Indira Gandhi
National Open University
School of Social Sciences

BLI-221
Library, Information and Society

Block

1

LIBRARY AND INFORMATION IN SOCIAL PERSPECTIVE

UNIT 1
Libraries, Information and Knowledge-based Society **5**

UNIT 2
Types of Libraries **32**

UNIT 3
Information Institutions **69**

UNIT 4
Laws of Library Science **95**

Programme Design Committee

Prof. Uma Kanjilal (Chairperson)
Faculty of LIS, SOSS, IGNOU

Prof. B.K.Sen, Retired Scientist
NISCAIR, New Delhi

Prof. K.S. Raghavan, DRTC
Indian Statistical Institute, Bangalore

Prof. Krishan Kumar, Retired Professor
Dept. of LIS, University of Delhi, Delhi

Prof. M.M. Kashyap, Retired Professor
Dept. of LIS, University of Delhi, Delhi

Prof. R.Satyanarayana
Retired Professor, Faculty of LIS
SOSS, IGNOU, New Delhi

Dr. R. Sevukan (Former Faculty
Member) of LIS, SOSS
IGNOU, New Delhi

Prof. S.B. Ghosh, Retired Professor
Faculty of LIS, SOSS, IGNOU, New Delhi

Prof. T. Viswanathan, Retired Director
NISCAIR, New Delhi

Dr. Zuchamo Yanthan
Faculty of LIS, SOSS, IGNOU, New Delhi

Conveners:

Dr. Jaideep Sharma
Faculty of LIS, SOSS, IGNOU, New Delhi

Prof. Neena Talwar Kanungo
Faculty of LIS, SOSS, IGNOU, New Delhi

Programme Coordinators

Prof. Jaideep Sharma and Prof. Neena Talwar Kanungo

Course Coordinator

Prof. Jaideep Sharma

Course Preparation Team

Unit No(s)	Unit Writer(s)	Course Editor
1–4	Professor R. Satyanarayana	Prof. Jaideep Sharma

Internal Faculty
Prof. Jaideep Sharma
Prof. Neena Talwar Kanungo

Print Production	Secretarial Assistance	Cover Design
Mr. Manjit Singh Section Officer (Pub.) SOSS, IGNOU, New Delhi	Ms. Sunita Soni Mr. Manoj Kumar Sharma SOSS, IGNOU	Ms. Ruchi Sethi Web Designer E Gyankosh, IGNOU

June, 2013 (Second Revised Edition)

ISBN-978-81-266-6511-2

Further information on Indira Gandhi National Open University courses may be obtained from the University's office at Maidan Garhi, New Delhi-110 068 or visit University's website http://www.ignou.ac.in

Printed and published on behalf of the Indira Gandhi National Open University, New Delhi by the Director, School of Social Sciences.

Laser Typeset by : Tessa Media & Computers, C-206, A.F.E.-II, Okhla, New Delhi

Printed at :

BLOCK 1 LIBRARY AND INFORMATION IN SOCIAL PERSPECTIVE

Introduction

Information plays a significant role in the development of mankind. It is needed for different purposes, viz. education, entertainment, decision making, etc. Library is one of the agencies that exists to serve the information needs of the society. Data centres, information analysis centres and referral centres and clearing houses are other agencies involved in providing information. This Block is devoted to a discussion of social perspectives of library and information.

Unit 1 sets the perspective by giving an overview of the information society. It explains the different perceptions of information society. There is a discussion on the factors of the arrival of information society and its evolution into the knowledge based society.

Unit 2 is devoted to different types of libraries. It discusses the definition, functions and services provided by these libraries. The Internet has an important role to play in fulfiling the information needs of people. It is advantageous to find information from digital and virtual libraries. These have been discussed in the Block. In view of the increasing electronic collections, libraries are transforming into hybrid libraries that has been explained in detail in the Unit.

The growing importance of information and its presence in electronic form has resulted in the conceptualisation of a number of other information institutions. Their evolution, character, structure and functions have been discussed in **Unit 3**. De-institutionalisation of information and its disintermediation have also been dealt with in the Unit.

S.R. Ranganathan has immense contributions in library and information science. Five Laws of Library Science given by him, is one of the fundamental contributions that is valid even today and in the times to come. These laws have been explained in **Unit 4** with their implications on different aspects of processes and services in a library. Their interpretation in the changing information scenario has been discussed in detail in the Unit.

ignou
THE PEOPLE'S
UNIVERSITY

UNIT 1 LIBRARIES, INFORMATION AND KNOWLEDGE-BASED SOCIETY

Structure

1.0 Objectives

1.1 Introduction

1.2 Modern Society: Some Characteristics

- 1.2.1 Role of Libraries in Society
- 1.2.2 Information and its Impact on Society

1.3 Information Society

- 1.3.1 Information Society: Evolution of the Concept
- 1.3.2 Definition and Meaning of Information Society
- 1.3.3 Factors Determining the Arrival of Information Society
- 1.3.4 Different Perceptions of Information Society

1.4 Knowledge Society

- 1.4.1 Definition of Knowledge Society
- 1.4.2 Characteristics of Knowledge Society
- 1.4.3 Establishment of Knowledge-based Society
- 1.4.4 Knowledge-based Economy (KBE)

1.5 Summary

1.6 Answers to Self Check Exercises

1.7 Keywords

1.8 References and Further Reading

1.0 OBJECTIVES

After reading this Unit, you will be able to:

- explain the characteristics of modern society;
- list the type of institutions founded by it to meet its activities;
- comprehend the need for and role of libraries to meet the different requirements of persons in society;
- discuss the expanding dimensions of libraries and new information institutions in a changing society;
- explain the concept of information society and its impact on information profession;
- discuss the meaning of Knowledge Society, its impact on economy; and
- explain the concept of National Knowledge Commission (NKC) and its recommendations.

1.1 INTRODUCTION

Modern society is a society of institutions. Peter Drucker observes that "every major task, whether economic performance, or health care, education, or protection of environment, the pursuit of new knowledge or defence, is today

being entrusted to big organisations, designed for perpetuity and managed by their managements. On the performance of these institutions, the performance of modern society – if not the survival of each individual – increasingly depends". He further affirms that every institution comprises human beings – men and women, whose performance brings success or failure to the institution and thereby to the society.

Libraries rank among society's most important and useful cultural institutions. They play a vital role in the world's systems of communication and education. The numerous resources and services that libraries provide help people to carry out their work, studies and leisure-time activities. Libraries provide access to knowledge and information that has been accumulated throughout history. People of all walks of life – including students, teachers, scientists, business executives and government officials – use library resources for their work. Since knowledge and information are so vital for all round human development, libraries and other institutions that handle knowledge and information are *invaluable* to the society.

In this Unit, an attempt is made to introduce to you the important role that libraries play in the educational process of formal and non-formal learning, in research and development, etc. It may be noted that with spectacular advances in Information Communication Technology (ICT) and increasing groups of users and their information requirements in different situations, modern society is heading towards an information society in which the central instrument of change, force and direction of change, are knowledge and information. Proper understanding and assimilation of these ideas is essential for you to fully grasp the role of libraries in the emerging information and knowledge society.

1.2 MODERN SOCIETY: SOME CHARACTERISTICS

We are living in a new era in which a highly integrated and self conscious society is evolving. We give it the name of modern society. The consumer today is different from the consumer of yester years. We have seen how changing life styles have brought about a change in demands for goods and services, changing the consumer market. In the present day, with better education opportunities, both literacy and Information Technology (IT) literacy rates are improving. More and more homes have radios, telephones, television sets, and computers (signifying modernity). Even schools have introduced computers in teaching and learning. In fact, the consumer today is better informed and more aware of environment and global issues. In the modern society, the general trend is for organisations and nations to globalise and work in a burden less open manner. Geographic, time and culture barriers are no longer issues of concern. People are in a position to communicate with each other across boundaries. They are able to tap talent, expertise and content from a vast reservoir of resources. In education, variation from previous norm is becoming as something to be consciously planned. In addition to all these developments taking place in consumerisation of goods and services, and changes taking place in social and cultural arena, the modern society has varied needs not the least of which is education. Education helps to mould well-informed, knowledgeable and responsible citizens who will be able to contribute to the progress and advancement of the nation. There is the goal of the economic well being of the society. Certainly, activities towards this end must be sustained by technological developments brought about by research and the enormous amounts

of information it makes available to us. In other words, efforts are afoot to evolve into a society, which is modern and which enables us to lead a cultured, prosperous and full life laying emphasis on certain values. It is the collective responsibility of the members of the society to make suitable arrangements for achieving this ideal.

Society during the course of its existence founded different institutions. Educational institutions like schools, colleges and universities, research institutions, cultural organisations, institutions for arts and recreation, business and industrial establishments are but a few examples. In fact, of all the institutions founded by the society *library and its modern cognates* are potent in meeting a variety of needs of different users of modern society.

1.2.1 Role of Libraries in Society

"When thinking of libraries people have many different images in front of them. By stepping back from individual cases and examining the context in which library services are provided and the trends which are likely to affect them in future, it is possible to arrive at some conclusions about how libraries' roles are likely to develop and to start to answer the central question "*do libraries have a central role to play* or *are they in fact simply anachronisms?"* [Brophy, 2007].

Brophy identifies four models in this context. These are:

- libraries as collection;
- the library as an organisation of resource sharing;
- the library as a provider of access; and
- the embedded or immersive library.

If we closely examine the dominant view through most of history has been that libraries were places where written, including printed materials were held together both for security and to create a collection organised for use. The collection was paramount and steps had to be taken to secure its development and representativeness. Also, besides collection, resource organisation became increasingly important. Along side the concepts of collection, the organisation of access to knowledge and the needs of the user as an individual, strengthened the view that the library was a social institution which played a role in the organisation of society. This is considered a progressive view, seeing the public library as a means to spread literacy and love for learning.

The current model of a library is relatively straight forward. The library is the *interface* between the users and the vast amounts of published and unpublished information available. Most libraries place great emphasis on their role in facilitating and supporting learning. The issue for libraries is to provide a range of services which support lifelong learners who choose to learn in any one of the many modes, and probably in a personal mix of all modes. Therefore, there is a considerable challenge for librarians, across most sectors, to develop their direct involvement in the delivery of learning. As a matter of fact, understanding of pedagogical principles will help librarians to be more effective in designing and delivering services and in demonstrating the relevance and importance of library. One thing must be emphasised, libraries are fundamentally service organisations. What they do is intended to benefit people of all ages and backgrounds. They are

quite clearly in the business of helping their users to develop knowledge and understanding. Both, services and knowledge, are firmly at the centre of community development, whether globally or locally. The offering of knowledge - based service and the continuous enhancement of its quality have provided business with an avenue for differentiation from their competitors. But, libraries do not conduct business. They are unique and need to progress in the 21st century empowering themselves to meet the changing needs of the society. The paradigm shifts taking place in libraries to effectively meet the changing needs of the society are indicated in the table1.1.

