. For many years (since the 1960s) India has been a haven for members of the Western counter-culture, especially hippies and dabblers in the occult.

In 1975, there were 3,347 United States citizens in the country.

In this multi-ethnic background of India there has come into existence too multi-languages in the country (some written others
spoken. According to the 1961 census, 1652 languages and dialects are spoken (21). Of these, fifteen are recognised as the official languages and one, Hindi, written in the Devanagiri script is designated as the official language. Urdu, the language of urban Muslims, differs from Hindi in being written in Arabic-Persian script and also in the large admixture of Arabic and Persian words. The spoken dialect from which both Hindi and Urdu are derived is called Hindustani or Khari Bol Tamil which has, perhaps the longest literary tradition is also the language most removed from the pervasive influence of the Sanskrit, the most ancient Indian language, while Malayalam is closest to Sanskrit of all Dravidian languages. Although English is the mother tongue only of the Anglo-Indians, it is spoken by over eleven million persons in India with some degree of proficiency. It is accorded the position of an associate official language in the constitution, but for all practical purposes, it is the official language, the principal medium of communication among the educated classes, the language of the courts, the medium of instruction in secondary schools and universities, the language used by the most influential media for example publishing, and the language of commerce.

Brazil is another country which has a complex racial background. However, it is considered as possessing a distinct and integrated people with few unassimilated minority groups. Brazil has been called the greatest melting pot of peoples in the New World. The main ingredient in the melting pot is what is generally described as Luso-Brazilian, representing descendants of original Portuguese settlers.
Others of Caucasian stock include Italian, Spaniards, Germans, Russians and Lebanese. Today, the ethnic composition is approximately as follows:

1) 60 percent European
2) 21 percent Mestizo, Mulatto and Cafuso, and
3) 15 percent Negro.

It should be noted that although the proportion of whites seems large, in fact, a big proportion of them are of mixed origin.

Portuguese, is spoken by virtually all Brazilians except the indigenous Indians. The principal Indian languages are Tupi, which was the lingua franca of Brazil until the end of the seventeenth century, Ge, Garib, Arawak and Nambiquara. It is interesting to note that spoken Portuguese differs markedly in vocabulary and pronunciation. Both English and French compete as the second language of educated Brazilians.

Unlike Indonesia which has over 300 ethnic groups, Malaysia's and Singapore's ethnic composition of the population is now fairly well stabilised and falls into four and three broad categories, respectively. In the former the categories are as follows:

1) the Negrito tribes - Semang, Senoi and Jakum (in West Malaysia), the Iban or Sea Dayaks, the Land Dayaks, the Melanaus, the Kayahs, the Kenyahs and the Muruts (in Sarawak) and the Kadazans and Bajans (in Sabah).

2) The Malays, who represent 45 percent of the total population and the largest ethnic group in the country, predominantly
found in the rural areas.

iii) the Chinese who comprise 35 percent. They not only constitute the second largest ethnic group but also dominate the economy, monopolise commerce and trade, and comprise a large part of the professional and general labour force. Also they are predominantly found in the urban areas.

iv) Indians, (a term which is loosely used to include Indians proper as well as Pakistanis and Sri Lankans) form the fourth category - who comprise 10 percent of the population, found also predominantly in the towns and urban areas.

Indonesians, Thais are also strongly represented, and British and Australians are the most numerous among Western communities.

The New Economic Policy (NEP) of the Malaysian Government was enunciated in 1976 with the overriding objective of national unity:

*the NEP seeks to eradicate poverty among all Malaysians and to restructure Malaysian society so that the identification of race with economic function and geographical location is reduced and eventually eradicated.* (22)

Singapore's three categories are divided as follows:

i) 76 percent Chinese,
ii) 15 percent Malays, and
iii) 7 percent Indians.

The remaining two percent includes mainly Eurasians and Europeans.

Unlike Indonesia's 250 spoken languages, Malaysia's and Singapore's spoken languages are not many. In the former, Bahasa
Malaysia is the national language. It may be written in Jawi or Rumi (Roman) script. It has an extensive vocabulary of loan words from Sanskrit, Arabic and English. Five different modes are used: Standard, trade or bazaar, court, traditional literary and modern literary. The Dewan Bahasa dan Pustaka (State Office for Language and Books) was established in 1959 to develop and enrich the language. In fact in 1967, an agreement was reached with Indonesia to coordinate the spelling systems of Bahasa Malaysia and Bahasa Indonesia (which derived from the Bazaar Malay) and to increase intelligibility. However, English is widely used and understood in the whole of Malaysia. Other languages such as Chinese and Tamil are also in wide use.

In Singapore, although English is the official language, Chinese (Cantonese) is increasingly competing with it. Both Malay and Tamil have a semi-official standing as the mother tongues of the two largest national minorities.

Other countries, such as Jamaica, Papua New Guinea and others are also multi-ethnic and multi-lingual. For example, in addition to Jamaicans (who are predominantly of African descent) constituting 91.4 percent of the population, there are other racial types (e.g. East Indians, Afro-Indians and Chinese) represented. Papua New Guinea is one of the most heterogenous populations in the Pacific region. There are hundreds of separate communities who can generally be broadly classified into Papuan and Melanesian. The Chinese are the principal ethnic minority in Papua New Guinea. Australians represent the bulk of the Europeans in the country.
In Jamaica, English is the official language. However, Jamaican English, whose main characteristics are the incorporation of archaic English and African words and certain peculiarities of word order and pronunciation, has been markedly developed. Papua New Guinea however, has more than 750 languages spoken. Since 1964 pidgin (a crude and unelegant language with English, German and Malay words adapted to native speech patterns), has been used in PNG House of Assembly and is also taught in schools and used in the press and on the radio. Although English is spoken only by 1 percent of the population, its future use as the national language seems assured, as official policy seems to favour it.

The ethnic complexity creates problems of providing library services unknown to say, Britain, Scandinavia or other developed countries. The generally poor developing countries would have to spend much more in proportion to provide 'comprehensive and efficient' services because of their multi-ethnic and multi-lingual backgrounds. Too many languages too mean that not a great number of people speak all the languages and this makes domestic publishing very difficult.

Even in a developed country like Denmark, publishing in Danish is difficult because it is a language spoken by a small population. This therefore means that it is difficult to have a profitable publishing industry (see Section 2.6). If there are no books published in a language people can read, how can there be libraries, particularly public libraries? It is understandable that the newly independent countries would like to replace 'colonial' languages (e.g. French in
Francophone Africa, English in Sri Lanka, Malaysia etc, with the lingua franca of their people to attain a national identity. For instance in Sri Lanka, Sinhala and Tamil have today replaced English. However, the latter is still taught as a second language in all schools. In Jordan, Arabic is the official language, and as elsewhere in Islam, it is a unifying force in the country. However, in countries like Papua New Guinea, India etc, where literally hundreds and thousands of spoken and written languages exist in the country respectively, it makes sense to keep or pursue English or other 'colonial' languages (e.g. French, Spanish, Portuguese etc). In Sierra Leone, although the most widespread lingua franca is Krio (the mother tongue of the Creoles), English is still the official language used in business, administrative and technical communications.

2.5 Literacy Problems

The general trend since the second world war and the gaining of independence has been to provide universal elementary education. Education is the major correlate of reading and library use in a country. But it is not education per se but the kind of education that matters.

The education system in developing countries often places its emphasis upon unquestioning acceptance of professional authority and that means that books play little part in the process. The system tends to discourage rather than encourage the habit of reading. One finds that the ideas and progress of a country is very much reflected
in the library service of the country. Attempts are at present being made for instance, by the National Library of Malaysia to despatch bulk consignments of selected materials in 'Bahasa Malaysia' to the rural areas, to stimulate reading interests. In the practical situation, it is always the rural areas that suffer because it is cheaper providing a library service to the urban areas where there is greater population density and greater literacy.

One finds that generally, literacy rates in the developing regions are still very low. For example, in South Asia, except for Sri Lanka with a national literacy rate of 84 percent, the rest are very low indeed. Bangladesh: 23 percent, India: 29 percent, Pakistan: 16 percent, etc with Afghanistan having perhaps the lowest: 8 percent. The literacy rate for countries in South-east Asia since 1950 has been increasing. For example, in 1950, only Thailand could show a literacy rate of over 50 percent\(^{(23)}\). Today, however, Indonesia\(^{(24)}\) and Malaysia\(^{(25)}\) show literacy rates of over 60 percent, whereas Singapore\(^{(26)}\) and Thailand have reached 70 percent. In the other regions; Africa, the West Indies, the Caribbean and Oceania still have very low literacy rates. For example, both Malawi (in Africa) and Papua New Guinea (in the Pacific) have national literacy rates of only 15 percent. Jamaica's literacy rate has been stated as 82 percent, but the functional literacy rate is probably less than half that figure.

The first step to be taken to overcome high illiteracy in the developing countries is to encourage and teach the people to read - and steps are being taken in some of these countries to
eradicate illiteracy problems. For example, in Sierra Leone, adult education programmes are available, coordinated by the National Committee for Literacy Development and the non-governmental Provisional Literacy Bureau. In developing countries, public libraries are needed to provide a constant flow of reading materials to the neo-literates and to sustain literacy. However, the overall scene in the developing regions is a discouraging one, because of there being a lack of resources (resulting from poor economies and lack of domestic publishing etc), to really develop adequate library services.

2.6 Domestic Publishing Problems

This is indeed a great problem which countries in Asia (excluding Japan and China), Latin America, the Arab countries and some parts of Africa, face. These countries have to rely for most or all of their book stock on the publications of other countries such as France, Japan, United Kingdom, United States, Federal Republic of Germany and the USSR. This has great implications because of what has been identified as 'cultural imperialism' by virtue of one country being almost solely represented in the literature read by the developing country which then finds its own outlook and ideas are not being expressed.

A country has to support domestic publishing in the first instance financially, in pursuit of it later becoming economically viable. However, in small countries (i.e. the developing countries), it is difficult to have viable economic publishing. The many languages
in use in the developing regions as indicated earlier in Section 2.4, are a problem for reasons already mentioned. Cost of printing is also a problem to the developing country which is trying to produce its own literature. There are of course other problems associated with publishing such as lack of editors, lack of expert printing technicians and up-to-date printing equipment, lack of distributors, the lack and expensiveness of paper, poor communication systems in the developing countries and various other problems that are not faced by the developed countries. There is sometimes a censorship problem too. It is perhaps safe to assume that the 'Islamic Revolution' which resulted in the formation of the Islamic Republic of Iran in 1979, means that the library materials acquired by university, school and public libraries, are strictly controlled. The linking of politics and religion in this country, means one can also assume that censorship will also affect publishing in Iran.

It should be noted that the availability or the absence of domestic publishing in a country affects library development in a country. It will be observed that where domestic publishing is low, for example, in the developing countries of Asia, Latin America, the Arab countries etc; libraries, particularly public libraries are not well developed, but where domestic publishing is high, for example, in Europe (excluding the USSR), the development of libraries is advanced. Table 2.1 shows the total book production in the developing countries.
Summary

Thus, this is the scene - poor economies, low per capita incomes, natural disasters, communication difficulties, high illiteracy, multi-ethnic and multi-lingual problems, very low book production, as well as other problems not discussed such as political instability, civil wars, revolutions, and social factors of traditional attitudes and values etc, where libraries have been established in the developing regions. A review of some of the development of library service in the underdeveloped world follows in Chapters 3 and 4.

Image is one of the necessary inputs for the design of a library building (27) - and in considering this factor in library design and planning, architects need to consider the issue of the 'interface' between the environment and the human being. This 'interface' is an interaction between the library and the user which should be studied from the viewpoint of the needs and requirements of the local user in the context of the local experience. For example, identity in design for the Malaysian environment comes not just from designing the building which envisages the Malay headgear or Tengkolok* but from a realistic appraisal of climate, other geographical factors, as well as social and cultural factors. Any response to geography and climate for instance,

* The Malay headgear or Tengkolok will be used as the design concept in the new national library building to be erected later this year (28). (See also Appendix 1).
requires a balanced control of sun, rain, thermal comfort and the effective use of landscaping. This type of response would be a definite contribution to any attempt at establishing a 'Malay-sian' architectural identity. The same should apply to the other developing countries. There is also another deep psychological factor to be considered:

A national library may also be a national monument intended by its sheer physical shape to arrest not only those who use it but those who see it. It can, with other monuments, be a symbol of nationhood, one of the means by which a people is given the identity from which it derives patriotism. (29)
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CHAPTER 3
DEVELOPING COUNTRIES: LIBRARIES

3.1 Introduction

There is difficulty in seeking to write about libraries in developing countries. Conditions are so different in different countries of the world. It should also be borne in mind that libraries in the modern connotation of the term are of comparatively recent origin in developing countries. In most of the developing countries, books and libraries in ancient times, belonged only to a limited number of people. They could be found for instance, in temples, monasteries and imperial courts. The masses depended on oral tradition, music and dance for the transmission of culture. By the eighteenth century, most of the developing countries had become colonies of western powers at one time or another. This meant that culture and tradition of these colonial powers were to some extent imposed upon these countries. Lester Asheim has observed:

The representatives of foreign nations who first came to settle and to rule in Africa, Asia and elsewhere often brought with them the best that they remembered from their own countries. The French and British University systems for example, carefully transplanted overseas, represented a high standard of achievement toward which many of the native populations could never have aspired on their own. (1)

Libraries are no exception! The types of libraries which were most familiar to the colonial rulers were transplanted to the colonies. In South-east Asia for example, there was the Singapore Library,
the forerunner of the present National Library of Singapore, estab-
lished in 1844 as a proprietary library, an example of which was
usually to be found in most of the British colonies at that time.

Needless to say, there are many shortcomings with the direct
and unaltered transplantation of social institutions and social
systems. As Asheim also said:

*But the expatriates themselves were held back
by their distance from home and from communica-
tion with later developments. Nostalgia for
the 'old days' was much stronger among those away
than among those who were caught up naturally in
the changes as they occurred and knew that the 'old
days' no longer existed. And so, many practices
and systems, which at home had long since changed
with the times, remained unchanged abroad for
a century.* (2)

These are harsh but true words. Social institutions and systems,
to be effective, must be sensitive to the particular societies in
which they are located. Transplantation without regard to the
specific background of the countries is doomed to failure. This
chapter looks briefly at the trends of library development in the
developing countries today. In order to ascertain the roles of
national libraries in these countries, it is not only necessary
to study the background of national libraries (dealt with in the
following chapter), but also the overall library scene in these
regions.
3.2 Library Scene in Developing Countries: General Trends

If one were to begin from the worst situation, one will find that public libraries are either very few or even non-existent. University libraries are generally of poor quality and hardly needed because as mentioned in Section 2.5, teaching at the university level discourages rather than encourages the use of books; a straight lecture, one-textbook system\(^3\) prevails and students are only required to repeat and reproduce lecture notes in examinations. The teaching methods in schools too fail to integrate the library fully into the teaching and learning process. It can be said that the present neglect of school librarianship in the developing countries, more or less follows the pattern which existed in the United Kingdom before the Second World War. Beswick indicates that school librarianship in Britain was not given proper attention until after the Second World War when he says:

... It should not be said that the library played more than a peripheral role in most schools, or in the work of any other subject department. (4)

This serves as a reminder to developing countries that they should aspire, despite the difficulties, to tackle all types of librarianship simultaneously. Special libraries are likely to be better, although limited perhaps in their scope. Also, they are generally out-of-touch with other libraries both within and outside the country. Table 3.1 shows the libraries (except national libraries) and their holdings in seventeen developing countries. As can be
### TABLE 3.1: Libraries in Developing Countries and Their Holdings

<table>
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<th>Country</th>
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<th>Public</th>
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<td></td>
<td></td>
<td>No of Libraries</td>
<td>No of Volumes (1000)</td>
<td>No of Libraries</td>
<td>No of Volumes (1000)</td>
</tr>
<tr>
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<td>79</td>
<td>487</td>
<td>14,610</td>
<td>5,407</td>
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</tr>
<tr>
<td>Fiji</td>
<td>79</td>
<td>3</td>
<td>174</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Guyana</td>
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</tr>
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<td>229</td>
<td>6,870</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Indonesia</td>
<td>79</td>
<td>31</td>
<td>930</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Iran</td>
<td>79</td>
<td>10</td>
<td>743</td>
<td>2,000</td>
<td>-</td>
</tr>
<tr>
<td>Iraq</td>
<td>79</td>
<td>7</td>
<td>210</td>
<td>4,701</td>
<td>1,543</td>
</tr>
<tr>
<td>Jamaica</td>
<td>79</td>
<td>5</td>
<td>150</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Malawi</td>
<td>79</td>
<td>13</td>
<td>473</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Malaysia</td>
<td>79</td>
<td>36</td>
<td>1,080</td>
<td>500</td>
<td>-</td>
</tr>
<tr>
<td>Nigeria</td>
<td>79</td>
<td>44</td>
<td>1,786</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PNG</td>
<td>79</td>
<td>8</td>
<td>159</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Peru</td>
<td>79</td>
<td>41</td>
<td>1,230</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Sierra Leone</td>
<td>79</td>
<td>8</td>
<td>166</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Singapore</td>
<td>79</td>
<td>13</td>
<td>1,785</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>79</td>
<td>5</td>
<td>578</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Uruguay</td>
<td>79</td>
<td>12</td>
<td>360</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: The figures are only approximate minimum figures.

1. Public libraries and Institution of Higher Education: only collections of 30,000 volumes and more are included.
2. Special libraries: only collections of 3000 volumes and more are included.

observed from the table, there is great disparity in the number of libraries and their holdings in these countries. These libraries have to carry out their services in such adverse conditions, where cuts in water and electricity supplies are common and where roads are sometimes impassable. The staff have to struggle to maintain a service but, as stated by Peter Havard-Williams:

Such however is the human spirit that communication somehow gets through — though slowly. (5)

Even a telegram or telex in these countries sometimes takes as long as a letter. However, even in the developing regions there are countries where the library and information services are comparable with services in the developed countries. An example provided by Peter Havard-Williams is Korea, where the services offered by the library and information service at the Korean Institute of Science and Technology are of a high standard (6). Their services have been computerized since 1975 (7) and their printed bulletins as well as holdings are also of a good standard. This may be attributed to the work of the former director of KORSTIC (Mr Kim) as well as the librarian of KIST (Mr Park Ke Hong)(8). Undoubtedly, all the government sponsored research institutes both in Seoul and elsewhere in Korea are trying to build up library and information services, which would be acceptable to any professional, wherever they may come from. Brazil one of the countries studied in this work, reveals that, she too, has significant special libraries which contribute to the development of scientific work in the institutes and foundations of which they are part, for example, the Instituto
Brasileiro de Informacao em Biensie and Tecnologia (IBICT), the Centro Nacional de Informacao Cientifica em Microbiologia, both in Rio de Janeiro and others. The Filmorex computer system is used for bibliographical searches in both institutions. It must be stressed that these two examples represent only one extreme - the other (of which most libraries in these countries belong) are left to the imagination.

In the developing countries, the profession does not usually attract the most able, except as stated by Peter Havard-Williams, 'at a relatively sophisticated level'. A second-rate personnel means that the case made for library provision is second-rate, and with so many needs to consider in the developing countries, a service which is not forcefully presented thus, goes downhill rather than develops. Whenever there are some able members of the service, especially those who have trained overseas (UK, US, Australia etc), these have very frequently used and still use, their training as a stepping-stone to some other more profitable post in the country or, less often, a more profitable post in another country, or an international organization. Then of course, the oral traditions of Africa, of the Arab countries (despite their devotion to reading the Koran) the importance of 'tradition' (in itself) in the Far East, the 'mas o'menos' (what will be will be) attitude of the Latin Americans, all seem to militate against the development of the public or the school library in these countries. Also students whose living conditions do not usually allow for conditions of study do not usually need to use the library as workshops
but as study rooms. Therefore, apart from the fact that university or college collections are limited in scope, their poor quality discourages students to undertake further study. The impetus of initial standards, concepts of education, government attitudes to higher education and external aid all seem to have a bearing on the quality of collections. It is not surprising then that one finds in countries of the Commonwealth, standards in higher education are generally higher than elsewhere because standards were set earlier on, higher education was considered prestigious by the indigenous governments, and aid has continued over a reasonable period. For example, if one compares the collections of a library such as that of Ibadan or Lagos University one sees what a difference there is between them and, those in the Far East. Many of the latter libraries are filled with fifth-rate American college texts.

One also finds that cooperation among libraries in the developing countries (except for some, e.g. Brazil and Iran etc), is not usually organised but operates informally, as in Iraq, Malaysia, Kenya, Malawi etc. At present, in Brazil, there is one active interlending cooperative and the Biblioteca Especializadas Brasileinas published by the IBCIT gives a list of its participating libraries. In Iran, an interlending cooperative has been initiated and administered by the Iranian Documentation Centre (IRANDOC), in which sixty libraries now participate. An example of efficient interlibrary cooperation on a national scale is the services provided by the Tehran Book Processing Centre (TEBROC). Contractual relations are
established with institutions which need its services. Books are delivered to the library ready to circulate with catalogue and shelflist card ready to file. In most cases, the methods of communication in use in interlending is the postal service, except in Korea where telex is used in KORSTIC and two other national libraries (12).

One can broadly outline a hierarchy of library provision in the developing countries. For instance, at a minimum (or nothing at all) school libraries, then not far above (with rare exceptions) public libraries, then university libraries and lastly, usually at a level of provision reasonably comparable with that in the developed countries, there are the special libraries. Libraries of various research institutes in the developing countries, which as a whole have suffered from book starvation, have within the last five to ten years developed to a point where they would be reasonably satisfactory to the ordinary working scientist anywhere (e.g. the Council for Scientific and Industrial Research, in Ghana; the National Institute of Medical Research Library, in Nigeria, the Rubber Research Institute, in Malaysia etc). However, it should be stressed that as with all other types of libraries, the special libraries in these countries are not without problems. Perhaps, Soosai and Cheu Teik-ong provide the general picture:

Though in qualitative terms the growth of special libraries appears impressive, many of the libraries are severely handicapped by inadequate funds, lack of proper staffing, especially professional staff, and a general apathy on the part of management to recognise the importance of the library. (13)
Although these words were meant for the special libraries in Malaysia, generally speaking, they also apply to this type of library in most of the other developing countries.

Over the past ten to fifteen years, library work has developed from isolated activities, such as John Harris' work in West Africa at Ibadan in the twenty years from 1947, and the beginnings of various university and college libraries in other Commonwealth countries (e.g. Sri Lanka, Malaysia etc) and the establishment of public library systems (e.g. Jamaica, Nigeria etc). Within the last ten years, the activities in parts of the world have become more coordinated thanks partly to the efforts of Unesco through the work of its Division of Documentation, Libraries and Archives, partly to the influence and support of bodies such as the British Council, and also to the Russian initiative of calling together a seminar for developing country problems in the field in 1970 through the agency of the International Federation of Library Associations. IFLA has also organised regular seminars for librarians in developing countries and has tried to organise a continuing programme through its division for developing countries. A further major influence on developing countries was Unesco's organisation of regional conferences in South America, Asia and the Middle East countries and the Inter-Governmental Conference on National Information Systems in Paris in 1974: this gave considerable impetus to activity in developing countries all over the world, and has had its effect on Unesco's own activity by bringing into harmony the Unisist programme (a world scheme for information in science and technology)
and the 'Natis' programme (the promotion of national information systems), with the new division General Information Programme (PGI) created on February 24, 1977 (14). Professor Choi has discovered that the networks of information centres and libraries in the fifteen developing countries he studied, were undergoing gradual development (15). This development is however, still in its infancy. More elaborate forms of national information networks, he reported, have been planned in some countries such as Iran, Korea and Yugoslavia, to be implemented when conditions will make it possible (16). It should be noted that most governments in the developing countries believe in the need for development of national information networks as an indispensable tool for their countries' economic, cultural and social wellbeing, but in many instances they do not yet exist, and in some others they are too embryonic to meet growing requirements.

In most of the developing countries, basic problems have to be solved, in order to achieve a reasonable quality of life for the majority of the population. What priority should a government give to education, information and libraries? Realistically, one must agree that drains, bridges and roads come before books, that industrial development is essential to attain greater prosperity. But, if modern technologies are to be developed, an educated population is necessary. If education is to be exploited economically, then information and libraries are essential. The problem is, at what level? Could one arrive at a percentage of the GNP? As stated by Peter Havard-Williams, it is not easy to arrive at a cost-benefit analysis,
for how can one 'assess the benefit or even the cost of a child reading Alice in Wonderland, The Hobbit or Enid Blyton? - or a third year undergraduate reading an advanced text as against a professor reading a journal article? (17) He also stated that attempts have been made for instance, by the Centre for Library and Information Management (CLAIM) to investigate these problems but without much progress. It is true to say that the further one gets from provision of libraries for industry, for government, for higher education, the more difficult it becomes to make any rational justification for libraries in terms which will make an appeal to politicians or civil servants, and hence the difficulty in making a case for, and the resulting poor provision of public libraries in developing countries.

The case to be made then must depend on the profession itself. How can one build a vital and viable profession? Fundamentally, one needs to look to professional education in its widest sense as the factor which will be the key to the development of libraries in these countries. Librarians start off in most countries by being clerks, 'failed' teachers, who may be unsuccessful in their own work and who found an appropriate 'easy' job looking after a library. It is only gradually that leaders who are both professionally competent and professionally motivated, arise, and it takes a long time for them to make their mark in making a case for their service. Developing countries should be wary about applying concepts, ideas etc that are appropriate only to developed countries. For instance, the International Federation of Library Associations (IFLA) in 1979 organised
a seminar on 'resource sharing' in developing countries. Surely this is being idealistic? How can one share what one has not got? As Peter Havard-Williams has said 'the tag of 'resource sharing' indeed makes life difficult for many librarians ... since it appeals strongly to administrators and managers as an excuse for economy.' The need is thus for imaginative leaders of the profession who will see the development of services in the light of the needs of their own country who will not only be concerned with the development of libraries, but broadly with the communication field and with the book trade as a whole.

With regard to library education and training programmes, one finds that, as in the developed countries, there is a variety of programmes in existence in the developing countries. However, there are certain general patterns. In Latin America the usual pattern is that of a bachelor's degree, though there is a postgraduate programme in Medellín, one or two postgraduate programmes in Mexico and several established in Brazil (Brazil has 14 library schools in the country: 12 in universities and two independent). In the Middle East, there is somewhat similar pattern (e.g. in Iran these courses are conducted in three library schools; in Iraq, they are conducted in two library schools). In African Anglophone countries, the pattern varies, but it more or less follows British practice. In Francophone Africa, there is a regional school for archive, library and information studies at Dakar, which is at the level of the British two year diploma. In Malaysia, the Mara Institute of Technology (the only library school in the country at
present) offers courses at Diploma* and Postgraduate* diploma levels. A postgraduate library school is yet to be established. At present, both the University of Malaya and the National University of Malaysia (Universiti Kebangsoran Malaysia) are in the process of discussing the establishment of the school, vying with each other to have it established in its own institution. Whether these discussions currently going on will eventually materialise and if so, in which university, remains to be seen.

Until this year, Singapore did not have any formal library education programmes. The first local Postgraduate Diploma Course in Library and Information Science began in July, this year (1982) by the cooperative efforts of the National Library and the Library Association of Singapore(20). In India, there are numerous library schools offering bachelor's and master's degrees in library science. In general, while there are of course exceptions, standards are more likely to be maintained in courses of postgraduate studies.

Although there is still a lack of qualified librarians in these countries, developing countries should not indulge in starting new library schools before undertaking manpower planning. The consequences of a lack of such a planning can be seen for example in India, where library studies departments have been allowed to proliferate without the required increase of job opportunities and where there is a high level of librarians' unemployment, or of librarians employed in relatively menial tasks. Of course, this is not unusual in India, but nevertheless one does not wish this situation to be

* The Diploma has been upgraded to a general degree and the postgraduate diploma is equivalent to other postgraduate diplomas in the UK, recently (1981). (19)
multiplied, or repeated in the other developing countries.

Professional associations can play an important role. But even where there are professional associations for librarianship, there are difficulties. In most of these countries, the library associations are generally young. In Latin America (e.g. Brazil, Peru, etc), there are too many professional associations devoted to library and information science, but they do not seem to unite all the professionals and their scope is not national. Also, in most of these countries, unlike Ghana, where a professional association must consist only of actual professional members, members include aspirants, unqualified members and frequently representatives of governing bodies. Then again, it should be accepted that professional work is difficult where jealousies are uppermost in people's minds, rather than the common good.

Conclusions

Therefore, on the whole, problems in the developing countries are those of the country in which it exists. Very briefly, it is obvious that there are regional - continental differences in library development in these countries. For example, in Anglophone Africa, libraries are relatively well developed, in Francophone Africa, there is very little. In the Middle East countries, public libraries are almost non-existent and so is any kind of bibliographical organisation, though there is concern for scientific documentation because it is necessary for industrial development.
Of all the different types of libraries, special libraries are perhaps the best provided for whilst school libraries are the most neglected. In Indonesia for instance, 'school libraries' are almost unknown. In some of the developing countries (e.g. Malaysia, Thailand, etc), however, University libraries are the best, but generally speaking, they are of poor quality and not suitable for research. Public libraries (with the exception of perhaps Singapore, Jamaica, Nigeria, where these libraries are quite well developed) are mostly still in rudimentary stage.

It has been observed that cooperation among libraries in most developing countries such as Iraq, Malaysia, Papua New Guinea, Kenya, Malawi etc is not organised and operates informally.

Computers are not used by libraries in library work in developing countries except in Korea and Brazil. Perhaps this is not surprising because libraries are not yet at a stage where advanced technology is important in their work, either in terms of quantity or quality, and more important because communication systems are in most countries, not yet sufficiently reliable. However, one must accept that the computer scene is changing and library planners should not totally rule out the use of computerised methods for library work in these countries.

Library education and training facilities in the developing countries are inadequate or not available at all in some countries such as Kenya, Malawi, Malaysia etc. In these and most other countries, most professional librarians are trained in the United Kingdom, United States, Canada and Australia.
In conclusion, as will be observed in the following chapters (4 and 5), national libraries in the developing countries can play an important role in improving the library situation in these countries by e.g. acting as coordinating libraries in library cooperation, providing leadership in the national information network of the country etc and one must not forget that it is always important for architects to study the roles and functions of the national libraries (discussed later in Chapter 5) in order to design aesthetic and functional buildings.
REFERENCES


2. Ibid, pp 42-43.


6. Ibid.


10. HAVARD-WILLIAMS, P. Libraries and information in developing countries, Op cit, p 77.

11. Ibid.

12. CHOI, Sung-jin, National information networks for advanced developing countries, Op cit, p 146.


15. CHOI, Sung-jin, National and information for advanced developing countries, Op cit, p 254.

16. Ibid.


19. INFORMATION obtained from Havard-Williams P, Head of the Department of Library and Information Studies, Loughborough University who is also the External Examiner to the Library School, Mara Institute of Technology, Malaysia.


CHAPTER 4
DEVELOPING COUNTRIES:
NATIONAL LIBRARIES

4.1 Introduction

This chapter studies the background of national libraries in developing countries. However it does not consider the roles and functions of these libraries in any detail as this is discussed in the next chapter.

It is not possible to cover every developing country that might be included in this chapter. Throughout, the countries mentioned as examples are mostly those that answered the questionnaire and letters sent by the author to their national libraries.

4.2 National Libraries: General Background

Most of the national libraries represented at the Unesco Vienna Symposium in 1958, were old, some of them ancient institutions which had evolved gradually with the history of their country. However, the national library as known today, is a much less well-known feature of developing countries than those in the developed countries, with the exception of a few which had long and close associations with developed countries. As can be observed from Table 4.1, most of the national libraries in the developing world are fairly young, mostly having come into existence within the last 10-60 years. Perhaps, the oldest of this group of national libraries are those found in the Latin American
countries, (for example, in Argentina, Brazil and Peru, see photographs 4.1 and 4.2) and also that found in Sri Lanka, known as the National Museum Library*, located in Colombo, the capital city of Sri Lanka. The National Library of India,** although established about twenty-five years later, is much better known. It was first established as the Imperial Library and was renamed the 'National Library of India' when it moved to its new home in Belvedere (in 1948), the residence of the Governor-General when Calcutta was capital of India. (1)

Thus, it became one of the earliest libraries to be officially named as a National Library. The Imperial Library Act 1902 stated the objective of the library as follows:

\[
\text{to promote growth of learning in all branches of studies to the people of India and the world at large.} \quad (2)
\]

Pakistan's National Library was established about thirty years ago and was placed directly under the control of the Directorate of Archives and Libraries. The National Library changed its name many times. Merging with the Liaquat Memorial Library in Karachi

* Originally known as Colombo Museum Library, it was changed to the present name in 1942.

** The National Library of India was established as a result of the Imperial Library Act passed in 1902. The Library was first opened to the public on 30 January 1903. By the same Act, the Imperial Library was amalgamated with the Calcutta Public Library which had been established in 1836.
TABLE 4.1: National Libraries in Developing Countries: Their Dates of Establishment

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>NAME</th>
<th>YEAR OF ESTABLISHMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Biblioteca Nacionai of Argentina</td>
<td>1884</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>National Library of Bangladesh</td>
<td>1971</td>
</tr>
<tr>
<td>Brazil</td>
<td>Biblioteca Nacional of Brazil</td>
<td>1810</td>
</tr>
<tr>
<td>India</td>
<td>National Library of India</td>
<td>1948</td>
</tr>
<tr>
<td>Indonesia</td>
<td>No National Library</td>
<td>-</td>
</tr>
<tr>
<td>Iran</td>
<td>National Library of Iran</td>
<td>1937</td>
</tr>
<tr>
<td>Iraq</td>
<td>Iraqi National Library</td>
<td>1961</td>
</tr>
<tr>
<td>Jamaica</td>
<td>National Library of Jamaica</td>
<td>1979</td>
</tr>
<tr>
<td>Malawi</td>
<td>Malawi National Library Service Board (1)</td>
<td>1967</td>
</tr>
<tr>
<td>Malaysia</td>
<td>National Library of Malaysia</td>
<td>1971</td>
</tr>
<tr>
<td>Nigeria</td>
<td>National Library of Nigeria</td>
<td>1964</td>
</tr>
<tr>
<td>Pakistan</td>
<td>National Library of Pakistan</td>
<td>1950**</td>
</tr>
<tr>
<td>Papua New</td>
<td>National Library of Papua, New Guinea</td>
<td>1975</td>
</tr>
<tr>
<td>Peru</td>
<td>Biblioteca Nacional of Peru</td>
<td>1821</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>Sierra Leone Library Board</td>
<td>1959</td>
</tr>
<tr>
<td>Singapore</td>
<td>National Library of Singapore (2)</td>
<td>1960</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>National Museum Library</td>
<td>1877</td>
</tr>
</tbody>
</table>

Author's questionnaire, 1982.

* Bangladesh has a national library only in name.

** This date refers to the national library which came under the control of the Directorate of Archives and Libraries. The exact date of the New National Library at Islamabad is not known (see page 127)

1. National Library functions are carried out by two other establishments (see page 131)

2. The NLS has four full time branches and their dates of establishment are as follows: Queenstown (April 1970), Toa Payon (January 1974), Marine Parade (November 1978) and Bukit Merah (June 1982).

PHOTOGRAPH 4.2: Close-up of the front entrance, The Biblioteca Nacional of Peru.
(earlier known as Liaquat Public Library) in 1954, it became the Liaquat National Library, with the status of the country's only library. In 1956, L C Key described it as:

... a great national institution, at present exists as a nucleus only, inadequately housed, without proper staff and unable to discharge its obligations to Government, scholarship, other libraries in Pakistan or the public ... (3)

In 1964, it was further renamed as Liaquat Memorial Library, with the status of a Central Library. This library continued to enjoy the privileges of a national library, until a national library was established in Islamabad in the late 1970s. The Liaquat Memorial Library however, remains a regional copyright library.

Before the establishment of the National Library of Malaysia, twenty years ago, some of the national library activities were attempted by the National Archives (1957)(4) and later the National Library Services Unit (1966)(5) (in the National Archives) as a result of a memorandum which was published in 1958 in the Malayan Library Group Newsletter(6). In an address at the annual general meeting of the then Library Association of Malaya, the Minister of Education, Mr Abdul Rahman bin Hj Talib said:

We all realise the shortage and difficulties of establishing libraries, complete with fully qualified staff. Our country, the Federation of Malaya, is far behind many countries in the world, in the use and spread of libraries and similarly, we are one step behind Singapore, our closest neighbour in the establishment of a National Library. The Ministry of Education and the Government of the Federation of Malaya are now giving attention to this matter, especially the question of establishing a national library of the Federation of Malaya. (7)
It was on 2 November 1959 that the Prime Minister's Department requested the Director of the National Archives to undertake to consider and submit to his Department your views concerning the setting up of a national library in the Malayan capital. (8)

A National Library Committee was formed in February 1966, as a result of the consequent report. As a first step to the establishment of the National Library, the post of Assistant Director (Library) was created in 1968 and in 1971, the Unit was renamed the National Library of Malaysia. However, the library was still linked with the National Archives to be known collectively as the National Archives and Library. A year later, the National Library Act was passed and the objectives of the National Library are provided in Part II(3) of the Act. The National Library of Malaysia was finally separated from the National Archives in 1976.

If one studies the history of the National Library of Singapore one finds that it stretches back one and a half centuries ago, and one cannot help feeling that the National Library of Singapore today, came about not by design, but by accident. The story of the library has been well documented, especially by Philomena Ng Soo-Ching (9) and Edward Lim Huck-tee (10), and will not be repeated here.

It should be pointed out however, that the National Library of Singapore was established in 1823 as a small school library but became a subscription library in 1844. Three years later, it was transformed into a government library, and the name was changed to Raffles Library and Museum, and this name was retained until 1958, when it was formally constituted as the National Library. In 1960,
the library was moved to separate headquarters. It should be pointed out that the Singapore National Library is the only one that operates both as national and a public library; in keeping with the concepts emphasised at the Delhi Seminar (1955). It has a system of full-time branch libraries located at Queenstown, Toa Payoh, Marine Parade and Bukit Merah(11) and book mobile service.

Although Iraq's National Library was established in April 1920, it was only forty-one years later that an enabling Act was passed. The National Library of Iran, which is attached to the Ministry of Culture and Arts, is based on the Ma'aref Public Library which has existed since 1897. It was given its present status or 'role' in 1957.

The Sierra Leone Library Board was incorporated by law in 1959 (Law of Sierra Leone, Cap 293 of 1959) to:

- equip, manage and maintain libraries in Sierra Leone;
- to support and reinforce programmes of adult and fundamental education; to provide much-needed information and reference services. (12)

In essence, it is a public library service, but it operates on a nationwide basis, with three regional libraries and seven branches. An amendment to the laws in 1962 (Publications Act) conferred legal deposit privilege on the library and warrants its inclusion here.

As for the National Library of Nigeria, its establishment was approved in principle by the Federal Government in Nigeria in 1960. A feasibility study was carried out with the assistance of the Ford Foundation of America, whereby Dr Frank Rogers, Director of the
National Library of Medicine, in Washington, recommended amongst others:

i) the establishment of a national library in Lagos to provide adequate library services for elements of the Federal Government in Lagos and to take on the wider role of a national bibliographical centre.

ii) the appointment of a library adviser to be charged with developing plans, drafting enabling acts, etc. (13)

The Cabinet officially approved the establishment of the National Library a year later, as recommended in the Roger's Report. In early 1962, the library began with the help of a team led by Dr Carl White (once Professor at Columbia University Library School, and former director of the Institute of Librarianship at the University of Turkey), under a Ford Foundation Technical Assistance Programme to Nigeria (14). The National Library of Nigeria, was ready to begin service two years later authorised by the National Library Act (later revised by the National Library Decree of 1970). It is governed by a board and is required to establish a branch in each state of the Federation. Thus, Nigeria, a large federal country, seeing the importance of tailoring Nigerian Institutions "to fit Nigerian needs and to respond to Nigerian aspirations" (15) has up till now set up six branches: in Enugu, Jos, Kaduna, Ilorin, Akure and Yola (16). The plan is to site a branch in each of the nineteen states of Nigeria, side by side with the public libraries which are a state and not a federal responsibility. It is envisaged that the branches will in future crystallise into special subject collections. Moreover, as stated by Adeleyi, these branches;
will bring the specialised services of the library closer to the state governments and to many more of the people of this country. (17)

The National Library of the Solomon Islands (1974) and the National Library of Papua New Guinea have been established within the last eight years, but the youngest National Library at the moment is the National Library of Jamaica, established only four years ago, but based in the library of the Jamaica Institute.