Table 1.1: The Paradigm Shifts taking place in Libraries

From	To
Custodian of books →	Service oriented information provider
One medium	Multiple media
Own collection	Library without walls
In good time	Just-in-time
In sourcing	Out sourcing
Local reach	Global reach
We go to the library	The library comes to you

Source: Sabarathnam, D. S. Transforming Libraries to Support Chance and Growth. Dempsey, L. et al. *Networking and the Future of Libraries*. London: Library Association, 1995.

There has been a debate in the literature questioning the future of libraries. Some experts express the view that the existence of libraries is under threat. They opine that faced with the challenges of the twenty-first century, the library users will demand *just-in-time* information to help them answer specific questions, address specific problems and strategise. Providing information in good time will no longer be an acceptable norm. The user will want the information made available at the push of a button and in the right form and right format. In order to stay relevant, libraries and librarians must realise this and cater to the new society and demands of knowledge-based economy. Librarians must *re-engineer* the library to serve changing needs and to offer more personalised and customised services. The answer to the question "what is our business?" will help to chart the new course and ensure that libraries stay *relevant and play central role* in the socio-economic development of the country.

1.2.2 Information and its Impact on Society

There has been an informatisation of contemporary society. The whole information environment or *info sphere* is understood to be of growing importance. Even at the untutored level of experience, there is wide spread awareness that information in some ways is effecting a transformation of the social world. All the three realms of society – polity, the economy and the culture are subject to major principles of innovation.

Information and knowledge are deemed to be social wealth. The benefits of this social wealth should be available to all the members of the society. This social wealth is available in a variety of physical forms (e.g. books, periodicals, microfilms, computerised databases, etc.). Ordinary citizens require a variety of information in their daily discharge of duties. Use of information certainly affects their mental growth and brings changes in their outlook as well as lifestyles.

The impact of information and knowledge may be noticed in a number of human activities. Some of these are: education, research and development (R&D), government activities and mass communications, etc. Society itself has undergone significant changes at different periods of human history and information use has been cited as one of the most important agents of this change. Three stages are generally identified in course of societal evolution. They are: the agrarian society, the industrial society and post-industrial society. In all these societal transformations, use of information played a vital role. The emergence of post-industrial society in the 20th century is based on the developments in technologies, and the revolution and processing of information and its subsequent use.

1.3 INFORMATION SOCIETY

It has been often stated that we live in an era of change. But, how can one characterise the deep transformations that come with the accelerated insertion of artificial intelligence and new Information Communication Technologies (ICTs) in our present society? Is it a question of a new stage in the industrial society or are we entering into a new era? *Global village, technotronic era, post-industrial society, information society,* or *information age*, and *knowledge society* are just a few of the terms that have been coined in an attempt to identify and understand the extent of these changes. But, while the debate proceeds in the theoretical sphere, reality races ahead and communication media select the terms that we have to use. It is the case with the term Information Society. In the present decade, the expression *Information Society* has without doubt been confirmed as the hegemonic term, not because it necessarily expresses theoretical clarity but rather due to its baptism by official policies of the more developed countries and the fact that it merited a World Summit dedicated in its honour (2003 in Geneva and 2005 in Tunis). However, let us try to understand the concept and its development.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

1) Explain the role of libraries and information in meeting the requirements of modern society.

.....

.....

.....

.....

.....

.....

1.3.1 Information Society: Evolution of the Concept

The concept of Information Society emerged during the 1970s and throughout the 1980s and rapidly gained popularity and currency, its proponents ranging from scholars and academic authors to popular writers. Prominent among the first group of writers were Masuda, who in the Japanese context, perceived an eventual transition of the society to the point at which the production of information values became the driving force for the development of the society. The second writer belonging to this group was Tom Stonier, who perceived the dawning of a *new age* for Western Society. He draws explicit parallels and contrasts between industrial and information societies. Although not very comfortable with the term information society, Daniel Bell did much to sustain it through his work on post-industrial society. Daniel Bell, the classical exponent of post-industrialism, also theorised the Information Society (Bell, 1979).

In *The Coming of Post-industrial Society* (1972) Bell argued that the increased part played by science in the productive process, the rise to prominence of professional, scientific and technical groups and the introduction of computer technology, are all the evidence of a new axial principle at the core of the socio economic system, namely, the centrality of theoretical knowledge. The emerging social framework of Information Society builds upon this base. Information increasingly becomes a source of added value and thus of wealth. A growing portion of workers is employed in the information sphere. The important factor, enabling discourse to shift from post - industrialism to Information Society is the massive growth in the economic significance of IT.

Although, in its current form it is something of a novelty, it would be a mistake to think that the idea of Information Society is entirely of recent origin. Alongside the analytical strands of thought about social change, we also find another theme, technological utopianism. In fact, the writings of Masuda, Stonier and Naisbitt depict a new kind of society which on one hand, to empirical analysis but, on the other, is full of good society imagery. Technological utopianism is especially powerful in the USA. It was felt that the USA would realise through marriage of nature and mechanics, an unprecedented solution to the problem of industrialisation, allowing us to transcend the typical evils of industrial society. The ideals of decentralised democracy, community participation, an end to hierarchy and class, and of plenty for all, which inspired an earlier generation of technological utopianism, reappear in the literature of Information Society.

Alvin Toffler and John Naisbitt have done much to popularise the concept of information society. Naisbitt contended that the United States made the transition from an industrial to an information society as early as 1960s and 1970s, and that in this process the computer played a significant role. On the other hand, Toffler talked of an information bomb exploding in our midst and a power shift in society, which will make it depend on knowledge.

The newness and attraction of these ideas and the vigour, with which they were expressed, fired the public imagination and helped to sustain the interest in the concept of the information society and its literature.

1.3.2 Definition and Meaning of Information Society

Information society is a much used expression. The term has been characterised by various dimensions. Several authors have tried to define and interpret this

term according to their own perceptions. What strikes one in reading the voluminous literature on the information society is that "so many writers operate with underdeveloped definitions on their subject. They write copiously about particular features of the information society, but are vague about their operational criteria. Eager to make sense of change in information, they rush to interpret these in terms of different forms of economic production, new form of social interaction, innovative process of production, or whatever. As they do so, they very often fail to set out clearly in what ways and why information is becoming more central today, so critical indeed that it is ushering a new type of society"(Webster, F). One wonders just what is about information that makes so many scholars to think that it is at the core of modern age. Let us try to examine some of the significant definitions provided for the term information society in literature and analyse their main attributes.

According to Branscomb (1986) "it is a society where the majority of people are engaged in creating, gathering, storage, processing or distribution of information".

Manfred Kochen (1987) writes that the simple notion of a society in which information rather than material flows constitute most of its "communication and control" exchanges is extended to stress that:

i) Most members generate knowledge by knowledge-based procedures that are knowledge-intensive;

ii) Information consistently reflects basic social variants;

iii) Reason and human values *rather than strength and expediency* manage conflicts between pressures to conserve invariants and pressure to adoptive change.

Having stated all this, Manfred Kochen adds that "an information society is a stage in the evolution of *community brains,* towards a *world brain!* This is probably most likely to be the essence of the *great transition that* futurists seem to agree on. When enough people begin to believe it as likely to happen, if it is a stage in natural cultural evolution, then this belief may contribute to its self fulfilment. It will take some decades before this idea is sufficiently widespread and until the first information society appears". Ronfeldt (1992) is of the opinion that "*information society* is one which sees the steady blurring of the boundaries, which presently separate computer hardware, communication systems and satellites, global networks and more". While none of the above quoted definitions is wrong, they serve to emphasise the fluidity of present situation, one which suggests that what is likely to emerge – and certainly in short term – *is a series of parallel information societies, between which users switch according to their need.* The convergences these separate structures may, or may not, come according to the type of information society which finally emerges.

Another expert Martin, James (1978) maintains that "the term (information society) has come to represent societies at an advanced post-industrial stage, characterised by high degree of computerisation, large volume of electronic data transmission and an economic profile heavily influenced by the market and employment possibilities of information technology".

The Information Society concept has close affinities with the theory of post-industrial society of Daniel Bell. In The C*oming of Post-Industrial Society* (1973)

Bell argued that the increased part played by science in the productive process, the rise to prominence of professional, scientific and technical groups and the introduction of computer technology are all evidence of a new *axial principle* at the core of the socio economic system, namely, the centrality of theoretical knowledge. The emerging social framework of Information Society builds upon this base. Information increasingly becomes *a source of added value and thus wealth.* A growing portion of workers is *employed in the Information Sphere.*

1.3.3 Factors Determining the Arrival of Information Society

When we use the phrase Information Society, we usually mean society as a whole. The problem is how to distinguish an information society and whether it has arrived. We have but to listen to the commentators and leaders to perceive the signs all around us. The Information Society is a direct consequence of:

- the data explosion;
- the growing information consciousness and information dependence of society at large; and
- accelerating developments in computing and communication technologies.

However, Cawkell (1987) opines that "the pre-requisite for an Information Society is a telecommunication based information service infrastructure, which gradually builds up until at some point a critical mass of terminal users will be connected to a more or less universal network". According to Bell "the term refers mainly to the social structure of the post-industrial society. It describes the characteristics and the structure of the society of which *the driving force will be the production of information values and not material values.* In considering when it will be realised it is necessary to look at the four stages of technological development which have to be achieved:

- science based computerisation, where computer is used extensively in national scale projects;
- management-based computerisation in both government and business;
- society-based computerisation in which computers will be used for the benefit of the society as a whole;
- individual-based computerisation where each individual will have access to the terminal and computer information to solve problems, creativity will flourish in this high mass knowledge creation society.

In other words, the most advanced stage of Information Society appears to be high mass knowledge creation society.

From the above discussion, it may be inferred that a high degree of computerisation, large volumes of electronic data processing and employment of information technology with telecommunication-based information service structure, are the main criteria, that signifies whether a society or nation has become information society or not.

1.3.4 Different Perceptions of Information Society

Even though schemes are possible**,** we may categorise the literature on Information Society into broad groups each group representing a unique perspective. In this

connection, it is worth noting that Webster distinguishes and presents five different perceptions of the Information Society on the basis of technological, economic, occupational, spatial and cultural criteria. Let us try to understand these perceptions of information society.

A) **Technological Perception**

The most common perspective of information society lays emphasis upon spectacular technological innovation. The important idea is that breakthroughs in information processing, storage and transmission have led to the application of information technology (IT) in virtually all the areas of society. Although IT occupies a central role in all the literature on information society, this perspective emphasises the technological infrastructure *to the exclusion of other social, economic and political attributes.* Martin provided a number of scenarios detailing life in the information society specially, the spread of digital networks *as the key element.*

The convergence of computing and telecommunications resulted in the linking of computers enabling the establishment of global networks. The development of ISDN (Integrated Service Digital Network) will provide the infrastructure supporting the key ingredient of post-industrial-society-information. The rapid growth of the Internet appears to bring about precisely this change.

In other words, the technological perspective effectively draws attention to the potential benefits of information technologies for the society.

However, with such emphasis on technology, generally removed from a social, cultural and political context, it is unable to provide adequate foundation for defining the attributes of information society. Also, the problem of measurement, and the associated difficulty of stipulating the point on technological scale, at which a society is judged to have entered an information age, is surely central to any acceptable definition of a distinctly new type of society. It is ignored by popular futurists. The authors of this school of thought are content to describe, in general terms, technological innovations, presuming that this is enough to distinguish the new society. "There are some serious scholars who encounter two problems. First, how does one come to measure the rate of technological diffusion, and, second when does a society cease to being *industrial* and enter into the *information* category?" (Webster, 2003)

B) **Economic Perception**

Some of the authors who write about information society point to the growth of the service sector in the industrialised nations and the decline of employment in manufacturing. For some of the authors, the dominant characteristic of an information society is the nature of its economy. Machlup (1962) initiated this research perspective by analysing the growth of the "knowledge sector" in the US economy. In Machlup's analysis, industries primarily concerned with production and distribution of knowledge (knowledge industries) were examined separately, rather than as a part of the overall service sector. The knowledge industries included such areas as educational system, the media and other communicative activities, libraries and other information activities, and research/institutes. The contribution of

this sector to the Gross National Product (GNP) was found to be significant (estimated at about 40% for the early 1960s) and growing at a rate considerably higher than the industrial sector. Machlup concluded that knowledge industries would soon outpace the industrial sector, leading to the rise of a *knowledge society.* A similar conclusion was reached at about the same time in Japan, as Umaseo (1963) predicted the rise of the *spiritual industries* over material and agricultural sectors in economies that were more developed. These earlier studies distinguished knowledge or information sector from other economic sectors.

The best known and often cited study on the emergence of an information economy conceived on these lines is the report from Marc Porat (1977). Porat initiated much of this work, by broadening the view of information work to apply to more than those jobs falling within the information or knowledge sector as defined by Machlup. Porat began by defining information activities as including all resources consumed in producing, processing, and distributing information goods and services. He defined the primary information sector as including all those businesses involved in the exchange of information goods and services in the market place. In addition, however, Porat noted that a great many jobs in other sectors of economy can be thought of as information work. Nearly, every organisation produces, processes, and distributes information for its own internal consumption. Thus, a secondary information sector includes these information activities. Porat estimated that overall information activities accounted for 45% of the gross national product in1967, and that half of the labour force was employed in information-related work. This study has been used to justify references to United States as an information society. Several authors have attempted to refine Porat's analysis and apply it in other contexts (Komastujaki, 1986, Schement, Lievrouw, and Dordick, 1983). This perspective focuses on the economy as the primary attribute of the information society. It may be stated that examining the economic structure alone provides only a limited view of the social and cultural implications associated with information societies. Also, several critics contend that Porat's classification of information workers is too broad to be meaningful, and does little to suggest social implications of the shift to an information society (Bates, 1985, Wizard, 1984). Bates, for example, has noted that according to Porat, factory workers assembling information transmission equipment are considered information workers; just as are university researchers. This does not appear to be logical.

He felt that such a categorisation may weaken the social distinctiveness of the information sector. There are other types of objections and criticisms on Porat's analysis. However, such objections may not entirely invalidate the findings of Porat and are not intended to do that.

Marc Porat has been able to distinguish two information sectors: primary and secondary, then to consolidate them, and separate out the non-informational elements of the economy. Porat, by re-aggregating national economic statistics, is able to conclude that 46% of the U.S. GNP is accounted for by the information sector. "The United States is now an Information based economy". As such, it is an "Information Society (where) the major arenas of economic activity are information goods and service producers, and the public and private (secondary information sector) bureaucracies".

C) **Occupational Perception**

Another popular measure of the emergence of an information society is the one that focuses on occupational change. The contention is that we have achieved an Information Society when the predominance of occupations is found in information. That is to say, in Information society, the number of people employed in occupations such as teaching, research and development and activities associated with creative industries (media, design, arts) out-numbers those employed in factories. The main characteristic of these people is high level of education. The occupational definition of information society is often combined with an economic measure. Porat calculated that the late 1960's, a little under half of the US labour force was to be found in the information sector. Porat connects the growth of economic significance of information with changing occupational patterns. Most identifiers of an information society draw on occupational changes as indicators of the approach of a new age, which reflects the introduction of new technologies. In other words, the shift in distribution of occupations is at the heart of the theory of the information society.

D) **Spatial Perception**

This perception of the information society has at its core the distinctive stress on space. Here the major emphasis is on the information networks that connect locations and as a result have great effect on the organisation of time and space. This aspect has been considered as an index of information society in recent years. The centrality of information networks linking together locations within and between towns, regions, nations and continents and indeed the entire world, is an important consideration for spatial perspective. In many writings, the technological bases of the information networks is emphasised because these networks provide the infrastructure that enables information to be processed and distributed. These developments may lead to an emerging *networked society.* The salient idea here is of information circulating along electronic *highways.* But, no one has been able to quantify how much and at what rate information must flow along these routes to constitute an information society. Though, no one could deny that information networks are an important feature of modern societies and do facilitate instantaneous communications round the globe, databases can be accessed from any place to any place, still some people would ask "why should the presence of networks lead analysts to categorise societies as information economies?". It may be stated that the question of what constitutes a network is a serious one and raises the problem of how to distinguish different levels of networking as also how we stipulate a point at which we have entered a network/ information Society.

E) **Cultural Perception**

Developments such as invention of radio, television, and computers coupled with the recent advances in telecommunication networks and media technologies are having great impact on the life styles of people as a whole. It is stated that presently we are living in a media-laden society and the informational features of our world are thoroughly penetrative now than in earlier times. In fact, the informational environment is a great deal more intimate and more constitutive of us. For example, the informational

dimensions of the clothes we wear, the styling of hair and faces, the very ways in which we work makes one aware that social intercourse nowadays involves greater degree of informational content than before. According to Webster (1996), "contemporary culture is manifested by more heavily information laden than any of its predecessors. We exist in media-saturated environment that means life is quintessentially about symbolisation, about exchanging and receiving messages about ourselves and others. It is acknowledgement of this explosion of signification many writers conceive of our having entered an Information Society". But no writer attempted to measure this development in quantitative terms and only describe our living in a sea of signs one fuller than at any other epoch. In the other words, "we are surrounded by more and more information and less and less meaning."

Reviewing the different definitions of information society, it emerges that these definitions are underdeveloped or imprecise. Whether it is technological, economic, occupational, spatial or cultural perspectives, we are confronted with highly problematical notions of what constitutes, and how to distinguish, an Information Society. It is essential that we be aware of these difficulties. Though, as a heuristic device, the term Information Society might have some value in helping us to explore and analyse the features of the contemporary world, it can not be accepted by all as a definitive. In other words, though one may acknowledge that information plays a vital role in the contemporary society, one has to remain cautious as regards the information society scenarios and in asserting that information has become the chief distinguishing feature of modern times.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of the Unit.

2) Briefly explain the essence of *Information Society* concept as reflected in the conceptual analysis of literature.

.....

.....

.....

.....

.....

3) State the attributes of an Information Society.

.....

.....

.....

.....

.....

.....

4) What are the economic implications of an Information Society?

.....

.....

.....

.....

.....

.....

F) **United Nations World Summit on the Information Society**

The United Nations and International Telecommunications Union (ITU) hosted the first phase of the World Summit on the Information Society (WSIS) in Geneva during Dec. 10-12, 2003. The summit concluded at its second phase meeting in Tunisia during Nov. 16-18, 2005, its results should be assessed in the light of the question whether a common vision on the future information society emerged that empowers the citizens of those societies of to be the architects of their histories.

One of the goals of the first phase of the WSIS was precisely to develop a common vision of information society. Although a large part of the government delegations and the private sector attributed little importance to this aspect, for many organisations in civil society, *it was dealing with a key issue,* for it was there the controversy regarding its meaning took place, evidencing the clash among projects of society.

In fact, the entire process of debate ended up in two separate approaches, which can be briefly summarised as follows:

In the first approach, to talk about the information society refers *to a new development paradigm* that assigns *technology to a causal role* in the social order, designating it *as the drive of the economic development.* For the developing countries, this discourse implies that the transition towards information society is essentially a matter of time and of political decision to create adequate *empowering conditions.* Something similar occurred with regard to the social sectors affected by the digital gap, which would have to be included via universal access programs. By placing technology at the core of this model, the telecommunications industry is convoked to lead this development; while industry *that produces services and digital content* assumes a hitherto unheard of influence.

The second approach, which contested the first in the Summit process, sustains that the new phase of human development that we are entering into is characterised by the predominance of information, communication, and knowledge in the economy as well as human activities. According to this standpoint, technology is the support *that has unleashed* the acceleration of this process; but it is not a neutral factor, nor is its course *inexorable,* since technological development is guided by *games of interest*

Following this perspective, policies for information society development should *focus on human beings* and *should be conceived* in terms of their

needs and within a *benchmark of human rights and social justice.* The developing countries and the social actors should play a key role in the orientation of that process and the decisions. In other words, for this second approach, what is fundamental is not *information* but *rather society.* While the first approach *refers to data, transmission channels, and storage space,* the second *talks about human beings, cultures, forms or organisation* and communication. The information is determined in terms of society and not the inverse. That is why the campaign for Communication Rights in the Information Society – CRIS – points out in the document on the WSIS, *The Question for Civil Society.* If Civil Society is going to adopt and remove the notion of an information society, it should return to these basic notions, posing the correct questions:

- Who generates and processes information and knowledge? How is it valued?
- How is knowledge spread and distributed? Who are the custodians?
- Who restricts and facilitates the use of knowledge on the part of the people to attain their goals? Who is best and least positioned to take advantage of the knowledge?

G) **Alternate Definitions or Proposals**

The concept of information society, born under the percepts of neo-liberal globalisation, infers that henceforth it will be the *technological revolutions* that will determine the course of development. Social conflicts would be things of the past. For the same reason, this concept is no longer the most appropriate to qualify the new trends in societies, nor much less to describe a counter-hegemonic project society. The present position is that beyond debating the appropriateness of one term or another, what is most important is to contest and de-legitimise any term or definition that reinforces this technocratic conception of society. Therefore, it is better to consider criteria to foment the debate. As a first step, we must welcome the suggestion that any reference to *societies* should be plural, recognising the heterogeneity and diversity of human societies. This also implies reaffirming the interest of each society appropriating technologies for their specific development priorities, and not simply adapting to them in order to be part of a supposed pre-defined Information Society. The second step is to affirm that "any definition that uses the term *society* cannot describe a reality circumscribed to the World Wide Web or ICTs, the Web may be a new social interaction scenario, but this interaction is strictly integrated to the physical world, and the two spheres are mutually transformed. We should back a project of the society where *information is a public good,* and *not a commodity;* communication, a participative and interactive process; knowledge, a shared social construction, not private property; and technologies, a support for it all, without becoming an end in itself". (Burch, 2005).