Although most of the developing countries studied have a national library, there are other countries where there are no national libraries (e.g. Indonesia, Jordan, Malawi etc) in existence. However, in these countries, the functions of the national library are being undertaken by another institution or institutions. For instance, in Indonesia, the fundamental functions of a national library are largely being carried out by an existing group of libraries and other institutions such as the Perpustakaan Museum Pusat (Central Museum Library) or the Kantor Bibliografi Nasional (National Bibliographical Centre). It has been suggested by Poon (18) that the institutions carrying out these functions should be the nucleus around which a unified national library* could be built.

In Malawi, the duties of a national library are shared by three establishments:

i) the National Archives of Malawi

ii) the University Library, and

iii) the Malawi National Library Service (MNLS).

* The National Library of Indonesia, was to have been established in 1979 (19) but until today it has not yet been set up.
Establishment (i) enjoys legal deposit under the Printer Publications Act, 1967, and is responsible for the production of the national bibliography. Apart from this, it also maintains a public reference library of which, unfortunately, only very few people are aware exists. Establishment (ii) on the other hand, operates a postal lending service to the public and plays a major role in the training of local staff at library assistants level. As for establishment (iii), which was entrusted with the powers of "promoting, establishing, equipping, managing, maintaining and developing libraries in Malawi", it operates on a national level, a public library service, offers technical advice on library matters to organisations in the country, and also shares the responsibility of training library staff. It is perhaps, reasonable to expect that the latter (MNLS) which already has a major reference library service will grow into the National Library, should the country decide to set one up.

It should be stressed that it does not really matter how a national library is created. In fact, each country has to seek the least painful and most economical way of creating a national library. Most of the National Libraries in developing countries have been created from public libraries (e.g. in Brazil, Peru, India etc), although a few (e.g. the Biblioteca Nacional of Mexico was created from the National University of Mexico and the National Library of Singapore from a school library) have evolved from other older libraries or groups of libraries. But whichever way it evolves, it is generally agreed that a national library in a developing country should certainly lead the nation's library development.
For countries such as Indonesia, Jordan, etc where national libraries have yet to be set up, the particular pattern should be sought whose adoption appears to be the most appropriate to their own background. But having chosen a pattern they should examine their specific needs and requirements, and then adapt this pattern accordingly. Only by doing this can the potential benefits of a national library be attained.

Some national libraries were founded partly as a symbol of independence. For example, the Biblioteca National of Peru was founded within a month after the proclamation of independence. At the inauguration ceremony of the National Library, General San Martin, the then Supreme Commander, concluded the ceremony with these words:

The library is destined to be a universal illustration, more powerful than our armies in sustaining our independence. Literary works will give strength to independence, bringing together individuals for the reading of books, by stimulating the people at large to enjoy the pleasures of study. I hope it will succeed in this effort, and this establishment, the fruit of much governmental concern, will be frequented by all those who love learning the fatherland. (21)

The concept of a national library contributing to a people's sense of nationhood is perhaps of great psychological importance (see also Chapter 2, page101). Older established national libraries in the developed world are all housed in architecturally imposing buildings as though reflecting national pride and agreement with the national library idea. The National Libraries of Brazil and Argentina however were founded during the period of struggle for independence. Despite their long history, the development of national
libraries, particularly in Latin America (and other developing
countries generally) has taken place not without hardships.
In general, the governments have been confronted with political
and social unrest and turmoil throughout their history, thus
interfering with growth and continuous and consistent progress
of the national library. They have in many cases, suffered heavy
physical losses. For example, in Peru, the national library,
lost most of its collection (only 14,000 volumes of the 55,000
volume collection were recovered) during the conflict with Chile.
Tragically again, a disaster struck this library, when a fire
(in 1943) completely destroyed the building and nearly all its
contents.

National library services in the developing countries follo­
wing the example of the developed world, have been provided by
legislation. Usually, the Director of the National Library or
National Library Service is directly responsible to a Minister or
Secretary of State or to a governing body, appointed by a Minister
or other central government process.

The planning agencies, and the planning processes vary
considerably according to the legislature, administrative, and
financial system of each country. Since most national libraries
are government agencies, the programming, execution, and evalua­
tion of their plans are carried out in accordance with prescribed
practices and procedures and are subject to bureaucratic and
other constraints. A hopeful sign perhaps is the inclusion,
with Unesco assistance, of national libraries and library and
book development as a whole in national development plans, for
example, Indonesia.
It should be noted that the organisation of the departments for the services provided by the national libraries are different in each country. However, it appears to be that the most common services are reference, acquisitions, lending, extension services, training services and bibliographical services. Apart from these, they also provide activities for the general public, such as, exhibitions, lectures and film shows etc.

The next chapter considers functions in greater detail. It is important that architects are made aware of the national library services, present and potential, in order that a functional library building can be designed.

Perhaps, the first factor requiring consideration in the planning of national library buildings is the size of the existing collections. Table 4.2 shows the holdings of some of the national libraries in the developing regions. As can be observed from the table, it illustrates that unlike national libraries in the developed world where stock size is measured in millions, the developing country's national library stock is measured in hundreds of thousands - at present. Planning for future growth is thus, another major factor.

The existence of special collections in most of the national libraries in the developing countries is similar to the developed world's national libraries. Some examples are: the National Library of Malaysia's substantial Malaysian collection; Iran's collection of rare books and manuscripts; the National Library of Nigeria's collection on Nigeriana, United Nations, UK Government Command Papers, League of Nations Treaties and Documents and
TABLE 4.2: National Libraries in Developing Countries: Their Holdings

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>YEAR</th>
<th>NO OF VOLUMES</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BOOKS</td>
<td>PERIODICALS</td>
<td>AUDIO</td>
<td>VISUALS</td>
</tr>
<tr>
<td>Iran</td>
<td>81</td>
<td>158,122</td>
<td>2,300</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Jamaica</td>
<td>81</td>
<td>31,486</td>
<td>2,305</td>
<td>29,636</td>
<td></td>
</tr>
<tr>
<td>Malawi</td>
<td>81</td>
<td>100,000</td>
<td>50</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>81</td>
<td>194,967</td>
<td>5,501</td>
<td>6,184</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>81</td>
<td>182,563</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>80</td>
<td>55,000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>81</td>
<td>2,784,762</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>81</td>
<td>400,000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td>81</td>
<td>1,221,500</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>81</td>
<td>600,000</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Author's personal correspondence, 1982 (see references 22-31).

Note:
Audio-visuals include: maps, manuscripts, microfilms and other audio-visual materials.
Jamaica's collection on West Indies from the eighteenth and nineteenth centuries including materials from Dutch, French and Spanish territories. Thus, architects should not overlook this factor when planning new national library buildings.

Another factor that should not be overlooked when planning national library buildings is the number of library users, the respective national libraries serve both now and potentially in the future. Although it is almost impossible to fix the number of seats required by the national library, it is important that statistics of library users for at least three years running should be examined to determine the approximate number of seats for the library relating these to any published standards. Table 4.3 indicates the number of users in the national libraries of the developing countries for the years: 1979, 1980 and 1981 and the apparent overlooking of this essential management information by several of the libraries concerned.

Also warranting consideration is the fact that in some national libraries, the collection is sometimes on closed access. For instance, in the National Library of Iran, the only guides to its holdings are card catalogues arranged alphabetically under the author's name. This means that books in closed access can be closely stored for example, compactly as only the staff use the bookstacks, that is, less space is needed than when open access is allowed.

A handicap to be overcome may be a solution offered by Malaysia. Although the National Library of Malaysia was founded about ten
TABLE 4.3: National Libraries in Developing Countries: Number of Library Users

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Iran</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Jamaica</td>
<td>10,000(a)</td>
<td>10,000(a)</td>
<td>10,000(a)</td>
</tr>
<tr>
<td>Malawi</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Malaysia</td>
<td>249,398</td>
<td>640,304</td>
<td>429,976</td>
</tr>
<tr>
<td>Nigeria</td>
<td>32,315(a)</td>
<td>32,215(a)</td>
<td>32,215(a)</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>13,300(a)</td>
<td>13,300(a)</td>
<td>13,300(a)</td>
</tr>
<tr>
<td>Peru</td>
<td>416,143</td>
<td>424,529</td>
<td>448,479</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Singapore</td>
<td>312,800**</td>
<td>373,800**</td>
<td>393,600**</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Author's questionnaire, 1982.

Key:
* This question not answered on questionnaire returned

** Figures include three of the four branches, Queenstown, Toa Payoh and Marine Parade.

(a) The figures are only approximate

n.a Not available
years ago, it is still in urgent need of appropriate premises of its own. At present, it is being temporarily accommodated in three separate buildings in Kuala Lumpur. The combined floor space of which is barely sufficient for immediate need. Although the government will contribute towards the cost of the new building (estimated by now to cost not less than $25 million (Malaysian Dollars)\(^{(32)}\)), contributions from the public will be vital in order to help raise the amount and perhaps give a sense of identification with this all-important project. Building construction is expected to commence later this year and completion is not expected until late 1984 or early 1985\(^{(33)}\).

The National Library of Papua New Guinea, although founded later than the National Library of Malaysia, already has a building of its own, in response to an invitation from the Australian Government to nominate the form which Australia's Independence Gift should take. The new building was officially opened to the public on 30 October 1978. The gift was made on:

\[... \text{the basis of cooperation and joint consultation in such matters as design, structure and library content, so that when completed it will truly reflect the wishes of both our countries and peoples.} \] \(^{(34)}\)

In Iran, it was realised ten years ago that, with economic, social and cultural developments taking place in the country, the present library cannot perform its role effectively. Thus, in December that year, a Royal Decree was issued for the creation of a new National Library - which was to have been the Pahlavi National Library. In August 1975, many distinguished librarians
from all over the world as well as representatives of Unesco and
IFLA were invited to Tehran, to put forward ideas for planning:

a model library, firstly for Iran, secondly for the
developing countries, and thirdly for the whole
world ... (35)

From the national standpoint, Iran requires:

a library that meets the social, cultural, educational
and economic needs of the Iranian society of today and
the future ... the Pahlavi National Library must play
a larger role than do many of the national libraries of
Western progressive nations. It must function in the
capacity of a mother library in cooperating with other
libraries of the country. Developing equipment and man-
power for them, nurturing them spiritually and mate-
rially, encouraging the younger generation to read and
learn, assisting the research and study of Iranian
society, expanding activities for the progress of
research into the culture and civilization of Iran,
and creating a positive and expanded capacity for study
and research in the different strata of Iranian society:
these should all be included in the planning. (36)

To fulfill the needs of the developing countries, the plan

requires special care to be exercised ... This is
important for (Iran) because Iranian society now
shares most of the problems of the developing countries. (37)

To serve international interests, implies that:

... the Pahlavi National Library has a special undertaking.
We must remember, this is the youngest of the national
libraries and therefore it should represent the most
modern and to a certain degree the most revolutionary
thinking in its planning. These new requirements demand
application of the most modern techniques and technology. (38)
The 'Final Report of the Board of Consultants' was delivered in March 1976. This report which consisted of six volumes, the last of which contains the architectural and building requirements of the library, was used as the basis for an international competition to select an architect for the new Pahlavi National Library complex.

Unfortunately, after all these efforts, the actual construction and establishment of this library has not materialised following the overthrow of the late Shah of Iran in 1979. Iranian colleagues are certain that the Pahlavi National Library is not likely to be established during the present regime of Ayatollah Khomeini. Although plans to establish the library have not been realised, the planning process was impressive and is still useful to study. Perhaps, for the first time in history, a nation had set out to plan the simultaneous development of all aspects of a vast new national library: the physical facilities and the equipment, the library's collection and the design for its services, staffing at all levels, and a comprehensive concept of programme operation. Also impressive is the fact that never before in the history of librarianship had so many distinguished leaders in the profession been brought together for so long a period in order to apply their collective knowledge, experience, talent and judgement to a single undertaking. The fact that the library is unable to materialise is a disappointment, not only to librarians and perhaps architects in Iran, but also librarians and architects throughout the world, who have been awaiting its establishment.
Conclusions

One finds that nearly all the developing countries studied have a national library of fairly recent establishment. In countries where national libraries are not in existence (e.g. Malawi, Indonesia, Jordan) some of the functions are undertaken by other institution/institutions.

The development of national libraries in Asia, Africa and the Caribbean, is owed to a considerable extent to the findings and recommendations of several seminars: the Manila Unesco Regional Seminar on the Development of National Libraries in Asia and the Pacific, 1964; the Quito Meeting of Experts on the National Planning of Library Services in Latin America 1966, and the Colombo Unesco Meeting of Experts on the National Planning of Library Services in Asia, 1967. These meetings emphasised the National Library's fundamental role as the leader of the nation's libraries, together with a number of other functions regarded as more or less essential. For instance, the Manila Seminar stated that national libraries must "provide leadership among a nation's libraries" and "serve as a coordinating centre for cooperative activities" (39). The Quito meeting said that a national library must "coordinate... whenever its own organisation and the development of planning render it advisable, in the extension and improvement of school and public library services" (40). Whilst the Colombo meeting stated that the national library ought to be "an active organisation with dynamic leadership" one of whose main aims should be to develop "systems and procedures which will make available the total library resources of
the nation for the benefit of the whole national community"(41).

This idea of a national library and of its coordinating function in relation to national library services, is new. However, attempts are being made by the national libraries to undertake this role, as will be observed in the following chapter. But, for various reasons there is room for improvement, among the major ones are:

i) Lack of financial support which results in meagre collections (both domestic and foreign). This in turn brings about many difficulties in operating and expanding the various services of the national libraries;

ii) Even if money is available, purchasing still presents a problem because of the fact that the local book-trade is underdeveloped and disorganised;

and

iii) The staff generally are young and inexperienced, that is, there is lack of mature and experienced librarians in most national libraries in these countries.

It should be noted that although the leadership role has been widely accepted not only in the developing countries, but in some developed ones as well, the way in which it is exercised has understandably varied from one country to another, owing to different degrees of political development, varying constitutional frameworks and geography and communications factors as discussed in Chapter 2. The advice given at the Delhi Seminar and the Vienna Symposium has not been forgotten. Thus, Nigeria has set up six branches (and branches
are expected to be set up in all the nineteen states) of the national library in the various states, so that its services can reach more people in the country. A similar policy is carried out in Pakistan, where the National Library is at Islamabad, and a regional national copyright library, the Liaquat Memorial Library, at Karachi\(^{(42)}\).

Singapore is a relatively small city-state; therefore centralisation is an important element in its national library pattern. It is the motive force behind the national library network, over which it exercises close control. A similar system has also been adopted in Egypt\(^{(43)}\) but in future it will attempt to be the peak of a national library system which together in close coordination the service of university, research, special, public and school libraries\(^{(44)}\).

Although it has been stated that in developing countries "most national libraries have ... sometimes (been) deliberately created as necessary adjuncts to nationhood\(^{(45)}\), on the practical side, establishing a national library has many benefits. The more significant of these include the preservation of national literature, a comprehensive bibliographical control, and a coordinated national library network which would in turn lead to a considerable saving in resources as well as affording better services. This would be a logical course of action to take, not only for those countries where national library activities are completely absent, but also for those where although these duties are being carried out by some agencies, a formally designated national library does not exist.
Therefore, young national libraries (generally in developing countries) should always be organically connected with lively networks: giving them life and deriving life from them, irrespective of their relationship with the other libraries in a country, which might vary according to circumstances in whichever country they may be in. They must never be, to use Hedwig Anuar's metaphor, an apex without a base (46).

The background to national libraries in developing countries and their roles and functions are essential for architects to understand in order to design satisfactory and functional buildings.
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CHAPTER 5
THE ROLES OF NATIONAL LIBRARIES
IN DEVELOPING COUNTRIES

5.1 Introduction

Despite numerous books and articles written on library planning, the fundamental procedures and criteria for planning and designing a good library are often unknown and unheeded by librarians and equally often, given little more than lip service by architects. When looking at the trends in library buildings before the Second World War, considerable weight was given to architectural aesthetic effect and minor attention to functional requirements. Monumental buildings were constructed which were architecturally impressive, but which were not well suited to their purpose as are many libraries. Today, although some national libraries are still built as 'monuments', the emphasis is changing. It should be borne in mind that a national library may well be a monument to the cultural status of the country involved, but it must be a working functional building if it is to justify its cost and fulfill the purposes for which it was brought into being.

A new library may cost a fortune to plan, construct and equip in the country concerned. Such an expenditure requires a major investment of funds, and the construction of a new national library is not a project which can be undertaken without the most careful planning.
One lives in an age when changes take place in the political order, the social order, and the cultural order with almost startling rapidity. In some instances, what was unthinkable five years ago, unacceptable even a year ago, is today commonplace. Thus libraries too, must change with the times. It could be that services which were scarcely considered a few years ago are today not only necessary, but become even fundamental parts of a library's operations. Tomorrow, or next year, will see the addition, annexation of still newer and probably as yet unforeseen functions to the activities of national libraries. Such services often make very special demands upon the buildings, and thus require consideration in the very earliest stages of planning. However, this chapter attempts to look at the more basic functions of the national libraries (which are by no means all-inclusive) but represent some of the more common tasks undertaken by national libraries in developing countries. It has been noted in the preceding chapter that an architect is unlikely to design a satisfactory as well as a functional library building without first understanding clearly the functions of a national library, because for each function or service undertaken by the national library, space has to be provided in the building.

5.2 Functions of the National Libraries

Some fifteen to eighteen years since the Manila (1964), Quito, (1966) and Colombo Meeting of Experts (1967), National Libraries have become established in almost all of the countries in the Asian, African, Latin American, and Oceanic regions. Where no national libraries have been established, plans for one are at an advanced
stage. Functions of national libraries in the developing countries has been discussed in the various meetings mentioned above and referred to in Chapter 1, only brief mention will be repeated in this chapter.

For the purpose of this work, eleven functions which were generally considered to be important in influencing the design of national libraries were chosen for the questionnaire sent to selected national libraries of the developing regions. These are listed at the head of Table 5.1 which indicates the functions undertaken by each national library in the developing regions. Discussion of the functions then follows.

5.2.1 Collect all National Publications

This is perhaps, the oldest concern of a national library everywhere (irrespective of whether it is in a developed or a developing country). By it the national library takes responsibility for the creation and maintenance of an archive of the nation's literature in the widest sense. Whatever other functions of a national library are being undertaken, the collection of the nation's literature must be its basic aim. Humphreys(1) has placed it as one of the fundamental functions of a national library. Normally, this function is achieved by means of a legal deposit (depot legal) law either upon the publisher of the printer, often in return for copyright protection.

Legal deposit Acts and copyright laws do exist in most of the developing countries studied in this work, with the exception of
FIGURE 5.1: Functions of National Libraries in Developing Countries
Author's questionnaire, 1982.

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>Collect all National Publications</th>
<th>International Exchange of Publications</th>
<th>Collect Foreign Publications</th>
<th>Preserve rare books and Documents</th>
<th>National Bibliographical Centre</th>
<th>National Bibliography</th>
<th>National Union Catalogue</th>
<th>Serve Research Workers</th>
<th>Interlibrary Lending</th>
<th>Professional Training of Staff</th>
<th>Library Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Fiji</td>
<td></td>
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<td></td>
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<td>x</td>
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<tr>
<td>Guyana</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x (Proposed)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>India</td>
<td></td>
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<td>Indonesia</td>
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<td>Jamaica</td>
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<td>x</td>
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<td>x</td>
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<td>x</td>
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<td>x</td>
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<td>x</td>
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<td>x</td>
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<td>x</td>
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<td>x</td>
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<td></td>
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</tr>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x (Serials only)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Peru</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Sierra Leone</td>
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<tr>
<td>Singapore</td>
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<td>x</td>
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<td>x</td>
<td>x</td>
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<tr>
<td>Sri Lanka</td>
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<td>x</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
<td>x</td>
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<tr>
<td>Uruguay</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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</tr>
</tbody>
</table>
Indonesia and a few others. In Indonesia the old Dutch law, although unrepealed, appears to have lapsed; however, a new law is being drafted. Except for those in the Latin American countries, e.g. Brazil (1907), Peru (1802) and Guyana (1839) and Sierra Leone (1898) in Africa, most of the legal deposit Acts are fairly recent. Malaysia 1966, Singapore 1962, Iraq 1970, Nigeria 1970 and Uruguay 1970. In some of the countries, for example, Malaysia, Singapore and others, the legal deposit provisions are still in the course of revision. Dr Pomassl carried out a survey of legal deposit laws in 1977 and it was thought useful to summarise his findings in Table 5.2. As can be observed from the table, non-book media has not yet been fully included. This could be because of the misinterpretation of the word 'book' to mean that only published material produced by letter press is subject to the law. G Chandler in a questionnaire sent to Directors of National Libraries throughout the world and published in 1980, reveals that more national libraries are now including audio-visual materials such as films, video records, sound recordings, pictures and photographs, and other materials which include Educational kits, Incunabula, coins, art objects, stone inscriptions, medals and microforms, in their legal deposit law. For example, Sri Lanka has included films, video records, musical scores, sound recordings, pictures and photographs and private manuscripts. Singapore on the other hand, has included films, musical scores, sound recordings and pictures and photographs. However, there are still a lot of national libraries in the developing regions which have no control yet over the wide range of valuable audio, visual and audio-visual materials.
<table>
<thead>
<tr>
<th>Country</th>
<th>Date of Act</th>
<th>Objects of Delivery</th>
<th>Obligation</th>
<th>No of Copies</th>
<th>Period of Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>1907</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Guyana</td>
<td>1839 amended 1972</td>
<td>All publications</td>
<td>Publishers</td>
<td>2</td>
<td>1 month</td>
</tr>
<tr>
<td>India</td>
<td>1954 amended 1956</td>
<td>Books and journals</td>
<td>Publishers</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1956 revised 1913</td>
<td>-</td>
<td>Publishers</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Iran</td>
<td>1907 amended 1970</td>
<td>All publications</td>
<td>Printers</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Iraq</td>
<td>1970</td>
<td>Written books</td>
<td>Printers</td>
<td>1 or 2</td>
<td>-</td>
</tr>
<tr>
<td>Jamaica</td>
<td>(see note 3)</td>
<td>All publications</td>
<td>Publishers</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Malawi</td>
<td>1957</td>
<td>All publications</td>
<td>Publishers</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1966 amended 1972</td>
<td>All publications</td>
<td>Publishers</td>
<td>2</td>
<td>1 month</td>
</tr>
</tbody>
</table>

Notes:
2. 'Written books' include books, bulletins, pamphlets, reports, statistics, official, semi-official and native reviews and newspapers, atlases, illustrations, maps, slides, official gazette and musical notes.
3. The Books (Preservation and Registration of Copies) law. The exact date is not known.
5. All publications including pamphlets, newspapers, music, maps, plans, charts and tables.
### TABLE 5.2... continued

<table>
<thead>
<tr>
<th>Country</th>
<th>Date of Act</th>
<th>Objects of Delivery</th>
<th>Obligation</th>
<th>No of Copies</th>
<th>Period of Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td>1970</td>
<td>All library work</td>
<td>Publishers</td>
<td>3</td>
<td>1 month</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>1822</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>1898 amended 1962</td>
<td>All publications</td>
<td>Printers</td>
<td>3</td>
<td>1 month</td>
</tr>
<tr>
<td>Singapore</td>
<td>1962 (see note 6)</td>
<td>All publications</td>
<td>Publishers</td>
<td>5</td>
<td>1 month</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td></td>
<td>Printed literature (see note 7)</td>
<td>Printers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uruguay</td>
<td>1970</td>
<td>All printed work (see note 8)</td>
<td>Printers and publishers (if published abroad)</td>
<td>3 (see note 9)</td>
<td></td>
</tr>
</tbody>
</table>


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**Notes ... continued**

7. All printed literature including maps, films, video records, musical scores, sound recordings, pictures, photographs and manuscripts.

8. All printed works including books, pamphlets, journals, newspapers, reports, laws, memoirs, codes, catalogues, directories, art books, maps and atlases, also regulations, lists of goods, programmes, almanacs and posters.

9. For some categories of documents e.g. regulations, lists of goods etc only one copy need be sent.
These have to be taken into consideration however since they will demand special care, storage and special rooms with controlled temperature and humidity, in any national library building.

The types of material which are included in the nation's collection may vary according to the country's particular needs and historical development, and the national collections may, as in many countries, be preserved separately from other collections. It is the intention of most national libraries to collect all printed literature of the nation, although there will be some division of opinion about the value of retaining centrally such items as local newspapers, book-jackets, jobbing printing of all kinds, diaries and similar ephemera. It is suggested that such items which are of regional rather than national interest should have files of these maintained in university, public and special libraries, when preservation of such material is thought desirable.

It has been found that the acquisition policies of national libraries vary from one country to another. As observed in Table 5.2 the collection of printed books and usually manuscripts, are common to most, but other types of materials (as observed earlier) may not always be included. Maps are commonly deposited under legal deposit in the developing countries, as also are music scores, but gramophone records, films, engravings, medals, coins and magnetic tapes are not always so treated. Omission of some of these materials by national libraries in the developing countries is not always because of the misinterpretation of the word 'book', but because some of these items are better dealt with in other insti-
tutions in the developing countries. For example, unlike many developed countries' national libraries, which have included in their functions the preservation of engravings, coins and medals, national libraries of developing countries have felt that these items would be better provided in a separate national museum or art gallery.

It should be stressed that editions of books, periodicals, theses etc, which are provided only in microtext form should be considered in the same way as editions of printed books and preserved accordingly. Attempt should be made by national libraries in developing countries to have a complete collection of printed books in microtext or other photocopy form when no copy is available in the country. Some national libraries have initiated the copying of manuscripts held in libraries outside their own countries. Some libraries also undertake the planning of a national scheme for the microfilming of domestic newspapers: this operation may also facilitate the publication of a union catalogue of newspapers.

National libraries generally should receive at least one copy of every book published in the country including all privately printed items and should seek to obtain all books printed abroad which describe any aspect of the life and culture of the country. In the developing countries, as indicated in Table 5.2, most of the national libraries receive between one to three copies under legal deposit, except for the National Library of Singapore which receives five copies.

It is wrong to assume that all current published material will
be obtained by means of legal deposit. Overseas publications concerning the nation not received by gift will need to be purchased. Therefore, it is vital that adequate funds should be available to the national libraries for purchases. Generally speaking, there are two types of grants - recurrent and non-recurrent. The former are needed for normal day-to-day acquisitions and other operations, while the latter will be used for the occasional important - and usually highly expensive - item which is offered through private sale or the market. The national library must always be in a position to apply for additional money to purchase outstanding books or manuscripts so that they may not be lost to the country.

It should be mentioned that although legal deposit laws exist in most developing countries, they are not always fully complied with by the publishers or printers in these countries, even though the law carries penalties, e.g. the clause in Section 3(4) of the Preservation of Books Act, 1966 (Malaysia) states that if a publisher fails to deliver the 'books' required he "shall be liable to a fine not exceeding one thousand dollars (Malaysian) and the value of the books he so fails to deliver ..."(5). But default despite the penalty is experienced in most developing countries. This is because most of the publishers in these countries are small businesses who have very small print runs and the demand for two or sometimes five copies for legal deposit can represent quite a big percentage of their total print runs. A much greater problem exists with serial publications, which are usually short-lived in
these countries. The other reason is that the publishers and printers are ignorant of the law. However, National libraries in the developing regions act on the policy that ignorance of the law is no excuse.

Finally, it may be asked, what is the proper use of the national collection? Generally, access to the national items should be made available to scholars and research workers. However, unique and very rare items in the library should not be made available for loan and, if the national library takes part in the inter-library lending scheme, it should restrict this function to duplicate items or photocopies or to recent material which can still be replaced.

5.2.2 International Exchange of Publications

This function of the national library is not regarded as fundamental. In fact, Humphreys has categorised it as 'inessential' or as a function 'of the national library service which (is) not (a) necessary function of the national library'\(^\text{6}\). However, on examination of the questionnaires returned, (tabled in Table 5.1), one finds that this is a popular function of the national libraries in developing countries, since 90 percent of these libraries undertake this task. The origin, the role of international exchange of publications in the library system, the position of the national library in relation to the country's publications exchange programmes and exchange problems have been detailed in Chapter 1.

This function is more important in developing countries than
the developed countries, because the former have to use exchange as a method of acquisition because of factors such as limitations of foreign currency. Usually national libraries in the developing countries are responsible for the exchange of official publications. Apart from this, the national libraries in these countries benefit tremendously from this function, because this 'system' also supplies information on exchange opportunities concerning other types of publications and on the availability of duplicates in libraries both inside the country and abroad. In early 1974, Singapore National Library became a deposit and exchange centre for ASEAN (Association of South-east Asian Nations) scientific and technical publications. It also receives many publications as an institutional member of National and International Library and Research Association and by 1974 had over 200 exchanges with national and university libraries as well as research institutions in about five continents(7). Where this role is undertaken the planning implication is for at least another office big enough for adequate operating staff and probably need storage space attached.

5.2.3 Collect Foreign Publications

Although it is important for national libraries in developing countries to collect the national literature and any other literature pertaining to the respective country, it is also important that national libraries in these countries to a smaller or greater extent are also concerned, to collect a wide coverage of scholarly literature published in other countries, for the use of scholars within
As indicated in Table 5.1, a large percentage of the national libraries (i.e. 90 percent) which answered the questionnaire in the developing countries do undertake this task.

The first means is through acquisition by purchase, only effectively performed with adequate financial resource. In some cases however, mere monetary resources do not solve all the problems.

In some countries, the condition of the publishing industry is such that outsiders are unable to purchase its products either because the books do not stay in print for long, or there exists no book distribution network. Various developing countries face this problem and one case in point is Indonesia, where in order to acquire Indonesian publications, the Library of Congress in the United States, and the National Library of Australia have set up field offices in Djakarta.

In some countries too, because of political reasons, few if any, books are exported. An example is the People's Republic of China. During its so-called Cultural Revolution in 1967, virtually no book of any library value was allowed to go out of the country.

Perhaps, a sensible way of acquiring foreign literature would be through a cooperative scheme. (See also Chapter 1, Section 1.3.1). The Manila Seminar (1964) suggested a policy of national coordination on the lines of the former Farmington, Scandia and similar plans; this naturally assumes that all the cooperating libraries have enough funds to permit them adequately to carry out their
part of the scheme. In addition to purchasing in depth within those areas assigned to it under the cooperative purchasing plan, the national library can follow a suggestion in the report of the Vienna Symposium (1958) by acquiring secondary and 'fringe' materials as a supplement to the acquisitions made by the other libraries in the plan. However (as already mentioned in Chapter 1), such a cooperative scheme is not without flaws and the problems that national libraries can be confronted with have been mentioned in Chapter 1. Malaysia and Singapore formed the Joint Standing Committee on Library Cooperation and Bibliographic Services (JSCLCBS) of the Library Association of Malaysia (Persatuan Perpustakaan Malaysia) and the Library Association of Singapore with a view to increasing cooperative acquisition of South-east Asian materials. One of the objectives of the Committee is "cooperative acquisition, storage and withdrawal" (8).

Most of the national libraries in the developing countries mentioned in Table 5.1 have strived to fulfill this function but because of budget limitations, coverage of these materials is far from comprehensive. The developing countries depend a great deal on acquiring foreign materials through gifts and exchange. Most of the government publications (e.g. reports and other documents) of other countries which may not be in the ordinary distributor's network are obtained in this way.

The situation has changed in developing countries today. In the initial years, the acquisition policy of the national libraries was that greater attention was paid to building up the nation's
literature. This is obviously understandable, as stated by O. Frankfurter on the National Library of Thailand's acquisition policy:

*rightly thinking that printed books in foreign languages would be acquired at a future date, whilst any delay in the acquisition of Thai manuscripts might prove fatal.* (9)

Is the National Library expected to cover extensively and intensively all foreign literature? Obviously not. What could be done by national libraries is to coordinate the collection of materials in academic and special libraries, and then, knit them together to form a coherent and efficient but decentralised network. Special libraries which are smaller than comprehensive libraries are probably easier for readers to use, and may be even for staff to run. National libraries in developing countries can learn much by looking at what older national libraries in the developed countries have done to overcome this problem. One finds that in the acquisition of foreign materials, national libraries in the developed countries have been selective towards certain subjects: for instance, the Library of Congress, does not collect foreign materials on medicine and agriculture because there is another national special library in each of these fields.

Thus, in developing countries where libraries have restricted budgets and inadequate acquisitions departments, the national library can perhaps perform an effective leadership role, by acting as a central agency for the purchase of foreign materials (10).
5.2.4 Preserve Rare Books and Documents

The Manila Seminar placed the question of protection and preservation as basic to the tasks of a national library. As indicated in Table 5.1, 90 percent of the national libraries in the developing countries that answered the questionnaire, undertake this function.

Among the rare books collection in the developing countries are incunabula and manuscripts. Manuscripts are defined by Pearson as:

> any document written by human hand with the aid of a pen, pencil or other instrument which can be used with cursive facility as distinguished from an inscription engraved with chisel or engraver. (11)

Early manuscripts and other rare books form a valuable collection in the national libraries of the developing countries. For example, Nigeria's National Library has a valuable collection on the early colonial history of West Africa; Jamaica's National Library has a valuable collection of works on the West Indies in the eighteenth and nineteenth centuries and the Biblioteca Nacional in Peru, has a valuable collection on Peruvian history and culture. These examples are repeated in almost every national library in these regions. National libraries normally confine their collections to 'non-archival' materials (i.e. those with intrinsic value) and leave the 'archival' materials for the National Archives of the respective countries.
One should also take into account the fact that even the most recent works will become rare in the course of time (perhaps even in a fairly short time) and steps must be taken to save them from disappearing. For instance, the rare books collection of the National Library of Malaysia, contains, amongst others, recent books which are banned in the country.

This function actually comes under the first function, that is, to serve as a permanent depository of all publications issued in the country. However, it warrants separate consideration as a separate function because these documents require special storage facilities, special reading rooms and facilities for consultation and constant inspection of the collections etc. It is normal practice in all national libraries to make special arrangements - of a widely different nature, incidentally, including separate store-rooms, horizontal storage for large-size books, air-conditioning, glass cases, and a strong room, or rooms - for the books regarded as the most valuable in their collections.
PHOTOGRAPH 5.1: Large-size books shelved horizontally at the Biblioteca Nacional of Peru.

Photograph 5.1 shows the horizontal storage for large-size books at the Biblioteca Nacional of Peru. The Vienna Symposium\(^{(12)}\) mentioned a figure of 4-5 percent as the proportion of such material in the total stocks of national libraries. That these facilities will need consideration at the planning stage of any proposed building is immediately obvious.

5.2.5 National Bibliographical Centre

If the primary purpose of the national library is to create and conserve the national collection, the primary objective of the national bibliographic centre is to produce comprehensive bibliographical records of national imprints. To perform this task, the first requirements are:
i) To obtain access to the physical items themselves (books, serials etc). It is legitimate to assume that the entries in the national bibliography (which will be discussed later) and created from the items themselves and not from information found on book jackets, publishers' lists or advance notices. Hence, the national bibliographic centre's attachment to the national library is an advantage, because items deposited by law can be shelved for readers after they have been described.

ii) To establish accepted standards for making the comprehensive bibliographic record, standards both for the content of the record and for the physical forms in which it appears.

These requirements imply: (a) the development and acceptance of national cataloguing rules which will prevail throughout the country, and (b) if the record is to have exchange value, some international basis for national cataloguing codes.

As indicated in Table 5.1, 73 percent of the national libraries that answered the questionnaire are carrying out this task. Presently, the situation is complex and far from perfect, but not unworkable. Although no international code exists, most of the national and multinational codes in use are based on the Paris Principles\(^\text{(13)*}\) and many have incorporated accepted international practices such as the International Standard Bibliographic Description for Monographic Publications ISBD(M)\(^\text{(14)}\) and the International

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* With the completion of the AACR II, national libraries in the developing countries would appear to be taking a leading role in adapting it.
Bibliographic Description for Serials ISBD(S). Most of the national libraries in the developing countries have now adopted the ISBD(M) and ISBD(S) in the national bibliographies of their respective countries. For example, the National Bibliography of Malaysia (Bibliografi Negara Malaysia), the National Bibliography of Singapore, the National Bibliography of Malawi, National Bibliography of Brazil, National Bibliography of Papua New Guinea etc.

The national bibliographic centre is best equipped when making the record to ascertain the author's requirements with regard to name usage: this emphasises the basic contention that each country has the knowledge to deal best with its author's names, whether corporate or personal. In some countries - Malaysia and Singapore are examples - national libraries have already produced authoritative lists of such bodies. However, there is much national variation in determining forms of corporate body names as presented in bibliographic records; acceptance of the simple recommendations made by Verona(15) could help to form an international basis for future national decisions in developing countries.

A number of national libraries in the developing countries have now become the centre for the registration of serials as the national contributing organ of the International Serials Data System (ISDS), which has its headquarters in Paris. Some of the examples are national libraries in Malaysia, Nigeria, Singapore and Thailand. Similarly many national libraries' national bibliographic centres can house the national International Standard Book Number (ISBN)
agency. Its use depends on the existence of an organised book trade, but its value to library operations is revealed by the fact that a number of national libraries in the developing countries house national ISBN agencies. Some examples are the national libraries in Brazil, Fiji, Nigeria, Philippines, Singapore, Thailand and Uruguay.

Cataloguing-In-Publication (CIP) schemes are underway in a number of developing countries and in experimental form in others. The national libraries which have today become the national agency for CIP are all, except Zaire, in the developed world sections: Belgium, Canada, France, Italy, Switzerland, United States of America etc.

In some countries, the national libraries are also designated a focal point for other international programmes, like Unesco's General Information Programme (GIP), Agricultural Information System (AGRIS), Unesco Statistics etc. As examples: Malaysia, Nigeria, Singapore and Thailand are the focal points for Unesco GIP; Malaysia and Philippines are the national centres for AGRIS; Singapore and Thailand are the centres for Unesco Statistics and Philippines is the Asian Cultural Documentation Centre for Unesco.

It should also be mentioned that in some developing countries too - Brazil, Fiji, Malaysia and Nigeria are examples - national libraries are participating in the international exchange of MARC data.
Thus, it is apparent that national libraries can play an important role in the development of the international library based information system. We find that the National Bibliographic Centre of the developing countries is usually housed in the bibliography division of the national library of the respective countries. Again, the planning requirement involves the calculation of office space for the necessary numbers of employees so that besides adequate bookstacks for the collection of the national library buildings must also be provided with a considerable suite of offices.

5.2.6 National Bibliography

The Vienna Symposium (1958) agreed that..."it is also the national library's responsibility to undertake the production of current national bibliographics..."(16). This opinion is also shared by the other seminars and meetings of experts held in Manila, Quito and Colombo.

As indicated in Table 5.1, 91 percent of the national libraries in the developing countries which have answered the questionnaire, undertake this important function. However, it should be borne in mind that sometimes, this function may not be carried out by the national library but by another agency in the country. For instance, in Fiji, this function is carried out by the (Public) Library Service of Fiji in conjunction with the University of the South Pacific; in Ireland, the Library School, University of Dublin carries out this task; and in
Spain, this function is undertaken by the Institute Bibliograp-

hico Hispanio.

What kind of materials should be covered by the national 
bibliography? Generally speaking, they may include monographs 
new periodicals, newspapers, maps, government publications, the-

ses, music scores and bibliographies. Recently, other materials 
such as films, sound recordings, translations, manuscripts, mi-
crofilms, education kits, art prints, pamphlets and posters are 
included in the national bibliographies. Table 5.3 illustrates 
the common types of material included in the national bibliogr-
aphy of some developing countries. As can be observed from this 
table, 100 percent of the selected developing countries have 
included monographs and new periodicals in their national bibl-
ography; 54 percent have included newspapers and theses; 
while 36 percent have included music scores. An interesting 
observation that can be made from this table is that only the 
Nigerian National Bibliography and the Peruvian National Bibli-
ography have included all the types of material tabled in Table 
5.3. It should be noted that none of the audio-visual materials 
are at present included in any of the national bibliography of 
the developing countries. However, one should bear it in mind 
that these items will be included in the national bibliography 
of the developing countries in the future. (As these items will 
eventually be included in the legal deposit law which are still 
undergoing revisions and amendments in most developing countries)

The planning requirement will be more office space and temporary
TABLE 5.3: Types of Materials Included in the National Bibliography of Developing Countries

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>MONOGRAPHS</th>
<th>NEW PERIODICALS</th>
<th>NEWSPAPERS</th>
<th>GOVERNMENT PUBLICATIONS</th>
<th>MAPS</th>
<th>MUSICAL SCORES</th>
<th>THESSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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<tr>
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</tr>
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<tr>
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<td>x</td>
<td>x</td>
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<td>x</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>x</td>
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<tr>
<td>Peru</td>
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<tr>
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<td>x</td>
</tr>
</tbody>
</table>

5.2.7 National Union Catalogue

The function of maintaining national union catalogues has long been carried out conscientiously by national libraries in a number of developed countries: United States of America, Great Britain, Belgium and New Zealand are examples. However, as can be observed from Table 5.1, only three national libraries in the developing countries (ie. Malaysia, Singapore and Papua New Guinea) are at present undertaking this task. (This represents about 27 percent of the national libraries that answered the questionnaire). In Guyana, this function has been proposed and plans are underway to carry out this task in the National Library of Guyana.