1.4 KNOWLEDGE SOCIETY

Change is the essence of a growing society. Information and Communication Technologies (ICTs) are seen as the facilitators of change. The current revolution around the importance of information and knowledge is profound. In fact, a new class structure is being created around the wealth of information and knowledge. Nowadays, knowledge has come to be constitutive of the way that we live.

Historically speaking, it is correct to say, to a greater or lesser extent, knowledge has always followed the development of man and mankind. It has been seen as a kind of measurement to the success and achievements of society or mankind. Nevertheless, no society *until the present one* has ever been called or referred to as *knowledge society.* This term developed relatively shortly after the term information society was introduced in the last decades of the 20th century. (Stipanov, 2005). The reason for this might be the technology-related developments which have fundamentally transformed the degree to which knowledge is being integrated into economic activity to the extent that we are witnessing a shift in the very basis of competitive advantage. The expression *knowledge society,* recognisable more as social project than as sign of times, is not without substance. In 1960s the debate on industrial society raised the question whether there can be considered a *paradigm* shift towards a *knowledge-based society*. Some prominent authors already foresaw knowledge as the main indicator in order to displace *labour* and *capital* as the main driving forces of capitalistic development. However, the notion *Knowledge Society* emerged towards the end of the 1990s and is particularly used as an alternative by some in academic circles to the Information Society. UNESCO in particular, has adopted the term *knowledge society*, or its variant, *knowledge societies* within its institutional policies. There has been a great deal of reflection on the issue, which strives to incorporate a more integral conception that is not only related to the economic dimension. For instance, Dr. A.W. Khan, Former Assistant Director General of Communication and Information, UNESCO writes: "Information Society is the building block for *Knowledge Societies,* whereas I see the concept of Information Society as linked to the idea of *technological innovation,* the concept of *Knowledge Societies* includes a dimension of *social, cultural, economical, political* and *institutional transformation,* and a *more pluralistic* and *developmental perspective*…. The concept of k*nowledge societies* is preferable to that of Information Society because it better captures the complexity and dynamism of the changes taking place…. The knowledge in question is important not only for economic growth but also for empowering and developing all sectors of society." (Sally, 2005)

"Today on the political level and also in many scientific disciplines, the assumption that we are already living in a *knowledge-based society* … the vision of a *knowledge-based society* determines at least the perception of the Western Societies" (Krings, 2006).

1.4.1 Definition of Knowledge Society

"The transformation of existing societal structures by *knowledge as a core resource* for economic growth, employment and as a factor of production *constitutes the criteria* for designating advanced modern society as a *Knowledge Society*".

"Such a society, in which knowledge plays a crucial and decisive role, with its entire mechanisms and organisation gives an impetus for new knowledge, ensuring the conditions of its inception and use, which further increases new knowledge, etc. Society is therefore, structured on knowledge, it is simply deeply penetrated so that complete functioning of society, including the entire development and progress, rests on *Knowledge"* (Stipanov, 2005).

In a *knowledge society* the traditional measures of competitiveness such as labour costs, recourse endowments and infrastructure are replaced by new dimensions (indicators) such as patents, research and development (R&D), availability of (or capability to afford) knowledge workers. The emphasis is not on the knowledge anybody has but the knowledge one produces. Knowledge resides exclusively in people. Therefore, it is clear that the greatest wealth of any nation, any society is its people. This is vastly underused resource, which offers the opportunity for any country to make major breakthrough, and catch up with countries presently more developed.

It is necessary to differentiate here between the definitions that aim to characterise an existing or emerging reality from those that express a *vision – a longing or desire for a potential society.* Both are relevant: the former for their contribution to analysis, and the latter because they guide policies. In the first category we shall refer to Manuel Castells, an authority on the subject information society. As for knowledge society, he points: "it is to do with a society in which conditions for generating knowledge and processing information have been substantially changed by a technological revolution focussed on information processing, knowledge generation, and information technologies". Castells opines that Information society places the emphasis on the content of work (the process of collecting, processing, and communicating the necessary information), and *knowledge society* emphasises economic agents, who should be superiorly qualified to exercise their work. With respect to visions, the documents resulting from the WSIS form illustrative examples, as they have emerged from a World process. For instance, the Civil Society Declaration extends its visions to several paragraphs, but essentially says: "We are committed to building information and communication societies that are people-centred, inclusive, and equitable societies, in which everyone can freely create, access, utilise, share and disseminate information and knowledge, so that individuals, communities, and people are empowered to improve their quality of life and to achieve their full potential". Subsequently, the Declaration adds the principles of social, political, and economic justice, as well as full participation and capacity-building of people; it highlights the objectives of the sustainable development, democracy, and gender equality; and it evokes societies where development acts as a setting for fundamental human rights and is oriented to attain a more equitable distribution of resources.

1.4.2 Characteristics of Knowledge Society

There are many components of *Knowledge Society*. First of all, there is a huge quantity of newly created knowledge in all fields continuously expanding and exponentially growing. Statistics are known about the exponential growth of knowledge to the entire past historical period, including all kinds of publications as one of the proofs of the whole process. The situation with the total number of researchers in the world, and the entire research capacity can be compared with past times. Not only the number of literate people, but also that of the educated people has increased enormously in the whole world. To this we need to add new possibilities of informing, communicating and team work which were incomparable and unthinkable earlier. Modern ICT has connected the world on all levels so closely, that the entire globe has become a net from which we can connect practically from any one point to another. The possibilities and the speed of communicating, the transfer of information and knowledge, the acquisition of

new ideas and views, not to mention the experience of it are so incredible that Manuel Castells, rightly calls today's society a *network society.* All this creates conditions for the development of new knowledge and awareness, uninterrupted progress and development. This process is advancing with such speed and dimension, that all those who are not directly or indirectly involved will ultimately stay on the fringes. Knowledge is no more *connected* with an individual; it is today the characteristic of the society as a whole, an interconnected society.

In a perfect knowledge society all people have:

- Open and timely access to information and knowledge;
- The capacity to absorb and interpret information; and
- Avenues and opportunities to use knowledge and decision making and for transformation to higher quality lives.

1.4.3 Establishment of Knowledge-based Society

A careful analysis of the literature available on knowledge society reveals that establishing a *knowledge-based society* is clearly desirable and, looking from the perspective of the imminent future, it may well be the only possible society. "The establishment of such a society is a political process – it requires political decision making and political actions. The process of establishing a *knowledge-based society* would be facilitated if one would define bench marks, indicators providing quantifiable measurements indicating whether we are going in the right direction and how far we have progressed. In fact, the essence of progress is to assure order among changes and preserve changes amid order". (Slaus).

It may be stated that the emergence of knowledge society means an ever increasing demand for a well-educated and skilled workforce across the whole economy. In this connection, it is worth noting that the appointment of the National Knowledge Commission (NKC) by the Government of India has been a step in the right direction. The NKC had been entrusted with the preparation of a *blueprint* for reform of our knowledge related institutions and infrastructure. It has submitted its report that will take us a long way in the knowledge society.

1.4.4 Knowledge-based Economy (KBE)

Most advanced economies have undergone significant structural changes in recent years. One of the key characteristics of the changes is the growing importance of knowledge in all sectors of economic activities. These economies have developed from an agricultural economy in which *land is the key resource,* then to an industrial economy in which *natural resources and labour* are the *main resources,* and now to a *knowledge-based economy (KBE)* in which *knowledge* is the *key resource.* In order to facilitate economic analysis, distinction can be made between different kinds of knowledge which are important in the knowledge-based economy: *know-what, know-why, know-how* and *know-who*. Knowledge is a much broader concept than information, which is generally *know-what,* and *know-why* components of knowledge. These are also the types of knowledge which come closest to being market commodities or economic resources to be fitted into economic production functions. Other types of knowledge – particularly *know-how* and *know-who,* are more of tacit knowledge, which are more difficult to codify and measure (Lundvall and Johnson, 1994).

The term KBE was first coined by the Organisation for Economic Cooperation and Development (OECD) and defined as "economies which are directly based on the production, distribution and use of knowledge and information" (OECD, 1996). The APEC then extended this idea to state that in a KBE "the production, distribution and use of knowledge is the main driver of growth, wealth creation and employment across all industries" (APEC, 2000). While the KBE ideal encompasses concepts like innovation, higher education and R&D, it is broader than this and highlights the importance of knowledge in all aspects of the economy. KBE is also referred to as the *New Economy* or *Modern Economy.* However, in a truly KBE, all sectors have become knowledge-intensive, not just those usually called *high technology.*

While there have been a lot of discussions on the characteristics of a KBE at the international arena, there is so far no internationally agreed framework for measuring a KBE. Different frameworks have been developed by individual countries and international organisations.

To fully understand the working of the KBE, new economic concepts and measures are required which track phenomena beyond conventional market transactions. In general, it was suggested by OECD that improved indicators for the KBE are needed for the following tasks:

- Measuring knowledge inputs;
- Measuring knowledge stocks and flows;
- Measuring knowledge outputs;
- Measuring knowledge networks; and
- Measuring knowledge and learning.

A full account of research conducted by OECD for developing improved indicators for the KBE can be found in the OECD publication "The Knowledge-based Economy", 1996.

The World Bank has recently developed the knowledge assessment methodology and score cards. They have formulated the set of 63 variables as proxies for four areas that they consider essential in the development of knowledge-based economy (KBE). They are:

- Economic and institutional regime to provide incentives for the efficient use of existing and new knowledge and flourishing of entrepreneurship,
- An educated and skilled population to create, share and use knowledge well,
- A dynamic information infrastructure to facilitate the effective communication and processing of information, and
- An effective innovation system of firms, research centres, universities and other organisations.

Each country should develop its own path to sustainable knowledge-based society. Once such a society is established it is assuring prosperity, social cohesion and even happiness, but the way to this goal is not free of dangers and threats.

Developing Countries

As part of economic history, the knowledge era has unfolded with remarkable speed. As a consequence most basic tools for creating and managing wealth has

lagged far behind the need. This is true of most of the developing countries. Knowledge has become the corner stone of wealth creation in a knowledge society. Intellectual capital comprises three primary types of capital: human capital, structural capital and customer capital. Of these human capital is the most important one. Developing countries need to recognise and value its human resources capital and capitalise on it to the task of amassing wealth of knowledge which works for the poor and promotes social equality. The wealth of knowledge will enable the developing countries to emerge as strong economies and become independent of low cost labour increasing productivity as well as incomes. Therefore, it is necessary to open up avenues for knowledge incubation to be supplemented by capacity building support and enabling policy frameworks. These policy frameworks are intended to provide opportunities for people to use the power of knowledge for advancing their growth.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of the Unit.

5) Discuss the important characteristics and features of a knowledge society.

.....

.....

.....

.....

6) Explain the different kinds of knowledge important in the knowledge-based economy.

.....

.....

.....

.....

7) Explain what is meant by the term Knowledge-based Economy (KBE) and discuss some of the important indicators that help to measure KBE.

.....

.....

.....

.....

8) Discuss the steps to be taken by developing nations to progress towards knowledge society and knowledge-based economy.

.....

.....

.....

.....

1.5 SUMMARY

This Unit commences with the role of libraries in modern society. In this regard, the concept of a modern library and its expected role to suit the changed requirements of the society and the user community is explained. The impact of information on a society and the user community is explained. The impact of information on society is briefly mentioned. The Unit then goes on to describe the concept of information society, its evolution, interpretations and its impact on information profession. The emerging knowledge society, its characteristics, its establishment, the changes taking place in the society in this context are explained in a simple manner so that it can easily be comprehended. It has been emphasised that in a knowledge society it becomes crucial that we have the skills and competencies relating to the selection and use of information. Tacit knowledge (essentially *know-how* and *know-who*) in the form of the skills needed to handle codified knowledge becomes more important than ever. The skills required of humans are those that are complimentary with ICTs and not those which are substitutes.

The concept of Knowledge-based Economy (KBE) and the indicators necessary for its assessment are described and explained. It has been stated that work in the KBE will demand uniquely human (tacit) skills such as conceptual and inter-personal management and communication skills. It has been mentioned that each country should develop its own path to sustainable knowledge-based society. The effort of Government of India in the constitution of National Knowledge Commission has been as a right step. If the Government of India implements the recommendations of the National Knowledge Commission, it would provide right environment to accelerate the establishment of Knowledge Society and transformation of India into a Knowledge-based Economy (KBE).

1.6 ANSWERS TO SELF CHECK EXERCISES

1) Modern Society has various needs such as education, research, cultural advancement, information and other ideological pursuits. It has founded different institutions designed to meet such needs. Libraries are one such prominent institution, which are expected to meet most of these needs. Certainly libraries play an important role in supporting the educational (both formal and non-formal) and research activities of the society.

   In many cases, access to information was, and is, via libraries. Information systems tend to be based on, or geared to, the processing and organisational requirements of institutional information centres. This pattern has, however, begun to change as a result of developments in computing and communication technologies. Technology appears capable of deinstitutionalising information and handing over access to individual, thus cracking the mould of library. The fundamentalists view is that the pace of development in ICTs will *soon make the traditional librarian / information worker obsolete.* It has been remarked that there is no long term future for any library in the form we know it today; libraries as collection of physical artefacts are rapidly becoming obsolescent. Of course, this fundamentalist position however, is rigidly simplistic. The social, cultural and educational function of libraries and information profession is also being challenged. In other words, the library

as the traditional store house of knowledge and the preserve of cultural heritage is caught in the maelstrom of change generated by technological advances. Therefore, as a adaptive reaction, attempts to define the goals of the library are called for. The library profession must revise its service delivery philosophies and operational mechanisms. There is a shift from a passive or reactive to a proactive mode. Naturally, this entails on the part of libraries evaluation exercises, the design and promotion of new systems and facilities, investment of time in user education programmes and acquisition of relevant professional skills and competencies for those already in the field. With the availability of sophisticated information technology valuable professional talents must be directed towards enhancing the image of the library as a dynamic information centre with a wide range of services to offer its users. Efforts should be made to enable users to view the *librarian as valuable professional resource person who can quickly locate the information and materials needed to support their intellectual pursuits in a total spectrum of subject areas.* To meet the changing needs of the clientele, libraries must be more creative and provide access to resources available in other libraries via networking, and electronic resources for those who can not afford home computers or terminals. Of course, library users must be made to understand the difference between information which is freely available, and information which is free.

Although libraries essentially handle information and knowledge, the institutional mechanism to meet the demands of the users in an emerging Knowledge Society has to be expanded by properly organising and operating many of the modern information systems and services. The implementation of the above discussed aspects is essential to meet the changing needs of modern society.

2) A number of scholars, scientists and philosophers have been predicting a revolutionary transformation of modern industrial society. Many causes have been identified and attributed as forming the driving force behind such transformation. However, most people opine that *information* is the defining feature of modern world. We are told that we have entered an information age and are rapidly moving towards "global information economy". Many writers identify an entire new phenomenon called Information Societies – the examples of which are found in the United States, Britain, Japan and Germany.

"Information Society" is a concept which sees the transition of Industrialised Society into one in which information – in its broadest and most diverse forms – is the key driving force.

Two major factors underline the Information Society claims. Firstly, that the society is becoming increasingly centred on information handling, processing, storage and dissemination using micro – electronics – based technologies, made available through the convergence of computer with telecommunications, namely ICT. And secondly, that this shift is reflected in an emerging occupational structure, in which the category of "Information workers" has become predominant. In other words, the Information Society appears as an out come of technological and economic changes.

3) Attributes of Information Society are:

i) Shift from an industrial economy to information economy.

That is to say that in industrial economy *capital* is the strategic resource, while in Information Economy information becomes the strategic resource;

ii) a telecommunication based information service infrastructure;

iii) a high degree of computerisation, large volumes of electronic data transmission and employment of IT;

iv) characterised by the fact that the rapid convenient delivery of needed information is the ordinary state of affairs.

4) Economic implications of Information Society:

Information Society might be characterised by different dimensions. One of these relates to the economic structure. We come across several references in literature to the economic implications of the Information Society.

The state of information in the economy has pervasive effects on the working of economy generally. It has great impacts on those sectors that provide information products and services such as press, television, radio, film … libraries and other information providers.

Machlup initiated studies analysing the growth of *Knowledge Sector* in the US economy. The knowledge industry included such areas as the educational system, the media, and other communication activities, libraries and other information activities and research institutions. Machlup's finding was that the contribution of this sector to the Gross National Product (GNP) was 40% for early 1960s and is growing at a rate which is higher than the industrial sector.

Marc Porat, who continued the research in this direction, enlarged the scope of information work to include all jobs falling within the information or knowledge sector as defined by Machlup. According to Porat information activities included all resources consumed in producing, processing and distributing information goods and services. Porat estimated that these activities amounted for 45% of the GNP in 1967.

In conclusion, it may be emphasised that the contribution of information sector to successful economic function is beyond doubt. However, it is not quite the same as saying that information has become a primary out put of all developed economies. We may say that we are moving towards Information-based Economies, but not wholly dependent on the production, sale and exportation of information goods and services for the preservation of our economic well being.

5) Characteristics of the Knowledge Society

One of the most popular themes discussed in general literature for more than a decade has been that technologically advanced economies are in the process of moving beyond industrial capitalism to information-based economies that will bring profound changes in the form and structure of the economic system.

Economists recognised long ago that the most important resource determining the economic efficiency of any economy, industry, productive process, or house hold, is *information and its effective communication*. The characteristics of information define the state of knowledge that under lies all economic process and decision making structures.

In transformation of social structures – by knowledge *as a core resource* for economic growth, employment, and as factor of production, constitute the *main criteria* for designating a modern society *as a "Knowledge Society"*. In a knowledge society, the traditional measures of competitiveness such as labour costs, resource endowments, and infrastructure get superseded by *new dimensions such as patents, research and development, availability of knowledge workers.* In a perfect knowledge society all people have:

- Open and timely access to information and knowledge;
- The capacity to absorb and interpret information; and
- Avenues and opportunities to use knowledge and decision making and for transformation to higher quality lives.

6) In order to facilitate economic analysis, distinctions can be made between different kinds of knowledge which are important in the Knowledge-based Economy (KBE). They are: *know-what, know-why, know-how and know-who.* Knowledge is a much broader concept than information, which is generally the, *know-what* and *know-why* components of knowledge. These are also the types of knowledge which come closest to being market commodities or economic resources to be fitted into economic production functions. Other types of knowledge – particularly *know-how* and *know-who* – are more *tacit knowledge* and are difficult to codify and measure.

Learning to master the four kinds of knowledge takes place through different channels. While *know-what* and *know-why* can be obtained through reading books, attending lectures and accessing databases, the other two kinds of knowledge are rooted primarily in practical experience. *Know-how* will typically be learned in situations where an apprentice follows a master and relies upon him as the authority. *Know-who* is learned in social practice and some times in specialised educational environments. It also develops in a day-today dealings with customers, sub-contractors and independent institutes. This is one of the reasons why private firms engage in basic research to acquire access to networks of academic experts crucial for their innovative capability. *Know-who* is socially embedded which can not easily be transformed through formal channels of information.

7) Most of the advanced economies have undergone significant structural changes in the recent years. One of the main characteristics of the changes is the growing importance of the knowledge in all sectors of economic activities. These economies have developed from an agricultural economy in which land is the key resource, then to an industrial economy in which natural resources and labour are the main resources, and now to a Knowledge-based Economy (KBE) in which knowledge is the key resource.

The term KBE (or some times called New Economy or Modern Economy) results from a fuller recognition of the role of knowledge and technology in

economic growth. Knowledge as embedded in human being (as human capital) and in technology has always been central to economic development. The term KBE was first coined by OECD and defined as "economies which are directly based on the production, distribution and use of knowledge and information" (OECD, 1996). The APEC then extended this idea to state that in a KBE "the production, distribution and use of knowledge is the main driver of growth, wealth creation and employment across all industries" (APEC, 2000). While the KBE ideally encompasses concepts like innovation, higher education and R&D, it is broader than this and highlights the importance of knowledge in all aspects of economy.

To fully comprehend the working of the KBE, new economic concepts and measures are required which track the phenomena beyond conventional market transactions. In general it was suggested that improved indicators for the KBE are needed for the following tasks:

- Measuring knowledge inputs;
- Measuring knowledge stocks and flows;
- Measuring knowledge outputs;
- Measuring knowledge networks; and
- Measuring knowledge and learning.

8) Knowledge exists in the minds of the people and when combined with capital, labour existing knowledge and other inputs, produces goods and services and thus becomes a factor of productivity. This fact has been realised by many developed nations and they have transformed into knowledge-based economies where conventional raw materials and physical labour (Brute – force economy) is being replaced by brain – force economy. Developing nations need to recognise and value its human resources capital and capitalise on it to the task of amassing wealth of knowledge which works for the poor and promotes social equality. The wealth of knowledge in turn will create opportunities for developing countries to emerge from dependence of low cost labour as a source of comparative advantage increasing productivity and incomes. Avenues need to be created for knowledge incubation (growth) to be supplemented by capacity – building support and enabling policy frame works which provide opportunities to people to use power of knowledge for improving their growth.

1.7 KEYWORDS

Information Age : A period predominantly centred on information activities.

Information Channel : Established carriers that disseminate information or knowledge.

Information Economy : Is a philosophy, an attempt to model the national economy with its basis on knowledge and information activities, and which has continued to affect, in important ways, the economic, social, political and cultural life of the nation.

Information Flow : Information transfer through established channels.

Information Industry : Industries involved in the production of information in any physical form.

Information Need : The term "Information Need" refers to that need which library services or materials are intended to satisfy. It is assumed that the consumption of information arises from a need for information.