Humphreys placed "publication of catalogues" (of which the national union catalogue is included) in the fundamental group, presumably for the reason that national libraries in the developed countries are in general, well-established institutions and publication of their catalogues would be beneficial to the whole country. However, in developing countries, national libraries are very often still in their infancy, and their holdings are insignificant, thus rendering this not always a viable current project. Still, when planning a new building, this function should at least be considered as a future function as space would need perhaps to be allocated for it. A further complication to effective planning is anticipating the eventual
format. Will it be card, fiche or computer? Varying space needs may be a consequence of format.

5.2.8 Serve Research Workers

Except in Malawi (where this function is carried out by the University Library), the other national libraries which answered the questionnaire as tabled in Table 5.1, (that is about 91 percent) undertake this task. One can sometimes detect in the national libraries of developing countries, a mentality nurtured on the European idea of a national library as being pre-eminently a custodian of higher learning and research and nothing else, "a library of libraries to be approached with reverence only when other kinds of libraries fail to satisfy the needs of the readers." (17). For example, the Nigerian National Library Decree of 1970 lays down that the duties of the National Library Board include that of setting up and maintaining collections considered "appropriate for a library of a highest standing," (18) and at the inaugural meeting of that country's National Library Board, a government minister said that the board would be responsible for building a headquarters for the library which "befits the nation and the enhanced status of this national institution." (19)

In the developing countries, this function is usually the concern of the reference division of the national libraries; which is responsible for ensuring access and use of the national library's total collection. To serve the research workers, the
reference division usually provides a reference enquiry service, a document copying service, a current indexing service and a current awareness service. Apart from these, it also provides facilities for the consultation and use of the different categories of materials, notably periodicals, newspapers, maps, and other materials.

This means that space will have to be allocated for all these services, for instance, space provision should be made for the workroom, for staff providing the current indexing service, and the current awareness service; space provision should also be made for such services as the reprography service area, stack retrieval service area - to receive and process requests for material from stack, the display and exhibition area, etc; also space will be necessary for reading rooms for periodicals, newspapers, maps, microforms and audio-visual materials. The quantities of the material stored in these categories often dictates whether separate reading rooms are provided.

To serve research workers effectively, one or more reading rooms or group seminar rooms are often provided in national libraries. Special study carrels (some treated acoustically to allow for the use of typewriters) are also found.

5.2.9 **Inter-library Lending**

Lending to other libraries and acting as the nerve-centre for the inter-library loan system, both nationally and vis-a-vis foreign libraries, are functions undertaken by most national
libraries in developing countries as indicated in Table 5.1 (about 82 percent of the national libraries that answered the questionnaire undertake this function). It should be noted that in some countries, this function is not on a large scale. For instance, under the National Library Act 1972 (Malaysia) one of the functions is "to lend...library materials forming part of the library."(20) However, because of its comparatively small bookstock, the library has not been called upon to perform the lending function on a large scale. Quite different from the usual lending pattern of 'request and supply,' the library dispatches bulk consignments of selected materials in 'Bahasa Malaysia' (national language) or selected materials in special subject fields to other libraries to stimulate reading interests, especially in the use of the national language. The National Library of Singapore (which has a much larger collection than its counterpart in Malaysia) however, is very much involved in inter-library lending. As might be expected, the library lends far more than it borrows. One may argue that the creation of a union catalogue would assist greatly in inter-library loans work (as observed earlier, only 27 percent of the national libraries have established union catalogues). While one must readily acknowledge the value of a centralized record of information resources, one wonders whether the union catalogue is the best method of achieving this. It could be that one is trying to solve today's problems with yesterday's solutions. It is to be noted that the union catalogue idea is receiving
less emphasis today in the more developed countries (e.g. U.K) and the reasons for this might be illuminating for developing countries.

At present, this function is housed in the reference division/department of the national libraries. However, one should note Anthony Thompson's remarks (which he derives from D.J Urquhart) on "a new and very important trend" among the national libraries, that of separating the national library's reference functions from the lending ones, and he forecasts that:

in future each country may have to plan two national libraries, one for conservation and reference, and the other for lending and photocopying. (21)

A separate building for lending and photocopying would, of course, be justified only if national libraries operate their lending on the style of, for example, the British Library Lending Division, which requires a large area and a form of management different from that of the traditional library. One cannot deny the planning implications on the buildings of this proposal. For example, the choice of site, where should it be sited? and other planning problems. However, it is doubtful whether many of the new national libraries of developing countries would need or be justified in running their lending on these lines, since the majority of the loans would not be out of their stock. More important still, few if any of them can ever hope to house first-rate stocks in both their reference
and lending divisions, as would be necessary for the system to be worthwhile.

It should however be mentioned that the National Libraries in Malaysia and Papua New Guinea have recently developed a lending service. The service itself is conceived of largely in terms of book loan service; within the Federal Capital Territory for the former and Waigani for the latter, with service differentiation between adults and children. In addition reading room facilities are provided. It should be noted that this service is distinct from the inter-library loan service carried out by the reference division of the national library of the respective countries. This public library service (lending service) is seen by the National Library of Malaysia as a distinct component and will be housed in a separate premises\(^{(22)}\). Papua New Guinea however, have included this service in the National Library building as shown in photographs 5.2, 5.3 and 5.4.

PHOTOGRAPH 5.2: Entrance to Waigani Public Library (on the right), administrative offices (on the left), National Library of Papua New Guinea.
PHOTOGRAPH 5.3: Waigani Public Library and children's reading room (on the right), National Library of Papua New Guinea

PHOTOGRAPH 5.4: Service desk at Waigani Public Library, National Library of Papua New Guinea
As for the types of material provided in the national libraries in developing countries for the inter-lending service, it can be observed from Table 5.4, that books and periodicals are commonly provided, although non-book materials are also provided by the Singapore National Library. It is interesting to note, that although the Biblioteca Nacional of Brazil does not undertake this function, it does lend out its non-book materials to other libraries.

5.2.10 Professional Training of Staff

'Professional training' has been regarded as an inessential function by Humphreys but as can be observed in Table 5.1, 82 percent of the national libraries do undertake this task. This may be because unlike the developed countries, where this activity is adequately carried out by library schools, in the developing countries, library schools do not always exist or are inadequate to cope with the demand. Thus, national libraries are expected to take on the role of providing 'direct' and/or 'indirect' training - 'direct' in running training programmes, and 'indirect' in providing a training ground for library school students.

It is important that courses provided by national libraries should not only be run for their own personnel, but as stated by Ib Magnussen:

*It is important for national libraries to offer themselves as training centres for some of the personnel of other libraries too.* (23)
### TABLE 5.4: Types of Materials Provided by National Libraries in Developing Countries in the Inter-Library Lending Service

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>BOOKS</th>
<th>PERIODICALS</th>
<th>NON-BOOK MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Fiji</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guyana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iran</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Jamaica</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malawi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Singapore</td>
<td>X</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uruguay</td>
<td>X</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

Source: G Chandler, op cit and author's personal correspondence, 1982.
The Biblioteca Nacional of Peru (National Library of Peru) in 1944 established a school for the training of its own personnel, but the courses were later opened to personnel from other libraries. The National Library of Malaysia provides training for non-professional staff only, run by its Training Division. The course is open to all libraries in the 'Guna sama' scheme. The National Library of Singapore, as mentioned earlier in Chapter 3, recently started a postgraduate diploma course with the cooperation of the Library Association of Singapore. Training programmes mean extra space having to be provided in departments and offices for when trainees are in attendance and may also require classroom or other (e.g. lecture) facilities.

5.2.11 Library Planning

As indicated in Table 5.1, about 64 percent of the national libraries that answered the questionnaire undertake this function. For developing countries, this is an important function to assume because (as indicated in Chapter 1), library services in these countries are usually fragmented and uncoordinated, and only national libraries, apart perhaps from university libraries, would have the most experienced staff in the country, to take care of

* 'Guna sama' is a Common User Service scheme covering professional and sub-professional personnel in all Federal Ministries and Departments except the Ministry of Education.
this duty. It is no wonder that, the Unesco Regional Seminar in Manila (1964) identified "to provide leadership among a nation's libraries" as the first of six national library responsibilities"(24).

National libraries in these countries have either executive or advisory roles in planning and coordinating the various groups of libraries in the respective country. For instance, Papua New Guinea's national library has both an executive as well as an advisory role in coordinating all libraries in the country while Malaysia's has an advisory role in coordinating her libraries. Singapore and Nigeria's national libraries have advisory roles in coordinating central government departmental libraries in their respective countries. In Peru and Nigeria, the advisory role in coordinating provincial/state government departmental libraries is present. Sri Lanka, instances an advisory role in coordinating libraries of universities and other tertiary educational institutions. Hers and Nigeria's and Papua New Guinea's national libraries also have an advisory role in coordinating libraries of industrial and commercial organisations in their respective countries. While Sri Lanka's has another advisory role, in coordinating public libraries in the country, Fiji's has an executive role in this. Finally, Papua New Guinea, Peru and Singapore, all provide examples of a national library having an advisory role in coordinating school libraries in the respective country.

The planning and coordinating role of national libraries is usually established by law. For example this is clearly stated as
one of the purposes and objectives of establishing the National Library of Malaysia, that is, "to provide leadership and promote cooperation in library affairs in Malaysia"(25). Some other examples are provided by national libraries in Sri Lanka, Nigeria, Papua New Guinea, Peru, Singapore etc. The National Library of Fiji and Thailand however carry out this role by administrative arrangement without formal legislation.

This function is usually carried out by an Extension Services Division of the National Library. Thus, space will have to be allocated for workrooms for gathering and compiling statistics, drawing up standards of services as well as evaluation and assessment etc.

Summary

It is clear that although there is further room for extension and improvement, attempts have been made by national libraries in developing countries to fulfill the planning, coordination and leadership roles as indicated by the functions they undertake; that is:

i) Collect all national publications,
ii) International exchange of publications,
iii) Collect foreign publications,
iv) Preserve rare books and documents,
v) National Bibliographical Centre,
vi) National Bibliography,
vii) National Union Catalogue,
viii) Serve research workers,
ix) Inter-library lending,
x) Professional training of staff, and
xi) Library planning.

All, except function (vii) is carried out by more than 50 percent of the national libraries that answered the questionnaire. Having examined the national library functions in these developing countries, it is perhaps necessary in respect of developing countries, to revise the priorities asserted by Humphreys nearly two decades ago.

For instance, Humphreys placed 'library planning' in the inessential category. However, as seen earlier, this planning and coordinating role is an important one for the national libraries in developing countries to assume, for reasons that have already been mentioned. This is because library services in the developed countries are already well developed and coordinated and Humphreys' so-called 'fundamental', 'desirable' and 'inessential' functions were classified with predominantly the European situation in mind. Humphreys' categorisation of these functions were based on his examination of the various activities of several great national libraries (namely European)\(^\text{(26)}\). Another example, is 'professional training', which is also regarded by Humphreys as an inessential function. This may be so in European countries, where this activity is adequately carried out by library schools. As already indicated, this situation is not true for the developing countries. There are other examples, but it is not the purpose here
to study these differences but to note that differences exist in the roles and functions of national libraries between developed and developing countries. Therefore, architects have to be made aware of this fact when designing or planning a new national library building.

The above conclusions are lent support in the following remark by Simeon Aje of the National Library of Nigeria in Lagos, when he commented during the discussion session following one of the papers presented at the Colloquium on National Library Buildings held in Rome in 1973 that:

... You (developed countries) have old libraries, often now turned into national libraries, and you have recently redefined their functions. We have therefore considered creating national libraries, but our conception is much modified, since we have not this background. We have learnt from your experience and have defined our own functions. These include the stimulation and promotion of libraries of all types, and also the training of librarians...(27)

As mentioned in Chapter One, the functions of the national library vary from one country to another, and they are closely identified with and responsive to the nation's development activities and goals. However, the eleven functions mentioned in the foregoing, were chosen, not only because they reveal the planning, coordination and leadership roles of the national libraries in developing countries, but also because they are important in influencing the design or building requirements of national libraries in these countries, which are portrayed in the following chapters.
REFERENCES

1. HUMPHREYS, K W, National library functions, op cit.


3. POMASSL, G (Dr), Survey of existing legal deposit laws. (Conf 401/C01.2... PG1/77/UBC/Ref 2). Paris: Unesco, 1977, p 41.


6.1 Library Organisation

The organisation of national libraries varies in the developing regions, according to the functional requirements dictated by local conditions. However, some of the common features are discussed in this chapter. It should be stressed that the space requirements are not discussed in any detail as this is dealt with in the following chapter.

At present, all the national libraries that answered the questionnaire (except Indonesia, where a new act is being drafted), receive the bulk of their national publications through legal deposit and processing is always handled by the Bibliography Department of those libraries. It needs to be pointed out that in the National Library of Malaysia and possibly others — publications acquired by purchase and gifts and exchange are received by the Acquisitions Department and processed by the Cataloguing and Classification Department. Legal deposit acquisitions are separately received, catalogued and classified in the Bibliography Department with obvious consequences for planning the new building — a point developed further in Chapter 7, Section 7.1.1.

6.1.1 Accessions

In most national libraries, accessions are examined upon receipt to check their condition before they are entered in the
respective 'accessions register' and sent to the appropriate department or section for processing. Material received from the various sources of accession such as copyright, gift, exchange or purchase, is entered in the appropriate accessions register which forms the main inventory of material in the library. For most of the national libraries in the developing regions, processing is handled by one large Bibliography and Cataloguing Department, respectively. In the developed countries, there has been a trend towards subject specialists performing departmental subject cataloguing and classification and the processing taking place in an accessions department. This situation is not surprising in the developing countries, because, as mentioned earlier in Chapter 3, there is a lack of library personnel, and the lack of persons expert in the particular subject field is either limited or not there at all in some libraries in the developing regions. In planning and designing future national libraries one must however anticipate change, as more non-book materials will be received by national libraries in these regions through legal deposit. The organisation of non-book materials such as maps, photographs, videotapes, sound recordings, cassettes, microfilms etc and even manuscripts, require special treatment and may not be catalogued and classified in the same way as books and thus the individual processing requirements must be related to the type of material and the needs of the readers.
6.1.2 Cataloguing

This is probably the most arduous and time-consuming work in any type of library involving the choice of headings, treatment of titles, annotation, selection of added entries and cross references and filing of finished entries. Since the work of this department is closely allied with public activities, it should be located if possible immediately adjacent or at least fairly close to the public catalogues or catalogue room. As stated by Brown, a catalogue:

*is an explanatory, logically arranged inventory and key to the books and their contents.* (1)

Its location in fairly close proximity to the accessions or acquisition department (depending on the individual national library) would also be advantageous. Some national libraries do their own card production and printing, and it would thus be advantageous to have the card-production cum printing unit located in close proximity (though separated as it would involve work with noisy machines) with appropriate acoustical treatment to contain the noise element. If the building is a multi-storey building, location of this unit in the basement or the ground floor of the building would be advisable.

Figure 6.1 shows an example of the possible materials intake through processing sections. One must bear in mind that the work flow should be arranged to save time and energy. This is rather like a production process in a factory and a sequence of appropriate work stations to affect a flow of work is the ideal.
FIGURE 6:1: Materials Intake Through Processing Sections

Books arrival by trolley

Invoice Checking

Temporary shelving to await further processing

Numbering

Checking & Sorting

Entering in accession file

Sorting

To different service departments

Lists of new additions and current awareness service

Fiction

Non-fiction

Children's

Reference

CATALOGING AND CLASSIFICATION SECTION

by trolley
Care should be taken that accuracy is maintained and therefore, a high level of glare free illumination is essential to prevent eye strain and fatigue.

6.1.3 Classification

The difference between a library and a collection of library materials is the difference between order and disorder. The patron expects to find his material arranged in a logical sequence according to the particular interest of the library and its users and this system of order is known as classification. "Without such an arrangement, the collection of books remain merely a collection and cannot be given the name library". (2)

According to Brown, classification is the most important factor in library organisation because it groups the materials on the shelf and in the catalogues into subjects and enables the staff and patrons to readily locate materials. Classification is vital for the systematic arranging of books (and other non-book materials) and Brown calls it:

the primary key to the assembly, finding, selecting, and rejecting of books. (3)

Classification is usually undertaken by a Cataloguing and Classification Department of the national libraries in developing countries. Most of the classification systems cover the whole realm of knowledge reflecting the library's contents as in the National Library of Malaysia, National Library of Iran, National Library of Brazil, National Library of Papua New Guinea etc.
although a classification system in some national libraries may be confined to a specific field of knowledge, for example in America, the National Library of Medicine (and the National Public Health Library to be established in Indonesia). In the latter more subject specialists may be necessary and more space may have to be allotted for the processing of the special materials.

6.1.4 Printed Catalogue

Various printed catalogues are produced by some of the national libraries in the developing regions. This type of catalogue is slowly regaining lost popularity despite the cost of the production and the problem of keeping it up-to-date. Space has to be provided for the activity involved - i.e. preparing copy for printers, proof reading etc.

6.1.5 Card Catalogues

This is perhaps the most usual catalogue found in the national libraries in the developing countries. They are arranged in cabinets of drawers and have the great advantage of full flexibility (since each entry has an individual card) which enables entries to be added and removed without upsetting the order of the cards. A 5" x 3" card is the international standard adopted. It should however be borne in mind that libraries grow, so do their catalogues and if they are in this form, they become 'monsters' requiring large catalogue halls as at Library of Con-
progress and elsewhere.

Card catalogues occupy more space than any other form of catalogues and create a major storage problem in many national libraries in the developing regions in the future. An answer to this problem is 'COMCATS' (Catalogue entries on microfiche etc). This will offer space savings but the quantity and positioning of necessary reading machines will be critical. Also, because of the various problems faced by the developing countries (e.g. lack of financial support, constant power cuts etc), the card catalogue will probably remain the main form of catalogue in national libraries in these regions for some time.

Since catalogues vary in size and in the rate of growth, Peter Havard-Williams caution needs heeding:

one can only state that the area allowed for each vertical tier of catalogue drawers in ranges must be twice the area of the drawers and the surface for consultation. 

(4)

For example, if the drawer size is 0.5m long x 0.16m then the surface allowances should be 1m x 0.16m = 0.16m² + 0.12m² for a 'share' of a reader consulting it. The area per catalogue drawer will thus be 0.28m² per vertical tier of drawers (in a range of say 30 or 40 - not more), or alternatively, 33 sq in. In addition, a width of at least one metre is needed around the area allowed for catalogue cabinets and readers consulting them.

Card catalogues can be stored in wooden or steel catalogue cabinets and local manufacturers have produced both types to store the 3" x 5" catalogue cards.
6.1.6 Union Catalogue/Lists

As indicated in the preceding chapter, only 3 national libraries (or 27 percent) of the developing countries that answered the questionnaire, produce union catalogues or lists. The lack of union lists and the slowness to respond to inter-library loans are some of the problems encountered in the developing regions. This particular problem faced by the Association of South-East Asian Nations (ASEAN) region\(^{(5)}\) was discussed during the workshop on university library buildings in South-East Asia in Singapore, 22-26 November 1976. A project to computerise the National Union Catalogue of Malaysian Periodicals called 'PEPU NET' which began four years ago, is being carried out by the National Library of Malaysia and the five university libraries in the country. Input sheets are sent to the database located at the Universiti Sains Malaysia (USM) in Penang.

Such a project is bound to be taken up not only by the other South-East Asian countries but also the other developing countries in the other regions, which will enable librarians in the respective regions to set up perhaps a regional cooperative network of inter-library lending, probably something like the British Lending Library (BLL) operating within the region.

It should be noted that in the countries which undertake the task to produce union catalogues, for example in Malaysia, this task is handled by the National Union Catalogue Unit of the Cataloguing and Classification Department of the National Library of Malaysia. Such an activity will require space for an office or an extra desk in a particular department.
6.1.7 **Staffing**

Library personnel in national libraries are usually divided into professional and non-professional. Those with appropriate qualifications are known as professional librarians. The following division of staff in the national library is fairly standard in the developing regions.

**TABLE 6.1: Division of Staff in the National Libraries in Developing Countries**

<table>
<thead>
<tr>
<th>Category of Staff</th>
<th>National Library</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Professional staff:</strong></td>
<td>Director-General (may be a civil servant in certain countries e.g. Malaysia)</td>
</tr>
<tr>
<td></td>
<td>Deputy Director-General</td>
</tr>
<tr>
<td></td>
<td>Assistant Directors</td>
</tr>
<tr>
<td></td>
<td>Heads of Department</td>
</tr>
<tr>
<td></td>
<td>Librarians</td>
</tr>
<tr>
<td></td>
<td>*Assistant Librarians</td>
</tr>
<tr>
<td><strong>Non-professional staff:</strong></td>
<td>Library clerks/Library assistants</td>
</tr>
<tr>
<td>a) Clerical</td>
<td>Assistants</td>
</tr>
<tr>
<td></td>
<td>Attendants</td>
</tr>
<tr>
<td></td>
<td>Receptionists</td>
</tr>
<tr>
<td></td>
<td>Secretary/Typist</td>
</tr>
<tr>
<td>b) Craftsmen</td>
<td>Binders</td>
</tr>
<tr>
<td></td>
<td>Repairers</td>
</tr>
<tr>
<td>c) Maintenance &amp; General Staff</td>
<td>Technicians</td>
</tr>
<tr>
<td></td>
<td>Security</td>
</tr>
<tr>
<td></td>
<td>Cleaners/Janitors</td>
</tr>
</tbody>
</table>

*Considered as semi-professionals in some national libraries
The organisation of a national library depends upon the functions and the relative size and scope of each section of the collections and the quantities of staff, in all categories found necessary to give the required service. These staff will require work space.

6.1.8 Control

A basic decision which may affect the planning importantly has to do with controls. Control is important in national libraries, and the need for control will determine the layout for the library. If planning is to produce satisfactory traffic patterns, account must be taken of problems of supervision and control of the building and its exits, facilities for communication and vertical transportation, and means of minimising noise and other distractions. Control means more than efficient operation of book circulation, record maintenance, filing, processing etc - it also means visual control of the various areas (6). In the national library, primary consideration is preservation of materials for future use and stolen and damaged books and other library materials are often irreplaceable. Preservation, more than any other factor has dictated the closed access bookstacks which dominate the national libraries in the developing regions. Experience shows that the adoption of open-access in other types of libraries (e.g. public and university libraries) in the developing countries has increased the incidence of unexplained losses. Thus, there is no prospect of this type of storage in national libraries, especially for valuable and rare materials.
In fact, most national libraries adopt the policy of restricted admission, and materials from the national collections are normally not available on loan.

Control begins at the entrance hall, where, usually, regulations require all readers and visitors to deposit their bags (either in an enclosed bag room or near the entrance) during their visit. Burton, the librarian from Hong Kong Polytechnic, suggests that some form of issue system using receipts or number tags could be used to prevent thefts. Gibson feels that the bag room should be sited near the central area so as to enable patrons to 'supervise' each other. This would be preferable to having an enclosed bag room which, in effect, would have less security. The cloakroom - an area where raincoats, umbrellas are deposited is another space requirement posing the question of how much space? It is important to control the patrons through a common entrance and exit which frees staff for more important work. It should be borne in mind that, where secondary exits are required by fire regulations, they should be located near to control points to prevent their illicit use.

One method of discouraging readers from stealing books is by adopting an electronic detection system. Photograph 6.1 shows the security/charge desk at the National Library of Papua New Guinea. However, there are other methods, for example, strategically placed mirrors are helpful and the use of closed-circuit television (already being used in the developed countries, for example Stockholm). Another possibility is the use of security guards (as those used in the National Library of Malaysia).
Capital and running costs will be a major influence but space is often a necessity with electronic systems and must be considered at the planning stage.

PHOTOGRAPH 6.1: Security/Charge Desk, National Library of Papua New Guinea

Continuous supervision is required in national libraries to prevent damage of library materials and to maintain order. In a subject departmentalized reference library, where the number of readers will be smaller than in a large general department, it may be possible to combine control with the duties such information service to readers, and the use of catalogues and bibliographies. However, more space and staff would be needed. For a large general library, attendants or security staff would be best employed to carry out this work.
It is important to stress that strict control is essential in the catalogue hall (irrespective of whether it is a national library or any other type of library), because any removal of a card renders the catalogue incomplete with a slim chance of losses being detected.

Perhaps, in order that a national library building may be manageable under the most adverse conditions which may possibly develop in the future:

i) Control stations should be planned for at strategic points,
ii) Space for future installation of turnstiles or other aids to checking at exist may need to be provided; and
iii) It should be possible to lock up valuable library materials.

C A Cowgill and G E Pentengill(7) have claimed that adequate supervision is only possible within 55' of the central point and they have produced several theoretical layouts of reading rooms based on this premise. The results of this study indicated that the largest number of readers could be supervised from a given point in a circular room as shown in Figure 6.2. However, it should be pointed out that it is difficult to combine circular areas in plans, but it is possible to combine octagonal shapes as is illustrated in Figure 6.3. Moreover, it is a generally accepted fact that libraries with circular reading rooms have severe disturbance resulting from voices, coughing and even echoes which are hard to overcome. In a similar manner, to automobile headlamp reflectors, which are shaped to take advantage of the
FIGURE 6.2: Areas and Seats Controlled from a Maximum of 55'

9,500 sq' (340 seats)  6,000 sq' (220 seats)  3,000 sq' (110 seats)  8,000 sq' (280 seats)

(A basic allowance of 25 sq' per seat is assumed. These examples assume that wall shelving and a supervisor’s desk is provided in each case. Number of seats would be higher if these items are excluded).

curved reflecting surface to produce a narrow beam of light, these circular reading rooms focus sounds by reflection. Surprisingly, the British Museum’s fine circular reading room is less affected by noise and echoes than other domed libraries (e.g. Manchester Public Library, Leeds University Library etc), built on the same principle. This may be partly due to the height and shape of dome which tends to dissipate the sound reflections rather than concentrating them near floor level, and partly to the galleries of books which have a limited absorption factor.

It is interesting to compare this with the fact that all the national libraries in the developing countries studied have either square or rectangular shaped buildings or reading rooms. It was suggested by Edward Lim Huck-tee, the Librarian of the USM
FIGURE 6.3: Diagrams of Theoretical Arrangements for Efficient Supervision

KEY:
- Reading room
- Work and Stacks
- Circulation

For single storey building
- 2520
- 1540

For single or multi-storey buildings
- 660


Figures indicate number of seats in each layout.
Library (Malaysia) that studies should be made of "other possible shapes apart from squares and rectangles, because they tend to be monotonous and boring". However, there is evidence that architects prefer cubes because they are most economical to build.*

It is general practice in national libraries to control strictly special collections such as manuscripts, rare books and incunabula. Often, they are stored in strong rooms or in special collection rooms and are handled and read under constant supervision. The National Library of Thailand has a rich collection of manuscripts beautifully written on palm leaves** and the Biblioteca Nacional of Peru has a valuable collection of incunabula (as do other national libraries as indicated in the preceding chapter). Such items used by the research workers are closely supervised. Only a few selected readers are permitted to consult banned documents (e.g. documents on communist doctrine and ideologies) in the national libraries particularly of the Asian countries. In the National Library of Malaysia for instance, such items are kept behind locked doors in the 'Bilek Nadir'.

* Presumably, cubes are economical because less building materials are used. But it must be emphasised that artificial lighting will have to be used to light the centre of the library, even when there is natural lighting.

** Observed on the author's visit to the Library in November 1977.
It has to be borne in mind that removal of staff from the reading rooms in the national libraries will reduce costs but will deprive readers (especially research workers) of specialist or expert advice on the spot. In better staffed national libraries, it would be possible to have staff members situated so as to be able to supervise smaller spaces during 'rush hours',* at least. The areas as supervised from a single station may be subdivided with low cases or with glass partitions - as illustrated in Figure 6.4. The use of string partitions instead of

FIGURE 6.4: Diagrams Indicating Division of Space Controlled from One Point


* One may observed that unlike national libraries in developed countries which are not subject to heavy traffic at certain periods, being primarily research institutions, the national libraries in developing countries are heavily used by students from secondary schools and the universities and thus are subject to certain rush hours.
the conventional ones, on the ground (entry) floor of the Nanyang University Library in Singapore, is interesting. The Librarian, Koh Thong-ngee, stated that these were used for ventilation and control purposes. The staff he said "needed some screening device for privacy and the same time must command a good view of the users entering the library"(9).

It is essential to prevent the public from entering staff and storage areas. The aim of any control system (the criterion of importance depends on the type of library) is to protect the materials and equipment in the library, to direct and assist readers and create order necessary to management of the library activities. Certain psychological factors, such as reasonable regulations, good lighting, and other physical facilities and the visible presence of a staff member, may be introduced to minimise the problem of control(10). It should be borne in mind that any system which reduces the number of staff directly engaged in control and supervision is desirable from the Librarian's (especially from the developing countries) point of view, as it may free staff for more important asks and may reduce operating costs.

6.1.9 Book and Periodical Retrieval

It is generally considered satisfactory if the time taken for the retrieval of documents is less than 15 minutes. Some libraries have retrieval times of one hour or more and the present demand for more rapid retrieval will present them with problems. Future
national library buildings should be planned and designed with rational location of the services. Policy decision is also important regarding the overall plan, i.e. subject departments as opposed to a general library. As materials grow, it is perhaps logical to divide collections by subject or by the nature of the materials e.g. maps, music etc. If a cost-benefit analysis is undertaken, one would find that while subject departmentalization increases efficiency of service on the one hand (as subject departments filter readers), it needs more space and more staff on the other.

Another way of solving retrieval problems, is by installing the latest mechanical devices (e.g. conveyor belts, pneumatic tubes etc). However, these mechanical devices are expensive and this creates a financial problem. But whenever costs permit, they should be installed in the closed-access stacks of the national libraries, to permit the swift retrieval and storage of stack material.

Items such as maps and prints of varying size require special attention and it is general to have reading rooms for these materials immediately adjacent to the stacks and for staff to retrieve these items when requested.

The essential requirements in all cases, are for protection for the materials during transit and for speeding service and this dictates generally the relationship between reading rooms and the bookstacks.
Conclusion

The whole organisation of a library, the activities of acquisition and processing and the service to readers, must be carefully thought out in order to achieve a coherently planned building.

6.2 Storage of Library Materials

D Coney states that:

No one will deny that the book and written language are the most detailed and explicit means man has yet found for communicating his thoughts. But there are other graphic records which communicate some aspects of thought more directly, more satisfactorily, than does language in its written form. Slowly, libraries are becoming, not depositories for books, but depositories for the graphic record of human thought... (11)

and he listed the materials by form, which strongly influence the technical processes and other aspects of library administration as follows:

i) Books, i.e. separates, pamphlets, serials (including newspapers and public documents.

ii) Manuscripts including transcripts.

iii) Reproductions of these, i.e. photostats, photographs, and microfilm.

iv) Maps, charts, diagrams (a kind of record presenting certain facts and ideas more accurately and economically than language).

v) Pictures, including reproductions of graphic and plastic arts as well as photographs of people, places and things.

vi) Music in its written form (a kind of communication different from language).
vii) Music recorded as sound in the forms of phonograph disks and cylinders, and sound film.

viii) Motion pictures, and language recorded as sound; e.g., the 'talking book' for the blind. (12)

The problem of storing a vast intake of different types of library materials is most acute in the national libraries which are required by the legal deposit Act (see Chapter 5) of the individual countries, to preserve the entire national production of literature. One possible answer is a secondary storage (a practice common in the US and UK). Similar to a warehouse for the less used materials of the national libraries in the developing regions. The situation has not reached a critical point yet, but it is worth bearing this in mind. Economical storage of materials has posed a problem for national librarians particularly and architects because national libraries always grow. Compact storage (particularly in the stack area) is the possible answer although the initial cost of installation is expensive.

6.2.1 Closed-access and Open-access Storage

Like most countries, the development of storage in national libraries in the developing countries has followed two distinct patterns: closed and open access. Generally, in closed access storage plans, the aisles are reduced, when compared with open access storage plans, because the latter require considerably more room for readers to move about the bookstack ranges. Most of the national libraries in the developing countries have both open and closed stacks particularly for their books. Generally
speaking, the closed stacks are inaccessible to readers who have to submit request slips for items housed in them. The main criterion used to decide whether or not to send a book to the closed stacks, is frequency of use insofar as it may be gauged from any record of loans which may be kept.

As for requirements for lighting and ventilation in the closed access areas, they are governed by the fact of whether seats are provided for readers in these areas. It should be noted that in some libraries with closed stacks in the US, lamps on hats (as those of miners) are used by staff.

6.2.2 Compact Storage

The problems of compact storage have received much attention particularly in American libraries. It has been stated by Muller that "perhaps the chief reason for the interest of librarians in the compact book stacks is to reduce the cost of sharing books in the libraries" and that "it is only when we consider the cost together that we gain the clear picture of the real cost of book storage" (13).

Compact shelving can also be devised for the other library materials (e.g. pamphlets, bound newspapers, bound periodicals and non-book materials) which may be on closed access in the stack area. Figure 6.5 shows a sketch of an example of a mobile lateral filing cabinet for pamphlets. It should be borne in mind that storage shelves can be supplied by manufacturers of the respective countries, in place of lateral filing frames if it is inten-
Note: This mobile lateral filing unit manufactured by MOEM Holdings (Malaysia) comprises four-bar steel cabinet (one static bay and three mobile bays) standing on 4" high solidly built leg base fitted with locking device controlling the complete unit. Mobile operation runs on sheave-bearing rollers on flat tracks with guide rods built at the base of each mobile bay. Overall dimensions: 80" high x 96" base length x 37" base width. Total capacity per unit of four-bays - 1600 files of average ¼" thickness.
ded to store other library materials. The MOEM Holdings 'Sdn. Berhad' one of the steel furniture and equipment manufacturers in Malaysia for example, supply mobile storage cabinets in 4-bay, 6-bay, 8-bay units ... up to 24-bays.*

Although the initial cost of installation is expensive, one should not rule out this possibility when deciding floor loads for future national library buildings, in the developing regions. In its preliminary brief to the architect, the National Library of Papua New Guinea indicated that 'floors capable of taking compact shelving at later date' for film storage is desirable(14). It is useful to note that at the International Symposium on the Construction of University Libraries held in Lussane in June/July 1971, Erwin Ingold stated that compact shelving makes for space saving of 50% to 125% compared with normally spaced storage shelving(15) or as stated by F G Poole, a space saving which may range from 50% to 75% or more(16).

6.2.3 Books

Perhaps the largest problem facing most national libraries is the storage of materials of different types and different size.

* The National Bibliography Division or Bahagia Bibliography Negara (BBN) of the National Library of Malaysia nearly installed the mobile compact shelving for its bound newspapers collection because of insufficient space for accommodating all the newspapers received under legal deposit. However, since it is only in rented premises, it was thought impractical since moving would be difficult.
Adjustable shelving has answered some of the difficulties and various systems have been devised for increasing efficiency and economy.

Books can be divided in the following groups, according to the size which corresponds to the definition used by the American Library Association (ALA).

i) 8" to 10" high: Octavos
ii) 10" to 12" high: Quartos.
iii) Over 12" high: Folios

It has been reported that the rough calculation one can adopt when planning storage areas in a library is approximately as follows:

i) 85%: Octavos.
ii) 13%: Quartos.
iii) 2%: Folios

The report by Aslib (1955)(19). states that "books vary in thickness quite appreciably ..." but that "statistically, they do not vary to anything like the degree commonly supposed ..." and that "... the vast majority of books are neither more thicker nor much thinner than one inch". The figures quoted in the report are from the analysis of 200 technology books which found 6% of books less than $\frac{1}{2}$" thick; 44% from $\frac{1}{2}$" to 1" thick; 30% from 1" to $1\frac{1}{2}$" thick; 10% from $1\frac{1}{2}$" to 2" thick and 10% from 2" to 3" thick. It states that the indication is that the average book thickness varies with subject and at what level the subject is treated.
There is no method available of determining the number of books a library can hold. However, several different methods have been used to give approximate book storage capacity. But the methods refer to lending libraries (see reference (20) as an example), and if they are used as a guide, it should be borne in mind that for a national library, it could mean more volumes to the shelf. For assessing a national library, the comprehensive nature of the collection brought in by legal deposit must be considered.

It was said long ago that librarianship was an exact profession, and yet in the one thing which lends itself to the application of precise measurement library science seems to be uncertain and indefinite. It is reasonable to expect that the capacity of a library should be ascertainable with some degree of accuracy; an architect planning a national library (or any type of library) should be able to provide for a required number of books. However a brief investigation reveals that there is no uniformity in the methods of estimating bookstack capacity, and no formula that may be trusted. Perhaps it is a matter of terminology. A national library is said to have a capacity of a million/multi-million volumes but as we have observed in Chapter 4, national library collections in the developing countries are in the multi-thousands. What kind of volumes? Large, small or the average of all? What is an average book? The engineer calculates the displacement of a vessel at so many tons. It is an easy matter to calculate the size of an aqueduct to carry so many gallons of water a day.
But architects who in the past have planned libraries to hold a given number of volumes have sadly missed their estimates. This results from the use of word "book" as a term of measurement, when in fact it is not susceptible to such use. It expressed neither height nor depth, cubic capacity or linear measurement. It simply is not a term of measurement, and conveys no such connotation, even to a librarian.

In order to express the capacity of a bookstack, it becomes necessary to use a term which in itself conveys a definite, an exact measurement, which will be as certain as a six foot rule or a set of weights and measures. Perhaps, the difficulty lies in the combination of three different ideas. It is simple to give the total linear feet of shelving in a library. It is quite easy to understand what is meant when a library of one million volumes is mentioned. The size of a stack might be expressed quite accurately in cubic capacity. But to arrive at a term which will convey a combination of all these factors seems to necessitate a word which is still unknown to librarians and architects.

A perfect analogy to our point is used by electricians. With a constant voltage, the flow of current along a wire depends upon the area of a cross-section of the wire. To arrive at this figure, it is necessary to measure the diameter, estimate the area of the cross-section, and from that calculate the flow of current, a lengthy calculation which the electrician avoids by the use of the term "circular mill", invented for the occasion, and which to the electrician conveys an idea of both the size of the wire and the flow of current. What is needed perhaps, is a "circular mill"
for libraries.

A method frequently used to estimate bookstack capacity is to base the number of books on the area of the floor space available. The uncertainty of this method is amusingly illustrated in that since 1881, when W F Poole gave the estimate of twenty-seven volumes per square foot, including the total area of the room(21), each succeeding authority has gradually reduced the figure. In 1890 W C Gladstone, the eminent statesman, venturing out of his own field, stated that twenty-five books per square foot was adequate(22) for the housing of books in a library. W R Eastman in 1901 still clung to the twenty-five per square foot, but warned that it was "full capacity",(23) evidently sensing that the estimate was too generous, and practically nullified his own figure by stating that "in practical work, to provide for convenient classification, expansion, etc, the shelves of the library should be sufficient for twice the number of books".

Perhaps the most commonly used is twenty books to the square foot, used first by Soule in 1912, and by Tilton in The Library Journal of September 1912, in his article Scientific Library Planning(24), which has been reprinted by Snead and Co in their catalogues. The formula is obtained by assuming a three-foot shelf in double ranges placed on five-foot centres, housing 150 books on each side, or 300 in all. That is, 15 square feet for 300 books, or 20 per square foot. This includes side aisles only, and compensation must be made for other floor space in main aisles, stairways etc. Gerould in his excellent The College Library Building
(1932) drops the estimate to 15 per square foot, but includes in this figure space occupied by aisles, elevators, staircases etc\(^{(25)}\), but not by carrels.

The method of estimating bookstack capacity by linear measurement of shelving is also frequently employed, and here again authorities differ. Briscoe estimates 25 per 3-foot shelf or 8.3 per linear foot\(^{(26)}\). Chalmers Hadley gives eight books per running foot, but warns to leave the shelves one-third empty\(^{(27)}\), while Soule states that eight books per foot is 'practical capacity' for octavos and duodecimos, and calculates for quartos separately\(^{(28)}\). Gerould states fifty books per running foot of single faced tier, which is equivalent to 7.1 books per linear foot.

In the Library Journal of June 1931, Dr Andrew Keogh states that the Sterling Memorial Library at Yale has 75 miles of shelves, with an estimated capacity of 2,000,000 volumes. This is only 5 per linear foot, a considerable drop from other estimates.

The familiar tables published by Snead and Co in their various publications do not attempt to set a formula for estimating a complete library, but range from 10 per foot for "circulation" to two per foot for US patents. The architect who wished to plan a library of a fixed capacity would be forced to estimate the probable number of volumes in each group as they would stand when the shelves were full - a rather formidable task. Even if this were possible, the original difficulty would remain. The use of the word "book" as a term of measurement. A term 'Cubook' suggested by R W Henderson in the Library Journal.
(November 1934 and January 1936) is worth looking at. Cubook is defined as "the volume of space required to shelve the average size book in a typical library. A standard section 3' wide by 7'6" high contains 100 cubooks"(29).

6.2.4 Bookstacks

Bookstacks should be based on the height a person can comfortably reach without using steps and the minimum width required for easy access to the shelves. The normal shelf length is 3'0".* Stack tiers in most libraries of the Western world are usually 7'6" (90") clear height. Barry Burton, the librarian at the Polytechnic of Hong Kong, thinks that stacks higher than 7' would be impractical in the region where the average height of readers is much shorter than those in the Western world(30). However, there is evidence that the younger generations in the Asian countries are now taller than their forefathers. Thus, it is suggested that stack heights of 90" should be maintained by developing countries. Although higher stacks (that is, above 7'6" or 90") could help solve space problems, one should always be aware of the implications of deciding on higher stacks. For instance, shelvers would tend to tiptoe and push books in, thereby mislaying the books. High stacks also result in shelving at only the middle portions, while the top and bottom remain empty. Moreover, higher stacks on the whole mean higher ceiling heights and one should bear in mind that the higher the ceiling height, the heavier is the costs of lighting and air-conditioning. Though

* A metre (which is just over 3') is now used in Europe and Britain
in practice ceiling heights are seldom less than 10', a ceiling height of 9'6" has recently been suggested by the Adhoc Committee on Standards for Library Buildings of the PPM\(^{(31)}\). This is reasonable, considering that book stacks are 7'6" high. It will provide the required illumination levels between 40 to 80 lumen/square foot. However, if the intensity of light for the reading and study areas needs to be increased, the zone where the strip lights are confined can be dropped to the desired height subject to a minimum of 8'0" clear to meet the requirements of the uniform building byelaws.

It should be mentioned that regarding lighting between stacks, it has been suggested by Robin Gibson, an architect, that irrespective of whether it is 1' or 1\(\frac{1}{2}\) above the top of the stacks, it would be effective, although the lower shelves would receive less light\(^{(31b)}\). Figure 6.6 shows the plan for a double-sided and single-sided bookstack. He also commented that space needs should be properly projected at the planning stage "so that there would be no need to extend stack height to make up for the lack of space"\(^{(32)}\). Since the collections of the national libraries in the developing countries, as mentioned earlier, are in multi-thousands instead of multi-millions, it would not help to show the growth of the collections of national libraries in the developed countries. Thus, the growth of collections for university libraries calculated by Peter P Havard-Williams\(^{(33)}\), illustrated in Table 6.1 would be a useful guide. Table 6.2 illustrates the growth of a collection of 600,000 volumes at a rate of 5% per annum over a period of 25 years; the figures are
TABLE 6.2: The Growth of a Collection of 600,000 Volumes at a Rate of 5% Over a Period of 25 Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Volumes</th>
<th>Year</th>
<th>Volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>600,000</td>
<td>13</td>
<td>1,131,000</td>
</tr>
<tr>
<td>1</td>
<td>630,000</td>
<td>14</td>
<td>1,188,000</td>
</tr>
<tr>
<td>2</td>
<td>662,000</td>
<td>15</td>
<td>1,247,000</td>
</tr>
<tr>
<td>3</td>
<td>695,000</td>
<td>16</td>
<td>1,310,000</td>
</tr>
<tr>
<td>4</td>
<td>729,000</td>
<td>17</td>
<td>1,375,000</td>
</tr>
<tr>
<td>5</td>
<td>766,000</td>
<td>18</td>
<td>1,444,000</td>
</tr>
<tr>
<td>6</td>
<td>804,000</td>
<td>19</td>
<td>1,516,000</td>
</tr>
<tr>
<td>7</td>
<td>844,000</td>
<td>20</td>
<td>1,592,000</td>
</tr>
<tr>
<td>8</td>
<td>886,000</td>
<td>21</td>
<td>1,672,000</td>
</tr>
<tr>
<td>9</td>
<td>930,000</td>
<td>22</td>
<td>1,755,000</td>
</tr>
<tr>
<td>10</td>
<td>977,000</td>
<td>23</td>
<td>1,843,000</td>
</tr>
<tr>
<td>11</td>
<td>1,026,000</td>
<td>24</td>
<td>1,937,000</td>
</tr>
<tr>
<td>12</td>
<td>1,078,000</td>
<td>25</td>
<td>2,032,000</td>
</tr>
</tbody>
</table>

given to the nearest thousand. It is easy to see that if two years are required to plan, add two years to build, the stack at the opening of the building will be 729,000 not 600,000 and the requirement will be nearly 1,200,000 volumes instead of 930,000 volumes, a difference of 258,000 volumes, or 28%. Allowing for 15 volumes per sq ft or 160 volumes per m$^2$ this would entail a difference of 17,200 sq ft or 1,600 m$^2$. At $20 per sq ft this would entail a difference in estimated cost of $344,000. Peter Havard-Williams states(34) that in practice, his experience at Queens University, Belfast showed that the growth of the collection doubled in 10 years.
FIGURE 6.6: Showing the Plan of a Standard Double-Sided and Single-Sided Book Stack
However, it should be pointed out that growth is subject to external factors but that history tends to indicate that national libraries always grow. (In university libraries and other libraries, growth can be subject to arbitrary curtailment, or attempts at rational curtailment as per Atkinson Report). Overall, the rate of growth of a national library may vary but it always seems to increase because little or nothing is discarded because of the essence of a national library being archival. That is, the developing country's national libraries at present measured in hundreds of thousands will probably one day be measured in millions. Therefore, the planning problem faced by the architect and librarian is the rate of growth.

6.2.5 Periodicals and Pamphlets

National libraries in developing regions receive this type of library material when locally produced through legal deposit and purchase when foreign material is concerned. Generally speaking, periodicals in the libraries can be grouped as follows:

i) current issues of periodicals,
ii) back numbers of periodicals, and
iii) bound volumes.

For group (i), the major problem is not of housing, but of eye-catching display of hundreds of journals for immediate use. The first step must be selection according to frequency of use. Most used titles will be displayed in reading areas; this is of course extremely space-consuming. They can be housed on
special display shelves of which there are numerous designs or on tilted shelves within runs of systems shelving units. More space-saving are units which hold magazines face forward on slopes at an angle to the reader. It is difficult to house effectively group (ii) because of their varied character; an issue of the same title can be in urgent and intense demand as it arrives hot from the press and subject to intermittent recall over a number of years, by which time it has been joined by hundreds of its fellows. Because of the growing need for delivery of the required issue, not to the requesting reader but to the photocopying centre, where the needed article will be copied (the issue being returned direct to the shelves) there is a tendency to leave more periodicals unbound, as bound periodicals are less convenient to photocopy. Unbound issues can be kept in open-sided boxes, which can be very cheap, or tied up in bundles, which are awkward for access; if loose issues are kept unenclosed, and piled loosely on the shelves they tend to stray. As for group (iii), because they are in book form, they present little problem for shelving. They can be shelved on normal bookstacks. As mentioned earlier they can also be stored in compact shelving systems. Note should be taken of the tendency of periodicals, even long-established ones, to change their format with disconcerting frequency.

Pamphlets are particularly difficult to handle. If pamphlets form a finite series they can of course be bound and shelved as books or bound journals. Perhaps the most general method of shelving is in special pamphlet boxes made to appropriate size and
shelved as books. However, they can also be shelved in lateral file cabinets or as mentioned earlier, in mobile lateral filing cabinets. Figure 6.7 shows an example of a Periodicals Display and storage stack/rack. Note how face on display requires more space than flat. Photograph 6.2 shows the display rack for current periodicals at the National Library of Papua New Guinea.

PHOTOGRAPH 6.2: The display rack for current periodicals, National Library of Papua New Guinea

6.2.6 Newspapers

Newspapers pose difficult storage problems due to their size, weight and short life. Adequate air-movement is essential for newspaper stacks. The kind of paper used for newspaper is often of poor quality, often making microfilming necessary, and some
librarians put the life at fifty years, even under ideal storage conditions.

The weight of the average bound volume is thirty pounds and for convenience of handling and for protection of bindings, most national libraries shelve them horizontally. They can either be shelved horizontally on conventional stacks or compact shelving systems, but costs will dictate choice. The ideal arrangement is one volume per shelf, but due to lack of space in most the national libraries in developing countries, newspaper bound volumes are shelved horizontally one above the other. Newspaper stacks should as far as possible be located near the reading rooms for convenience of handling. In some national libraries, special reading rooms near or adjacent to the newspaper stacks could be allocated to obviate the handling and transport of newspapers. It is generally accepted that; the heavier the bound volume, the longer it takes to be delivered to the reader.

Perhaps, the present day rate of growths of pamphlets or newspapers or books, may not, if used as a basis for planning, hold good in the future. For example, the intake of pamphlets may vastly increase if there is more publication in this form. As for newspapers - perhaps, this type of publication will disappear altogether with the increasing use of microfilms and other reasons. This presents a problem to librarians and architects, in planning for the future.
FIGURE 6.7: Showing an Example of a Periodicals Display and Storage Stack
6.2.7 Microfilms and Films

Microfilming of newspapers and to a lesser extent, of periodicals are at present being carried out extensively by the national libraries in the developing regions. The subcommittee on Microforms (SCOM)\(^{(35)}\) was set up by the Library Associations of Malaysia and Singapore (PPM and LAS respectively) for this purpose in 1968. A similar pace of development of microfilms/films can also be seen in other developing countries.

Preservation of microfilms and other films, in those regions which experience tropical conditions, presents many problems, particularly of storage of this type of library material and various hazards have been noted. For instance, an article in Reproduction Methods identifies and characterises thirty-one common defects of microfilm and suggests probable causes\(^{(36)}\). However, the factors responsible for such hazards may generally be classified as follows\(^{(37)}\):

1) choice of photo-sensitive product;
2) the way in which the operations of chemical treatment are carried out;
3) the humidity and temperature of air in immediate contact with the film;
4) hazards of water, fire, mould and biological agents;
5) contact with chemicals in solid, liquid or vapour form;
6) physical deterioration.

All these factors are inter-related. For storage, sealed containers impermeable to peroxides are suggested. Since the conditions of
the tropics accelerate blemish formation\(^{(38)}\), it is thus important to conform to the recommendations of the International Organisation for Standardization (ISO) and the United States American Standards Institute (USASI).

Other films (microrecords, cinematograph films, such as those found in the national libraries of Sri Lanka, Malawi, Papua New Guinea, Singapore etc) also suffer from variation in temperature and humidity. High humidity encourages mould which would eventually destroy the image and may cause the gelatin of the film to curl and lose its readability. Other causes of deterioration include rough handling, water steam, fire, dust, dirty equipment and atmospheric impurities (e.g. sulphur dioxide which causes gradual fading).

Roll films should be stored in aluminium or plastic containers so that there is no friction between the shelves. Negatives can be placed in individual plastic or in seamless envelopes which can be made easily from an acid-free paper (e.g. 20 pound permalife) as shown in Figure 6.8.

The ideal storage for such library material is a room which should be air-conditioned to give a dust free atmosphere with a relative humidity (RH) of 40%-50% and temperature in the range of 60°F - 80°F but preferably near 70°F\(^{(39)}\). The need for partial or full air-conditioning will require extra space for the mechanical plant necessary to effect this.

It should be noted that storage for microfilm of newspapers is desirable in or adjacent to the newspaper stack so that the
related material is conveniently located for constant use.

FIGURE 6.8: Making a Seamless Envelope

6.2.8 Maps

Maps may be stored horizontally or vertically, in specially designed equipment which bears no relation to conventional stack arrangements. This is because, the problems with maps are:

i) they are not standardized in size; and

ii) their methods of presentation vary.

For example, they vary from less than quarto size to wall maps of the order of 12' x 8' and the methods of presentation
include folded maps, atlases (usually in bound volumes), relief maps, roller maps and framed wall maps. They are all subject to the same deteriorating agents as other library materials and require similar atmospheric conditions of storage. Bound volumes of maps, because of their size, are best treated as very large books. Loose maps may be shelved in standard map filing cabinets (either in vertical or horizontal filing cabinets, available from local suppliers) which provide an economical method of storage. Hinged maps and pull-down fitments for maps such as that found in the City Business Library, City of London, is in greatest demand in the UK and could also be useful in the tropics. Developments in office storage equipment in the respective developing countries have resulted in further economies towards space utilization. The trunking necessary for air-conditioning will demand space and must be remembered in both stack areas at the planning stage. For Brazil, Malaysia, Nigeria, Malawi, Peru, Papua New Guinea, Singapore etc, whose national libraries collect maps under legal deposit, it would be worthwhile at the planning and design stage to study some of the methods of storage for maps provided in the trade literature available in the respective countries.

6.2.9 Posters and Pictures/Photographs/Prints

Although there is not much of this type of material stored in the national libraries in the developing regions, one must not overlook the storage of such items for future library buildings because a small portion of these items are received by the national
libraries. For instance, the National Library of Malaysia receives all posters published by the various political parties during the election campaigns. One must not deny the fact that such items do form important historical sources. Storage problems of these materials are similar to those of maps but a greater proportion of these items are of wall size and thus can be mounted on standard sized mounts and stored in vertical or lateral filing cabinets. Photographs, pictures and prints are best attached to standard mounts and filed vertically in filing cabinets. Photograph 6.2(b) shows how photographs, pictures etc are stored at Nottingham Public Library.

PHOTOGRAPH 6.2(b): Method of storage for photographs, pictures, prints etc, Nottingham Public Library, UK.

6.2.10 Incunabula and Rare Books

Maximum security is essential in special rooms with controlled temperature of 50-60°F and humidity of 50-55% and continuous super-
vision is the accepted method of storage in national libraries.

6.2.11 Manuscripts

As indicated in the preceding chapter, this type of material forms a rich collection in some national libraries in the developing countries (e.g. National Library of Thailand, National Library of Jamaica, Biblioteca Nacional of Peru etc). These materials are subjected to deteriorating agents such as mould and insects, since they are wholly organic in origin and are thus subject to deteriorating agents. Photograph 6.3 shows part of the manuscript collection of the National Library of Thailand.

In the tropical regions (such as those generally experienced by developing countries) the danger of damage to library materials in general and to manuscripts in particular, by termites, cockroaches, silverfish, moths, rats, borers and other insects\(^\text{(40)}\) is a most serious problem and requires special measures. Fumigation, although it can be dangerous to human beings is a method that should be favoured by national libraries especially in the developing countries. However, the questionnaires returned from the national libraries in the developing countries indicate that only three national libraries from those countries: Sri Lanka, Singapore and Nigeria respectively, have a fumigation room built as part of the library building. The National Library of Malaysia, whose building is expected to be completed only in late 1984 or early 1985, have included a small fumigation room of 500 sq ft in its plan\(^\text{(41)}\). (See Appendix I: National Libraries in developing countries; basic information and data).
PHOTOGRAPH 6.3: Part of the manuscript collection, National Library of Thailand
Conclusion

Architects and librarians should explore the possible storage systems together and perhaps reach agreements on the need for flexibility in the building to permit, for example, the conversion to compact storage of ordinary bookstack areas should this become necessary.

6.3 Documentary Reproduction

National libraries require facilities for reproducing materials for a variety of purposes. For example, it makes sense for the national library to have the resources to obtain e.g. periodicals (which are perhaps the only copies in the country) and provide photocopies from them according to demand. Otherwise many other libraries are buying little used material (e.g. periodicals) for only occasional demands. It is economically sensible for a national library to take on this responsibility, otherwise there tend to be incomplete files of periodicals or no files at all of some periodicals. At present it has been accepted by the majority of the national libraries in developing countries, as an essential technical service. Processes such as xerography leads to cheap copies of rare works and out of print books for use by staff and readers and for inter-library loans. The National Libraries of Nigeria and Malaysia provide photocopy requests (about 0.006/1000 population/year and 14.1/1000/year respectively\(^{(42)}\) to remote users (i.e. other than to those visiting the respective national libraries). Storage problems may be partly relieved by the adoption of microrecords of
bulky items, and the development of cheap and simple reading apparatus.

Photocopying machines are commonly used. Photograph 6.4 illustrates as example the type of photocopying machines in some of the developing countries (e.g. Malaysia). They are suitable for

PHOTOGRAPH 6.4: Photocopying machines used for documentary reproduction in Malaysia

cheap and rapid facsimile in libraries and from the research workers' point of view, they provide the most satisfactory form of reproduction because they reduce the delays in reproduction to a minimum. With regard to location, there are two aspects to consider:

i) Users coming into the library to photocopy library materials by themselves; and

ii) Photocopies done by the library to be sent out by post to distant users.
Therefore, plans perhaps have to be made to install separate facilities (e.g. coin operated machines for (i)), and they may be located at any convenient point in the library where demand warrants.

Microrecords are becoming more popular for reproduction of newspapers and to a lesser extent, periodicals (as mentioned earlier in Section 6.2.7). It was recommended at the Vienna Symposium (1958) that:

*the national production should be preserved in its original form; microcopying, particularly of newspapers should not be regarded as justification for destroying the originals.* (43)

Although this is an opinion accepted by most librarians, it should be borne in mind that alas, the originals (particularly those on wood pulp paper) do not last, and national libraries (e.g. Library of Congress and British Library) have to microfilm/film to preserve. It should be agreed that microfilming is a vital factor in preserving deteriorating materials and must be regarded as a national library responsibility.

Such activities (i.e. photocopying and microfilming) will require space. In the National Library of Malaysia for example, the former is the responsibility of the Reference Department under the Reprography Service area unit. (However it should be noted that in the British Library, the Reference and the Lending library are geographically separated by 200 miles or so). If the Reference department is under one unit, as in the National Library of Malaysia, it should be collocated with the workroom area of the current awareness service; and also the periodical and newspapers reading rooms. Microfilming is
generally the responsibility of the photography/microfilm unit.

Conclusion

Although this service to the readers requires only a small space (that is, space for the photocopiering/Xerox machine/machines and for staff/readers undertaking the task), it is important that its location is properly thought out early at the planning stage.

6.4 Communication

A good national library building must be designed to facilitate communication which is vital for the proper functioning of the library. Communication has a complex meaning in that it implies not only the process of sending and receiving of information, but also the means by which the end-user gains access to such information. The communication process in the national library, functions on two levels: the internal level and the external level.

6.4.1 Internal Communication

It should be borne in mind that the complex nature of a library's (in this case, a national library's) internal communication can be seen from the fact that it operates at several sub-levels, such as the following:

i) communication among the staff of the national library;

ii) communication between staff and readers;

iii) communication between staff and the records (e.g., main catalogue, the union catalogue and various bibliographic tools).
iv) communication between staff and the library materials;

v) communication between readers and the library materials.

i) Communication among the staff of the national library

It is obvious that communication among the staff members in a national library can be facilitated by placing all the staff on the same floor of the library building and possibly also in the same room or group of rooms. This is usually done in the case of the processing departments which can be grouped together. However, it is not possible to do this in every case because of the need to locate the staff on all levels and in areas where they are required to provide services to readers. In view of this, some means of electronic/electric communication (e.g. inter-com or telephone which will be discussed later) must be provided in all staff areas. The quantity of trained staff is an important factor to consider. If there are only a relative few, because of skilled manpower shortage, then the intercom becomes much more important, particularly as national libraries tend to be large and staff may be anywhere.

In the preliminary brief to the architect, the National Library of Papua New Guinea indicated that an inter-com system linking senior staff and technical service areas is desirable. In addition, since staff are likely to be located on all floors of a multi-storey national library building, consideration should also be given to providing an internal or non-public passenger lift.

Both architects and librarians in the national libraries in developing countries, have not yet solved the problem of facilitating communication between staff in the public areas and those in
the non-public areas. This is especially true in the case of staff members in reader services who are required to be on the move all the time, for instance, the reference librarian who is consulting the public catalogue or is in the stack area; the attendant who is shelving a book, the library assistant at the circulation counter. Possible solutions are the use of bleeper type devices (similar to those in use by doctors in hospitals) and the use of 'flashing lights' (to convey coded staff numbers to indication panels throughout the building). While the former (provided to staff members who are required to move around a lot in their job) may be expensive, the latter is not. Although the former device may be expensive, it should be borne in mind that any facility which reduces staff time spent in communication is a saving which over a certain time period will more than compensate for the initial capital cost. The 'flashing lights' system for internal communication, has the advantage that readers are not disturbed and staff can be rapidly located without searching. However, it also has a disadvantage, in that, staff have to keep looking as opposed to the individual contact of the 'bleeper'.

ii) Communication between staff of the national library and the readers

Staff and readers usually only interface at certain service points, for example, at the reader advisor's desk, at the circulation counter, at the photocopying service area and so on. It is usually not easy for the library staff to communicate with readers who are in the stack areas or the reading rooms; nor is it easy for readers in these areas who require the assistance of the library staff to obtain such assistance readily without having to travel some distance.
to the service point. In this modern electronic age, it should be possible for library staff to communicate easily with readers wherever they are located and vice-versa. One method is to have inter-com facilities conveniently located in the public areas for the use of readers when they wish to communicate with the library staff located in various areas of the national library.

iii) Communication between national library staff and their records

Traditionally, the processing staff of the national library are located on the ground floor of the national library building because of the need for them to have ready access to various records such as the main catalogue, the Union Catalogue and various bibliographic tools. Since the ground floor tends to be the prime area of the library, this practice is frequently frowned upon by architects in the developing countries, who prefer to relegate the processing departments to the basement area if this is possible. While for some time to come it will be necessary to locate the processing staff on the ground floor to facilitate access to the various bibliographic records, increasing use of the computer in the national libraries of developing countries will make this unnecessary in the future. The reason is that the computer will allow easy duplication of the main catalogue in the form of the printed catalogue or COM-CAT. While the bibliographic records are stored in the computer, the facility of on-line access will make it unnecessary for the work areas to be housed in the prime area of the ground floor.
iv) Communication between national library staff and the library materials

National library staff have to work with books, periodicals, microforms, audio-visual materials etc received by legal deposit. They should therefore be in a position to reach these materials quickly or have these items transported to them quickly. Hence, there is a need for a fast means of vertical transport, such as book lifts, goods lift, or chutes. The actual number and type of such methods of conveyances are dependent upon various factors such as follows:

i) The number of levels (floors) to be served;
ii) The number of books that have to be transported;
iii) The number of staff who have to be transported as well as frequency of the movement;
iv) Whether the national library operates a closed or open accessed system.

v) Communication between readers of the national library and the library materials

Research workers whom national libraries in developing countries serve (see Chapter 5), demand rapid retrieval of information and library materials and the national library is faced with the problems of economically providing the service. Methods of book and information retrieval acceptable more than ten years ago can no longer satisfy the needs of readers today and other means must be employed to improve the service in answer to the demand made upon it. Moreover, many national libraries are organised in such a complex way
that readers find it difficult to use to collections easily; and also the location of the materials on different levels/floors pose problems of communication. As mentioned in Section 6.1, although mechanisation can help solve the problem, it is expensive. By careful planning, the architect should be able to reduce the need of mechanical transport to a minimum. For example

i) Locate the reading areas near the stacks;
ii) Reduce the number of separate collections although certain items such as rare books, manuscripts and other valuable items have to be kept in separate rooms;
iii) Where it is unavoidable, provide an easy means of vertical communication, e.g. lifts and escalators.

6.4.2 External Communication

Five categories of external communication can be identified and they are as follows:

i) Communication between the national library and its immediate authority;
ii) Communication among libraries chiefly for inter-library lending and other cooperative purposes;
iii) Communication between the national library and external computerised data bases;
iv) Communication between the national library and its suppliers.
v) Communication between the national library with readers or potential readers (e.g. the British Library receives thousands of postal enquiries and telephone calls).
The means by which the external communication of a national library can be facilitated are many and these are frequently not directly related to the design of a national library building. Some of the external communication devices which can be identified are: the telephone, telex, computer terminal and motor vehicle. Therefore, adequate provision should be made in the design of the national library building for telephone trunking as well as for housing the motor vehicles which the national library may possess.

Various mechanical and electronic communication devices have been generally accepted as being necessary in a national library building. Obviously, however, no national library is identical in terms of its communication needs and what follows is an attempt to lay down suggestions for the supply of communication devices in a national library building. It must be accepted however, that economic circumstances and the local level of technological development may at present limit the introduction of more sophisticated devices (e.g. computers, telex etc require suitable technicians for maintenance etc).

6.4.3 Vertical Communication

i) Any national library building with more than one floor will require some means of linking the two or more levels. At the very least, conveniently located staircases must be provided. Although an open staircase is always more aesthetically satisfying (as that found in the Biblioteca Nacional of Brazil;
see photograph 6.5); unfortunately because of the need to

cut down disturbances as people move from one floor to the
next or to prevent the staircase from serving as a conduit for
noise, a closed staircase is often more desirable. Also, fire
precautions may require closed-in staircases in public buildings
as in Britain.

ii) Although it is not compulsory to consider provision of facili-
ties for the physically handicapped in some developing regions
(e.g. the South-east Asian region\(^45\)), provision should when-
ever possible be made for transporting of such readers. This also affects the planning in terms of access by ramps in addition to staircases. If lifts are installed, the control must be in a position where paraplegics could reach it.

iii) Basically, there are three types of lifts:

a) passenger lifts, escalators;

b) goods lifts, and

c) service lifts.

(a) and (b) are self-explanatory except that goods lift may also carry passengers, but (c) is so designed and constructed that it is possible for goods only to be transported. A national library building of more than one level should have at least a service lift to carry books. If funds permit a goods lift should be provided. This has the added advantage of being able to carry occasional passengers such as handicapped individuals who use the national library. It should be noted that the number and size of service or goods lifts provided would be dependent on the quantity of library materials that need to be transported between floors daily, the waiting interval, the size and speed of the car, the number of stops and so on.

iv) Generally speaking, if a national library building only requires communication one floor up and one floor down, then a passenger lift is not necessary, otherwise a passenger lift is necessary, or it will cause undue fatigue to library patrons. Passenger lifts are also required when public areas are located at the upper floors of a multi-storey national library building. It
is not necessary to provide passenger lifts if the reading rooms are only one floor from the ground. Results of a research into University library buildings by P R Tregenza shows that stairs are the general form of vertical communication in buildings of less than four storeys. The number of lifts to be installed should be based on a number of factors as follows:

a) the total number of people using the national library building (i.e. staff and readers);
b) the daily traffic patterns e.g. establish the peak periods of use;
c) the quality of service to be provided, e.g. the tolerable waiting time;
d) the size of the car;
e) probable number of stops;
f) speed of the lift.

v) The calculation of the number of lifts required can be quite complicated. However, this can be worked out by the mechanical engineers. In designing the lift system for any type of building, the normal method of analysis is a calculation of the response of the system to the traffic conditions that might occur in the building when the majority of the occupants arrive for work within a short period, conditions as mentioned by Pinfold generally called the 'morning arrival peak' or the 'up peak period'.
Basically, the calculations are based on assumptions which are as follows:

a) If the lifts can perform satisfactorily i.e. they can cope with the flow of passengers generated during the morning arrival peak, then they will also be satisfactory during lunch-time and evening peaks and also under conditions of random inter-floor traffic occurring during the remainder of the day.

b) Strakosch(48) states that during the morning arrival peak period, each lift car is filled with 80 percent of its maximum load. However, this percentage is not the same in all references. Some authorities(49,50) stated values varying between 81 percent and 86 percent. Wadsworth(51) gives the average car load as 'two or three persons less than the full capacity. Phillips(52) plotted a graph relating car floor area to the number of passengers.

c) The probability of any given person in the queue wanting to travel to a particular floor is independent of the probability of any other person intending to travel to that floor. If this assumption is not true in a particular case, the calculated capacity of the lift system will be less than the actual capacity.

d) During the morning arrival period, there is no traffic other than that from the ground floor to the higher floors of the building.
It should be noted that the waiting time as stated by various authorities (53-58) published on this matter varies as indicated in Appendix II.

vi) There are other less used means of vertical transportation and these include chutes, conveyor belts, escalators and paternosters (59).

6.4.4 Electronic Communication

i) The telephone remains an important means of communication both within and outside the national library. The minimum requirement perhaps is for one telephone to be located in the Director-General's office, the Deputy-Director General's office and one in the reader services desk or circulation counter. Additional telephones or extensions should be located where required, e.g. at least one in each department or division of the national library. The architect must provide a flexible linking system to cater for changing functions, and the space for installation of a manual switchboard and telephone equipment.

ii) In national libraries, inter-library communication by telephone is usually being supplemented by telex and requests can be directly transmitted between the libraries involved, more rapidly and with less chance of error. Unesco financed a pilot project for a national network in Malaysia, initially comprising the National Library of Malaysia and the five University libraries. As the first step, Unesco provided free installation and maintenance and bore the cost for telex link-up
between the National Library and the five university libraries. The telex facility began operation four years ago (1978). It is hoped that linkage may be extended to other countries in the region after the Malaysian network has been firmly established. Provision was made for installation of telex in the architectural brief of the National Library of Papua New Guinea (60). However, this system is expensive to install and is only justifiable if the national library has extensive external transactions.

iii) Bleeper systems are also expensive and should only be considered in situations where the library's area exceeds perhaps 100,000 sq ft and the number of staff is in excess of 100.

iii) As mentioned earlier, the use of 'flashing lights' is inexpensive to install and its advantages have been mentioned on page 240.

iv) The installation of computer terminals in national libraries of developing countries can only be justified if the national library has on-line access to external bibliographic data bases and/or access to a computer for its daily operations.

v) Public address system would be useful if budget permits especially if the building exceeds four floors in height. It is particularly useful to keep users informed of the situation and give instruction on the evacuation of the building during outbreak of fire or an earthquake etc. However it may have to be judged in the light of statistical probability. Otherwise there could be an expensive investment in a never used facility.
Conclusion

In order to facilitate communication which is vital for the proper functioning of the national library, a modern national library must employ some form of communication equipment to obtain rapid internal and external communication. Whatever system is adopted, plans have to be made and engineers have to be consulted early in the project, so that adequate space and trunking system to cater for changing functions is provided, should the need arise.

6.5 Lighting

One must bear in mind that lighting is closely related to colour and this section should be read in conjunction with Section 6.6. Lighting is one of the most important aspects of library planning and intensive research has been done, directed towards the provision of adequate illumination and good visibility conditions in offices and industries. The field of library lighting has not received such concentrated attention. However, the results of other research work can be readily applied to it.

Good visibility in a building depends upon the careful distribution of light sources to provide adequate light, without glare or distraction for each visual task involved. This depends to a great extent upon the use of appropriate colouring.

Petherbridge and Hopkinson state that:

Good lighting is, in fact, the provision of a pattern of brightness and contrast which enables the eye to work efficiently and in comfort throughout the duration of the visual task. (61)
Lam states that "low contrast of light and visual order can produce a relaxed mood, high contrast light, tautness"(62). This has parallel in the application of colour. For instance, in a reading room, a stimulating atmosphere without distraction depends largely upon the selection of the lighting installations with controlled brightness contrasts. However, uniform lighting without contrasts, can create a feeling of monotony and tiredness.

It has been stated by Ranck(63) that different people have different light requirements and that some eyes require a much higher level of illumination than others. There is evidence that small details decline with advancing age and that this decline may be noticeable from the twenties onwards. Although it is desirable to have different levels of illumination to cater for this physical and age difference in the reading, it is seldom considered practical in the modern national library. But it is not impossible. For instance, it would be provided by 'local' lighting controlled by readers (and/or individual staff members) but it would be expensive and an attendant would have to go round switching off forgotten lights.

There is also adequate evidence that increased illumination up to a point increases efficiency and overcomes one major cause of eyestrain(64). However, the question of good visibility in a library is not answered by adequate levels of illumination alone, and there are other important factors to be considered. Hopkinson(65) gives four points to be considered in a lighting system depending upon the nature of the environment and the visual task being performed. These are:
i) the effects on visual activity;
ii) on contrast perception;
iii) on ease of performance;
iv) on visual comfort.

The sources of lighting can be divided into natural and artificial lighting\(^{(66)}\).

i) Natural lighting

A Thompson\(^{(67)}\) is of the opinion that daylight is essential. However, one must bear in mind that the quality and intensity of daylight varies with the latitude, orientation and weather conditions, in addition to the time of day. In tropical and semi-tropical climates, as experienced by most of the developing countries, the daylight sky is bright and thus could provide sufficient light, but this high luminance easily causes glare\(^{(68)}\); and glare has two effects: it causes the pupil of the eye to contract, restricting the amount of light that can enter; and it reduces the contrast on the reading task between the print and its background. Both effects intensify the difficulty of reading\(^{(69)}\).

The main source of natural light in a library is windows\(^{(70)}\). These may have certain serious defects. For example, the University of Philippines main library, with its high and wide windows of clear glass measuring 4.20m x 4.20m faced the problem of glare from the sun introduced by poor geographical orientation (it is possible to overcome this problem by studying the position of the sun at the different times of the day as experienced by the
University of Otago(71) see Appendix III). The clear glass wall facing the centre porch and enclosing the stairwell created the most acute problem with respect to windows. The library authorities tried to remedy the problem of glare by painting all the glass windows and fixed glass panels with aluminium paint, and new problems were created because of this. The outside view is blocked and the building interior has become darker, forcing the library to turn on the lights even during the daytime. Perhaps, a better solution would have been the use of internal screening semi-transparent curtains and the like, which can be used with usually satisfactory results. Blinds (e.g. venetian blinds) however, are not recommended because they bring problems, especially noise, if the windows are open for ventilation. Although this type of screening is used in the adult/young people reading area at the Marine Parade Branch Library, Singapore (see photograph 6.5b). Then again venetian blinds restrict the opening of the windows. For more severe conditions, external screening may be achieved by means of overhangs, projecting balconies, pierced masonry screens, fins or louvre blades. Gibson suggests the use of plants in courts and voids, but Burton warns that plants would attract insects(72).

Glare can also be overcome by using inward sloping glass windows under a projecting roof together with the use of slit windows and fins. Edward Lim(73) suggests siting windows in the north-south direction and avoiding the east-west direction. The Hong Kong Polytechnic overcomes the glare problem with ‘tinted glass windows overhanging every floor’(74). Sun shading may also
be provided in other ways, e.g. the National Library of Papua New Guinea, with its low pitched roof which has been raised to 70 degrees over the reference collection area to provide a significant increase in the height of the building and to emphasise the importance of this major functional areas, has become a key feature of the design, with exposed timber trusses and fixed glazing to provide controlled natural lighting. The timber boarded ceiling extends into this space which is protected externally from excess solar heat loads and direct sunlight by means of a ventilated and insulated metal sun canopy, which is framed up from the roof trusses(75).

As mentioned earlier, in Section 6.2 strong sunlight can damage all library materials. Furniture and fabrics are also frequently faded by direct sunlight. A psychological factor to be taken into
account is that the provision of windows allows visual relief from close study of books and overcomes fatigue. Natural lighting is necessary where studies and carrels are located in the bookstacks, because of human occupancy. Where such facilities are omitted from bookstack areas, it is satisfactory and perhaps even preferable sometimes to omit natural lighting (for preservation of materials, which is one of the main responsibilities of a national library in developing countries) and rely solely on artificial lighting in the bookstacks.

ii) Artificial lighting

There has been great divergence between the views of the various authorities in the field. The intensities (and glare limits) recommended in the British IES Report\(^{(76)}\) and the recommended illumination levels in the 'Library Building Standards for Malaysia'\(^{(77)}\) are shown overleaf. It can be observed that the latter is more generous in its recommendations in certain areas than the former. However, it must be borne in mind that these recommendations are very general and should not be applied uncritically. Generally speaking throughout the world, a lighting level of 300 lux is ample. It is therefore suggested that in order to allow for flexibility in the design for library lighting that more areas have an illumination level of 300 lux. This will allow for easy relocation of services and functions without adversely affecting their respective operations from the lighting point of view.
### TABLE 6.3: Recommended Lighting Intensities: IES

<table>
<thead>
<tr>
<th>Activity</th>
<th>Recommended Illumination (lux)</th>
<th>Lighting Glare Index*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading rooms (newspapers, and magazines)</td>
<td>200</td>
<td>19</td>
</tr>
<tr>
<td>Reading tables (lending libraries)</td>
<td>400</td>
<td>19</td>
</tr>
<tr>
<td>Reading tables (reference libraries)</td>
<td>600</td>
<td>16</td>
</tr>
<tr>
<td>Counters</td>
<td>600</td>
<td>19</td>
</tr>
<tr>
<td>Closed book stores</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Binding</td>
<td>600</td>
<td>22</td>
</tr>
<tr>
<td>Cataloguing, sorting, stock rooms</td>
<td>400</td>
<td>22</td>
</tr>
</tbody>
</table>

**Note**

* These figures represent the maximum degree of glare for the room in which each activity is to take place. The IES Glare Index is widely used for comparisons throughout industry and its levels are stipulated in lighting contracts.

### TABLE 6.4: Recommended Lighting Intensities: Ad Hoc Committee PPM

<table>
<thead>
<tr>
<th>Area</th>
<th>Recommended Illumination (lux)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading areas</td>
<td>400</td>
</tr>
<tr>
<td>Book stacks</td>
<td>300</td>
</tr>
<tr>
<td>Book repair and binding</td>
<td>600</td>
</tr>
<tr>
<td>Counters</td>
<td>600</td>
</tr>
<tr>
<td>Storage areas</td>
<td>300</td>
</tr>
<tr>
<td>Staircases and corridors</td>
<td>200</td>
</tr>
<tr>
<td>Office areas</td>
<td>600</td>
</tr>
<tr>
<td>Carrels</td>
<td>600</td>
</tr>
<tr>
<td>Technical service areas</td>
<td>400</td>
</tr>
</tbody>
</table>

**Note:** Illumination levels measured in lumens/m².
Metcalf(78) divides the sources of artificial lighting into three categories:

i) mercury lamps, which have been used comparatively little;
ii) incandescent lamps which can be classified into two classes, viz: vacuum lamps and gas filled lamps; and
iii) fluorescent lamps, which have assumed a major place of importance in the lighting field.

taken into account is that the reader will be happy to work in a bright area within the sight of other areas which are less brightly lit, but he will suffer a sense of frustration if he can see areas brighter than the one in which he is working.

6.5.1 Flexibility of Lighting Installation

Flexibility of the lighting installation is desirable for reasons already mentioned earlier. Flexibility can be achieved by providing a wiring system capable of carrying the heaviest loading which may be required. However, one has to bear in mind that this is only possible at a greater cost. National libraries in the developing regions should make careful study of where heavy wiring is needed because it has been known in many libraries throughout the world that heavy wirings installed are not fully used. The use of trunking in conjunction with modular ceilings, leads to great flexibility because light fittings can be relocated to suit partitions and furniture layout. General lighting has the advantage also of giving complete flexibility in the positioning of stacks and reading areas. Fluorescent light fittings for stacks can run across or along the direction of stacks,
although the latter is less efficient (80).

6.5.2 Factors to Consider in Library Lighting Design

Stevens (81) states that:

It is usually easy to make lighting efficient and ugly, and it is easy to make it attractive and inefficient; but to achieve efficient and attractive result is the aim.