Information Transfer Process : The movement of information from generation to use with a series of intermediate links that connects each other to form a chain.

Information Work-Force: The term has acquired a wider connotation and includes many groups who are involved in a variety of information related occupations. The OECD categorisation includes: Information producers, Information processors, Information distributors and Information Infrastructure occupations, under this concept …

Infosphere : Is a neologism coined by Luciano Floridi on the basis of biosphere? It denotes the whole informational environment constituted by all informational entities (thus including informational agents as well), their properties, interactions, process and mutual relations. It is an environment comparable to, but different from cyberspace (which is only one of its sub-regions, as it were), since it also includes off-line and analogue spaces of information. It is a concept that is rapidly evolving.

Kinds of Knowledge:

i) *know-what* : Refers to knowledge about *facts* such as How many people live in Delhi? What are the ingredients of pancakes?, When was the battle of Panipat fought?, are some of the examples. Here, knowledge is close to what is normally called as information.

ii) *know-why* : Refers to scientific knowledge of the principles and laws of nature. This kind of knowledge underlies technological development and product and process advances in most industries. The production of this kind of knowledge is often organised in specialised organisations such as research labs, universities, etc.

iii) *know-how* : Refers to skills or capability to do something. Businessmen judging market prospects for a new product or a personnel manager selecting and training staff have to use their know-how.

Know-how is typically a kind of knowledge developed and kept ready with in the border of an individual firm.

iv) *know-who* : Involves information about who knows what and who knows how to do what. It involves the formation of special social relationships which makes it possible to get access to experts and use their knowledge efficiently. This kind of knowledge is internal to the organisation to a higher degree than any other kind of knowledge. It is very important for any modern manager or organisation to have this.

Post-Industrial Society : The thesis propounded by Daniel Bell. The concept emphasises the centrality of theoretical knowledge and the axis around which new technology, economic growth and the ramification of the society will be organised. This axial principle is becoming more and more predominant in advanced industrial societies.

Social Wealth : Wealth available freely to all members of a society.

1.8 REFERENCES AND FURTHER READING

Bell, Daniel. *The Coming of Post-Industrial Society*. New York: Basic Books, 1973. Print.

--- . "The Social Framework of Information Society". *Computer Age: A Twenty Year View.* Ed. M.L Detouzos and J Moses. Cambridge, MSS: MIT Press, 1979. 163-211. Print.

Brophy, Peter. *The Libraries in the 21st Century.* 2nd ed. London: Facet, 2007. Print.

Branscomb, A. "Law and Culture in the Information Society". Information Society. 4.4 (1986): 279-311. Print.

--- . *Who owns Information?: From Privacy to Public Access*. New York: Basic Books, 1994. Print.

Burch, Sally. "The Information Society/ The Knowledge Society". Word Matters: Multicultural Perspectives on Information Societies. Ed by Alain Ambrosi. C and F Editions, 2005. Web 26 September 2012. < http://vecam.org/article517.html>

The Network Society: From Knowledge to Policy. Ed. Manuel Castells and Gustavo Cardos. Washington, DC: Johns Hopkins Center for Transatlantic Relations, 2005. Print.

Cawkell, A.E. *Evolution of an Information Society*. London: ASLIB, 1987. Print.

Katz, R.L. *Information Society: An International Perspective*. New York: Praeger, 1988. Print.

Kochen, Manfred. *A New Concept of Information Society*. London: ASLIB, 1987. 141-154. Print.

Krings, Bettina. "The sociological perspective on the knowledge-based society: assumptions, facts and visions", Enterprise and Work Innovation Studies, 2, IET, (2006): 9-19. Web 26 September 2012. <http://run.unl.pt/handle/10362/1706>

Lundvall, B and Johnson, B. "The Learning Economy". *Journal of Industry Studies*. 1. 2 (1994). Print.

Lyon, D. *Information Society: Issues and Illusions*. Cambridge: Polity Press, 1988. Print.

Machlup, F. *The Production and Distribution of Knowledge in the United States*. Princeton, NJ: Princeton University Press, 1962. Print.

Martin, James. *The Wired Society*. Englewood Cliffs, NJ: Prentice-Hall, 1978. Print.

Martin W.J. *The Global Information Society*. 2nd rev. ed. London: ASLIB Gower, 1995. 1-16. Print.

Masuda, Y. Information Society as a Post-industrial Society. Bethesda, Md: Future Society, 1981. Print.

OECD. The Knowledge-Based Economy. Paris: OECD, 1996. Web 26th September 2012. < http://www.oecd.org/science/scienceandtechnologypolicy/1913021.pdf>

Porat, M.U. *The Information Economy: Definition and Measurement*. Washington: Department of Commerce, 1977. Print.

Ronfeldt, D. (1992). "Cyberocracy is Coming". *The Information Society*. 8.4(1992): 243-296.

Sweeny, G.P., ed. *Information and the Transformation of Society*. North Holland: Amsterdam, 1982. Print.

Slaus, Ivo. "Building the Knowledge - based Society: The Case of South East Europe". *Futures.* 39.8 (2007): 986-996. Print.

Stipanov, J 2005. Knowledge Society and Public Libraries. Paper presented at the Naple Conference, Supetar, October 6-7, 2005. Print.

Toffler, A. *Powershift: Knowledge, Wealth and Violence at the Edge of 21st Century*. New York: Bantam, 1996. Print.

Umaseo, T. "Joho Sangyo Ron. [On Information Industries".]. *Chuokohron*. 1963; 3-4. Print.

Webster F. "The Information Society: Conceptions and Critique". *Encyclopaedia of Library and Information Science*. Vol.58 (21). New York: Marcell Dekker, 1996. 74-112. Print.

--- . "Knowledgeability and Democracy in an Information Age". *Library Review* 48.8 (1999): 373-383. Print.

--- . *Theories of the Information Society*. 2nd ed. London: Routledge, 2002. Print.

UNIT 2 TYPES OF LIBRARIES

Structure

2.0 Objectives

2.1 Introduction

2.2 Types of Libraries

- 2.2.1 National Libraries
- 2.2.2 Academic Libraries
- 2.2.3 Public Libraries
- 2.2.4 Special Libraries
- 2.2.5 Digital Libraries
- 2.2.6 Virtual Libraries
- 2.2.7 Hybrid Libraries

2.3 Summary

2.4 Answers to Self Check Exercises

2.5 Keywords

2.6 References and Further Reading

2.0 OBJECTIVES

After reading this Unit, you will be able to:

- explain the complex nature of libraries which need to operate across many boundaries;
- discuss the different types of libraries that have evolved over a period of time and their basic functions;
- categorise them as: national, academic, public and special libraries;
- explain the concept and the meaning of electronic, digital, virtual and hybrid libraries and their functions;
- explain how excellent libraries keep renewing to meet the changing requirements of the society as well as the user community; and
- discuss the challenge for all librarians to find that judicious blend of traditional service and courageous innovation which will secure their libraries' future.

2.1 INTRODUCTION

In modern societies all activities of people are organised and conducted through institutions. A social institution is an *integrated pattern* of human relationship established by the common will and serving some vital need. The pattern is caused through the interaction among people as a vital social need. In modern societies special emphasis is being given to the aspects of literacy, adult education, formal education, lifelong education, health care and dissemination of information and knowledge. Educational institutions promote knowledge, skills and socialisation processes of the society. Many of these institutions incorporate a

body of formal rules and regulations through which activities of the society are carried out and regulated.

Of the many institutions formed by the society, library and its modern cognates are the most potent ones in meeting multiple needs of users in a modern society.

It was during the middle of the 19th century that social forces came into play and revolutionised the character of *library* making it more and more a public institution. The industrial revolution had a great impact on the concept of library transforming it from private and personal institution into a democratic institution and benefiting people at large. "Libraries are hugely complex organisations which need to operate across many boundaries but have few, if any, unique services. Yet they have survived for millennia, changing to meet new circumstances and adapting to their users' needs. They are there for the long term, not only in their duty to preserve humankind's recorded memory but as centres of expertise in accessing, using and, increasingly, creating information and knowledge. Doomsday scenarios have come and gone, yet excellent libraries keep renewing themselves. The challenge for all librarians is to find that a judicious blend of traditional service and courageous innovation which will secure their libraries' future" [Brophy, 2007].

Francis Miksa (2007) takes a *long view* of the library which will allow a thoughtful basis for discussing present changes taking place. Accordingly, first he proposes looking at the library in society as an *era-specific* phenomenon and then discusses the library which we know, the modern library, in the same way, as an *era-specific* phenomenon, including the idea of the library that it replaced. Next, he examines three principal aspects of the modern library which are now being challenged by the present circumstances. Miksa feels that there are at least three basic aspects of the present library that our contemporary, situation is challenging. They are: i) how we view the idea of the library as a social institution, ii) how we view the target populations that the library is to serve, and iii) how we view the idea of library funding. Miksa's views on all the above aspects are revealing and merit serious consideration by the library profession. After long discussion on the changing nature of the present library concept, Miksa concludes by saying that the emerging library will differ from the present library in that it will be in electronic form resident in individual communication devices. It will be tailored to an individual or the needs of small cohesive groups of individuals. And it will continue to need such basic functions as selection, acquisition, organisation, and access mechanisms and services, just as it always has, although now fitted to the needs of the individual or small group for whom such a library has been created.

Reference has been made to the authors Peter Brophy and Francis Miksa to emphasise the point that the concept of library as we know it today is undergoing change, and as such its role in the society has to be decided by the changed requirements of its clientele. However, attempt is being made to provide you a picture of different types of libraries as they exist today and their functions.

2.2 TYPES OF LIBRARIES

From their historical beginnings as places to keep the business, legal, historical, and religious records of a civilisation, libraries have emerged since the middle of the 20th century as far reaching bodies of information resources and services

that do not even require a building. Rapid developments in computers, telecommunications, and other technologies have made it possible to store and retrieve information in many different forms and from any place with a computer and telephone connection. The terms *digital library* and *virtual library* have begun to be used to refer to the vast collection of information to which people gain access over the internet.

This section provides a brief account of libraries with a focus on the later part of the 20th century, when both technological and political forces radically reshaped library development. It offers an overview of different types of libraries and explains their important functions.

2.2.1 National Libraries

The concept of national library is a recent development dating back to a few centuries. This development has been a feature of socio-economic, cultural and scientific advancements in the Western industrially advanced nations. Although national libraries existed in the past in some form in many countries, the growth of national libraries as we understand them today has been an outcome of the Renaissance Movement in Europe. Their growth has been further accelerated by the advances in science and technology and their applications in industry, trade, transportation and communication. Their objectives, functions and activities have been discussed in many national and international conferences.