Even though it is difficult to achieve both qualities in library lighting design, there are various factors which should be taken into account. They are as follows:

i) Visual comfort should be given due recognition. It should be noted that increased luminance in the surrounding areas as compared to the luminance of the reading matter impairs reading performance and increases discomfort.

ii) Eye fatigue can be caused by glare and external contrasts. This means that with an increase in the luminance of the environment the quality of light should be controlled by reducing glare and contrasts to acceptable levels.

iii) Good lighting for comfortable operation of library functions is one that aims at a smooth graduation in brightness from the book itself to its immediate environment (the table top) and on to the total surrounding environment.

iv) Emergency lighting should be provided, as it ensures the safety of the persons in the building when the normal light system fails. The occupants of the building in such a situation should have sufficient light to permit an orderly exit.
from the building. Sufficient illumination at exit points is necessary for purposes of security.

v) The lighting system should be laid out so that it is relatively easy for the janitors and workmen to get to the lamps and reflectors for frequent cleaning.

vi) Maintenance costs of the planned lighting systems should be worked out by the consultants concerned.

vii) In many large multi floor libraries there are created areas requiring near continuous artificial lighting. The switching arrangements are crucial to economy (where more than one light fitting is operated per switch). But what is of overriding importance and deserving mention is the siting of switches. Wrongly placed they can drive staff mad. Rightly placed they will save staff fatigue etc.

viii) Librarians, architects, and library boards should always keep uppermost in mind that the function of any library building (national or otherwise) is to serve human needs and that it must be operated by average human beings. Therefore, one must adapt to the fullest extent possible, lighting and everything else about a library building to human beings rather than expect human beings always to adjust themselves to the library building.

Conclusions

Lighting can be expensive as it accounts for as much as 10 percent of the construction costs (82) (i.e. in extreme cases).
Increasing energy costs make it imperative that some dependence be made on natural lighting in the design of the national library buildings in developing countries. However, it should be emphasised that a controlled environment of the national library interior with dependence on artificial lighting should strike a balance, depending on the size, function and other cost considerations of the building. Flexibility of the lighting installation is desirable and should be also thought of at the planning stage by architects and light engineers, to allow for possible change of functions within the national library building.

6.6 **Colour**

Colour is a vital element in the provision of comfortable reading conditions in a library. However, it must be considered in close relation to the lighting requirements, as each is dependent upon the other. Colour is known to perform both psychological and physiological functions, but the former have not been adequately studied. Personality plays an important part in colour selection and the reactions of readers to a given library colour scheme cannot be predicted with any degree of certainty. Colour may aid good vision by eliminating glare, by modifying light distribution and by reducing distraction. It can modify light distribution by acting as a reflector or secondary light source, and where practicable (especially in industry) by signalling critical features of the work environment. Reading involves a wide range of visual tasks, depending on two factors: the type of material being read and the degree of concentration required. In general
as the visual task becomes difficult, higher illumination levels are required. This fact is recognised by various lighting authorities in formulating recommended illumination levels.

Ranc'k(83) states that:

Plan a colour scheme for the walls, windows and draperies to give an artistic effect. It will attract readers and be more restful to all who use the room. Red is not a restful colour to have in such a room, but there are other colours, which possess just that quality.

In semi-tropical and tropical climates, there is a preference for cool colours. The National Library of Nigeria for example, is painted light yellow(84). Colour can be used to alleviate discomfort to some extent in industry by introducing a cool colour scheme where high temperatures are involved. For instance, rooms facing sunlight can be made more comfortable by cool colour schemes. In windowless interiors, such as in some bookstacks, Gloag(85) suggests that the emphasis should be on cool, fresh colours. However, bright colours can be used with great advantage in circulation and exhibition areas.

Colour can also be used effectively to visually separate areas of differing functions and for indicating traffic flow in the desired direction, so that the readers using the national library are sub-consciously directed along predetermined paths, for instance, from the entrance to the catalogue room and then to the reading room.

In a multi-storey national library building, a different colour scheme on each floor can prevent readers from being 'lost', especially when the floors and the layout of bookcases would otherwise be similar to one another.
6.6.1 Application of Colour in National Libraries

Colour can be applied to all surfaces in the national library: to curtains, furniture and fittings. In addition, library materials are normally highly coloured. There is often sufficient colour in books themselves. The cheapest material for colour application is paint, but this needs regular maintenance due to deterioration with time. Developments in paint technology have increased the life of painted finishes by the introduction of plastic paints. Wallpaper, which is cheap and can be used with insect-resistant adhesives, has been tried with effect at Makerere College\(^{(86)}\), Uganda.

Colours fade with the sun. Thus, architects may turn to plain concrete, as does Le Corbusier in Northern India, and to local bricks, as in Iraq, where yellow brick is the prime walling material\(^{(87)}\). Other self-coloured materials - plastics, timber, marble, red-brick etc, - have potential value in areas subject to wear and tear, including areas such as foyers, exhibition halls and circulation areas. Permanence of colour and resistance to hard wear reduce maintenance costs on these materials.

Floorings are available in a wide variety of colours and the required reflection factor is readily achieved with floorings such as rubber, linoleum, and vinyl. Generally ceilings are suited to acoustic treatment and most acoustic tiles are white. However, colour can be applied to them and coloured acoustic plasters are also available.
The application of colour to items such as showcases, light fittings, doors and furnishing should be governed by the basic principles of good viewing conditions for each case and thus colour restraint might be necessary. Bright colours would be more suitable for casual areas such as foyers and circulation. However, it should be noted that splashes of bright colours can be introduced on chairs/chair seats with great effect thought some thought must be given to maintenance, e.g. problems of cleaning.

Although there is some justifications for the use of colour to attract readers, there is less care for this in national libraries, where "... one should keep in mind that the visitors ... are not looking in these rooms for sensational scenery but expect to find the possibility of being able to concentrate in peaceful surroundings"(88).

Murals in the interior or exterior of libraries in developing regions is something one can ponder on, for they can have great effect in national libraries, when placed in strategic positions. For example, the main staircase area of the national library. Photograph 6.6 shows the use of murals in natural colour stone on the four sides of the Central Library at the University of Mexico.

Is there such a thing as an ideal colour scheme to be used in library buildings (national or otherwise)? Medd has said that:
PHOTOGRAPH 6.6: Murals, Central Library at the University of Mexico

I think there is not, it is a good thing there is not, surely colouring is a combination of science and artistry. We should be glad that artistry is there, and the fact that it does exist in the subject means that there will always be several excellent colour schemes possible. (89)

Conclusions

Colour is dependent upon the lighting requirements, and vice versa. In semi-tropical and tropical climates, where high temperatures prevail, there is a preference for cool colours. However splashes of bright colours can be introduced on doors, chairs/ chair seats etc with great effect. There is no ideal colour scheme, but it would be advantageous if the architects and national librarians in developing countries spend sometime during the planning stage to choose the 'right' colour scheme for their respective new national library building.
6.7 Ventilation and Air-Conditioning

The design of library buildings (national or otherwise) must take into consideration two different types of occupancy and provide facilities as well as satisfactory conditions for each of them. The requirements for human beings are those of comfort and health*, whilst for books and other library materials the requirements are those of preservation from damage and deterioration.

Books and library materials are subject to ageing or decay. Studies by Kimberly and Hicks\(^90\) into the storage conditions necessary for the preservation of records in libraries showed that deterioration of paper is caused by two factors: internal agents (substances produced or left in the paper during manufacture) and external agents (introduced by the conditions of use and the method of storage). Authorities have agreed that library materials are best preserved in a Relative Humidity (RH) of between 45 and 55 percent. Above this fungi will grow if the temperature exceeds 65°-70°F. Air temperature of 70°-75°F combined with the RH of about 50%\(^91\)(91b) is the best temperature range for permanent preservation of paper. It is fortunate for national library planners that optimum conditions for preserving paper are practically the same as those for human beings, irrespective of race\(^92\) - certainly a fortunate coincidence\(^93,94\). How can this be achieved in national libraries in the semi-tropical and tropical

\* References 89b and 89c provide interesting studies on thermal and ventilation considerations that would be useful for architects and national librarians to ponder on.
climates of the developing regions? The answer may depend on the level of technology which can be afforded. There is a strong case for the installation of air-conditioning in national libraries to maintain constant temperature and humidities. Not all the developing countries are fortunate to have their national libraries installed with a full air-conditioning system. Only Iran, Singapore, Peru and Papua New Guinea have full air-conditioning*. The National Library of Malaysia will have its entire building installed with air-conditioning and particular areas will have special air-conditioning provisions(95). But is air-conditioning the only solution possible? Air-conditioning is not the only answer; people in these regions have, after all lived without it for centuries. The National Library of Guyana for instance, uses electric fans (both overhead and tabletop models) as a cooling system(96). If air-conditioning is to be used, it should take the form of individual air-conditioner units(97), as is to be found in some national libraries in the developing regions for instance, in the National Library of Malawi, the National Museum Library, Sri Lanka, and National Library of Nigeria. This is more practical, so that one or more can break down without rendering the entire building uninhabitable. Where budgetary restrictions exist, partial air-conditioning is another answer, as isolating the bookstock and air-conditioning the collection but not the reading areas. The National Library of Papua New Guinea installed a main air-conditioning unit and two smaller units,

* See Appendix I.
so that air-conditioning can be switched off in working areas over weekends, but left on in reading areas and the Papua New Guinea collection area, when made necessary by power conservation measures\(^{98}\). Similarly, the National Library of Jamaica has its main building, the Art Gallery and Lecture Hall installed with a central air-conditioning system, while window units are used in the main reading room and bindery\(^{99}\). Ascalon, an architect\(^{100}\), described in this connection a building which he had designed in the Philippines where the most important requirement was not to air-condition. The problem was to induce air into the building and eliminate humidity. This was done by designing an open building and by the use of dehumidifiers whenever necessary. It must be pointed out that the siting of the national library building is of primary importance in these regions, so as to make maximum use of natural cross-ventilation.

One point to bear in mind when designing national library buildings which will be centrally air-conditioned, is that the number of windows opening to the exterior should not be kept to a minimum, because it is a fact that electricity supply and power cuts are frequent in these parts of the world. Otherwise, with little or no ventilation, the library will become an unbearable oven\(^{101}\). This is a crucial problem. Often the efficiency of air-conditioning depends on there being no opening windows. (If they are left open, they can unbalance the air-conditioning). It has been suggested that air-conditioning by floor should be considered for fire protection and cheaper capital and maintenance cost. However, its disadvantage is that it would create more noise and occupy more ducting space.
When Ascalon designed his library in the Philippines, a building designed without air-conditioning, because of the recent energy crisis in the Philippines, he did however build-in a provision for air-conditioning to be installed in the hope that the restriction might be lifted at a future date (102). Perhaps this was not altogether a wise thing because of the cost involved. The ban on air-conditioning may never be lifted, and even should it be lifted, individual air-conditioner units could be installed instead in limited areas.

An important point to note is that the decision whether or not to air-condition is a very difficult one to make. It is very much a local decision. However, if one views the development of national libraries, one finds that in its totality it involves a continual effort on the part of those library staffs and users involving the selection, processing, storage, maintenance, and exploitation of library materials which includes books (including rare books), microfilms, journals, films, slides, sound recordings etc. The investment in monetary terms is huge. Given this and the fact that a controlled environment is essential for the conservation of the national collection (which is one of the main responsibilities of a national library in the developing regions), it is strongly felt that where finance permits, the national libraries in these regions should be air-conditioned.

In addition there should be sufficient air changes per hour to ensure adequate ventilation. The ventilation system should also ensure that the incoming air is cleaned by filtering which should be capable of screening particles in excess of 1 micron.
(one millionth of a metre). Also the use of "grey" noise is recommended. "Grey" noise is the steady noise of the air-conditioning or other mechanical equipment as a masking noise to the fluctuating sounds in the national library. This noise, however, should be within noise levels normally prescribed for a library.

6.7.1 Insect Attack

Excessive moisture coupled with high temperatures in the humid tropics make it an ideal condition for insects to thrive and they have become natural enemies of library materials in these regions. The most aggressive insects in the tropics are termites. The best repellents are chemicals with a chlorophenol base and they should be used to treat the ground, (as it is done in Africa) that is the whole construction area before building begins. The foundations, when built, will also need treatment. If the building is already completed, a surrounding trench about ½ a metre deep should be treated\(^{103}\).

Insects can be discouraged in national libraries in these regions by regular cleaning and by the use of fumigants in severe cases. The incidence of insect attack can be reduced sharply with the use of metal framework for buildings\(^{104}\) and metal shelving\(^{105}\), but not always in the case of termites.

6.7.2 Dusts

Dust is yet another serious problem in national libraries in these regions, because it discolours paper and it can harbour
insects as well as be a factor in condensation of acidic moisture. Regular cleaning with feather dusters or domestic vacuum cleaners (centrally vacuum cleaners have not been used in the majority of the developing countries) will reduce damage to a minimum.

It should be pointed out that smoke comes under the classification of dust or dirt\(^{106}\). Therefore when smoking is permitted in the national library, an air-cleaning device should be selected which will remove tobacco smoke from the air. The latter is injurious to library materials because it has a very similar darkening and deleterious effect to ammonia fumes.

6.7.3 Smoking

Smoking, mentioned previously requires additional consideration. A larger quantity of circulated air is necessary in order to ensure that the density of smoke is held to a practical minimum. Frequently a space will have a normally sufficient air supply to accomplish proper air motion, but when smoking is allowed, this supply becomes insufficient to carry away the smoke. Therefore, general policy with regard to smoking should be determined early, in the design stage, so that ample duct sizes can be provided. If smoking is permitted, smoking areas should be located away from book stacks and 'no smoking' signs should be displayed to prevent readers from smoking in restricted areas. For best results, it is necessary to provide an exhaust outlet in or near the ceiling and as close to the smoking zone as possible\(^{107}\).
Other factors injurious to books are gases and fumes. Certain chemicals notably sulphur dioxide (SO₂) which is a waste product not only of certain industries but of the combustion of fuels containing sulphur, are known to have very detrimental effects upon all types of paper and bindings. Therefore, if a national library is contemplated in a region where harmful chemicals are found in the atmosphere, it becomes necessary to remove these chemicals before introducing the air to the conditioned space.

Conclusions

Therefore, in determining the type of ventilation and cooling system to be employed, the mechanical engineering consultant must consider the following factors:

i) maintenance and preservation as well as longevity of all the national library collections;
ii) to allow reasonable comfort to national library staffs and users;
iii) maintain even ventilation throughout the national library building;
iv) differing functions within the library;
 v) severity of atmospheric pollution;
vi) climatic condition of the locality.

The decision whether or not to air-condition a national library building is very much a local decision but it should be emphasised that whenever budget permits it should be air-condi-
tioned. This is because a controlled environment is essential for the conservation and preservation of the nation's literature. The continuous use of the equipment and servicing requirements

The trunking necessary for air-conditioning will demand space and must be remembered in both stack areas at the planning stage.

6.8 Heating

In countries where the temperature falls before 68°F, heating becomes essential (108) (this applies for example in some South American countries and some countries in the Middle East). General heating can be accomplished by introducing heaters in the ventilation system which warm the circulated and filtered air to a temperature that will reduce cold draughts. Where there are windows, convectors could be provided under them, carefully designed to prevent heat damage to books and other library materials. Where unusual exposure conditions exist, consideration must be given to zoning the system. This enables some areas to be controlled independently of others.

Radiators are most efficient under windows to counteract the flow of chilled air down from the glass and consequent draughts across the floor. They may be enclosed with openings at the floor for the air to enter and in the windowsill for the heated air to emerge.

Conclusion

Although this is not a common feature found in the developing regions, the climatic conditions of some developing countries such as Peru, Iran etc require both heating and cooling systems
in order to achieve reasonable standards of comfort and hospitality in the modern national library.

6.9 Acoustics

Readers in general and research workers in particular, require an atmosphere free from disturbing noise of any kind, and the architect faces the problem of designing the national library to achieve quiet conditions inside the building in the face of the increasing noise of the modern city. National libraries particularly, face noise problems because, being a library for the nation, they tend to be built in the capital city where the noise is more apparent. Hope Bengal in a foreword states that in designing new buildings:

_We must also defend them against the immensely increased risk of disabling noise - noise from aircraft, from street traffic, from new industrial noise, from mechanical equipment indoors._ (109)

However, one must not regard the entire national library as a quiet institution, for in practice, the areas requiring noise reduction are the reading rooms, studies, and other similar rooms where concentrated study is carried out. Other areas are normally treated as accepting a reasonable noise tolerance level.

National libraries are subject to both external and internal noise. The former are beyond the control of the national library with the exception of noises originating on the library site, for instance noises from the public and staff parking areas, the traffic noise on the site and the loading docks and garages.
Noises from these sources can be reduced by having proper regulations as to the time of delivery and by careful positioning on the site to remove the sources as far as possible from the quiet rooms in the national library. The other alternative is by sound insulation. City areas are considerably noisier than the suburban areas; the latter being unaffected by external noise in its semi-country location.

Internal noises originate within the national library as a result of its normal activities. The following table extracted from the DSIR Report (1960)\(^{110}\) shows the speech interference level for different types of communication. Internal noises

**TABLE 6.5: Table Showing Noise and Speech Interference Level**

<table>
<thead>
<tr>
<th>Decibels</th>
<th>Voice level and distance for word intelligibility</th>
<th>Nature of communication possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>Normal voice at 10'</td>
<td>Relaxed conversation</td>
</tr>
<tr>
<td>55</td>
<td>Normal voice at 3'</td>
<td>Continuous communication in work areas</td>
</tr>
<tr>
<td></td>
<td>Raised voice at 6'</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very loud voice at 12'</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Raised voice at 2'</td>
<td>Intermittent communication</td>
</tr>
<tr>
<td></td>
<td>Very loud voice at 4'</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shouting at 8'</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>Very loud voice at 1'</td>
<td>Minimal communication</td>
</tr>
<tr>
<td></td>
<td>Shouting at 2-3'</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>Shouting at 1'</td>
<td>Minimal communication</td>
</tr>
</tbody>
</table>

Source: DSIR Report (1960)

can be controlled by careful planning, that is, by separating noisy areas from those requiring quiet\(^{111}\); and by sound insulation: by sound absorption, sound isolation and sound control\(^{112}\), where
applicable. Perhaps the cheapest and simplest method is by careful planning of the building to reduce the noise problem to a minimum. This can be carried out by grouping the activities according to their noise levels. This can simplify the job of architects and national librarians in achieving quiet conditions in the library areas.

Noisy activities in the national library can be grouped into the following:

a) Noises from the national library operations and equipment:
   i) Handling of books, periodicals, newspapers etc.
   ii) Footsteps which may echo in quiet rooms.
   iii) Book trolleys.
   iv) Xeroxing and photocopying.
   v) Metal library equipment (e.g. map cabinets, metal shelving etc).
   vi) Microfilm reading machines.
   vii) Binding and printing operations.
   viii) Typewriters and other equipment keyboard, e.g. computers, telex etc.
   ix) Cleaning equipment (floor polisher, vacuum cleaners).
   x) The constant 'banging' of the drawers of card catalogue cabinets.
   xi) Noise from telephone, buzzers, bleepers.
   xii) The constant banging of doors.
b) **Noises from other equipment:**

i) Fans (overhead or table top model).

ii) Air-conditioning plant.

iii) Lifts.

iv) Plumbing and sanitary fittings.

c) **Other noises:**

Noise from airborne noises such as coughing and conversation.

A feature that is common in a number of the national libraries in the developing regions is the open courtyard (see Figure 6.9) as an example.

![Diagram of the National Library of Papua New Guinea](image)
Photograph 6.7 shows the open courtyard of the Biblioteca Nacional of Peru. This feature is generally recommended for letting in air (i.e. natural ventilation) in tropical buildings. The Marine Parade Branch Library (a branch of the National Library of Singapore) have very clearly used this open courtyard as the children's activity area e.g. for storytelling and games during the non-rainy seasons (see photograph 6.8). Care should be taken that reading rooms are located away from the open courtyard area because this area would generate noise and distraction for serious research workers. It would be better to locate reading rooms away from the noise areas. Also, the noise could travel through the courtyard up to the other floors.

It is generally accepted that libraries (national or otherwise) should be designed on the basis of different sound requirements: the noisy and the quiet zones. Perhaps another zone, 'semi-quiet zone' would make it more complete. The quiet zone includes the reading rooms and carrels, the semi-noisy zone would include the normal activity including the offices, the catalogue rooms, seminars and lecture rooms, exhibition halls and the noisy zone includes the activities such as in the staff and reader circulation areas, staff room, microfilm reading rooms, typing etc.

Careful siting can help solve the problem of external noise. It is advisable to select sites away from the most severe sources of noise. If the site is large to enable the building to be set back from the boundaries, groups of trees and shrubs may be used to 'screen' the noise from the national library (see photographs...
PHOTOGRAPH 6.7: Open courtyard, Biblioteca Nacional of Peru

PHOTOGRAPH 6.8: Open courtyard, Marine Parade Branch Library, National Library of Singapore
6.9, 6.10, 6.11). Internal noise can be effectively overcome by the use of rubber pads on the legs of furniture items, rubber buffers to doors and drawers of metal cabinets. Ideally, book trolleys should be fitted with rubber wheels since most of the national libraries in the developing regions have either vinyl tiles, mosaic tiles, marble, linoleum tiles, masonry or cement screed as their floor covering (as can be observed in Appendix I). Only 33% of the national libraries that answered the questionnaire, can afford carpet or carpet tiles or rubber tiles as their floor covering which are better absorbents of noise. Dr Wijasuriya, the present Deputy Director-General of the National Library of Malaysia says that 'carpeting, PVC and industrial felt is likely to be heavily used' (113) in the new national library building. The use of suitable construction materials can also help noise insulation in the national library. The common form of acoustical treatment in most national libraries of the developing regions is the use of acoustic boards on dropped ceilings and of vinyl tile flooring.

Conclusions

Students in general (who are usually secondary school and university students) and research workers in particular, are concerned about quietness in the national library building. Thus architects and national librarians have to try to overcome noise problems within, and outside, the building. Careful planning and careful choice of site is important early in the planning or design stage. The use of suitable acoustical materials in the
PHOTOGRAPH 6.9: Trees around the Biblioteca Nacional of Brazil

PHOTOGRAPH 6.10: Trees around the National Library of the Philippines
PHOTOGRAPH 6.11: Trees around the main building, front view from south to north, National Library of Thailand
construction, and also the furnishings, can help greatly to insulate from noise in the national library building.

6.10 Fire Protection

The incidence of fire in libraries generally is small. War damage has been the cause of many fires and serious losses of books and manuscript collections of national libraries in the developing regions, for example the outbreak of fire which completely destroyed the National Library Building of Peru and nearly all its contents in 1943 (already mentioned in Chapter 4).

National libraries in the developing countries play an important role in preserving a nation's heritage and provide vital, constantly used tools for educational and other pursuits. There is therefore a critical need to assure their safety from fire. As stated by Bird:

In the burning of a building, it is the active life of the library based on its books that matters, not the shell of the building. (114)

Measures should also be taken to reduce the danger to the occupants of the building in the event of an outbreak of fire (115).

The causes of fires in libraries may be grouped under the following general headings:

a) Plant and equipment, electrical;
b) Housekeeping and operations;
c) Others such as incendiary fires.

Based on incidences of fires in libraries generally, it has been
observed that in the developing countries, housekeeping and operations, electrical failures and poor design are the main causes of fires\(^{(116)}\).

6.10.1 Factors to Consider in Design and Planning

Hardly surprising, in planning for fire safety of national library buildings two critical considerations arise:

i) the need to ensure the safety of the users, staff and other;

ii) the need to preserve the integrity of the contents of the national library.

A number of problems peculiar to national libraries in particular and libraries in general arise in connection:

i) the combustibility of library contents and at the same time susceptibility to damage by water, the normal medium of fire suppression;

ii) the need to limit accepted egresses for security reasons, which could be fatal in fire emergencies;

iii) the high density of occupants engaged in mental and intellectual activity who should be disturbed as little as possible;

iv) the cost factor is important.

It is estimated that 20-25% of building costs\(^{(117)}\) may be absorbed by the special features of construction required for protection against fire. Against this may be considered the long term saving accruing from reduction in insurance premiums on the life of the building.
6.10.2 Fire Prevention Measures

In the planning of a complete system of fire safety for national library buildings in the developing regions, it is necessary to approach the matter from three aspects:

i) Passive fire precautions: these would involve the design of the building and the selection of building materials in such a way as to minimise the risk of the spread of fire;

ii) Active fire protection: this involves the provision of fire protection equipment to detect, warn, and suppress a fire;

iii) Library operation, maintenance and organisation involving the maintenance of equipment, proper housekeeping, fire drills and organisation of a fire prevention committee.

i) Passive fire precautions:

It is desirable to select materials and types of construction that are either non-combustible or which have high fire resistant ratings. Library building design should avoid the creation of combustible concealed spaces. Voids between a ceiling and the floor slab above, are good examples of concealed spaces through which fire can spread rapidly and where access for suppression or fire is difficult. Openings between floors should also be protected so that fire on one floor will not spread to the floor above or below. In the case of escalator/lift openings, fire-rated roller shutters which close in the event of fire would be necessary.
An important consideration is the proper selection of interior finishes and furnishings. Highly flammable wall and ceiling finishes and combustible draperies should be avoided. Extra care should be taken in respect of the burning characteristics of unholstered furniture (e.g. plastic foam upholstery like polyurethane is dangerous(120), particularly if it is used in smoking areas within the national library building), insulating and acoustical materials. On the electrical side, adequate earthing and lighting protection should be provided. It is recommended that all wiring should be run in metal conduits to reduce the risk of fire caused by electrical faults.

Provision should be made for the safe emergency evacuation of people as well as for access by the fire brigade to the fire areas. Stringent regulations usually apply to the provision of fire escape stairs and they vary with different countries in the developing regions, although they all require alternative escape for the occupants of the building. 50% of the national libraries that answered the questionnaire reported that no emergency stairs and exits exist in their buildings making them a veritable trap in case of fire or earthquake. The Biblioteca Nacional of Peru has five emergency exits; the Malawi National Library Service has one emergency exit; Papua New Guinea's National Library, Nigeria's National Library and Singapore's National Library all have two emergency exits in case of fire or other disaster.
ii) Active fire precautions:

Without fire protection equipment, fire-resistive or non-combustible contents may survive but combustible contents will not. Fire protection equipment should provide for both detection, alarm and extinguishment. While these are separate functions, they may and often should be consolidated into one continuous fire protection system which detects a fire, sounds the alarm, and sets off automatic extinguishing devices.

Apart from automatic extinguishing equipment there are also those operated by the occupants and by firemen\(^{(12)}\). Early warning detection systems provide an opportunity for occupant action with portable fire extinguishers and fire aid hosereels before advanced stages of fire development actuate the automatic fire suppression system.

For twenty-four hour protection, an automatic detection system should be provided. This may comprise thermal or smoke detectors, depending upon the degree of sensitivity required, wired to a central indicator board located preferably on the ground floor, mainly accessible from outside but at the same time under the supervision of library staff.

The fire detection system sounds an alarm on detection of a fire to alert the occupants and also summons the Fire Brigade. The alarm should be able to give an "evacuate" signal or "standby to evacuate" signal. Alarms may consist of alarm bells or muted signals consisting of flashing lights, depending on the type of occupancy.
An automatic extinguishment system which is widely used and has proved its value in the reduction of fire losses is the automatic sprinkler system. It performs several functions such as:

i) Detect fires at the point of origin;
ii) Cause the sounding of alarms;
iii) Control or extinguish the fire;
iv) Can and should be connected directly to the nearest Fire Brigade.

A disadvantage however is the water damage caused to surrounding books in case of activation but this may be overcome by the use of "on-off" sprinklers that automatically close off on extinguishment of fire. Thomas stated that:

quite apart from extinguished fires, water will cause damage to stored materials and it is important that the fire should always be extinguished with a minimum quantity of water irrespective of the supplies available. (122)

For special areas such as microfilm rooms, magnetic tape etc, where water is damaging to materials, fixed Halon 1311 installation can be applied. The system automatically discharges an extinguishing gas to put out fire.

Apart from fighting fire, another important factor to consider is the orderly evacuation of the occupants. A public address system (mentioned earlier in Section 6.4.4) is an efficient communication system to use. Prominent EXIT signs should be displayed on all egresses and the escape routes well illuminated by emergency lighting. A panel which serves as a directory of exits should be well located.
iii) Library operation, maintenance and organisation

A fire safe library occupancy is one that is so arranged, operated and maintained that fire has only a very remote chance of starting. This will depend on the elimination of ignition sources and on arranging the occupancy so that fire will not spread.

A high standard of housekeeping is the most important single factor in the prevention of fire. Out of the way places such as areas under and around bookstacks, storerooms, janitors' closets, lunchrooms, air-conditioning rooms and binderies require special attention. Safe containers should be provided for the collection of waste paper, packing materials etc and should be emptied at regular intervals. Books awaiting processing or rebinding should be stacked neatly. Frequent random inspections should be made to detect unsafe conditions.

Air-conditioning and other equipment should be maintained, inspected and tested in accordance with recognised safe practices. Where future extension of buildings is envisaged, electrical supply wiring should be initially sized to cope with the extra demand anticipated.

In order to enforce these measures, it will be necessary to appoint a fire safety officer as one of the library staff. The responsibilities of this officer would be to carry out inspections, implement a high standard of housekeeping, plan and carry out fire drills and organise management to cope with emergency fire situations.
Conclusion

The acceptable system of fire safety for a national library building should begin in the planning and construction stages with the incorporation of fire-resistant construction materials and provision of adequate fire-protection equipment to the building. The fact that the incidence of fires in libraries generally is small should not lure the librarian and architect into a false sense of security and every possible precaution must be taken.

6.11 Constructional Problems

In designing or planning a national library building, the more important structural system to adopt is the flexibility of internal layout to meet changes in the requirements of national library organisation. This is because national libraries will probably require rearrangement several times during their lifetimes. Ulveling states that no library building:

however wisely laid out today, will likely remain unchanged 25 years hence. (123)

6.11.1 Modular Planning

The modular method of planning in new national library buildings is almost universally used in the developing regions. 89% of the national libraries that answered the questionnaire described this method as having been adopted. This type of construction is one successful solution to the problem of flexibility. (An example can be seen in Figure 6.10). To narrow down this cybernetic unity, the controlling factor in a national library building will be the
FIGURE G.10: An Example of Modular Design

3rd Floor Level
National Library of Thailand
positioning of the book stacks. Based on 4'6" space as stack centres, the economical normal reinforced concrete structure or building module is 27'0" with 2'0" concrete columns. This will provide 5 rows of book stacks each of which is 18" wide allowing for a shelf depth of 8" on each side of the double sided book-stack with 2" of clear space between shelves. The extra two rows of book stacks between the columns are optional depending on whether it is used for the circulation of the users or for book stacks. Other building modules that have been found to be economical are:

i) 22'6" square ft with 18" columns.
ii) 18 square ft with 18" columns.

It should be borne in mind that the decision on the size of the module to be used would greatly depend on the following factors:

i) Total size of the building being planned for;
ii) The site;
iii) The building budget; and
iv) The building consultants' recommendations.

It should also be noted that the measurements of the above mentioned modules are based on the experience of library planners both overseas and local\(^{(124)}\). On the local front, it has been observed though, that when actually constructing the buildings, contractors may end up with dimensions which vary by 1" or so. For example, columns planned to be 18" might end up being 19" thereby upsetting the location of bookstacks between columns as the space between them is shortened by 2".
Maximum flexibility is perhaps achieved by selecting the largest column grid compatible with economic considerations. This reduces the number of columns to a minimum and permits greater freedom in internal arrangements to meet changing needs. Dr. Ranganathan has stated that "so far as the external treatment is concerned, full weight may be given to the monumental but in regard to the inner layout and the utilization of inner space, it should be absolutely functional" (125).

6.11.2 Floor Loads

Swann says that this is "an extremely important question particularly in the case of multi-storey buildings used for storage .." (126). To provide adequate foundations and a sound building with strength to withstand the required loads in all parts is a matter for the professional expertise of the architect and his consultants. All that need be discussed here is the peculiar nature of library loads. Books stacked closely together are heavy, heavier than an inexperienced person realises. For instance, 'normal' books weight 25 lb to 30 lb per 3' run of a single shelf, but certain categories (bound periodicals and directories for instance) can weigh as much as 50 lb to 55 lb per 3' shelf run. If these are to be shelved several rows high, the result would be a very heavy floor load. In the national library, if compact storage is to be introduced into some areas as a later date, the load to be carried will be considerably increased; firms who make the equipment will be able to supply exact figures. However, it should be pointed out also, that if floors are made strong enough to install compact shelving
only in some particular areas, it carries the risk of wasted money if such shelving system does not have to be introduced. The Standards for Library Buildings in Malaysia (127) have recommended that all floors of library buildings should be capable of supporting a minimum of 150 lbs/sq ft live load to permit flexibility (so that book stacks can be located in any part of the building). For added safety, it suggested that a load bearing capacity of 180 lbs/sq ft should be incorporated in the design of the building, and for floors which have to bear the load of compact shelving, a minimum load bearing capacity of 200 lbs/sq ft was recommended. Beda Lim, the former librarian of the University of Malaysia, stated that the floor loading of 200 lbf/sq ft of the Postgraduate Centre and Law Libraries of the University of Malaysia, although was costly, provided extra safety and flexibility.

Faulker Brown on the other hand has said that:

In order to support either bookstacks or reader spaces, the maximum superimposed floor loading takes on the nature of a constant. It is currently 7 kN/m² (150 lb/ft²). There is no evidence to show that the floor loading figure of 9.5 kN/m² (200 lb/ft²) quoted in Bricks and Mortarboards (128) is necessary. Experiments that have taken place tend to show that 5.75 kN/m² (120 lb/ft²) live load might be enough. (129)

6.11.3 Extensions

However well planned the national library, eventually an increase in the floor space will be needed and extensions have to be undertaken. With reference to extensions how best to blend any
extension designs with the existing national library building? Gibson said that the most important practical thing to do in planning extension work is to ascertain where the existing entrances are as these would determine the pattern of user movement and layout(129). One must bear in mind that if space permits, a national library building should ideally expand horizontally rather than vertically, as the latter creates various problems. The most difficult of these is the need to keep the services of the national library in operation during the expansion which may take a year or more. The design of a structure for extra floors will increase the initial cost and the cost of the additional floors will inevitably be higher than the cost of erecting them at the initial stage. Therefore, one should try as far as possible to plan extensions where workmen and heavy equipment would have independent and direct access to the area without having to pass through entrances and thereby disturb the normal flow of library operations and readers.

One of the problems in library planning that needs to be pointed out is: How big? - now, and in the future? Life of the building is one factor (i.e. does one build for permanence, e.g. 100 years, or 40/50 years?) If it is decided to expand later, then, in the event of upward extension, the foundations to take the eventual extra weight must be built now. There is of course the risk of diseconomy should the extension not be built! If the extension is to be outward, the land must be acquired now (though it may be let out until actually needed). If one does not do this, the land may not be available when one wants to expand. In either
case, one must invest capital now, which will not be giving imme-
diate benefit.

6.11.4 Heavy Rains/Monsoons

An important consideration in designing national library
buildings in the tropical and sub-tropical regions which is
frequently overlooked, is the need for adequate protection against
heavy rain.

Not much research has been done and one would think that such
research would be useful for librarians in these regions, because
any form of moisture, leakage or condensation and dampness is a
major source causing deterioration of library materials. Dampness
in buildings is the architect's and builder's biggest headache(130)
and it is more so in the tropics. Broadly speaking dampness can
enter a building by one or more of the following ways:

i) Down into the building, for instance, a leaky roof.

ii) Up into the building from perhaps an ineffective wall damp-
proof course.

iii) Up into the building from an uninsulated solid floor.

iv) Through an uninsulated solid wall.

v) From condensation of a humid climate on cold walls(13).

In national libraries, the penetration of water into a
bookstack especially is likely to remain unobserved for sometime,
as stacks are not staffed for continuous periods and leakage may
occur directly over a section of shelving where its presence may
not be immediately apparent. This problem can perhaps be overcome
by making it the duty of the janitor or attendant to patrol
during and after heavy downpours. This can be done by specifying
this duty in the janitor's job-description. Adcock states that
dampness can also be overcome by "treating the wall with a water-
proofing compound" (e.g. the use of silicone based water repellents
which may be applied to any doubtful walls); and checks should
be made to see that "adequate guttering is provided to cope with
the volume of rainwater arriving from the roof"(132).

Hailstones also occur in the tropics and they have been
known to weigh 4 pounds. This thus must affect the design of roofs
in these regions. The roofs have to be not only weather resistant
but also strong and stable. Rain - 6 inches sometimes falling
in one hour very often cause floods in these regions. Here, the
choice of site at the planning stage is very important. It is
important that the national library is not built in a hollow or
any area where water will quickly gather. It is also important
that the level of the lowest shelves is raised above the ground
(8" to 12" would be sufficient)(133) as this would reduce possible
damage to library materials by floods. Protection from lightning
for all buildings is necessary in view of the frequency and ferocity
of tropic thunderstorms. Reducing distraction caused by the
noise of thunder is part of the acoustical treatment problem.

Particular attention is necessary in respect of roofs over
bookstacks especially flat roofs where the underside of the water-
proof membrane is likely to be a source of water collection during
the monsoons or rainy season in the tropics. Pitched roofs or ones
which slope to one direction only(134) (see also photographs 6.12
PHOTOGRAPH 6.12: Pitched roof, National Library of Guyana

and 6.13) is desirable for a building in these regions. It is also essential that stormwater should be thrown off far enough from the walls so that the lower part of the walls are not caked with mud - otherwise there will be the problem of algae growing on them.

It should also be noted that, if provision is made for cars to come to the front entrance, there needs to be a drive-in porch where people may alight without getting wet during rain (see photograph 6.14); and similarly there should be a large protective canopy at the goods entrance to the national library building, so that bags of mail and crates of books can be off-loaded under cover.

PHOTOGRAPH 6.14: A drive-in porch, National Library of Singapore
6.11.5 Prevailing Winds/Sandstorms

As observed earlier in Chapter 2, prevailing winds such as hurricanes, tornadoes, cyclones, the harmattan; and sandstorms such as the Sharqi or Sirocco and Khamsin, are all dangerous and damaging to buildings in the developing regions. They certainly pose a great problem to architects and builders in these regions. Good workmanship and design is thus necessary in national libraries erected in these regions. The buildings have to be strong and stable. Roofs particularly, have to be well secured as it has been known for a live-squall to peel off the aluminium roof of a large building, as easily as one peels an orange. Also, it should be pointed out that if the panes of glass are too large and the wind is very severe, glass breakage and its results may be serious.

The problem of dust can be very acute particularly just before a storm breaks or during a sandstorm. It is desirable when planning, to site the national library building with shelter from the prevailing wind if possible e.g. in the lea of a hillside and to provide a concrete or stone chipping path to the main entrance (135) and to provide that entrance with a porchway (see photograph 6.14). Where possible a wide lawn will considerably reduce the dust problem.

6.11.6 Earthquakes

Some countries in these regions such as Indonesia, the Philippines; certain parts of Africa and Latin America face the
problem of earthquakes. Large physical earth movements can
destroy buildings completely. Thus a great deal depends on the
building itself. It is suggested that architects in these regions
should find out possible ways of preventing damage to national
library buildings by earthquakes. The Malaysian Rubber Producers'
Research Association (MRPRA) initiated a programme of research
into the feasibility of using natural rubber structural bearings
as isolators for buildings in 1972. In 1977, they carried out
a major programme of model testing jointly with the University
of California(136). The first tests have proved successful and
Figure 6.11 shows the diagrammatic representation of how rubber

FIGURE 6.11: Diagrammatic Representation Showing how Resilient Rubber Mountings can Modify a Building's Response to Earthquakes

Response of normal building

Response of building on springs
mountings would be compounded and designed to last the life of the building or even longer. It may not be long before natural rubber bearings already proven in the isolation of buildings from noise and minor vibrations from other sources, will be in place to await their severest test - and this will contribute to the safety of thousands of people in many parts of the world.*

Architects in the developing regions should try to keep abreast with such developments and consult with the structural engineer, so that future national library buildings in particular and library buildings in general, can be a safer place for its occupants.