A) *Definition and Functions of a National Library*

"A national library is a library specially established by the government of a country to serve as the pre-eminent repository of information for that country" (Wikipedia). Unlike public libraries, national libraries rarely allow citizens to borrow books. Often, they include numerous rare, valuable, or significant works. Though many national and international conferences discussed the subject of national libraries, there is no one agreed definition for the concept of national library. Of course, there are wider definitions putting less emphasis to the repository character. We shall, however, examine the expositions contained in some glossaries like Harold's Librarians' Glossary and Reference Book and the ALA Glossary of Library Terms for the term.

The 6th edition of Harold's Librarians Glossary (1987) defines a National Library as:

- A library maintained out of government funds;
- Serving the nation as a whole;
- Books in it being for reference only;
- Usually copyright libraries;
- The function of such a library is to collect and preserve for posterity, the books, periodicals, newspapers and other documents published in the country;
- This is best done by a law requiring the publishers to deposit copies of all publications issued by them; and
- Books purchased being published in other countries.

On the other hand, the ALA Glossary simply defines the National Library "as a library maintained by nation". This definition does not specify or discuss the services that a national library has to offer except the twin functions of collecting and conserving the nation's intellectual patrimony and purchase of important books published in other countries. A far more detailed exposition of the term national library may be obtained from the recommendations of UNESCO entitled "Recommendations Concerning International Standardisation of Library Statistics". It reads as: Libraries which, irrespective of titles, are responsible for acquiring and conserving copies of all significant publications published in the country and functioning as a deposit library either by law or under other arrangements. It will normally perform some of the following functions:

i) produce a national bibliography;

ii) hold and keep up-to-date a large representative collection of foreign literature, including books about the country;

iii) act as a national bibliographical information centre;

iv) compile union catalogues; and

v) publish retrospective bibliographies.

This exposition is rather comprehensive and covers most of the important functions of a national library.

It may be interesting to note that the *Final Report of the Regional Seminar on the Development of National Library in Asia and Pacific Area*, held at Manila in 1964, contained the following as functions of a National Library:

- to provide leadership among libraries;
- to serve as permanent depository for all publications issued in the country;
- to acquire other types of materials;
- to provide bibliographical services;
- to serve as coordinating centre for cooperative activities; and
- to provide service to government.

It may be pointed out that Lor (1997), drawing on the work of Line and Line (1979) and IFLA (1992), established three dimensions to the work of National Library, identifying functions concerned with 1) Heritage, 2) Infrastructure and 3) Delivery of comprehensive national library service. Of these three dimensions, delivery of comprehensive national library service is worth mentioning. Under it (Delivery of comprehensive national library service) he considers the following aspects:

- acquisition and processing of library material for other libraries;
- recycling and disposing of material acquired for other libraries;
- central support of reference, consultation, loan and document delivery services by other libraries;
- system-wide professional and technological leadership;
- advice to other libraries;

- system-wide planning and coordination;
- research and development relating to the development of the service; and
- literacy programmes using constituent and affiliated libraries as centres for literacy promotion.

It must be emphasised here that from the perspective of the national library in terms of its function-leaving aside medium and content – the national library provides a cultural focal point which transcends the present and reaches into the past, in terms of the material it secures, and into the future, in terms of transmitting human knowledge to future generations. It fulfils these roles by collecting a representative, although never comprehensive, set of records and by ensuring that they are organised and preserved so as to remain of use in the future. A national library which fails to build the representative collection or fails to secure its permanence has failed in its duty".

Of course, national libraries can not shoulder all of this responsibility on their own, and they are joined by major academic and other libraries in a cooperative endeavour which builds on specialisms which have developed over the centuries.

Looking into the future, it appears that the comprehensiveness of access to published information which national libraries sought to provide is likely to be achieved more through collaborative networks than by individual national libraries. This does not down play the critical role of collecting and preserving the national published heritage and making it available in innovative ways. For example, the British Library has demonstrated how the function of preserving the national published memory and that of broadening and deepening access can be combined, with innovative products like *Turning the Pages* and the *Business and Intellectual Property Centre.*

Under the umbrella *National Libraries Section* (IFLA), many national libraries cooperate to discuss their common tasks, define and promote common standards and carry out projects helping them to fulfil their duties. Similarly national libraries of Europe participate in *The European Library.* This is a service of *The Conference of European National Librarians* (CENL).

The foregoing account is provided in this Unit, to give you a brief account of the concept of national library and its functions.

It is to be noted that in most of the countries there is a national or state library or group of libraries maintained by national resources, usually bearing responsibility for publishing a national bibliography and maintaining a national bibliographical information centre. National libraries strive principally to collect and to preserve the nation's literature, though they try to be as international in the range of their collection as possible.

The Bibliotheque Nationale in Paris, the British Library in London, and the Library of Congress in Washington, D.C., are among the most famous and most important national libraries in the Western World.

There are many other national libraries with important collections and very long histories. The Russian State Library (formerly called Lenin Library) in Moscow is the National Library of Russia. It is of a size and importance comparable to the Library of Congress. It receives several publications from throughout the

country and distributes their copies to special libraries. This library organises domestic and international lending and exchanges and offers courses of lectures for professional education and also for readers. The Soviet Library – Bibliographical Classification scheme based on a Marxist-Leninist Classification of Knowledge is produced by it.

The National Library of China, Japan and India are some of the important national libraries. Literature describing all the above libraries along with their functions and services offered by them is available.

The National Library of India

A) *Collection*

It may be emphasised here that the National Library of India located in Kolkata has more than 2.2 million books and other materials. The collection is built through the following means:

- Books received through Delivery of Books and Newspapers Act 1956;
- Purchase;
- Gifts;
- Exchange; and
- Other depository privileges.

The majority of collection is in English and Indian languages, though there are some books in few foreign languages. The broad categories of publications acquired through purchase are:

- Books and journals on India in any language, published anywhere in the world;
- Indian publications published before 1954, and not available in the library;
- Books by Indian authors published abroad;
- Standard reference works; and
- Books on library, documentation, and information science, science and technology, education, planning and development and standard works on history, sociology, and biographies of eminent people, rare and out of print books on microfilms and other standard works within the limits of budget provision.

The National Library has some gifts which enrich its holdings considerably. The famous of such collections happens to be that of Sir Asutosh Mukhopadhyay collection gifted by his family. It covers the whole gamut of subjects in the humanities and sciences as far as published knowledge up to the early decades of the 20th century. Of course, the library possesses the enviable collections of historians like Sir J.N. Sirkar and S.N. Sen. Archival papers of Sir Tej Bahadur Sapru and other rare manuscripts greatly attracts research scholars.

The National Library has exchange relations with 170 institutions in 56 countries all over the world. As result of such relations, the library has been

able to acquire valuable foreign documents, not normally available through trade channels.

Besides U.N. publications, the publications of American, British, Canadian governments as also publications of OECD are deposited in the National Library according to the agreements made with Government of India. These documents add a new dimension to the importance of the National Library. All these documents, as also the other holdings of the library are processed, organised and serviced to the patrons of the library.

B) *Services*

The National Library of India provides the following services:

- Lending service including inter - library loan;
- Reading facilities;
- Bibliography and reference services; and
- Reprography services.

The lending function is rather peculiar for a national library. However, for historical reasons, the National Library of India has continued its lending facilities to the members of the library in and around Kolkata. Inter - library loan facilities are offered to members and institutions with the cooperation of other libraries, both at national and international levels. This service obtains loan of books from Russian State Library, Moscow, British Library, London, and libraries in Australia, Hungary, Denmark, Sweden, and a few other countries.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of the Unit.

1) What are the functions of national library?

.....

.....

.....

.....

.....

2) Briefly discuss the services offered by the National Library of India.

.....

.....

.....

.....

.....

3) Mention some of the important national libraries of the World.

.....

.....

.....

.....

.....

.....

2.2.2 Academic Libraries

Use of libraries for reading and reference is an integral part of learning, teaching and research. Libraries in schools and colleges provide facilities for students and teachers to read books or consult them for reference, thus widening the scope of class room learning and teaching. University libraries provide additional facilities for higher learning, research and dissemination of knowledge.

The massification of higher education has led in recent years to much greater prominence being given to the role of academic library in supporting learning and teaching. In the U.K., The Robbins's Report (Committee on Higher Education, 1963) set the stage with its famous statement of principle: "higher education opportunities should be available to all those who are qualified by ability and attainment to pursue them and who wish to do so".

The Follett Report (1993) set in train strategic thinking which has enabled libraries to take an institutional lead in some areas, for example, in the development of broad cross-organisational information strategies.

The effects of information and communication technologies on the changes and developments taking place in academic libraries cannot be undermined. However, it has to be recognised that there are other drivers of change. These include the role of library staff in the direct delivery of teaching, especially in relation to information literacies, accountability and pressure on resources with consequent requirement for robust performance and the whole question of the design of the physical library in an age of electronic communications.

At this point in time, the role that academic libraries will play in future is far from clear. They remain institutional expertise in information organisation even if the recognition of this expertise is rather patchy. Their legacy collections are important and recognised as such. The integration of their services into learning, teaching and research provides the greatest challenge, with the possible loss of large numbers of researchers as direct users as alternative patterns of scholarly communication emerge. Also their remains the question as to *what physical academic library should look like* in an age of e-learning and e-research.

However, we need to have understanding of the present situation so far as the academic libraries are concerned.

The academic libraries comprise: school libraries, college libraries and the university libraries. Performance of each of these types of libraries is important in promoting the objectives of their parent organisations to which they are attached.

A) *School Libraries*

The librarian of the school library has responsibilities of not only maintaining the library but also getting involved in activities that would compliment and supplement classroom teaching. It is necessary for her/him to possess teaching skills. Story-telling, book talks, demonstrating the lives of birds and animals through audio-visual aids, etc. are some of other desirable skills that a school librarian should possess. Most of these activities call for imagination both in design and presentation. S/he should develop a participative approach with the teachers and play a supportive role in improving the performance of the school as a whole.

A school library should offer some of these services to its clientele:

- Lending,
- Information and reference services,
- Guidance and advisory services,
- Preparation of reading lists both on anticipatory and responsive basis,
- Service on current events, activities, personalities, etc. and
- Other routine services.

It may be pointed out that the situation relating to school libraries in India presents a dismal picture and needs considerable improvement. In this connection, it is worth pursuing the recommendations of the Secondary Education Commission and the Directorate of Extension Programme for Secondary Education of the NCERT to vitalise school libraries.

B) *College Libraries*

College education provides a completely different environment to students. Here, the teachers will not be in a position to provide individual attention to students. Students have to depend more on self-learning. Therefore, college library plays important role in supplementing class room teaching. In this section we shall briefly discuss the objective functions, nature of collection that needs to be built up and the services to be rendered to the different categories of users.

The major functions of a college library may be summed as under:

- Giving the young minds (boys and girls) a wider and deeper understanding of different disciplines;
- Preparing the students for advanced studies in various disciplines;
- Preparing the girls and boys for shouldering higher responsibilities in life;
- Providing adequate reading facilities; and
- Introducing special materials to faculty necessary for their research.