Conclusions

Not only do architects in these regions have to consider the conventional construction problems of flexibility and floor loads, they are also faced with climatic and non-climatic problems, which greatly affect design in these countries. Modular

* An international conference on Natural Rubber for Earthquake Protection of Buildings and Vibration Isolation sponsored by the Malaysian Rubber Research and Development Board (MRRDB) and United Nations Industrial Development Organisation (UNIDO); and organised by the Rubber Research Institute of Malaysia (RRIM) and International Society for Seismic Isolation (ISSI) held on 22-25 February 1982 in Kuala Lumpur, Malaysia produced some very interesting papers (137) which would be useful for architects. Unfortunately, only the abstracts of the papers are available. The proceedings have not yet been published and they will not be available for several months yet (138).
planning is one successful solution to the problem of flexibility and as for floor loads, in quoting to the structural engineer the maximum load likely to be required in the national library building, the architect can use the experience of many other library planners or standards available in the countries locally. As for the climatic and non-climatic problems, the land and the type of construction to be erected on it should be studied with reference to the effect, for example, of rainstorms, flooding, sandstorms, earthquakes etc, which may break into or damage the building. It should also be mentioned that in both plumbing and exterior features there should be no opportunity for water or other liquid to gather and become stagnant— to reduce mosquito breeding.

6.12 Materials

The problem of flexibility can now be satisfied following successful developments in modular planning. However, the major concern of the architect is not only to provide a building of maximum flexibility but also a building of maximum durability. But maximum durability means maximum expense generally. To build for permanence usually implies more expensive materials: this will have to be borne in mind.

The aesthetic appearance of finishes and furnishings is important for various reasons already mentioned (e.g. staff/reader comfort, inducement to work or study etc.) As with other facets, the economic factor may tend to dominate. The architect and librarian must also consider problems of maintenance (discussed
Building materials are subject to several sources of deterioration, including wear and tear, atmospheric and climatic conditions, insect, termites and fungal attack and accidental causes such as fire and/or deliberate damage such as vandalism.

Both the external and internal materials have to be considered.

6.12.1 External Materials

As far as possible, local materials should be used for the roofs, walls etc of the national library building, although not much scientific research has been done on local materials in relation to the climate, (insect/fungal attack problems) compared with the developed countries\(^{(139)}\). For instance, it would be assumed that timber, the one indigenous building material available in most of the developing regions, would be more widely used; this however is not the case due to prejudice, high cost and lack of technical knowledge in its proper use. A long-term research programme into the use of timber as a structural material is long overdue. Such problems as seasoning, termite control etc must be solved before the potentialities of this material, in what are admittedly difficult climatic conditions can be fully exploited. Plywood is readily available e.g. at Sapele (Southern Nigeria) there is one of the largest plywood factories in the world\(^{(140)}\). The *Architects Journal* (1957) states that the
reconstitution of timber into chipboard and laminates may be the best solution to the problem (141). This is not true, as experience has shown that chipboards tend to deteriorate rapidly with damp.

Reinforced concrete and precast sand/cement block work are the most widely used building materials at present. Steel is expensive and its use is confined to large span single-storey structures. Other materials such as bricks, cast iron, terra cotta, glazed tiles, floor tiles, terrazzo, roofing felts, roofing tiles, glass, plastics, linoleum, rubber, asphalts etc are also used. However, it is only comparatively recently that intensive scientific research has been done upon some of these materials in the tropics and not all of them are suitable for tropical and semi-tropical use.

Some countries in the developing regions, import most of their building materials. Singapore, for example, imports cement, reinforcement, wall tiles, metal windows, structural steelwork, all types of piping, drainage goods, paint etc, from abroad. Britain is the largest supplier followed by Japan (142). Materials supplied locally in this island are sand and syenitic granite aggregates, both of which are excellent, but checks to prevent the presence of an excess of organic matter are necessary.

Roofing materials remain one of the most difficult problems in terms of cost and climatic control. No single long-term indigenous materials exist. Most of the library buildings in these regions use reinforced concrete, aluminium, asbestos or corrugated steel roofs. A discussion on the problems of roof design is
outside the scope of this work, but it would be useful for architects in these regions to consult the work by Adil Mustafa Ahmad on 'Roofs in the hot dry tropics' (143). However, it should be noted that special precautions need to be taken for flat concrete roofs exposed to the tropical sunlight which causes contraction and expansion leading to cracks.

Decisions concerning the use of materials as far as the structure and exterior of a national library building are concerned, is not solely within the province of the architect as the librarian has an interest in a building being adequately weatherproof. The responsibility is really a joint one. Also, the librarian may interest himself in the interior, and if, for instance he has a cooperative architect, he may contribute to decisions concerning the use of certain types of materials for floor finishes and other furnishings.

6.12.2 Internal Materials

Internal materials should be selected for functional requirements, durability and appearance. The requirements for a reading room for example are for quiet, resilient, non-slip and durable surfaces, easy to maintain and economical to provide. The last factor (i.e. the cost factor) usually governs the type of material to be used as floor coverings in the national libraries of the developing regions. It is not possible to compare the costs of the different floor materials in the developing regions, but the architect can get an idea of approximate costs by using the typical price ranges given by Berkeley in the United States, in
Appendix IV. Most of the national libraries as already mentioned earlier, use vinyl tile, linoleum tile etc flooring. Although developments in floor tiles of this kind gives promise of long life and satisfactory service, the finish is less resilient and consequently noisier than rubber tiles. The quietest finish is undoubtedly carpet, but the problem of cost and maintenance usually prohibits the use in many reading rooms. The National Libraries in Nigeria and Sierra Leone use rubber tiles whilst the Malawi National Library Service uses carpet tiles which are easily replaceable for areas that wear rapidly. In some countries, the price of linoleum and parquet are about the same price. Parquet has a better appearance and if properly cured before use, could last as long as any other flooring. For instance, parquet used in the University Libraries in Thailand, are moisture conditioned first before properly glued to the floor (144). The method of laying the parquet and the pattern used is important if cracks are to be prevented. It is also a practice to cover parquet floors with polyurethane finish to protect the wood. One must bear in mind that such flooring is noisy and book trolleys have to have rubber wheels if they are to be used on such floorings, otherwise they will damage the floor.

In planning national library buildings, there seems to be a general tendency to request the provision of large open spaces. It is important to realise that these create a fire hazard requiring numbers of fire escape staircases and exits. The Fire Prevention Authorities might require compartmentation for isolation or segregation of fire risk and for fire spread control.
If such a requirement is imposed, demountable partitions would provide maximum flexibility in planning and design - and account should be taken of the desirability of sound insulation and durability. Care is needed in the selection of the type of demountable partitions used. If they are difficult to dismantle the result could be damaged floors and walls.

In selecting furniture and equipment for national libraries in the developing regions, what must be sought is the functional, durable, easy to clean and maintain, and as simple in design as is compatible with strength. A great many local timbers are suitable for the manufacture of furniture and shelving. Certain of these are only appropriate for the manufacture of small items such as stools, occasional tables, display cabinets, picture frames, umbrella racks, door handles; others may be used effectively for much larger items such as circulation desks, study carrels, book shelves, periodical display racks, tables, card catalogue cabinets, reading desks, wall panels and doors of all kind etc. However, such furniture is best employed in air-conditioned buildings where proper precautions against insects such as termites and borers have been taken. The National Library of Papua New Guinea uses low level timber shelving to house the reference collection. Timber is also used for the reference desk (as shown in photograph 8.2) and the ceilings (see photograph 6.15). All the countries concerned, or nearly all of them have locally grown timbers, many of which are insect and fungus proof or can be easily treated. In Malaysia, timbers commonly used for furniture making are rengas, buey, sepetir, angsana, teak and many
PHOTOGRAPH 6.15: Note the timber ceiling, National Library of Papua New Guinea

others (146). A great variety of wood such as Gewa, Garjan, Teak chambal, ordinary chambal and Kordi (147) are available in East Pakistan for use of shelving and similar equipment. In Guayana, a number of hardwoods such as Manni, Locust, Shibadan, Kabakalli and the semi-hard wood, Crabwood could be used for shelving and other library furniture (148). African timbers, such as sapele and afrormosia, already well used in British libraries, because of their rich warm appearance for furniture and fittings (149) should also be used in national libraries in the tropics.

For national libraries which are not air-conditioned and insect proofed, it is probably safest and most economical to install steel shelving and metal furniture as far as possible (150).
Many local manufacturers can produce good quality steel shelving and furniture of various colours. Although steel often rusts whenever it is scratched, chipped or roughened, it can be easily overpainted, and a properly baked on finish will help avoid the problem. Many of the national libraries in the developing regions normally adopt a mixture of local timber and steel or metal shelving in their libraries, as can be observed from the photographs accompanying this work.

Both wood and steel have relative advantages and disadvantages and librarians and architects have to study them and arrive at a compromise. (a) The advantages of wood are as follows:

i) Offers warmth of texture and richness;
ii) Flexibility can be achieved in fittings;
iii) Warmer than metal and less resonant with movable parts;
iv) Creates intimate attractive and comfortable atmosphere;
v) Woods such as teak, mahogany and the other woods mentioned earlier, are pest and insect resistant.

Its disadvantages are:

i) Inflammable;
ii) Non-seasoned wood tends to buckle;
iii) Inferior wood might be attacked by insects;
iv) Very few or no local furniture industry;
v) Cost is a problem in most developing countries;

(b) The advantages of steel are as follows:

i) Good for stack rooms;
ii) Offers greater strength for less thickness;
iii) Non-inflammable;
iv) Uniformity can be achieved in large installations;
v) Insect and rodentproof;

Its disadvantages however, are as follows:
i) Cannot absorb atmospheric moisture;
ii) Tends to rust at any point where it is left unpainted;
iii) Cost and availability factors are important in the developing countries;
iv) Metal fatigue may eventually occur.

Perhaps, before too long plastic (e.g. polyacetal which is a strong-stiff, rough material with good resistance to impact etc., a combination of which may enable it to replace metal) (151)(152) will be used for shelving. It is suggested that local library furnishing manufacturers study the possibility of using this material.

6.13 Maintenance

Maintenance is essential in all buildings to prevent physical and visual deterioration and it includes repairing of defects and damage, renewal of finishes, regular cleaning of materials to retain their appearance. Frequency of maintenance is a governing factor in the rate of deterioration and Rostron states that:

*If buildings were cleaned and serviced with as much diligence as cars, deterioration would be a less frequent occurrence.* (153)
A higher building has a greater external maintenance problem than a low building, because maintenance with ladders is usually restricted to about 30 ft and with special equipment to fifty ft. Thus, when designing a building, this factor should be borne in mind.

The two major internal maintenance problems are cleaning and redecoration. Book cleaning is necessary and is a major problem in national libraries in these regions. Experience has shown that books and other library materials free from dust have a longer life than those in dusty atmospheres. National libraries in the developing regions place great importance on book cleaning and they face greater problems than those in the developed countries since, because of their small budgets, they use only feather dusters and at best, the domestic type vacuum cleaners rather than central installations.

The selection of the building's materials should be based upon the appreciation of the functions of the national library. The librarian and architect should consider factors such as:

1) durability;
2) function (e.g. resilient flooring in reading rooms, fire resistant materials in bookstacks and smoking area, if any etc);
3) easy maintenance;
4) acoustics;
5) cost.
Conclusions

It is recommended that whenever possible, local materials should be used in a national library building. Acoustical material should be used in a national library, to help maintain an atmosphere conducive to study and work. Carpeting of floors in a national library is by far the most effective method of maintaining the atmosphere required in a national library. With present day production methods the cost of installing and even maintaining carpets or carpet tiles is much cheaper than the conventional vinyl tiles which are currently used in most of the national libraries in these regions. Durability of carpets today is another argument in their favour. With regard to other building materials, the choice should be based on durability coupled with ease and economy as major factors. This will realise a great deal of savings later.
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7.1 Assessment of Areas by Calculations/Standards, and Layout

It is essential to make assessments of the areas required for both the activities which will take place in the national library and also for the storage of library materials during the preliminary planning. There is no reliable exact method of assessment in existence, and the following points are intended simply as a reminder of some of the rooms or areas for which allowance has to be made. The linking of room areas for the architect's brief would need to clarify these rooms or areas for which public access is required and those for which only staff access is necessary.

It would be as well to take special note of what was said by Metcalf in 1965:

If experience over the last fifty years applies today (and there is no reason to believe it does not), it seems fair to say that in most library buildings, accommodation for the staff, tend to become inadequate before those for books or for readers. (1)

The problem of space provision is one of knowing now what activities, or change in scale of activities will emerge and need to be provided for in addition to what is known to require space now. It may be as simple as straightforward growth of work requiring there to be say space for a second or assistant secretary, or it may be more complex perhaps requiring another senior
professional with a quantity of supporting staff in a more or less self contained division. For the purpose of this study known activity only will be discussed. In reality, however, one would of course add on a margin for possible unforeseeable increase in staff or activities.

7.1.1 Areas for Possible Library Departments/Divisions

a) General administration:

This department/division is responsible in the broadest sense, for policy, finance and personnel. The general administration should provide space for the following:

i) Director General's office,
ii) Director's Office/Deputy Director's Office,
iii) Office of the Secretary,
iv) Conference/Board Room,
v) Assistant Directors' Offices,
vi) Offices for administrative and clerical personnel.

In the location of the Directors' Offices, care should be taken to place them away from the public areas. At the same time, some filtering process should be planned for so that visitors reach the offices of the Directors only through the secretarial and reception area. Areas (i), (ii), (iii) and (iv) should be located in a separate cluster and should be in a position more accessible to visitors, staff and the general public since staff in this group will be more concerned with the day to day affairs of the National Library. Adequate work space must be provided
for administrative and clerical staff. Space for despatch and delivery unit has also to be provided. Conference or Board Room space should be large enough as to permit other activities of an occasional nature to be held, for example, press conferences, small ceremonies for presentations or awards. This area should also be equipped for chart and map display as well as blackboard facilities.

b) **Acquisitions: accessioning and processing:**

In most of the developing countries, this department/division is responsible for the acquisition of the national library's holdings through purchase, gift and exchange. In some countries it is also responsible for processing: labelling, lettering and sometimes laminating and strengthening books and other library materials before they are ready for use by readers.* Thus, there should be space provision for the following:

i) Room for Head of Department/Division.

ii) Workroom space for staff - this should be so designed as to provide for the following distinct units:

a) Book acquisitions unit

b) Serials acquisitions unit

c) Gifts and exchange unit (including international exchange)

d) Foreign publications unit

* In Malaysia, space provision for a bindery has already been made in the National Archives building and is designed to function as a common service.
e) Special materials unit.
f) Processing unit (if bindery is not located in the same building).
g) Public library acquisition unit (e.g. Malaysia and Papua New Guinea)
h) Unpacking and sorting room
i) Shelving for unprocessed materials, taking care that separate stock space is provided for (f)
j) Shelving for materials for exchange or distribution
k) Shelving for bibliographical and acquisition tools
l) Fumigation chamber/room.

An important point to note is that a large amount of shelving space is required for accessioning in national libraries, and the librarian must be careful not to underestimate this need, especially if future expansion is predicted. It should be borne in mind that the shelving required is related to 'processing' throughout. Ideally the number of staff is also related to this (i.e. the amount of space they require). If the staff is too small then more shelving is required to accommodate backlogs. The quantity and rate of accessions will affect the size of the room or the area allocated for this activity.

The service entrance of the national library, with loading/unloading bays should lead directly to the Acquisitions Department/Division, which should preferably be located at the ground floor level.
c) **Cataloguing and classification:**

Generally speaking, this division in the developing regions is responsible for the cataloguing and classification of all library materials prior to such materials being made available for use. Space provision should be made for the following:

i) Room for Head of Department/Division.

ii) Workroom space for staff - this should be so designed as to provide for the following distinct units:

a) Descriptive cataloguing unit

b) Classification/subject headings unit

c) Card production/cum printing unit

d) National Union Catalogue unit

e) Shelving for unprocessed materials

f) Shelving for cataloguing and processing tools

g) Shelving for processed materials to be physically separated perhaps as follows:

i) National library materials

ii) Public library materials

pending their despatch to their final locations.

The space to be allocated for cataloguing and classification will depend on whether the two processes are to be carried out together or separately. Again, size allocated to this activity will depend on the quantity to be catalogued and classified and the time taken.

* If such a project is worth being carried out, see Chapter 5, Section
One has to bear in mind also that the largest single item of furniture could be the staff catalogue. The physical form of this, e.g. card or microfiche will affect the space needs in the cataloguing room. The traffic route of each cataloguer should also be carefully worked out. The architect will probably know about the recommended allocation of space per office worker but it must be emphasised that cataloguers need space not only to work on the books in hand, but also for the large number of bibliographical tools they use in their work. G Thompson suggests that "14 m² (150 sq ft) per cataloguer is a reasonable overall figure"(2).

The growing tendency for bibliographical tools to be produced in microform (especially microfiche) will offer immediate space savings. However, the quantity and positioning of necessary reading machines will be critical.

Ideally, this department/division needs to be located fairly close to the public catalogues. Its location in fairly close proximity to the Acquisitions Department/Division would also be advantageous. An additional requirement would be for it to have direct access to the service entrance area and the loading bays in order to facilitate the movement of processed materials to premises occupied by the Public Library Service (if it is located in a different building). The card production cum printing unit, would involve work with noisy machines and should therefore be located separately though in close proximity, with appropriate acoustical treatment to contain the noise element. Location of this unit in
the basement of the building is advisable, but will involve a reasonably close lift access.

d) National bibliography:

This department/division is responsible for the procurement and registration of library materials received under legal deposit law of the respective developing countries, the publication of the National Bibliography and the development of the international library based information system. Thus, space provision should be made for the following:

i) Room for Head Department/Division

ii) Workroom for staff - this should be so designed as to provide for instance, the following:

a) Acquisition and registration unit - this will cover receipt and sorting of materials

b) Serials recording and claims unit - this will cover collation and preparations for binding

c) Descriptive cataloguing unit

d) Classification unit

e) Publications unit

f) ISDS unit

g) ISBN unit

h) CIP unit

i) AGRIS unit

j) GIP unit

k) Stack space for unprocessed materials taking care that
separate stack space is provided for (f), (g), (h) and (i). Since several of the Department's/Division's routines are similar to those of the Acquisitions and the Cataloguing and Classification Departments/Divisions, a location as proximate to these Departments/Divisions as possible would be advantageous. Provision should also be made for the later development of the Publications Unit into a Printing and Publications Department/Division serving the needs of the whole national library.

It should be borne in mind that this is the present situation in the National Library of Malaysia. However, it is suggested that when the new building is constructed, the acquisition work of the Acquisitions and this department (i.e. Section 7.1.1(b) and (d) respectively) could be combined. Books could be directed to (b), with a record card sent to (d). This would result in staff economy.

e) Reference;

This Department/Division is generally responsible for ensuring access and use of the National Library's total collection. It provides a reference enquiry service, a document reproduction (photocopying and Xeroxing) service, a current indexing service and a current awareness service. It also provides facilities for the consultation and use of different categories of materials, notably periodicals, newspapers, maps, etc. There should therefore be space provision for the following:

i) Room for Head of Department/Division
ii) Workroom space for staff - this should be so designed as to provide for instance, the following distinct units:
   a) Current indexing service
   b) Current awareness service
   c) General bibliographic compilation unit
   d) Inter-library loan unit

iii) Service areas for readers:
   a) Catalogue hall (including space for the National Union Catalogue)
   b) Stack retrieval service area to receive and process requests for materials from stack
   c) Reprography service area
   d) Entrance hall
   e) Display/exhibition area
   f) Reference enquiry area

iv) Special reading rooms for:
   a) Periodicals/newspapers
   b) Maps
   c) Audio-visual materials e.g. photographs, drawings, microform etc.
   d) Music
   e) Rare books and manuscripts
   f) Special collections

v) General collection and adjacent reading areas

vi) Reference collection and adjacent reading areas

vii) Room for computer terminals. Although it has been observed earlier (Chapter 3) that computers are hardly used in these
regions: i.e. there may be no need yet for such a room, but the space could be used for other purposes temporarily. Surely staff and readers 'hands on' service will come into being within the life of the building?

vi) Special study carrels and group seminar rooms at all levels (except basement) properly treated acoustically.

ix) Closed access stack equipped with the latest mechanical devices such as conveyor belts, pneumatic tubes etc, where budgets permit, to enable the swift retrieval and storage of stack material. Design and arrangements should permit readers to obtain stack retrieval service irrespective of floor level they may be on.

Except for (i), (ii) and (viii), all other areas are accessible to the public, and may be located on different floors provided that the following allocation of workroom space and specific collections is provided for:

a) (ii)(a), (b) and (d) should be collocated with (iii)(c) and with iv(a)

b) (ii)(c), (iii)(a), and (vi) should be collocated.

c) (iii)(b) and (ix) should be collocated.

It should be noted that by virtue of its very functions and national responsibilities, there exists no standard method to determine the percentage or proportion of the total potential user population for which reading and other facilities should be provided in national libraries. Such calculation will have to be determined based on projections made on existing usage patterns.
While a forecast of the potential user population may be attempted, such an attempt should only be considered as a rough and ready measure.

Types of reading and other user facilities as found in academic and public libraries should be allowed for. Difficulties would exist however in calculating the quantity and proportion of each of the reading and user facilities provided for. This could best be determined by existing demands and the experience of other national libraries.

f) Training:

This department/division is responsible for in-service training of non-professional as well as professional staff. In some national libraries (e.g. in Singapore) courses in library studies are also being carried out. Space provision in this department/division should include the following:

i) Room for Head of Department/Division

ii) Workroom for staff

iii) Seminar/lecture room or a classroom for trainees in attendance.

It would be advantageous to locate this department/division away from the main reading areas so that readers will not be distracted by trainees before and after the lectures. Such a room if placed near the main staff rest areas, could also be made available to the staff for occasional social functions. Blackboard, projectors, screens can be free standing. The lecture/seminar room
should also be well insulated so that both the noise inside and outside can be contained.

g) *Extension service:*

This department/division is usually responsible for matters connected with library planning and development in the country. It is an area not normally accessible to the public. The following space provision would be required:

i) Room for Head of Department/Division

ii) Workroom space for staff.

This area should be designed as an operations room with facilities for chart and map display. The gathering and compilation of statistics, the drawing up of standards of service as well as evaluation and assessment (as mentioned earlier in Chapter 5) is done by this department/division. Consultancy services generally provided by the National Library are the responsibility of this department/division too. Adequate room should be provided and future expansion should be allowed for this department/division to be developed into perhaps a Planning, Research and Evaluation Department of the National Library.

h) *Public library (lending service):*

This is perhaps the most recent service development in national libraries in the developing regions. If this service is provided in the national library building or outside the premises, the following space provision should be provided:
i) Head of Department/Division

ii) Service areas for readers:
   a) Circulation counter
   b) Lending collection
   c) Adult reading area
   d) Children's reading area

iii) Stacks/shelving space for books and other library materials just returned; stacks for lending collection on open access and stacks (preferably low shelving) for children's books on open access.

iv) An auditorium with a stage for teenagers to carry out stage plays (see photograph 7.1) and for other activities such as film shows etc.

PHOTOGRAPH 7.1: The stage of the auditorium at Marine Parade Branch, National Library of Singapore
v) Space also for story telling (see photograph 6.8 on page 279 where maximum use of space (i.e. the use of the open courtyard) has resulted in a successful method of carrying out this service).

It should be noted that access to the circulation counter should be from the main lobby and traffic to and from ii(b), (c) and (d) must pass (a). Supervision for ii(b) should be possible from ii(a) and should be co-located with ii(c) and (d). Sizes required will determine practically of this.

It should be noted however, that if this department/division is built outside the premises, more staff would be needed (e.g. different security staff, would be needed to look after the two buildings, and also janitors and clerical staff). But since this service is a distinct component of the national library, perhaps it is best to house it at separate premises, despite the planning implications involved. Whether this division in the Papua New Guinea is working better than if it was housed separately it is still too early to say, since the building has been in service for only three years.

7.1.1.1 Areas for library service functions

National libraries offer a variety of services. Some may be common to all national libraries, others may be restricted to some national libraries in some countries, while a few may be unique in themselves as a result of local demand. Services offered by a national library are dictated by many factors. They should reflect
the needs of the local situation. Determination of space for
library services and other facilities is indeed a difficult
task as there exists a great deal of variation in the types of
services offered by national libraries in the developing regions;
the nature and numbers of users differ, educational level of the
readers is not standard etc. Financial support available also
determines the nature and extent of the services to be provided.
One solution perhaps in determining this space is to allocate
the percentage of the total building space for library services.

Library service function areas are meant to include, among
others, the following:*

i) Entrance hall

ii) Display area

iii) Reception

iv) Circulation counter

v) Bag storage areas

vi) Lobby

vii) Catalogue hall

viii) Conference/meeting rooms

ix) Seminar rooms

x) Auditorium

xi) Information/reference counter

xii) Trolley park

xiii) Staff rest room/area

xiv) Prayer room (for countries like Iran, Iraq, Malaysia, Pakistan

and other Muslim countries)

* Note that some of the services have already been mentioned
in the various departments/divisions stated in Section 7.1.1
xv) Photocopying machines, etc.

The Library Building Standards for Malaysia have suggested that the following formula be adopted in calculating areas for library service functions.

Area for library service function = 20 percent of the sum total area required for:

i) collections

ii) reading facilities

iii) library staff (3).

Having determined the total space for library services, adequate allocation will have to be made to each of the service function areas that the library would have. It should be noted that it is much more difficult to assess public areas such as catalogue halls, because catalogues vary in size and in the rate of growth. Therefore, it is difficult to set a standard. However one can state as a result of recorded experience, that the area allowed for each vertical tier of the catalogue drawers in ranges, must be twice the area of the drawers and surface for consultants if a card form is chosen (see Chapter 6, Section 6.2).

7.1.2 Areas for Building Service Functions

When one plans a building, a certain percentage of space of the building is normally allocated for its service function and structures which, amongst others, include the following:

i) Air conditioning plant room

ii) Air handling units
iii) Switch room  
iv) Lift/escalator  
v) Distribution room  
vI) Generator/pump room  
viI) Telecommunication facility  
viii) Wall space  
ix) Staircases  
x) Toilets  
xi) Corridors, etc  

The Malaysian standards have calculated these non-assignable areas as follows:

Area for building service function = 20 percent of the sum of:  
  i) Area for collections  
  ii) Area for reading  
  iii) Area for library staff  
  iv) Area for library service function(4).  

It must be borne in mind that these recommendations (Section 7.1.1.1 and 7.1.2) are very general and should not be applied uncritically. Standards available locally should be studied. It should also be remembered that certain features are relatively permanent, for example, lift shafts, staircases, toilet facilities, etc. Their location, once determined, is likely to be permanent. Expensive mistakes must be avoided.
7.1.3 Areas for Library Staff

Staff will need working space/office space in relation to the quantity of work depending on:

i) the existing bookstock and its growth; and

ii) readers and their demands.

There is no common standard on the working space per head of staff. G Thompson states that the working space per head of staff in general work areas should generally be between 75 sq ft and 100 sq ft; staff largely occupied at single desks (e.g. typists) will need only 75 sq ft to 85 sq ft, but other specialists need 100 sq ft to 125 sq ft, with more for senior staff because they will be consulted by their colleagues. Individual offices will be from 100 sq ft to 300 sq ft, according to function\(^5\). The Malaysian Standards, made use of the Malaysian Economic Planning Unit (EPU)'s recommendations on spaces for office accommodation with an addition of 20 sq ft more for library staff. Office space area for typists and clerks is 110 sq ft, for semi-professional staff is 140 sq ft, for professional staff is 170 sq ft and for senior staff, between 200-300 sq ft\(^6\).

Here too, the recommendations should not be applied uncritically. Local standards should be studied. For total working space for staff, one will have to know the quantity of staff as a consequence of increase in book stock or reader demands.
7.1.4 Areas for Storage of Library Materials

Calculation of space required for library materials depends very much on the type of stacks used, their height, arrangement and spaces between them.

The storage capability for:

a) Books: Much has been discussed in Chapter 6, Section 6.2. The economy of space that may be achieved by differing forms of shelving design and layout has been comprehensively detailed in Keyes Metcalf's major text\(^7\) and this must be any planner's initial starting point. Based on various standard norms (e.g. free standing double sided stacks, shelves of a standard 3 ft length; a minimum 4'6" aisle etc.), the Malaysian Standards recommends that space for books and periodicals be calculated using the formulae as indicated below:

Space for book storage

i) Books: 12 volumes per sq ft
ii) Bound journals: 8 volumes per sq ft
iii) Display of periodicals: 1 title per sq ft

(8)

It must be emphasised however, that in calculating the total storage capacity needed for the new national library building, the attempt must be made to measure the intake of books and other library materials per year. For example, the current intake at the British Reference Division needs approximately 7 miles of shelving per annum\(^9\).
b) **Microfilm and Films:** As with books, it would help if one knows the intake of such items per year. The difficulty of course lies in ascertaining the storage space for future expansion because of the various types of microfilms and films.

c) **Maps:** As mentioned earlier, their varying size and methods of presentation pose problems with these items. It is difficult to ascertain the actual quantity of which type of maps would be received by the national library but it would help if one can assess the average intake of such items per year.

The Malaysian Standards recommends that storage for microfilms, maps and other non-book materials* may be calculated using the following formulae:

**Space for non-book materials:**

Non-book materials: 10% of the sum total area used for books and bound journals.

It should be borne in mind that this recommendation should not be applied uncritically because this 10 percent of the book storage space allocated to non-book materials is based on the present rate of acquisition of such material today. Other developing countries will have to study the current rate of acquisition of such materials in their respective countries. However, the percentage should naturally be reviewed in the light of any foreseeable future trend where acquisitions of such material would increase considerably.

* Other non-book materials include audio and video recordings, computer tapes and discs, microforms, films, photographs, plans, charts, kits, slides and transparencies.
d) **Election campaign posters:** Apart from other posters which the National Library of Malaysia receives, this is a current responsibility of the National Library of Malaysia and it serves to illustrate a planning problem. How can the quantity of this material to come in be assessed in relation to the life of the building? Elections in the country occur at least every five years and a possible formulae for the total space needed for this material \(Z\) could be:

\[
Z = x + \left( \frac{1}{F} \times y \text{ sq ft} \right):
\]

where 
- \(x\) is the space needed for material already in stock,
- \(L\) is the life in years of the building,
- \(F\) the frequency of elections, and
- \(y\) the space required for each election's material produced.

It may be necessary to add on a margin in case some elections take place before the normal five years interval.

e) **Incunabula and rare books:** Apart from measuring the intake of such items, one also has to consider other factors. For instance, for the very rare item, it may mean that space will have to be provided for the reader to use the rarity at one side of a table and a member of staff to supervise, at the other side.

### 7.1.5 Areas for Reading and Other Facilities

Regarding adequate space for readers, one is faced with the fact that there are no convenient guidelines specially applicable in National Libraries. If one looks at the provision of other
libraries, as given below:

i) Australia: 911 seats  
ii) Canada: 162 seats  
iii) Japan: 1304 seats  
iv) Nigeria: 1764 seats  
v) Singapore: 360 seats  
vi) West Berlin: 1200 seats

they offer little guidance too. One may ask for instance, whether in Nigeria, as a national network of libraries develops, the 1764 seats will really be used by readers. Again, one may ask whether in West Berlin, a city with other good library resources, the 1200 seats in the huge new building (built in 1976?) will be used; or is this figure caused by the dream of a future unification of the city?

Perhaps the questions that should be asked by national libraries in the developing regions are: to what extent should the National Library supplement the lack of seating in other libraries? Is there a standard that can be developed in respect of seating in national libraries in general? These are questions difficult to answer. Clearly the standard should be based on its clientele both existing and potential. In the developing regions, the National Library's clientele today consists largely of young adults and upper secondary school students. There is also a growing use of the library by University students and staff, Government officers and others. It should be noted that if the National Library provides a lending service, then less seating may need to be provided. But
since in most of the developing countries, the collections of the national libraries are meant for reference on the premises only, considerable provision will have to be made for seating if convenience for users of the collections is to be maximised. Another planning problem which should be considered is, if the National Library is constructed in phases, it will be necessary to determine the extent of seating to be accommodated in each phase. Since the collections of the national libraries in the developing regions are of modest proportions (see Chapter 4), it might be advisable to provide a greater proportion of the seating in the first phase of the building.

The types of reader and other user facilities provided in the national libraries should be as those found in the academic and public libraries. Difficulties would arise however in calculating the quantity and proportion of each of the reader and user facilities provided for. Perhaps, this could best be determined by existing demands and the experience of other national libraries. Space requirements would have to be considered for instance, the following facilities:

i) Four seater table
ii) Two seater table
iii) Single seater table
iv) Carrel (open and closed carrels)
v) Group study room/seminar rooms
vi) Individual listening or viewing booths
vii) Facilities for using typewriters etc
It should be noted that in (i) and (ii) one should bear in mind that readers in close proximity may distract each other (see photograph 7.2 as example for the former, unless they have a screen in the middle as in photograph 7.3). Maximum privacy (iv) (as in closed carrels) requires most space. Perhaps, the open carrel offers the best compromise (economical of space too). Also, note how echelon formation of tables enables more seats and tables to be provided in the space.

In the book 'Library Buildings of Britain and Europe', A Thomp­son gave recommendations for the size of tables as follows:

- 0.76 m x 0.46 m
- 2'6" x 1'6" (Wheeler and Githens)
- 0.76 m x 0.53 m
- 2'6" x 1'9" (Galvin and Van Buren)
- 0.90 m x 0.56 m (Monsieur Bleton)

One assumes that the generally acceptable minimum table sur­face for each reader is now 0.90 m x 0.60 m. However, Metcalf gives 0.84 m as a minimum depth. The former is by no means extra­vagant.

Peter Havard-Williams(10) suggested that the area taken up by the readers chair should be 0.90 m x 0.75 m (3' x 2'6"). This figure is realistic and reasonable, as it will allow the reader not only to sit up to the table, but will also allow him to move easily from his chair and study sitting back holding a book away from the table. This means that, if one can agree on 0.90 m x 0.60 m (3' x 2') for the table surface, the total minimum required area for one reading place will be: 0.9 m x (0.6 + 0.75) or 3' x (2' + 2'6") = 1.22 m³ (13.5 sq ft).
PHOTOGRAPH 7.2: An example of a four seater table, Loughborough University of Technology Library

PHOTOGRAPH 7.3: An example of a four seater table with a screen in the middle, Loughborough University of Technology library
This figure however, does not allow for aisles around the reading desks. For example, minor aisles should be 0.90 m (3') wide, major aisles should be 1.35 m (4'6''). The customary allowance for readers is $2.3 \text{ m}^2$ (20-30 sq ft) with $2.3 \text{ m}^2$ (25 sq ft) as the generally acceptable average.

As for carrels, Peter Havard-Williams suggests\(^{(11)}\) that a table of 1225 mm x 600 mm (4' x 2') with a total cubicle area of 1525 mm x 1225 mm (5' x 4') is acceptable. This, with a 50 percent allowance for aisle space, is the equivalent of Metcalf's suggested $2.8 \text{ m}^2$ (30 ft\(^2\)) overall allocation. For a full discussion of reader seating and especially carrel alternatives, see Metcalf\(^{(12)}\).

Group reading rooms and seminar rooms can be furnished flexibly with groups of standard sized (600 mm x 900 mm, 2' x 3') tables placed together to form larger units according to need.

As for chair heights: they need little comment because they are a common factor in public buildings and the architect will have his own source of standards. However, Van Buren\(^{(13)}\) says they should be 430 mm (17") high, Peter Havard-Williams\(^{(14)}\) says 460 mm (18"); naturally there will be different requirements in the children's reading area (public library (lending services) department), according to the age group using them.

Thus, one finds that published standards can be used as a guide in assessing space needs. Interest and demand for library standards have long been characteristics of librarianship in all countries (and the developing regions are no exception). During the past decade, and in a few instances earlier, statements of
standards have been developed for most types of libraries in most parts of the world. Standards in the developing countries however are not consistent. When national libraries in this region are planned it should be borne in mind when devising standards that they need to be revised from time to time and can if pitched too low in the first place, constitute a hindrance and a drag for years to come. However, standards pushed too far ahead or too soon, will not be taken seriously.

7.2 Architect/Librarian Relationship

Working relations between the architect and the librarian must be good, if satisfactory buildings are to be provided\(^\text{(15)}\). While the librarian is not an architect, and the architect is not a librarian\(^\text{(16)}\) it is possible for an attractive and functional library building to result from a meaningful interaction between the librarian and the architect. But real cooperation between librarians and architects is rare and calls for comment. A suitable example is in the Foreword by Frederick P Keppel, President of the Carnegie Corporation of New York, to Wheeler, J L and Githens, A M American Public Library Building. As most librarians and some architects know, Wheeler is a librarian, Githens an architect. This is what Keppel has to say:

*Such close teamwork on the part of different professions is happily not unique, but it is sufficiently rare to have attracted the attention of a foundation traditionally interested in the American public library ... (17)*
Those interested in not only public library but other types of library (e.g. National Library etc) in the developing regions, would echo and endorse Keppel's comment. Good librarianship made effective by good architecture is what one wants.

The importance of understanding the functional characteristics of library buildings has been stated by John Henderson:

Before the form or design can be developed, the function must be described by the librarian and understood by the architect. The building is an expression of the function and service of the library; every detail and every emphasis is dominated by this fact. (18)

One knows what can happen when there is lack of liaison between the architect and the librarian especially in the case of new buildings. For example, when Stephen Parker was working on the Botswana National Library, he arrived to find that the architect had already had the main issue desk designed, and built of brick. Being quite unsatisfactory anyway, the only solution was to shrug philosophically and knock it down and start all over again (19). This meant that both time and money had been wasted unnecessarily.

Experts in most fields are notoriously self-opinionated and stubborn and inclined to resent interference and look upon outsiders with ideas as meddling fools (20). However, to achieve a successful building, both the architect and the librarian must learn to appreciate that the other is an intelligent person and has views which are of value and each should be prepared to listen to the other's views, especially when strongly held. Perhaps the
ideal combination of how to achieve a satisfactory solution to
the complex problems of this specialist building is:

*An architect who sees the librarian's viewpoint,*
*a librarian who knows exactly what is wanted to
ensure adequate public services, and a public
spirited library committee with vision and wisdom
enough to give the experts a fair chance.* (21)

According to Martha Boaz, in planning the library building, the
librarian is responsible for the following:

i) A knowledge of the community which the library will service.

ii) An organised programme and detailed analysis of library ser­
vice, based on the needs and interests of the community:
   a) List of services to be performed
   b) List of facilities required to give these services

iii) An acquaintance with recent developments in library architecture.
Visits are very important in this study area.

iv) A knowledge of building costs. These costs should be based on
comparisons which are derived from equivalent factors: type
of building material (brick, steel, wood), total cost (does
it include site, architect's fee, furniture and equipment,
etc?)

v) A projected building plan (in cooperation with the architect)
which will meet the community needs for the present and for
at least 20 years in the future. This, in general, involves
planning for interior arrangements and services which include:
   a) Space for books and other materials
   b) Space for readers
   c) Space for work areas and staff
d) Equipment
e) Interrelationships between areas

vi) A willingness to check specifications in plans and to visit the building during construction. The librarian should guide, correlate, and participate in the plans in all stages of the planning and building. 

The architect on the other hand is responsible for the following:

i) Helping to plan the interior of the building

ii) Designing the exterior

iii) Considering materials and methods of construction

iv) Preparing plans and specifications

v) Furnishing estimates of costs

vi) Advertising for bids

vii) Helping with preparation of the contract

viii) Checking to see that the building meets all legal and local building requirements

ix) Supervising construction (instruction to contractor should come from the architect, not the librarian)

x) Advising on any problems which may arise after the building has been completed.

And both the librarian and the architect should:

i) Contribute from his special knowledge to the best plan which can be developed.

ii) Go together to visit other libraries; and
iii) Work cooperatively together in every phase of the planning and development of the building and in every case strive for understanding of each other's problems (24).

The relationship between clients and architects is perhaps different in the developing countries from those of the developed countries. Often in developing countries clients are uncertain of what they want or should want. On the other hand, sometimes, clients are very influential and architects are forced to incorporate their decisions into designs. Hijas Kasturi, an architect in Malaysia has this to say of his experience with librarians in the country:

*Not only may he have preconceived ideas about the (library) system to be used, but he may also have his own ideas on the design and aesthetic aspects of the building when actually this is the architect's responsibility.* (25)

In these countries too, changes of personnel are often frequent, which very often results in shifts of emphasis and this makes the job of the architect more difficult. Then again, the clients may not require architects to follow a project from start to finish and thus the implementation of the project may be delegated to others. Architects may sometimes get caught in between disagreements amongst clients. Perhaps, the only solution to this problem is for the architect to try and minimise the effects of the problems by providing flexibility and interchangeability in his design. An example is a project in Thailand, which had to pass through the hands of numerous authorities before getting to the architect. The presence of a University architect who summed up the whole position and liaised with the authorities help to
remove the confusion and thus smoothed the difficulties.

7.3 Selection of Site

National libraries have been located in urban areas, traditionally, in the centre of cultural activities, usually in the capital city. In some cases, the national library inherited a prominent city building (e.g. a church etc, like that of the Biblioteca Nacional of Mexico*), erected for an entirely different purpose and thus imposed restrictions upon its development. Then again, even when the library occupied a building designed for it, the changing development of librarianship and the changing city patterns combined to create difficult problems. It has been reported by Unesco in: National Libraries: their problems and prospects, that the "only acceptable site for the national library is a central one ..."(26).

The choice of central site has both its disadvantages and advantages. Its disadvantages are as follows:

i) Land values in urban areas are higher and the cost of a site sufficiently large to allow future expansions will be extremely high.

ii) Storage demands have increased proportionately with the increased output of printed materials and national libraries already

* The former church of St Augustine was used to house the Biblioteca Nacional of Mexico from 1867 until it moved to the new building in 1979 located in the campus of the Centro Cultural Universitario. The former, however, still houses the reading room and all manuscripts and rare book collection (27).
face or will face problems of extra accommodation for library materials.

iii) Noise levels are constantly increasing in city areas especially in the developing regions (e.g. South-east Asian region, the Latin American region), due to the transport and increasing traffic density. It will be increasingly difficult to provide the degree of sound insulation essential for research reading.

iv) It is an established fact, that deterioration of library materials increases in urban areas (see Chapter 6). In addition to this deterioration of materials, building maintenance costs are increased, because of the need of repainting.

The advantages are:

i) Research workers in particular, and users in general, have more ready access to the materials.

ii) The central site is suitable to hold cultural activities such as exhibitions, lectures etc.

iii) Convenient for staff to travel to work.

A convincing case can be made to locate future national libraries in country areas, provided that an efficient public transport system is available between the city centre and the library. This is not possible in most countries in the developing regions because of the fact that the transport system outside the city areas is poor. (Perhaps, this factor will be different in 10 to 20 years time). The advantages of such a site are:
i) A lower background noise level which is suitable for research study;

ii) Less atmospheric pollution, thus suitable for storage of library materials;

iii) Horizontal expansion is possible;

iv) Cost of land is cheaper;

v) Landscaping can form an attractive environment for the building;

vi) Parking space for staff and visitors is readily available.

Whether the site chosen is located in the city or the country, the following factors should be taken into consideration in evaluating a site for the national library.

i) The chosen site should be appropriate to the objective and function of the library

ii) The site for the library building should, whenever possible, be where the largest percentage of the users existing and potential, have access to the library frequently in the normal pursuit of their activities. The site should also have pedestrian access; be convenient to public transportation and have conveniently available parking facilities.

iii) An expansion of the library building is one of the crucial problems in deciding on a library site. The size of the site chosen should not only cater for the immediate needs of the building but also allow for future growth.

iv) The orientation of the building on the site should, as far as possible, be ideal for all seasons, climates and other conditions.
v) Soil, ground and environmental conditions often affecting cost of building will need careful study.

7.4 Future Expansion

Growth in any national or other research library is inevitable. It could be the result of increased collections, an increase in the reading facilities demanded or an increase in the services provided and of the library staff. The problem is perhaps paramount in national libraries, because a large part of the acquisitions are received from legal deposit. The rate of accessions (as mentioned earlier in Section 6.1) is thus the dominant factor in the need for expansion. [Plans for growth should be made at the time when the site is selected so that the chosen site will allow for additions to the existing building in the future.]

How much space should be provided for initially, and what length of period should lapse before the first phase of expansion starts? Or at what stage is it uneconomical to continue extending on old buildings and when should a new building be considered? There is no universal answer to these questions - it depends on the demands made on the individual national libraries - and where the pressures are. Some of these questions may be answered by market surveys. Partial solutions could perhaps result by controlling the collection by means of changing objectives; by weeding and micro-filming (it must be mentioned however, that this is difficult for national libraries). A permanent solution cannot be achieved in national libraries because unlike university and other types of
libraries which can by cooperation, afford to specialise in their acquisitions policies, the national library cannot. (For example, in North America where the applications of modern technology have made increased cooperation possible and the collection of one library is made accessible to users to another, libraries are able to afford to specialise in their acquisitions policies, under such conditions).

Hume states that:

*the library should be planned to give service for about 25 years before extensions are required, this being a figure carefully arrived at by city planners, architects and librarians ...* (28)

In view of the uncertainty of building costs and future library requirements it is normal to plan a national library building in two or more phases. This may take the form of either making future additions to the structure or providing space for non-library purposes for an initial period so that the space could subsequently revert to library use when required.

As mentioned earlier in Chapter 6, extensions can be effected both horizontally and vertically. The latter is more difficult than the former and also it raises the initial cost of the building because of the fact that it needs heavier columns and foundations. An acceptable solution to this problem is the lift-slab method of construction. However, there are other considerations to be borne in mind, for instance, waterproofing (in tropical and sub-tropical climates with heavy downpours like that experienced in the developing regions) could be a problem when the roofing is removed.
Expansion can be simplified by considering permanent features such as staircases, lifts, toilets etc in relation to the ultimate requirements.

Apart from vertical extensions and horizontal extensions, the other solution to the problem of expansion is secondary storage (see Chapter 6).

The choice of vertical or horizontal extensions depend on such factors as:

i) the available site;
ii) local regulations;
iii) load-bearing capacity of the soil.

When planning a national library building in order to make provision for future growth, attention should be given to the following issues:

i) To plan the layout of the elements in the initial unit in such a way that when it is expanded the extension of the book and reader facilities will not be interrupted by structural elements that would probably confuse the reader as he goes from the old part of the building to the new one.

ii) To plan service facilities such as air-conditioning etc so that additional facilities in the expanded unit will balance the original structure.

iii) To keep traffic lanes for the readers and staff direct and easily followed.

iv) To have a clear concept of the ultimate size of building/
buildings so that plans can be made for a time when the building cannot be enlarged further.

vi) Avoid vertical expansion if possible, for reasons already mentioned earlier.

7.5 **Flexibility**

The architect has to provide the maximum degree of flexibility in a national library building to meet the developments in library techniques. This is emphasised by MacDonald when he said that:

> What we really need is some kind of rubber structure floating on air and the roof held up by sky hooks—obviously a thing that is beyond present technological resources. However, current resources do permit building more adaptably than has ever been achieved, and that without the loss of any essential and without increase in cost. (29)

Modular planning offers a high degree of flexibility and there is evidence that librarians from developing regions regard this type of construction as the most suitable of library requirements. (As shown in Figure 6.10 in Chapter 6. See also Appendix I).

**Summary**

Assessment of areas required for activities of the national library, areas required for building service functions, areas for library staff, areas for storage of library materials and areas for reading facilities, etc should be made during the preliminary planning. There is no reliable exact method of assessment in existence but library planners can make use of published standards.
available overseas and locally, to arrive at a reasonable compromise. "Few architects know very much about librarians and far fewer librarians know anything about architectural planning"(30). But, to make the national library building a functional as well as an aesthetic success, the cooperation and involvement between the librarian and the architect in the design process is absolutely essential. Given two competent professionals, the result should be a national library satisfactory from both viewpoints. As for siting, both the advantages and disadvantages of siting the national library on a central site should be studied. Apart from this, other factors should also be taken into consideration (see page 357). As for future expansion, it is inevitable in all library buildings especially a national library buildings which receives the great bulk of its collection from legal deposit. Whenever possible, vertical expansion should be avoided. Finally, it cannot be denied that modular planning offers a high degree of flexibility essential in a national library building to meet future developments.
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CHAPTER 8
THE DESIGN CRITERIA OF PUBLIC AREAS: RECOMMENDATIONS

8.1 Entrance Hall

The entrance hall is an important area in all public buildings because it is the major area for public circulation and gives visitors their initial impression of the building. It is primarily used to enable one to adjust to being indoors, as a place to shake off rain and dirt from shoes, to check readers in and out and as a distribution point for readers and others. In national libraries, the entrance halls have an important function to perform: to provide direction for such a complex building. For instance it can be used to display, plan, map or model (see photograph 8.1) to guide readers/potential readers. Sometimes, if the entrance hall is large enough, it may contain suitable exhibition space. However, exhibition space may demand its own quiet environment to enable visitors to concentrate on what is displayed e.g. for reading accompanying interpretive description of exhibition etc. Thus, in national library buildings, the entrance hall can perform the dual function of a focal point of public circulation and a foyer space to display guides etc and other activities.

8.1.1 Functional and Environmental Requirements

Functional requirements:

i) It should be located as near to the ground level as possible.
PHOTOGRAPH 8.1: The entrance hall, National Library of Papua New Guinea
ii) Supervision and control systems adopted at the entrance halls should be adequate in national libraries, both to avoid 'unannounced visitors' and to avoid stealing of books (turnstiles, electronic devices or security officers are methods usually used in national libraries in the developing regions).

iii) Sometimes, the entrance hall also houses the main circulation desk (e.g. National Library of Thailand) and even the reference desk as well - as shown in photograph 8.1(b).

PHOTOGRAPH 8.1(b): The entrance hall which also houses the main circulation desk, National Library of Thailand
iv) It should serve as a foyer to the ancillary public areas such as lecture theatre, exhibition areas/rooms etc.

v) Public phone booths (see photograph on page 178) and toilets should as far as possible, be located off the entrance hall to remove a sense of noise and traffic from the reading area of the national library buildings.

vi) Space should also be allotted at the entrance hall to provide for display and notices and for readers awaiting attention.

vii) Toilets if possible should be located inside and not near the entrance hall, because they take up extremely valuable floor space and also because they will attract people to use the library as a 'public convenience' area instead of using the library for library purposes.

Environmental requirements:

i) Overall lighting level of 300 lux is sufficient in this area.

ii) Control over humidity is not essential in this area. Therefore, systems of air-conditioning and ventilation can be governed by economic considerations. For example, fans (wall or ceiling models) or individual air-conditioner units are sufficient to install in this area.

iii) Careful planning is essential to avoid draughts during the monsoon seasons (tropics) or when the temperature drops as in some Latin American and Middle Eastern countries, if it is to provide satisfactory conditions in which staff work (refer to
(iii) of the functional requirements).

iv) Because the entrance hall is usually noisy, it is desirable to have reading areas insulated from it.

v) Acoustic ceiling tiles will reduce the noise level in this area and the architect's advice should be sought for the flooring which demands a hard wearing surface to avoid undue noise from this source.

vi) If carpet tiles or industrial felt is used in this area, it is desirable that the right colour be chosen for easy maintenance. For instance, if the area surrounding the building is sandy, then the colour chosen should match the colour of the sand outside, so that the sand brought in by the readers will not leave an obvious stain/mark on the flooring used.

8.2 Exhibition Areas/Rooms

The report by Unesco(1) draws attention to the importance of exhibition areas in national libraries. National libraries have greater responsibility to exhibit valuable items from the collections than other types of libraries. Exhibitions may include manuscript, incunabula, recent acquisitions etc. Ideally, they should be changed at regular intervals to maintain general interest and give a representative cross-section of the collections. It should be noted that each display item the librarian needs in the exhibition areas/rooms, should be indicated in the primary brief and elaborated in the secondary brief. If would be simple for the architect to provide the framework for changeable displays for
exhibits, if he knows what the librarian has in mind.

8.2.1 Functional and Environmental Requirements

Functional requirements:

i) Adequate control is essential in the exhibition areas.

ii) Floor area should as far as possible be free from fixed obstructions.

iii) To attract visitors who do not come to the national library to do research work, the exhibition area/room should be located adjacent to the entrance hall so as to be readily accessible.

iv) The location should seek to simplify supervision and discourage any unauthorised wandering about the national library building.

Environmental requirements:

i) Although natural illumination is essential in all public areas, direct sunlight must be screened in this area to protect the exhibits. Ceiling lighting would be satisfactory, but provision may be necessary for supplementary lighting on the exhibits. Care should be taken to ventilate cases to avoid overheating from illumination. Outside lighting is also essential at entrances.

iii) Requirements for air-conditioning, ventilation and acoustics are similar to the entrance halls.
8.3 a) Reference Room/Area

Reference rooms are preferably placed on the entrance level where space is at a premium, close to the main entrance lobby and not far from the staff of the processing department. It should be noted that if they are larger than necessary, they are likely to be used by users simply looking for a place to read, as well as by those wanting reference information. This room/area almost always gives an impression of restlessness and tends to be noisy, although the use of acoustical materials in the ceiling and flooring, can be used to absorb sound. Because of its restlessness, a reference room is far from being an ideal location for a general reading area. It should also be remembered that the necessary conversation between readers and the reference librarians tends to be disturbing. In selecting the best location for the reference desk, this factor should be kept in mind. Photograph 8.2 shows the reference desk at the National Library of Papua New Guinea. Photograph 8.3 shows the reference study area at the same library.

Xerography and photocopy machines should be provided in this area for the use of research workers and other readers. Reference books are usually thicker than others as well as deeper. There is less reason to provide space for any large amount of growth in the reference collection than elsewhere, as older volumes can frequently be shifted to the stack when new ones are acquired.

b) Rare Books and Manuscripts Room

Rare books and incunabula as well as manuscripts should be kept in a reading room for rare books. Very often, manuscripts can be
PHOTOGRAPH 8.2: Reference desk, National Library of Papua New Guinea

PHOTOGRAPH 8.3: The reference study area, National Library of Papua New Guinea
served in the rare book room. Because of their value, they should be given preferential treatment. Suitable atmospheric conditions are also important (see Chapter 6, Section 6.2.10). Air-conditioning is the best method of obtaining the desired degree of temperature and humidity control, and the rare book/manuscripts room should always be air-conditioned even when the other areas are ventilated by other methods. This is a practice in the libraries of the developing regions. For example, although the National Museum Library of Sri Lanka is not air-conditioned, the rare books room is air-conditioned. If the rare books and manuscripts are housed in a reading room, they should not be shelved in open access and should be locked in glass cases or cupboards when not in use. In general, both these kinds of materials are not heavily used, thus not much provision needs to be made for seating accommodation, but special supervision of the materials as they stand on the shelves or locked in cases and cupboards and as they are used, is desirable. It should also be noted that if these materials are stored separately from the rare book reading area, then the stacks should preferably be located as close as possible to the rare book reading area. This can sometimes be done on the same floor, sometimes directly above or below, as at the National Library of Medicine. Ready access for library staff between the two floors by stair or lift or both is desirable. A laboratory (2) perhaps (e.g. to carry out research on paper analysis etc) would be useful as that available in the National Library of Mexico (3). It should be located near the bindery.
c) **Special collections rooms:**

Sometimes a room is provided in national libraries in the developing regions for special collections, as for example, the Papua New Guinea collection (see photographs 8.4 and 8.5), the Malaysiana, the Philippiniana and Nigeriana collections, in the respective National Libraries of those countries. This room may be located adjacent to the exhibition area or room. They present the same problems as rare books and manuscripts. Thus, control is essential and air-conditioning is to be highly recommended.

d) **Periodicals room:**

Adequate display space for current issues of periodicals, including newspapers are required in periodicals reading rooms. Larger tables are also required for consultation. Some national libraries prefer to have the bound back files of their periodicals served by the same staff who control the current numbers. Therefore, they should be shelved close at hand, on the same level (often a difficult arrangement) or perhaps on the level directly above or below with a stairway making convenient connection between the two. A factor that should also be taken into consideration is that, since periodicals are frequently consulted with printed books, close communication is desirable between these reading rooms unless, the national library is subject departmentalised (e.g. National Library of the Phillipines) in which case, periodicals could be with the subject departments concerned. In arranging for the seating accommodation for periodical reading, it should be borne in mind
PHOTOGRAPH 8.4: PNG collection: reading/public area, National Library of Papua New Guinea

PHOTOGRAPH 8.5: PNG collection: reading/public area, National Library of Papua New Guinea
that peace, quiet and comfort are desirable and that the research worker's purpose is quite different for instance, from that of readers who are consulting the standard reference works.

Back files of newspapers are generally produced today on microfilm (although bound volumes of newspapers are also kept in some national libraries in the developing regions). For these reading machines as those shown in photograph 8.6, will be required with special seating and should preferably be kept in the microfilm or microform room (if there is one).

PHOTOGRAPH 8.6: An example of microfiche reading machine available in the developing countries

e) Map reading room:

Since the requirements for consultation of maps poses entirely different problems from books and periodicals (as mentioned earlier in Chapter 6), a separate reading room for such items is desirable
especially in relation to the quantity likely to be in the possession of national libraries. Since transportation of sheet maps for instance, is difficult, there should be facilities for use as near as possible to their storage location. In selecting a suitable location for a map room, it should be borne in mind that service by staff members may be needed.

Large flat tables with linoleum tops to prevent damage to maps is essential. The space area required per reader should be bigger than that required for normal reading rooms, as it will have to accommodate the circulation area, large tables, issue desk and some reference shelving and cabinets. At present the number of readers provided for need not be large because the use of maps is generally not large, but a margin has to be provided as more maps might be used in the future because this is probably the only library where researchers can consult maps in their research.

f) Reading room for photographs, drawings:

A reading room for such items is desirable in a national library. The consultation problem is similar to that of maps, although consultation in glass cases (lockable) may have to be ensured, to prevent damage. Requirement of perhaps, no ink, or biros to be used etc may be essential. Large tables, in addition to the normal reading tables would also be essential.

g) Music reading room:

Many national libraries provide special accommodation for their music collections, for a variety of reasons. For instance, music
material, such as music scores and sheet music, tends to be outsize and requires special equipment. It should be mentioned however, that music collections in national libraries in the developing regions is generally restricted to books and periodicals and perhaps to a lesser extent, musical scores and sheet music. The situation may not change for the next ten years but there is hope that national libraries will be required under legal deposit, to collect musical recordings, tape recordings etc. When this happens, future national library buildings in the developing regions will require listening rooms or listening booths. A more economical method (however, less satisfactory method of listening) is to have seats at large tables provided with earphones, so that individual listeners can listen to the records without disturbing other readers and/or listeners. Seating accommodation for the use of music books may be perhaps a little larger than for regular books, because of the somewhat larger average size of the material but this expansion is not really essential.

Reading room requirements are similar to other reading rooms involving books and periodicals. If listening rooms/booths are to be built, they should be sound proofed (walls of rooms for music should preferably also not be at right angles to aid sound insulation) and some form of ventilation (e.g. fans) be installed. Glazed doors would be most suitable for supervision purposes.

Some libraries with large music collections provide music rooms i.e. places where solo music at least may be performed.
e.g. in the USA and Europe a piano is sometimes provided.

h) **Reading rooms:**

Because of the rapid expansion of recorded knowledge especially in the fields of science and technology, problems are created for all major libraries, particularly national libraries. The possible solution is to break up the collections into subject departments; and this means that future national libraries erected may have to include several reading rooms. Although most of the national libraries in the developing regions are not subject departmentalized, some of the national libraries have separate reading rooms for some special collections. For example, the Philippiniana and Asia Division Reading room of the National Library of the Philippines (see photograph 8.7). Library materials can also be decentralized according to the nature of the material but this will create problems for the research worker using more than one type of material. The architect is faced with the problem of integrating the several reading rooms while retaining a certain degree of independence. Large libraries in the developed countries; the Library of Congress annexe and the Bodleian Library, Oxford to be precise, overcame this problem by having a central stack, surrounded by reading rooms. Multi-storeynational library buildings offer a simple alternative, with reading rooms one above the other and adjacent stacks.

Reading facilities required in the modern national libraries include group study (e.g. seminar or discussion room or rooms), four seater table (preferably with a screen in the middle for
PHOTOGRAPH 8.7: The Philippiniana and Asia Reading Room, National Library of the Philippines
greater privacy), carrels for individual research workers, lockable carrels (open carrels save space and provide easier supervision), single seater table, and some comfortable informal seating for instance by the windows or in part of the reading rooms to give readers the opportunity to relax, away from the traditional study atmosphere(4) of the national library. Photograph 8.8 shows as example of informal seating found in the reading areas at the Loughborough University of Technology library. After looking at the photographs throughout this work, one feature that can be observed is that they mostly lack a variety of reading facilities. The reading area in the Biblioteca Nacional of Peru for example clearly illustrates this in photograph 8.8(b). This is something that should be borne in mind when planning future national library buildings.

8.3.1 Functional and Environmental Requirements

Functional requirements:

i) Ideally, they should be located immediately adjacent to the catalogue halls.

ii) Adequate control and supervision is essential for the special reading rooms (e.g. rare book, special collection, periodical etc reading room) as well as the general reading rooms and the catalogue hall/halls.

iii) Communication should be provided between all reading rooms.

iv) A subject specialist should be available at the desk in all the reading rooms.
PHOTOGRAPH 8.8: Informal seating, Loughborough University of Technology Library

PHOTOGRAPH 8.8(b): The reading area, Biblioteca Nacional of Peru
v) Most forms of demountable screens or low bookcases would serve for sub-division where and when necessary provided that supervision could be maintained.

vi) The space allotted should be large enough to allow a margin for some extra seating to be introduced should occasion demand.

vii) An allowance of 30 sq ft (although 25 sq ft is generally acceptable) per reader place in the general reading area is essential for preliminary planning. Allow for minor aisle around the reading desks measuring 3 ft (0.90 cm) and major aisle measuring 4'6" (1.35m) wide.

viii) It is suggested that an allowance of 35-40 sq ft per reader be provided for the rare books, manuscripts and special collection room. An area of 40 sq ft per reader of the periodical/newspaper room should be adequate. A larger area (preferably 50 sq ft, per reader) is essential for the map room.

ix) Closed carrels should be provided for research workers who want to consult certain materials or who want quiet study. An area of 50 sq ft per reader would be adequate. It should be borne in mind however that open carrels save space and provide greater supervision.

x) Special booths (e.g. listening booths etc) should be provided off the reading area for research workers who want to consult such items as records or other audio recordings. Ideally, they should have glazed doors for supervision and should be soundproof. Like (ix) an area of 50 sq ft per
reader would be adequate.

xi) It should be stressed that valuable materials e.g. rare books, incunabula, manuscripts etc should not be shelved in open access and may need to be kept in locked glass cases or cupboards when not in use. These will need to be properly ventilated.

xii) Strict supervision is essential on the valuable materials both when they are in use and when they are not in use.

xiii) It is essential to place reading machines where an attendant is available to load it and help the reader who is not mechanically minded and requires assistance.

xiv) As stated in Chapter 7, unlike in other types of libraries, it is difficult to assess seating requirements for national libraries, as there are no guidelines applicable. However, calculations should be based on its clientele both existing and potential.

Environmental requirements:

i) General lighting of approximately 30 lumens per sq ft or 300 lux is adequate. Although natural lighting is essential, it may require glare control.

ii) To prevent glare, table tops should have matt finish.

iii) Whenever reading machines are used, it is essential that they should not be placed so that the sun or a bright light of any kind will shine on the reading surface. On the other hand, there is no need for a darkened room. Almost any convenient space without an excess of light is satisfactory.
iv) The colour scheme adopted in the various reading rooms should complement the lighting system. Violent contrasts should be avoided.

v) Although air-conditioning would be ideal (and is essential in the rare books, manuscripts and special collections room), the system used can be governed by economic considerations. For example, single air-conditioning units or fans (ceiling, wall or table top models) can be used. In any case, zoned air-conditioning is recommended.

vi) Since quiet conditions are essential in these rooms, all noisy items should be segregated in soundproof rooms.

vii) Acoustic ceiling, resilient flooring, rubber buffers on metal furniture and doors, rubber type wheels for trolleys used on vinyl tiled floorings etc are all important requirements.

viii) If there is a choice, reading rooms should be sited away from the external noise. Trees around the premises may provide a good means of sound insulation.

8.4 Studies/Seminar or Lecture/Auditorium

a) In national libraries, studies or seminar rooms, where several readers can work together on group projects involving discussions, are an essential requirement. Accommodation for 10-15 readers is recommended at 25 sq ft (2.3 m²) per reader. Ordinary readers could use the room/rooms when not required for group purposes.
If studies or seminar rooms do not have books (i.e. they are simply used for group discussions, meetings, lectures etc) they waste space. Unless used a considerable number of hours each week, they tend to be a luxury. However, they represent 'expansion points' for use for other library purposes later, particularly if their walls can be removed easily.

b) An auditorium is sometimes built in a national library (e.g. the National Library of Singapore, see photograph 7.1). Notice the sloping floor of the auditorium in the photograph. Each national library must study carefully whether this room is really necessary. Although auditoriums usually are built with a sloping floor which necessitates space on two floor levels, this requirement is justified if films are to be shown or each member of the audience is to be able to see a speaker. If a national library cannot have everything - which is the more important has to be answered. For example, shall there be an auditorium seating up to 100 persons, or shelving for 15,000 additional volumes or accommodation for perhaps 40 more readers?

In Singapore, the National Library uses its auditorium which has a simple stage, some spotlights, a basic proscenium and a public address system; for young adults to perform plays and other activities (see photograph showing young adults getting the stage ready for a play).
8.4.1 Functional and Environmental Requirements

Functional requirements:

i) If there is more than one study or seminar room, built in a multi-storey building, they should be located on different floors. For the ideal location of the seminar room for trainees, see Chapter 7, Section 7.1.1(f).

ii) When the rooms are not used for meetings, group discussions, lectures etc ordinary readers should be allowed to use the rooms.

iii) When the rooms are used at hours that differ from regular library hours, proper control is essential.

iv) Usage of knock-out materials or demountable walls could be used so that use for other library purposes is possible at a future date though account must also be taken of acoustic requirements.

v) The rooms should be furnished flexibly with groups of standard sized 2' x 3' tables placed together to form larger units according to need.

vi) Blackboards, projectors, screens etc should be provided.

vii) A seating of between 200-300 persons (depending on the size of national library building) provided for, in the auditorium should be adequate. Ideally, the room could, when necessary, be divided into two rooms (to occupy 100-150 seats in each room, respectively).

viii) A stage, a basic proscenium and a public address system should be provided in the auditorium for plays to be staged - and for other similar community activities.
 ix) Changing rooms and washing facilities should also be provided in the auditorium if plays, etc are to be produced. Architects and librarians have to study carefully how many and how big the changings should be.

x) The auditorium may require greater ceiling heights than would otherwise be necessary.

Environmental requirements:

i) Apart from the general lighting of 300 lux which is adequate for the studies or seminar rooms, the auditorium also requires suitable number of spotlights necessary for stage productions.

ii) The ventilation system used in these rooms can be governed by economic considerations (e.g. single air-conditioning units or fans). If air-conditioning is provided, single air-conditioning units are preferred so that they can be switched off when not in use.

iii) The studies or seminar rooms and the auditorium should be designed with proper acoustic treatment. For example, acoustic ceilings, walls and resilient floorings should be provided in these rooms to contain the noises both inside and outside the rooms.

iv) Preferably, these rooms should be sited away from the quiet zone of the national library building, so that readers engaged in serious study will not be distracted by the noises caused by lectures, discussions, or play rehearsals in the seminar rooms or the auditorium respectively.
8.5 Catalogue Rooms/Halls

Catalogue rooms/halls form the focal point of library activities, because this is where readers locate materials housed in the national library. National libraries in the developing regions may have one catalogue hall or there may be separate catalogues for special collections. Although the catalogue is self-sufficient for experienced readers, others, less experienced will require staff advice. Therefore, a service or reader's advisor's desk should be located here to meet this need. The catalogue today can be in the traditional card form or in microform (e.g. microfiche). However, the majority of the national libraries in the developing regions have the former, and it will be sometime before the latter is adopted fully in these regions. If microform is adopted, it will offer immediate space savings. Photograph 8.9 shows the catalogue hall at the Biblioteca Nacional of Peru.

PHOTOGRAPH 8.9: The Catalogue hall, Biblioteca Nacional of Peru
8.4.1 Functional and Environmental Requirements

**Functional requirements:**

i) Ideally, they should be located adjacent to the reading rooms without a change of level.

ii) Control and supervision is desirable in this area to prevent removal of cards and also to provide assistance to inexperienced readers.

iii) It is generally accepted that the area allowed for each vertical tier of the catalogue drawers in ranges should be twice the area of the drawers and surface for consultants if the card form is adopted.

iv) Also, if a card catalogue is used, standing height tables are essential for consulting the cards. However, if microfiche is adopted, machines can be placed on normal height tables for consultation. Comfortable chairs for consultation and 'taking notes' would be essential.

v) Bibliographical activities should be located adjacent to this room/hall, so that the service or reader's advisor's desk can act as bibliographical information centre.

vi) Future expansion should be clearly envisaged in the initial planning stage. It will be related to the rate of acquisition of library materials.

**Environmental requirements:**

1) Minimum glare is required and general lighting would be suitable.
ii) The requirements for ventilation and air-conditioning is similar to that of the reading rooms.

ii) The activity in this area involves conversation and it can be classed as a 'semi-noisy area'. The use of acoustic materials and resilient flooring will reduce the noise level. If metal cabinets are used (this is however not usual; most national libraries in the developing regions adopt timber cabinets for card catalogues), they should be fitted with rubber buffers.

8.6 Prayer Rooms

It should be mentioned that until today, this provision has been ignored by most libraries in the Muslim developing countries. However, with constant requests by both staff and readers to conduct their prayers in the library, it is felt that it is necessary for libraries, especially national libraries (with research workers who spend many hours carrying out their researches in the national libraries) to provide this service for both the staff and readers who want to conduct part of the 'five times a day' prayers. Perhaps, it should also be mentioned that presently, national libraries in the Muslim developing countries such as Iraq, Pakistan and Malaysia etc meet the requests of readers and staff who wish to carry out their prayers by allowing them to use one of the rooms not normally allowed to the public. This creates problems because readers are seen loitering outside staff areas that are not normally allowed to the public. This also adds to security problems.
8.6.1 Functional and Environmental Requirements

Functional requirements:

i) Because the Islamic religion ordains that men and women cannot pray together, two rooms have to be provided (one for men only and the other for women only), or perhaps a more economical method is to have one large room with a partition in the middle (any opaque material e.g. thick curtains or demountable walls can be used). Separate entrances for men and women would be preferable.

ii) Preferably, washing facilities should be provided in the room/rooms because readers and staff who wish to conduct their prayers will have to clean their faces, hands, feet etc first. Otherwise, the room/s should be located not far from the toilets.

iii) Space should be provided in the rooms for staff and readers to put their shoes and socks (as prayers have to be undertaken barefooted).

iv) The room/rooms should be able to accommodate 30 people* (including both sexes) praying at one time. A room with an approximate area of 300 sq ft should be adequate. This calculation is based on the average size of the prayer mat** (4' x 2') used by each person with about 20% margin allowed for future expansion.

* It should be pointed out that the time lapse between the five prayers is not close so there is no danger of congestion or flow of people at any one time.

** It should be pointed out that space or 'aisle' in between each prayer mat is unnecessary, as they can be placed next to each other.
v) Constant checks by attendants/security guards is essential to ensure that the use of the room/rooms is not abused. (i.e. the rooms should be used solely for praying and not for instance, for discussions or sleeping).

**Environmental requirements:**

i) General lighting would be suitable.

ii) The ventilation system used in these rooms should be similar to that of the studies/seminar rooms; so that they can be switched off over the weekends.

iii) Acoustic treatment should be provided in these rooms to contain the noises both inside and outside.

iv) Preferably, these rooms should be sited in the semi-noisy zone, so that the atmosphere will not distract the persons conducting their prayers, and at the same time will not distract readers undertaking serious study, whenever the former get in and out of the prayer room/rooms.

8.7 **Coffee Lounge and Non-Assignable Areas Available to Readers**

a) **Coffee lounge:**

A feature that is still uncommon in libraries in these regions is the coffee lounge. However, they are desirable in most contemporary national library buildings in the developing countries. Ideally, they should provide drink machines (both hot and cold), so that readers may have a drink without having to leave the building. However it should be stressed that readers should not be allowed to bring food in the room as pieces of food left on
floorings, or chairs may attract vermin (rats or mice etc). The environment of this room should be one in which a friend talks to a somewhat larger than usual group of neighbours or fellow readers. The room should also be attractive and comfortable. If smoking* is allowed at all in the building, this is the room where this could be provided, although various precautions to prevent fire hazards will have to be undertaken and they may demand space.

b) Toilets:

Toilets are considered as non-assignable areas. However, they are important and their size and location should be carefully worked out(5).

8.7.1 Functional and Environmental Requirements

Functional requirements:

i) Ideally, the coffee lounge should be located near the entrance hall or the noisy area and away from the reading areas. If possible toilets should be made available on all floors of the building, with perhaps the exception of the entrance level (see Section 8.1.1(vii)), so that traffic can be reduced back and forth from one level to another. They should also be placed in the same location, in the centre or in the same corner of each floor, so that they will be easily found and the cost of plumbing will be reduced. They are what

* National libraries completely air-conditioned for preservation of materials may bar smoking entirely because of the deleterious effect of smoke and ashes (see Chapter 6).
architects call 'the services core' of the building and economy tends to dictate their location (similar to the one mentioned above).

ii) Comfortable semi-lounge* chairs and coffee tables should be provided in the coffee lounge. If smoking is permitted at all in the building, ash trays should be provided on the coffee tables and even smoking urns in the coffee lounge.

iii) Also, if smoking is permitted, the material used for the semi lounge chairs and curtains should be carefully chosen. For example, plastic foam upholstery material such as polyurethane, which has a high burning characteristic should be avoided.

iv) Space should be provided for drink machines in the coffee lounge.

v) Potted plants could be placed in the room to provide a comfortable atmosphere.

vi) The size of the room will depend on the amount of space the national library can allot for this purpose. The use of knock out materials for the walls of this area would mean that it could be removed easily and used for other library purposes at a later time.

Environmental requirements:

1) General lighting of 200-300 lux would be adequate.

* Lounge chairs which are expensive, use an unnecessarily large amount of floor space and encourage slumber.
ii) Ventilation in the coffee lounge depends very much on whether smoking is permitted. If smoking is allowed, the atmosphere in the room will tend to become thick. A frequent change of air is necessary. Arrangements should therefore be made to have the air extracted from the room and not recirculated (especially if the ventilation and cooling system used in the national library building is air-conditioning). However, if smoking is not permitted, then the requirement for a ventilation system to be used should be similar to the requirements in the studies/seminar rooms and prayer room/rooms.

iii) Because this area involves conversation the use of acoustic materials and resilience flooring will reduce the noise level.

Summary

Various public areas (such as the entrance hall/display area, exhibition area, the catalogue halls/rooms etc) and the different types of rooms and reading areas (such as reference room, rare books and manuscript room, periodicals room and reading rooms for the other types of library material, studies/seminar rooms, auditorium, coffee lounge and prayer room/rooms (for Muslim countries only), should be made available to the users. Their size and location should all be worked out in the planning stage and both their functional as well as environmental requirements should be studied in order to determine suitable conditions as well as location for the respective rooms/areas. It should be
emphasised that some rooms (e.g. studies/seminar rooms etc) provided for non-library services could, when the need arises, be used for other library purposes, if the development of the national library services warrants.
REFERENCES

1. UNESCO, National libraries: their problems and prospects, Op cit, p 42.


9.1 Processing Departments

Broadly speaking, processing includes shipping and receiving, order and acquisition work of various kinds, handling gifts and exchanges, cataloguing (both descriptive and subject), classification, preparation for binding (e.g. for serials) and the typing and other clerical work associated with these activities.

Materials on receipt, are sent for accessioning, cataloguing and classifying, and then shelved in appropriate rooms or areas. Some items are sent to be shelved on open-access while others are sent to the stacks to be shelved in closed-access.

9.1.1 Functional and Environmental Requirements

Functional requirements:

i) Whenever possible (choice of site is important in this respect), these departments should be located adjacent to the public catalogue hall/room, without any change of floor level.

ii) The acquisition department should preferably be placed on the same level as the shipping room or the unpacking and sorting unit. When it cannot be placed on the same level, at least it should be located as close as possible, and if other considerations make it preferable to place the shipping room on
the floor below for instance, then a service elevator is essential.

iii) When the processing departments and the stack areas cannot be located on the same level, lifts become essential.

iv) In the acquisition as well as the other departments that can be lumped under 'processing', preferably, an area of 125 sq ft for each person should be provided with an extra 50 sq ft for the person in charge (i.e. the head of each department). It should however be emphasised that if 150 sq ft per person can be made available, instead of 125 sq ft, it should be provided, as a generous space area in these departments is advantageous because there will be much more margin if the staff increases in size more rapidly than anticipated.

v) Shelves and table space for library materials and equipment are essential.

vi) Space in these rooms must be allowed for book trolleys to be moved between staff positions without risk of collision.

vii) The need for potential future expansion should be considered and a margin of extra space added accordingly.

Environmental requirements:

i) Since the tasks involved in these departments are tedious and tiring, the lighting system adopted should present a minimum amount of glare.

ii) Table tops should be similar to those in the reading rooms to prevent reflection.
iii) The ventilation and air-conditioning system adopted should be in accordance with economic considerations (single air-conditioner units or fans would be sufficient).

iv) Since preparation for the shelves work and typing tend to be noisy in the cataloguing department, a separate acoustically treated room may be useful.

v) In the other departments where typewriters are in constant use, they should also preferably be screened off.

vi) Generally, noise in the processing departments must be controlled because it interferes with concentration. To reduce internal noise level in these departments, acoustic ceilings and resilient floorings are recommended.

vii) Size could mean these rooms could be subjected to 'office landscaping' treatment for (iv), (v) and (vi).

9.2 Administrative Office

In national libraries in the developing regions, the most important offices are those of the Director-General, Director, Deputy-Directors and Assistant Directors. Generally, they are planned as a self-contained group with an office or offices for the secretarial staff, waiting space for visitors and a private toilet and washroom. The Director-General's room is frequently used for small meetings of heads of departments to discuss policy and management matters. A table and comfortable seats for about twelve people should be provided. Accommodation for the general clerical personnel (including accounts staff and typists) form part of the administrative group.
A room for conference purposes, located near the offices of the Director-General and Director in the administrative suite is desirable. It may also serve as a board room, for staff conferences etc.

Heads of Departments of national libraries, have their offices in the individual departments concerned for convenience and efficiency. However, in some cases, for instance, in the Reference Department, if a library officer is available at the reference desk to deal with readers' service, then it is possible to locate the Head of the Reference Department's office away from the reference area to where the public have no direct access; exception being made where there are problems which the library officer at the Readers' Service desk is unable to solve.

9.2.1 Functional and Environmental Requirements

Functional requirements:

i) Office areas should be designed for maximum flexibility to accommodate changing functions which time may bring.

ii) In national libraries, offices of the Director-General, Director and Deputy Director should be designed as a self-contained unit within the administrative suit of offices.

iii) Care should be taken that the offices of the above (ii) be placed away from the public areas. However, at the same time, some filtering process should be planned so that visitors reach the offices of the Directors only through the secretarial and reception area.
iv) The Director-General's office should be between 350-400 sq ft (or even more in a large national library building) because it also has to accommodate the table and chairs necessary for Heads' meetings, apart from his own desk and chair, visitors' chairs and shelving.

v) The Deputy Director's office should be about 200 sq ft. Apart from his own desk and chair as well as shelves or book cases, some comfortable lounge chairs and coffee table should be provided, enough for 3-4 visitors.

vi) An area of 150 sq ft to 200 sq ft should be sufficient for offices of the Assistant Directors.

vii) An area of 1000 sq ft should be sufficient for the conference room which may also serve as a board room, to hold press conferences, small ceremonies for presentations or awards etc. The room should also be equipped for chart and map display as well as blackboard facilities.

viii) The Secretary's office may also be a waiting room. A space of 125 sq ft for each secretary (if more than one secretary is provided), with additional space for a reception room should be provided. Space for filing and supply cupboards is essential in this area.

ix) Where large clerical offices are open plan for greater flexibility, furniture and particularly, bookcases or any demountable partitions can be arranged to give each member of staff some feeling of privacy and prevent visual and aural distraction.
x) Office areas should be zoned according to their noise tolerance and located away from the noisy part of the site if possible.

xi) Future expansion should be considered early during the planning stage and a margin allowed.

Environmental requirements:

i) Natural lighting is essential in all office areas. In these latitudes, north facing windows are recommended, if possible. Lighting of minimum glare is required in the general offices.

ii) Ventilation and air-conditioning systems to be adopted is similar to the reading rooms.

iii) The noise level should be reduced to a minimum in private offices. Acoustic ceilings and resilient floorings are required in the office areas, especially in the typing area, to reduce the noise level at the source.

9.3 Staff Rest Room/Lounge and Locker Accommodations

The staff should, if possible, be provided with a locker, a rest room/lounge space, and a kitchenette; the latter is particularly important if there are no suitable lunch facilities in the neighbourhood. Ideally, adequate toilet facilities for both sexes, separate from the public, and, a place to eat one's lunch and to relax during the lunch hours and morning and afternoon coffee breaks (if these are the custom of the national library of the respective developing country) should be provided.
9.3.1 Functional and Environmental Requirements

Functional requirements:

i) It is essential that staff amenities (such as the staff rest room, lounge, kitchenette, toilets etc) be located together, away from the reading/study areas.

ii) It is vital to remember that if any kitchen facility (e.g. a stove, refrigerator, sinks and cupbaords) is provided, it must be carefully controlled to make sure that vermin of one kind or another (especially rats, mice etc commonly found in the developing regions) are not attracted.

iii) Extra space in a convenient location for a locker for personal belongings for each part-time staff (if any) and also for the student trainees. They should be at least 5 ft high and wide enough for everyday needs e.g. umbrella, raincoats, etc.

iv) For the staff locker, rest, lounge, toilet etc, 15 sq ft per person for the first 50 staff members and at least a minimum of 10 sq ft for each staff beyond that number.

v) The staff rest room should be equipped with a chairbed, washing facilities with hot and cold water are essential and a medicine chest must also be available. In emergencies, the room could be made available to any member of the public taken ill.

vi) The semi-lounge chairs provided for the staff lounge may be similar to those provided in the public coffee lounge (see Section 8.7.1).
vii) The toilets should be equipped with mirrors, paper towels or other drying equipment, sanitary dispensers, soap holders or soap dispensers etc. Coat hooks need to be provided for jackets, sweaters to be removed for washing etc.

Environmental requirements:

i) General lighting is adequate in these areas.

ii) Ventilation and air-conditioning systems to be adopted may be governed by economic considerations (ceiling fans or single air-conditioner units should be sufficient).

iii) The toilets and other conveniences should be provided with exhaust fans.

iv) Care should be taken that noise and food odours are not spread to the office as well as the public areas. Acoustic ceilings and resilient floorings may be used in these areas to reduce the noise level. To control food odours, exhaust fans may be used; or if the room is not air-conditioned (i.e. ceiling fans are used) the windows should be openable.

v) Preferably, they should be sited near to other sources of noise.

9.4 **Bindery**

Binderies may or may not be provided by national libraries. In Malaysia, as mentioned earlier, the tasks of binding and repair are undertaken by the National Archives. In the British Library, a reason for having a bindery is that items received by legal deposit must not leave the premises. This is also the reason why
they are established in the other national libraries in the developing regions e.g. Brazil, Mexico, Papua New Guinea etc. Generally, the activities that take place in this room include: binding, rebinding of old or damaged volumes of newspapers, periodicals, manuscripts etc; lettering, laminating, strengthening etc. The scope of the activities depends on the functions and size of the national library concerned. On the other hand, it should be pointed out that the square footage required cannot be determined until the extent of work to be undertaken by the bindery has been decided (i.e. whether provision for binding and repair work beyond the preparation for binding is to be made). Noisy machinery is usually inevitable.

9.4.1 Functional and Environmental Requirements

Functional requirements:

i) Location should be at the ground or basement level, because of the heavy equipment that will need to be installed, and to reduce noise.

ii) Since heavy equipment will have to be installed, floor loads must not be forgotten.

iii) To reduce handling of bulky materials and also to simplify zoning problems, it should be located adjacent to the loading dock.

iv) Apart from the loading dock, close connection is also desirable between the bindery and the stacks in case of items needing urgent treatment.
v) Shelves and table space for materials awaiting binding and equipment are essential.

vii) For maintenance purposes, an impervious hardwearing flooring material is desirable.

vi) Space should be allowed for storage of binding materials and also for moving book trolleys.

Environmental requirements:

i) A lighting system of minimum glare with supplementary lamps to provide light and shade for finishing is essential.

ii) Air-conditioning is essential in this area (unless it is banned due to energy crisis as has happened in the Philippines). Single air-conditioner units may be used if the national library is not centrally air-conditioned.

iii) As the bindery is usually equipped with noisy equipment such as the guillotines, sewing machines and presses, noise insulation will thus be essential.

9.5 Loading Dock/Bays

In national libraries (especially those in the developing regions) it is essential that a loading dock be provided. This is particularly important in the developing countries because large shipments in large packing cases are frequently received. The traffic involved here is both inward and outward. The former include accessions, bindery services, stationery for the offices etc, and the latter include little used stock sent to
other libraries for redistribution or sent to secondary storage (this can be foreseen as a necessary development in the future for national libraries in the developing regions), library materials despatched for loans or exchange and also waste material from the library processes (for example, packing material).

9.5.1 Functional and Environmental Requirements

Functional requirements:

i) Location should be on the same level (i.e. ground or basement level) as the bindery and also the fumigation room for greater efficiency. If possible it should also be located either vertically or horizontally, to the acquisitions department.

ii) Much more accommodation is required in the developing countries than in the developed countries because of large shipments.

iii) A goods/passenger lift should be provided for vertical transport of bulky items if the building is multi-story.

iv) Garage accommodation for the national library vehicles may also be necessary.

Environmental requirements:

i) The entrance of the loading dock should be covered so that the truck/van carrying the shipments of materials can back up to it and be unloaded despite the constant heavy rainfalls and thunderstorms experienced in the developing regions.

ii) Outside lighting is desirable in the loading docks.
9.6 Maintenance Room/Rooms

It should not be forgotten that as with any other type of library, national libraries too require janitorial personnel who must have their own quarters. They will need a place which their group can use as a base and where they can keep supplies, brooms, mops, vacuum cleaners and other equipment as well. Thought should be given whether the maintenance staff should have a separate rest room, lounge and even kitchen facilities and space provided accordingly as in Section 9.3.

9.6.1 Functional and Environmental Requirements

Functional requirements:

i) Ideally, a janitor's closet with running water and a sink and space for cleaning equipment should be provided on each floor. If a single large room is provided, it should be located in the basement.

ii) A goods/passenger lift should be provided if the room is located in the basement of a multi-storey building.

iii) Adequate space should be provided to accommodate a reasonable quantity of supplies and equipment.

iv) Cupboards and shelves should be installed to store the supplies and the equipment.

v) A space area of 100-125 sq ft per full-time member of the maintenance staff or the equivalent should be adequate to cover all items (e.g. rest room/lounge etc should they need to be separated from the general staff rest room etc, supply and equipment rooms, and janitor's closets if they are located on separate floors).
vi) For maintenance purposes, an impervious hard wearing flooring material is desirable.

Environmental requirements:

i) General lighting is sufficient in this area.

ii) Ventilation system to be adopted may be governed by economic considerations. Ceiling fans would be adequate as well as a space saver, as no floor space is required.

iii) To control noise level, the room should be provided with noise insulation.

9.7 Fumigation Room or Chamber

Insects, bookworms, silver fish, cockroaches etc are a significant problem in libraries in the developing regions. Because tropical and sub-tropical conditions render incoming library materials liable to insect and mould infestation, a fumigation room or chamber is a necessity in the developing regions to treat the book shipments.

9.7.1 Functional and Environmental Requirements

Functional requirements:

i) Ideally, it should be located near the loading dock, so that the materials which need to be fumigated can be treated immediately, before they are brought into the processing departments. This location also means that it is near the open air.
ii) An area of about 500-600 sq ft should be sufficient for this purpose.

iii) Shelves should be provided in the room for books, periodicals and newspapers which need treatment.

iv) Minimum windows would be required in this room (although large windows would be advantageous to rapidly release the poisonous gas present in the chemicals used for the treatment). It should be pointed out that the windows need to be able to be temporarily sealed off by the fumigators.

v) A goods/passenger lift should be provided for vertical transportation of the items after treatment to the processing departments if the building is multi-storey.

Environmental requirements:

i) General lighting is sufficient in this room.

ii) As for ventilation, perhaps the best method is the use of fans (preferably ceiling or wall fans as they take up no floor space). The fans will blow out the gas from the room to the open air when the treatment is over, after 24-36 hours usually.

iii) The activity in this area involves talking amongst the fumigation group, the attendants who are unloading materials on trolleys to the shelves and also conversation between the fumigation group and the library staff. It is necessary to use acoustic ceilings to contain the noise. As for flooring, care should be taken that the material used will resist corrosion by the fumigation gases.
Summary

It should be stressed that adequate accommodation for the library staff is essential for effective service. It has been observed that in most library buildings (both in the developed and developing countries) accommodation for the staff tends to become inadequate before that for books or for readers\(^1\). This may be because of the modesty or timidity on the part of librarians or to a failure to realise how much the staff may have to grow in order to process new materials and provide public service. In any event, library staff quarters all too often are congested, and the resultant crowding hinders even if it does not prevent effective work.

However, it is accepted that an overly generous supply of work space at a circulation desk (for instance), has been known to 'encourage' poor housekeeping, and an unnecessarily large amount of shelving area for books in process has been known to slow up cataloguing by relieving pressure to push books through, thus accumulating 'backlogs', but good administration should prevent both difficulties.

Space is needed for four major staff groups - administrative personnel, public service staff, processing staff and maintenance staff - as well as for rest rooms, lounges, kitchenette, lockers and toilets. In all the space areas provided (particularly in the workroom areas) future expansion and ample margin should be thought of and provided for, respectively. Principle three of Dr D J Urquhart's *Principles of Librarianship* (1981), which states 'supply creates demand',\(^2\) should also be applied when planning
areas to be provided for staff areas. That is, an efficient national library will generate more use and perhaps require more staff to maintain the efficiency. It should also be pointed out that in planning the various staff areas, both the functional as well as the environmental requirements should be carefully considered.

REFERENCES:

1. METCALF, K D, Planning academic and research library buildings, Op cit, p 129.

CHAPTER 10

THE DESIGN CRITERIA FOR STORAGE AREAS: RECOMMENDATIONS

10.1 Storage Areas

All library materials require space for storage, but different types of material require different methods of storage (e.g. films and books differing in size and format of presentation, have different space requirements and require different methods of storage). However, the functional and environmental requirements remain constant.

10.1.1 Functional and Environmental Requirements

Functional requirements

i) Materials in the storage areas should be readily accessible to the readers. If budgets permit, mechanical devices (e.g. conveyor belts, pneumatic tubes etc) should be installed, as they will give architects greater freedom in design. These devices tend to generate noise, however and must be insulated to prevent reading room disturbance. Otherwise, the relationship between the storage areas and the reading rooms should influence planning in these regions.

ii) Flexibility of floor loadings is essential to permit internal rearrangement (e.g. conversion from normal shelving to compact storage systems). In quoting to the structural engineer the maximum load likely to be required in the national library
building the architect is able to use the experience of many other library planners.

iii) Future stock expansion should be considered and proposals for extension should be made during the initial planning.

iv) Although it has been suggested a tier height of 7' would be more practical in the developing regions (because the average height of readers and staff in these regions are shorter than those in the Western world), it is recommended that the stack heights of 7'6" or 90" (capable of having 6 shelves on one side with about 13" clearance between shelves of each bay), be maintained (there is evidence that the younger generations in the Asian countries are now taller than their forefathers).

v) Free standing double sided stacks, and shelves of a standard 3 feet (or 90 cm) length should be installed.

vi) In non-compact storage areas, centre to centre spacing between the two double sided stacks should be 4'6" (as shown in Figure 10.1 overleaf). This allows for a clear space of 36" between stacks assuming that the shelves are 8" deep with 2" clearance between them making the stacks 18" deep.

vii) A minimum of 4'6" aisle, space between ranges of stacks should be made available. Aisle space around stacks should also be taken into consideration.

viii) There should be allowance for space in the area to cater for sorting tables, book trolleys and staff working in the stacks.
FIGURE 10.1: Centre to Centre Spacing of the Stack
In addition to the usual fire precautions, compartment planning is recommended.

Carrels are recommended in the reading rooms of national libraries. They should not be provided in the storage areas of these libraries.

All shelving in the storage areas should be adjustable.

It is recommended too, that services such as stairs, lifts, etc should be grouped together so as to reduce fixed obstruction to a minimum and to provide for additional strength in the constructional design of the building. This will free the floor area for any change of functions.

Environmental requirements:

Direct sunlight deteriorates library materials and thus, windowless storage areas would be ideal particularly in national libraries. However, because of the constant breakdown in power and electricity supply in the developing regions, it is recommended that limited windows with some form of internal or external sunscreens (in severe cases) be provided in both closed and open storage areas.

Fluorescent lighting is required in storage areas and they can run across or along the direction of the stacks although the latter is less efficient.

Light colour finishes on floors, wall, ceilings and furniture are recommended for storage areas.
iv) Temperature in the storage areas should be maintained within the range of 65°F - 70°F and the RH of 50%. This is essential or rapid deterioration will occur. Losses without such provision would be costly. Air-conditioning is the best method of maintaining the above temperature and humidity.

v) As condensation can cause damage to library materials, precaution should particularly be taken in storage areas to prevent this danger. A pitched roof over stack areas is preferable to a flat roof. It is also recommended that it should be the janitor's or the attendant's job to make rounds in the storage areas after each heavy downpour or thunderstorm.

10.2 Secondary Storage (e.g. Individual/Cooperative Warehouse) for the Future?

Warehouse is defined by the Concise Oxford Dictionary (17th edition 1982)\(^{(1)}\) as a 'building in which goods are stored, repository, ..., store temporarily in repository'.

The idea of a cooperative storage warehouse in Malaysia between the National Library, the five university libraries and some of the notable research libraries, e.g. Rubber Research Institute Library, Forest Research Institute etc would on the surface seem to provide solutions for future storage problems and perhaps inspire better inter-library cooperation, which is after all one of the main roles of the national libraries in the developing regions.

Thus, theoretically, a library can when conditions make it necessary, have separate stacks in separate premises to act as
repositories. These buildings can take the form of simple concrete and brick structures at a very cheap cost - in other words - storage warehouses. These buildings may be contiguous, as in the Library of Congress and its Annex, or may be widely separated as in Widener Library at Harvard and the New England Deposit Library across the river. In the first library (i.e. the Library of Congress) all books in the stacks of either building may be delivered at either loan desk, depending on where the reader makes his request. At the second library (i.e. at Harvard) the reader may use the collection of the storage library in its own reading room or may request delivery to Widener for his use. It should be stated that in either case, the erection of a separate building was the only solution to a difficult problem, expansion of the original building was particularly impossible.

Many such libraries have resorted - permanently or temporarily, on - or off-site - to some form of storage for their little-used materials, in the effort to contain and to service their continually expanding collections without incurring substantial additional costs. From the individually maintained storage facility to the storage unit jointly owned and operated by several libraries would seem, superficially at least, a logical, economical and widely adopted transition. Yet such storage (although the subject of cooperative storage has a lengthy history and a voluminous literature*) has been limited in realization.

* A PhD thesis and other articles by J Harrar bear witness for example (see 'Sources also used not cited above')
In theory, the advantages of such a storage are as follows:

i) The building built as a warehouse can be built inexpensively and on cheap land.

ii) Compact shelving can be installed and this means that it will be a great space saver.

iii) Maintenance costs of the storage facility would be lower than that of the active library in terms of light, number of janitors and cleaning. It should be emphasised however, the air-conditioning cost will be the same in tropical areas.

iv) It may provide temporary deployment space for library materials.

v) The need for new library buildings would be 'reduced and delayed' permitting the accumulation of cash reserves and credits which would be directed toward other needs for example, for increasing book collections, bettering services to readers and improving library personnel.

vi) Such storage reduces costs even though it may necessitate duplication of records and impose additional costs in transporting materials between the warehouses and the main library.

vii) Cooperative storage warehouses increase the research resources available to the cooperating libraries.

viii) Such warehouses, help to promote cooperation among libraries which is highly desirable in the developing regions, bearing in mind Dr D J Urquhart's Principle 'no library is an island'.(2)
Although the advantages of this type of storage are numerous, one should not forget that in practice (as discovered by J Harrar(3) during her research of the libraries involved in the United States) the situation is not that rosy. For instance, to say that costly enlargements would no longer be necessary, overlooks the fact that expansion of the collection is accompanied by increased staff and readers and that means increased costs. Also, cooperation among libraries is certainly essential. But cooperative storage facilities are not the only form of cooperation presently available. For example, the Scandia Plan, the former Farmington Plan is/was carried out independently of any warehouse, and maybe the most economic provision for cooperation is a single large library gathering as much material as possible under one roof.

The studies of such storage libraries have been done only in the developed countries (e.g. US). Before any decisions can be taken, as to whether this system would suit libraries in the developing regions (especially national libraries), careful thought, discussions and feasibility studies would need to be carried out to ensure the cost-effectiveness of the project.

Summary

The historical evidence suggests that libraries generally run out of storage space for books before they are scheduled to do so. This results in crowded conditions and ineffective service. Therefore, future expansion and a margin for it have to be considered and added respectively during the planning stage. Compact shelving has
been generally accepted to increase space for little used shelving materials. However, it is expensive, but it is recommended that flexibility of floor loadings is essential to permit the use of compact shelving at a later date. Other functional and environmental requirements to storage areas will also have to be considered. Can secondary storage (e.g. individual or cooperative warehouses) be the answer to future storage problems in the developing regions? Careful study will have to be carried out, before such a project is attempted in the future (when such a need arises).

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CONCLUSIONS

The present study has attempted to determine the roles of national libraries and their consequent requirements for planning their buildings in the developing countries. The conclusions below have arisen out of the ground explored in the preceding chapters. They are basically a general synopsis of the general characteristics of the developing countries, their libraries (including national libraries) and the building requirements of national libraries.

A. General Conclusions

1. The general background of the developing countries is one of low per capita incomes, very low literacy rates, poor or no domestic publishing, multi-racial and multi-lingual, adverse geographical conditions (climatic and non-climatic) and education systems which discourages rather than encourages the habit of reading etc. It is against this gloomy background that libraries (including national libraries) are established. Thus on the whole, the problems of libraries and librarianship in these countries are those of the country in which it exists.

2. The National Library concept is a recent one in developing countries. Indeed as indicated in Table 4.1, the national libraries in these countries are fairly young, mostly having come into existence within the last 10-60 years.
3. The tasks and functions performed by the national libraries investigated are summarised in Table 5.1. They are as enumerated below:

a) Collect all national publications (100%).

b) International exchange of publications (90%).

c) Collect significant foreign publications (90%).

d) Preserve rare books and documents (90%).

e) National Bibliographical Centre (73%).

f) Publication of the national bibliography (91%).

g) Publication of the National Union Catalogue (27%).

h) Serve research (91%).

i) Inter-library lending (82%).

j) Professional training of staff (82%).

k) Library planning (64%).

All eleven national libraries which answered the questionnaire collect all national publications, mostly through legal deposit, as indicated in Table 5.2. All except function (g) is carried out by more than 50% of the national libraries which answered the questionnaire. An interesting point to note is that although function (k) is considered 'inessential' by Humphreys, this task is undertaken by 64% of the national libraries in the developing countries which answered the questionnaire. This is probably because of the haphazard and uncoordinated manner in which libraries have developed in these countries. Function (j) is also regarded by Humphreys as an inessential. This may be so in developed countries where
this activity is adequately carried out by library schools. In general, architects have to be made aware that differences in functions and roles of national libraries exist between those in the developed and developing countries when designing or planning a new national library building in the latter.

It should also be pointed out that functions (a) - (k) were chosen not only because they reveal the planning, coordination and leadership roles of national libraries in these countries, but also because the activity generated by these functions means that adequate space will have to be provided by the architect when designing national library buildings. It is also essential that architects are informed of the functions of the national library as they are important in influencing the design or building requirements of the national library in the particular country.

4. Table 5.1 shows that function (i) is undertaken by 82% of the national libraries which answered the questionnaire. But, as indicated in chapters 3 and 5, inter-library cooperation among libraries generally in these countries is not organised but operates informally, by means of the postal service.

While accepting that a national library is more than a reference library in a capital city, it would perhaps be economical and desirable for lending facilities to be developed in these regions. Perhaps it would be uneconomical for every national library in the developing regions to seek to emulate the
British Library Lending Division (BLLD). It would make sense to appoint one national library in each major region to undertake this role e.g. Singapore or Malaysia for Southeast Asia, Brazil for Latin America (these being the wealthiest and most rapidly developing countries) etc. Problems may arise with Africa. Since South Africa is the wealthiest country in the region, it should be the country in this region to take on this role. However, it is doubtful that 'Black' Africa can accept it as the lending library for the African region.

Again, it can be argued that one world lending library i.e. the BLLD would be sufficient or could be made sufficient given likely future technological development such as 'telefax' reproduction from BLLD over vast distance using communications satellites. However, more than one BLLD type international lending library would be sensible when one considers for instance the recent conflict between Britain and Argentina, whereby services to Argentina from BLLD were presumably denied. Politics may defeat economy in this respect.

Like the national library concept, library architecture in developing countries is also a new phenomenon which means that problems such as lack of trained building technicians, architects and librarians experienced in national library design and planning are thus inevitable. Apart from these, there is also lack of research done on local materials, and other
numerous problems that affect library design either directly or indirectly (e.g. heavy thunderstorms or monsoons, hurricanes, tornadoes, sharqui, shamal, harmattan and earthquakes.)

At present, library shelving in developed and developing countries alike is made of wood and steel. However, discussions with some plastic technologists makes one hopeful that before long, plastics (e.g. polyacetal whose properties have been mentioned in the Introduction and Chapter 6) may also be used. Plastics have advantage over steel in that they are lighter than the latter and no more expensive. They also have advantage over some timbers in that they are termite proof.

However, further study and research will have to be undertaken by library manufacturers and local industries to prove its use as library shelving.

Attempts have been made by various works on library architecture to overcome damage from strong winds and heavy thunderstorms. But no work has yet provided a solution to reduce earthquake shocks in library buildings generally. Studies on the use of natural rubber bearings already proven in the isolation of buildings from noise and minor vibrations from other sources may be used before long so that future national library buildings in particular and library buildings in general, can be a safer place for their occupants.

6. It is essential to make assessments of the areas required for both the activities which will take place in the national
library and also for the storage of library materials during the preliminary planning. Assessment of areas can be made by rational calculations and by using published standards (either local or overseas). It should be stressed that there is no reliable exact method of assessment in existence and the general points to consider have been given in Section 7.1.

7. Teamwork or close collaboration between architects and librarians will help overcome many of the difficulties and provide the basis for a successful design. More often than not, the design of a national library building is the first venture for both the architect and the librarian in these regions. They learn and their knowledge grows together until the best result is achieved. Things will thus go smoother and ideas will get translated into reality much better when active communication is maintained between the architect and the librarian. A break in the communication link because of reasons such as non-residency of the architect or an impasse between the architect and the civil engineer will result in a great deal of unnecessary problems.

8. The functional and environmental requirements for the public, staff and service, and storage areas are discussed and recommendations made in Chapters 8, 9 and 10 respectively. An interesting point that came out of Chapter 10 was, the possibility of adopting the idea of a cooperative storage
On the surface, this idea for example in Malaysia between the National Library, the five university libraries and some notable research libraries e.g. Rubber Research Institute etc seems to provide solutions for future storage problems in the major libraries in the country. In theory, the advantages are numerous as detailed in Chapter 10. But as also indicated in Chapter 10, there are disadvantages as well.

9. Finally it must be emphasised that in designing national library buildings in these regions, the principles stated in this work can only be adopted subject to inevitable compromise, because of the various problems to which reference has been made.

B. Recommendations for further study

A few issues evolve from the present study, an exploration of which will contribute to a further understanding of the conclusions and observations made during the course of this study. These issues are recommended below as recommendations for further study.

a) A study designed to identify other methods of cooling and preservation, if air-conditioning is to be avoided, and can air-conditioning really be avoided in the tropics?

b) A study designed to identify local library finishes and furnishings and to compare their costs.

c) A study to investigate the feasibility of a Regional Lending Library (BLLD type) in the developing regions (e.g. Singapore
or Malaysia as the Regional Lending Library for South-east Asia, Brazil for Latin America, etc?)

d) A study to investigate the feasibility of cooperative storage warehouse for developing countries to overcome future storage problems.

* * * * *
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APPENDICES
## APPENDIX I: NATIONAL LIBRARIES IN DEVELOPING COUNTRIES: BASIC INFORMATION AND DATA

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>DATE OF OPENING</th>
<th>ARCHITECT</th>
<th>TOTAL NO OF STAFF PLANNED</th>
<th>TOTAL SITE AREA (m²)</th>
<th>ARCHITECTURAL DESCRIPTION</th>
<th>NO OF FLOORS</th>
<th>NO OF SEPARATE BUILDINGS</th>
<th>TYPE OF COOLING SYSTEM</th>
<th>ILLUMINATION</th>
<th>PRINCIPLE FLOOR MATERIAL USED</th>
<th>COST OF FLOORING MATERIAL (per m²)</th>
<th>OVERALL COST INCLUDING SITE</th>
<th>COST OF SITE</th>
<th>ENTRANCES</th>
<th>GOODS LIFT</th>
<th>DISABLED</th>
<th>FIRE ESCAPE STAIRS/EXITS</th>
<th>FUMIGATION ROOM/CHAMBER (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>1910</td>
<td>San Cisco Marceillo de Sousa Aguiar</td>
<td>-</td>
<td>3,600</td>
<td>Modular</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>1909</td>
<td>R.J. Scott &amp; P. Hodge</td>
<td>-</td>
<td>3,600</td>
<td>Modular</td>
<td>2</td>
<td>None</td>
<td>Fans</td>
<td>-</td>
<td>Wood &amp; Marble Wood</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Guyana</td>
<td>1987</td>
<td>T. Young</td>
<td>-</td>
<td>1,300</td>
<td>Modular</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Iran</td>
<td>1937</td>
<td>Andre Godard</td>
<td>150</td>
<td>13,600</td>
<td>-</td>
<td>4 and 2</td>
<td>-</td>
<td>Gas &amp; Water Air-conditioning</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Jamaica</td>
<td>1979</td>
<td>Morris Sibley &amp; Robinson</td>
<td>75</td>
<td>25,291</td>
<td>Modular</td>
<td>3</td>
<td>None</td>
<td>Central Air-conditioning &amp; window units</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6 (Both staff and public)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Malawi</td>
<td>1978</td>
<td>Montgomery Oldfield &amp; Dennison</td>
<td>55</td>
<td>1,300</td>
<td>Modular</td>
<td>2</td>
<td>1</td>
<td>Air-conditioning units</td>
<td>-</td>
<td>Carpet tiles, vinyl tiles</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>No</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td></td>
<td>Envisaged to be complete in late 1984 or early 1985</td>
<td>The design concept envisages Malay headgear or Tongkolok</td>
<td>238,000</td>
<td>The design concept envisages Malay headgear or Tongkolok</td>
<td>6</td>
<td>None</td>
<td>Air-conditioning</td>
<td>TO FOLLOW ESTABLISHED STANDARDS</td>
<td>Carpet PVC &amp; Industrial felt</td>
<td>Not less than M$25 million</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Yes (500)</td>
<td></td>
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</tbody>
</table>

/Continued.../
<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>DATE OF OPENING</th>
<th>ARCHITECT</th>
<th>TOTAL NO OF STAFF PLANNED FOR</th>
<th>TOTAL SITE AREA (m²)</th>
<th>ARCHITECTURAL DESCRIPTION</th>
<th>NO OF SEPARATE BUILDINGS</th>
<th>TYPE OF COOLING SYSTEM</th>
<th>ILLUMINATION</th>
<th>PRINCIPLE FLOOR MATERIAL USED</th>
<th>Cost of Flooing Material (pounds)</th>
<th>Overall cost including site</th>
<th>Cost of Site</th>
<th>Entrance</th>
<th>Public Entrance</th>
<th>Disabled</th>
<th>Fire escape/stairs exits</th>
<th>Fumigation chamber (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papua New Guinea</td>
<td>1978</td>
<td>Dr At- nol Richards</td>
<td>72</td>
<td>2,900</td>
<td>Modular</td>
<td>None</td>
<td>Air-conditioning for main unit and separate smaller units</td>
<td>-</td>
<td>-</td>
<td>Cement, carpet &amp; linoleum</td>
<td>Free</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>1822</td>
<td>Emilio North Terre</td>
<td>320</td>
<td>16,500</td>
<td>Modular</td>
<td>-</td>
<td>Air-conditioning</td>
<td>-</td>
<td>-</td>
<td>Vinyl</td>
<td>£59,500.00</td>
<td>2</td>
<td>None</td>
<td>None</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>1964</td>
<td>Jarrett-Vaska-Yo Park</td>
<td>2</td>
<td>14</td>
<td>Modular</td>
<td>-</td>
<td>Air-conditioning</td>
<td>-</td>
<td>-</td>
<td>Rubber tiles</td>
<td>£59,500.00</td>
<td>2</td>
<td>None</td>
<td>None</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td>1960</td>
<td>PWD Architect</td>
<td>164</td>
<td>10,000</td>
<td>Modular</td>
<td>3 &amp; 2</td>
<td>Air-conditioning</td>
<td>300</td>
<td>300</td>
<td>Vinyl</td>
<td>S$2,154.00</td>
<td>3</td>
<td>None</td>
<td>None</td>
<td>Yes</td>
<td>Yes (10)</td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1877</td>
<td>-</td>
<td>1</td>
<td>None</td>
<td>None</td>
<td>Air-conditioning for rare books room only</td>
<td>-</td>
<td>-</td>
<td>Cement</td>
<td>-</td>
<td>1</td>
<td>None</td>
<td>None</td>
<td>No</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uruguay</td>
<td>1964</td>
<td>Arq. Luis Crespi</td>
<td>200</td>
<td>4,000</td>
<td>Neo-classic</td>
<td>5</td>
<td>None</td>
<td>-</td>
<td>-</td>
<td>Marble, wood etc</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>Yes</td>
<td>Yes (6)</td>
<td>Yes (6)</td>
<td></td>
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### Published Literature

<table>
<thead>
<tr>
<th>Published Literature</th>
<th>Waiting Time/Interval: Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 'CONTACTOR' (45)</td>
<td>20 seconds interval: good service</td>
</tr>
<tr>
<td></td>
<td>30 &quot; &quot; may be too long for some buildings, but satisfactory for others</td>
</tr>
<tr>
<td></td>
<td>40 &quot; &quot; poor</td>
</tr>
<tr>
<td></td>
<td>'Many buildings ... as high as 60 secs are without very serious objection on the part of the occupants'</td>
</tr>
<tr>
<td>2. HARDING (46)</td>
<td>'The aim today is usually to provide an installation in which the waiting time does not exceed 30 secs'.</td>
</tr>
<tr>
<td>3. HONEY (47)</td>
<td>'In London in the year 1946, the limit of patience is found to be approximately:</td>
</tr>
<tr>
<td></td>
<td>1. High buildings in centres of great activity: 24 secs</td>
</tr>
<tr>
<td></td>
<td>2. High buildings in active areas commanding less rental than 1: 30 secs</td>
</tr>
<tr>
<td></td>
<td>3. Buildings in centres of medium activity or buildings of medium height: 36 secs</td>
</tr>
<tr>
<td></td>
<td>4. Buildings in centres of leisure: 48 secs</td>
</tr>
</tbody>
</table>

Continued...
<table>
<thead>
<tr>
<th>Published Literature</th>
<th>Waiting Time/Interval: Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. HUTTON (48)</td>
<td>&quot;... it is usual to allow about 30 secs in offices and 60 secs in domestic buildings&quot;.</td>
</tr>
<tr>
<td>5. LINDUS (49)</td>
<td>&quot;For general guidance an interval of 25-30 secs can be considered excellent quality service, but 35-45 secs may still be acceptable for normal quality standards in office buildings and intervals up to 60 secs acceptable in hotels and up to 90 secs acceptable for flats&quot;.</td>
</tr>
<tr>
<td>6. PPM (Malaysia) (50)</td>
<td>&quot;Waiting time should not exceed 45 secs&quot;.</td>
</tr>
</tbody>
</table>
APPENDIX III

<table>
<thead>
<tr>
<th>Sun a.m.</th>
<th>p.m.</th>
<th>Azimuth Winter</th>
<th>Equinox</th>
<th>Summer</th>
<th>Azimuth Winter</th>
<th>Equinox</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noon</td>
<td>0</td>
<td>0° - 0'</td>
<td>0° - 0'</td>
<td>21° - 30'</td>
<td>45° - 0'</td>
<td>68° - 30'</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>28° - 30'</td>
<td>39° - 0'</td>
<td>58° - 30'</td>
<td>16° - 0'</td>
<td>38° - 0'</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>52° - 30'</td>
<td>68° - 0'</td>
<td>87° - 0'</td>
<td>2° - 30'</td>
<td>20° - 30'</td>
<td></td>
</tr>
</tbody>
</table>

Source: University of Otago, Competition for the University Library Building, 1959, p 6.
APPENDIX IV: COSTS OF FLOOR MATERIALS (RANGES OF APPROXIMATE COSTS, INSTALLED)

<table>
<thead>
<tr>
<th>TYPE OF FLOOR MATERIAL</th>
<th>COST (per sq ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESILIENT</strong></td>
<td></td>
</tr>
<tr>
<td>Linoleum</td>
<td>$.35 to $.90</td>
</tr>
<tr>
<td>Rubber tile</td>
<td>.50 to 1.20</td>
</tr>
<tr>
<td>Asphalt tile</td>
<td>.30 to .50</td>
</tr>
<tr>
<td>Cork tile</td>
<td>.70 to 1.60</td>
</tr>
<tr>
<td>Vinyl cork tile</td>
<td>.50 to 2.00</td>
</tr>
<tr>
<td>Homogenous vinyl tile</td>
<td>.80 to 1.00</td>
</tr>
<tr>
<td>Backed vinyl tile</td>
<td>.70 to 1.50</td>
</tr>
<tr>
<td>Vinyl asbestos tile</td>
<td>.25 to 1.00</td>
</tr>
<tr>
<td><strong>CARPET</strong></td>
<td></td>
</tr>
<tr>
<td>Wool</td>
<td>$11.50 to $20.00</td>
</tr>
<tr>
<td>Nylon</td>
<td>8.00 to 14.50</td>
</tr>
<tr>
<td>Acrylic</td>
<td>10.50 to 16.00</td>
</tr>
<tr>
<td>Antron nylon</td>
<td>9.50 to 15.50</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>6.00 to 8.00</td>
</tr>
<tr>
<td><strong>MASONRY</strong></td>
<td></td>
</tr>
<tr>
<td>Ceramic tile</td>
<td>$1.25 to $2.25</td>
</tr>
<tr>
<td>Marble</td>
<td>3.50 to 10.00</td>
</tr>
<tr>
<td>Terazzo</td>
<td>1.25 to 3.75</td>
</tr>
<tr>
<td>Slate</td>
<td>3.00 to 4.00</td>
</tr>
<tr>
<td>Concrete</td>
<td>.60 to 1.00</td>
</tr>
<tr>
<td>Magnesite</td>
<td>1.10 to 1.65</td>
</tr>
<tr>
<td>Brick</td>
<td>1.00 to 3.50</td>
</tr>
<tr>
<td><strong>WOOD</strong></td>
<td></td>
</tr>
<tr>
<td>Oak (strip)</td>
<td>$1.45 to $1.25</td>
</tr>
<tr>
<td>Maple (strip)</td>
<td>.45 to 1.25</td>
</tr>
<tr>
<td>Block</td>
<td>.65 to 1.35</td>
</tr>
<tr>
<td>Parquet (block)</td>
<td>.55 to 2.50</td>
</tr>
</tbody>
</table>

/Continued...
APPENDIX IV... continued

<table>
<thead>
<tr>
<th>TYPE OF FLOOR MATERIALS</th>
<th>COST (per sq ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FORMED-IN-PLACE</td>
</tr>
<tr>
<td>Mastic</td>
<td>$.50 to $.75</td>
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<tr>
<td>Epoxy</td>
<td>.75 to 1.75</td>
</tr>
<tr>
<td>Polyester</td>
<td>1.50 to 2.25</td>
</tr>
<tr>
<td>Polyurethane</td>
<td>.75 to 1.60</td>
</tr>
<tr>
<td>Silicone</td>
<td>1.00 to 3.50</td>
</tr>
<tr>
<td>Polychloroprene</td>
<td>.80 to 1.10</td>
</tr>
</tbody>
</table>

Note: The prices would have increased by now (though they still serve as a good guide)

APPENDIX V: An Example of the Questionnaire Sent to the National Librarians of Selected Developing Countries

Dear

STANDARDIZED BUILDING DESCRIPTION

I should be grateful if you could fill in all the sections of this questionnaire that are relevant to your particular library building and return it to:

1. Name and address of library:
   ______________________________________________________________
   ______________________________________________________________
   ______________________________________________________________

2. Approximate volume of stock:
   ______________________________________________________________

3. Approximate number of readers:
   ______________________________________________________________
   (Statistics of library users for the last three years would be useful).

4. Date of Opening: ____________________________________________

5. Name of Architect: __________________________________________

6. Total number of staff planned for:
   ______________________________________________________________

7. Total site area m$^2$: _________________________________________

8. a) Architectural descriptions of library e.g. Modular.
   Please include module dimension if relevant:
   ______________________________________________________________
b) How many floors are there?

______________________________

9. Floor loading  i) Stack areas ________________________________

ii) Other areas ________________________________

______________________________

10. How many separate buildings are there?

______________________________

______________________________

11. Type of cooling system e.g. air-conditioning. Please specify:

______________________________

______________________________

12. Please give the illumination in:

a) Public areas ________________________________ lux

b) Staff and service areas ________________________________ lux

c) Stack areas ________________________________ lux

13. What is the principal flooring material?

Wool carpet ________________________________________

Nylon carpet ________________________________________

Carpet tiles ________________________________________

PVC sheet ________________________________________

Lino tiles ________________________________________

Cork ________________________________________

Wood ________________________________________

Other (please specify) ________________________________________

14. Cost of flooring material (per m²)

______________________________
15. Are there any special finishes e.g. acoustic tiles, external cladding etc? Please specify

16. Overall cost including site

17. Cost of site

18. Construction costs

19. Entrances:
   a) How many staff entrances are there?

   b) How many lifts are there?
      i) Passenger
      ii) Goods

20. Public entrances:
   a) How many are there?

   b) Are there provisions made for the disabled?

   c) How many fire escape stairs/exits are there?

21. Bindery:
   a) Area m²

   b) Please specify special equipment
22. Computer installation:
   a) Do you have a computer installation in your building
      Yes ___________ No ___________
   b) If yes please describe type:
   c) Any special features and fittings (please specify):

23. Fumigation chamber/room:
   (Please state area assigned (m^2)):

24. Are there any published articles or brochures describing your building? If so would you please give references.

25. Would you please include any floor plans, external and internal photographs that are available.

Thank you for filling in this questionnaire, if you have any other comments you would like to add please note them below.

Yours faithfully
## FUNCTIONS OF NATIONAL LIBRARIES IN DEVELOPING COUNTRIES

### COUNTRY:

<table>
<thead>
<tr>
<th>Collect all national publications</th>
<th>International exchange of publications</th>
<th>Collect foreign publications</th>
<th>Preserve rare books and documents</th>
<th>National Bibliographical Centre</th>
<th>National Bibliography</th>
<th>National Union Catalogue</th>
<th>Serve research workers</th>
<th>Interlibrary lending</th>
<th>Professional training of staff</th>
<th>Library planning</th>
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</tbody>
</table>

Please indicate (x) the functions undertaken by your library
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Thesis Access Conditions Form

AUTHOR  ZAMAN, H.B.

TITLE  The role of national libraries and their consequent building requirements in developing countries.

CONSULTATION STATUS  
(as defined in Notes to Candidates)

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<td>...........................YEARS</td>
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<tr>
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<td>END DATE .....................19...</td>
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</tbody>
</table>

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<th>Signature</th>
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