For translating the above functions into practice the college library needs certain key components. They are:

- A collection of books and other learning material;
- The identification of user community which comprises students, teachers and the college management;

- Physical facilities like building, furniture and other equipment;
- Professional staff for the library; and
- Finance and budget.

In order to meet the varied academic and extra curricular needs of both students and the teachers, a college library should acquire a wide range of learning and teaching materials. The quality of the collection has to be determined on the basis of a well thought out policy laid down by the library advisory committee. The librarian and her/his staff using the global selection tools should bring to the attention of experts worth while titles on different subjects to build a collection adequate to meet the learning and teaching requirements. The collection thus acquired must be processed and properly organised to facilitate its maximum use. The important services to be provided by a college library comprise the following:

- Textbook Services;
- Lending and interlibrary loan service;
- Reading room services;
- Information and reference services;
- Documentation services on a specific request;
- Display of current journals and new acquisitions to the library;
- Assistance in the use of the library;
- Audio-visual services – such as tape slide demonstrations; and
- Reprographic facilities (on liberal basis).

It goes without saying that use of modern technology in services will facilitate better performance and efficacy of the library. Voluntary help and service should be the real motto of the library staff. They should be active partners in playing supportive role in teaching and learning process and help the library user community to the maximum extent. Last but not the least aspect is the funding policy to be followed by the management. They should do well to follow the accepted norms and standard practices. Modernisation of the library facilities is the need of the times.

C) *University Libraries*

An enduring metaphor for the university library is that it is the *heart of the university.* The exact origins of this phrase are not clear. However, Grimes (1998) suggests that it was first used by William Eliot (who was president of Harvard University, Chicago during the period 1869-1909). Subsequently the image was picked up in U.K. and appeared in various reports like Parry Report 1967. The metaphor implies that the academic library is of unparalleled importance. The objectives and functions of a university library are derived from the functions of a university which are:

- Learning and teaching;
- Research and generation of new knowledge;
- Dissemination and publication of research results;
- Conservation of knowledge and ideas; and
- Extension and services.

i) *Functions*

As stated above the major functions of a university library are derived from the objectives of the university. They comprise:

- Development of a collection in a wide range of subjects for learning, teaching, research, publication, etc.;
- Getting the stock of knowledge materials organised and maintained for use;
- Organising and providing a variety of library, documentation and information services, both responsive and anticipatory.

The user community of university library generally falls under the following categories:

- Students at different levels of study in different subjects;
- Teachers imparting instructions and guiding students at different levels and in different subjects;
- Research students working for M.Phil and Ph.D. degrees;
- Post-doctoral research scholars working on specific projects;
- Professors and experts guiding research projects and managing research activities of the university;
- Members of various academic and executive bodies of the university;
- Scholars in general, who get special privileges of using the university library; and
- Others.

It can be inferred from the above that university libraries have a great responsibility and a very important role to play not only in shaping students for higher learning and research, but also in providing a variety of services to meet other demands. It must be emphasised here that the university library is governed as per the statutory laws of the university. Hence the library system will be subject to scrutiny and evaluation by its academic and executive councils. There are well laid out policy procedures for its administration. The chief librarian manages the library as per the policy guide lines. Let us now consider some of the important features which need constant and special attention for the successful functioning of a university library.

The major areas of concern of a university library are:

- Collection development;
- Processing and organisation;
- Services;
- Professional staff;
- Physical facilities;
- Finance and budget.

Each one of the above components has a significant role to play in the over all success of the library as a support mechanism in promoting the goals of the university in its pursuit for the achievement of higher learning and research.

ii) *Collection Building and Organisation*

A major responsibility of the university library is to build a sound collection of documents carefully geared to the academic needs of students, teachers and other researchers and scholars engaged in academic pursuits. While it is not easy to specify what constitutes the best collection, the actual and potential needs of users have to be ascertained at appropriate intervals. User and use study techniques and methods developed during the last three decades will provide some valid basis for collection building. The results of citation analysis are being adopted in the acquisition of the current journals. The collection must be need-based and representative. In fact, a university is rated high or low by the quality of collection it builds. Budget provisions are the limiting factors in achieving a comprehensive and balanced collection. Another important factor in the proper management of a university library concerns the proper housing of the large stock of materials. The materials should be properly classified and organised and located at right places of use so that they are easily accessible for any one to use. The physical storage and filing of all documents, both print and non-print, must be conducive to use. In particular, the open access system is practised in the modern university libraries. Adoption of technology adds to the efficacy of the library procedures.

iii) *Services*

The major success of the university library depends on the range of services it offers to its users. The services ought to be planned, keeping in view the general demand for such services, and the capability of the library in offering such services. The primary concern should be to initiate any service on user needs and interests. Services can be categorised as follows:

- Library Services:
  - i) Lending,
  - ii) Information and reference,
  - iii) Reading facilities,
  - iv) Assistance in the use of library, and
  - v) Display of periodicals and current acquisitions.
- Awareness Services
  - i) Current Contents of Journals, and
  - ii) Selective Dissemination of Information (SDI).
- Bibliographic Services
  - i) Literature search,
  - ii) Compilation of bibliographies on specific subjects.

- Condensation Services
  - i) Preparation of abstracts of specific topics,
  - ii) Digest services, and
  - iii) Review and preparation of state of the art reports.
- Other Services
  - i) Document supply services, and
  - ii) Internet-based search services.
- Special Services
  - i) User education,
  - ii) Exhibitions and special displays, and
  - iii) Special lectures and workshops.

One thing must be noted in the context of the provision of library services. That is the services will prosper by offering high quality services. The basic idea about the word *quality,* becomes when used properly, a statement that the *essential product-customer-purpose* linkage has been established. Fundamentally quality is concerned with meeting the *want and needs* of customers. In other words, detailed knowledge and understanding of needs, preferences, skills, and reactions of users is fundamental to the future of library. The closer the library can get to its users as individuals the more likely it is to find a place in the portfolio of services they choose to use. If libraries can get this right, then they can become the services of choice for their users. The present trend is towards personalisation.

iv) *Professional Staff*

The university library staff must be professionally well qualified. They must match the quality of the teaching and research community in terms of academic and professional qualifications, experience and expertise. Their constant interaction with students at different levels, faculty, research scholars, computer and communication experts, and management experts of the university ensures the credibility and appreciation from the user community. It is only through innovative approaches that the user community will be drawn towards library and its services. Ability of library staff to communicate with different groups of users and articulate the services organised by the library will go a long way in establishing good relations. The conduct of the library staff plays a great role in successful operation of university library.

v) *Physical Facilities*

There is no gain saying the fact that proper facilities in the form of a planned building to house the library holdings and servicing them in functional manner is a necessity which enhances the utility of the library. In planning future library buildings the impact of computer and communication technologies will have to be kept in view. Today most of the print materials are available commercially in micro and machine readable forms making storage problems rather simple. This aspect must be taken into consideration when space requirements are formulated. Space allocation must meet the changed information environment.

vi) *Finance and Budget*

University libraries generally operate on the budgets allocated by the universities. The financial allocations are based on certain norms and recommendations of different commissions on education. According to Raj Committee, 20% of the university budget should be made available to the university library. But this provision is not followed uniformly by all universities. Different yard sticks are applied in different cases. It may be mentioned here that the cost of university library must be considered in the context of changing educational technology. It is learnt that the U.G.C. is seized of the subject and sooner, if not later some policy will be formulated taking into context the application of ICTs and the changing information environment. Whatever may be the situation proper funding is necessary for university libraries.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

4) How does a university library differ from that of a college library?

.....

.....

.....

.....

.....

2.2.3 Public Libraries

Public libraries have a proud heritage. They are now acknowledged to be an integral part of community life as promoters of literacy, providers of a wide range of reading for all ages, and centres for community information services. Yet, although the practice of opening libraries to public has been known since ancient times, it was not without considerable opposition that the idea became accepted, in the 19th century, that a library provision was a legitimate charge on public funds. It required legislation to enable local authorities to devote funds to this cause.

By the second half of the 20th century, there was general agreement around the position that the *public library* fulfiled *three interconnected roles:* education, information and entertainment. It enabled its users to undertake informal learning as well as providing a place for study, it provided access to organised sources of information on all subjects, and it provided entertainment, primarily through lending fiction. Within these roles all libraries developed all manner of services. However, as budgetary cuts started in UK, it became apparent that public libraries were struggling to define what this *tripartite role* really meant in an age of mass communication and mass formal education.

Policy level studies discussed much more deeply into the role of the public library and the contribution it makes to society. In 1993 The Comedy Consultancy issued a report under the title *Borrowed Time* which focussed on five main areas in

which Public Libraries are currently impacting on public life. They are: *Education, Social Policy, Information, Cultural Entertainment* and *Economic Development.* Another significant event in this direction took place with the issue of *UNESCO Manifesto* on Public Libraries in 1995. This was issued in collaboration with IFLA. This *manifesto* emphasises the following aspects:

- The *public library* which being the *local gateway* to knowledge, provides a basic condition for lifelong learning, independent decision-making and cultural development of the individual and social groups;
- A living force for education, culture and information, and essential agent for the fostering of peace and spiritual welfare through the minds of men and women;
- The local centre of information, making all kinds of knowledge and information readily and freely available to its users;
- Accessible for all, regardless of age, sex, religion, nationality, language or social status;
- And lastly, the libraries which have collections and services, all types of appropriate media and modern technologies, as well as materials with high quality and have relevance to local needs and conditions. Materials must reflect current trends and the evolution of the society, as well as the memory of human endeavour and imagination.

The above aspects cover all facets of public library services. The manifesto also spelt out key missions, which relate to information literacy, education and culture which are at the core of public library services.

Public libraries were long perceived as places for lending and reading books, especially fiction and journals for personal education and were not identified with scientific knowledge. This view of public libraries is obviously changing and they represent much more and more successful now than they were in the past. But, what is the role and mission of public libraries in today's Knowledge Society?

A) *Role of Public Libraries in Knowledge Society*

We need to clarify that *knowledge society* is not a society in which knowledge is reserved for the privileged and the chosen individuals or specific groups, but it is intended and must be open to all individuals regardless of age, education, occupation and religion, and to all social groups regardless of ethnic origin, size and class origin. Since knowledge itself is a common and public good and as such intended for all, it must be accessible to all under the same conditions.

Hence, each society must ensure the ways and mechanisms so that each individual as well as groups have access to information, sources of information and knowledge. In a way it is obligation of each State to build the knowledge society as a complete and fundamental programme of its long-term development. In other words, everything that is related to the efficient functioning of public libraries as agents that ensure access to knowledge and the sources of knowledge must be supported. It may be stated that these obligations derive from the documents of the *World Summit on Information Society* (WSIS). Indeed, the tasks and the mission of public libraries are specially emphasised in the recommendations of the Alexandria

Manifesto on libraries in the building of the information society. This manifesto stresses the role of libraries in the democratic process and in the information and knowledge society. All this is based on the fundamental human right to knowledge, learning and communication without any barriers. Indeed, public libraries are intended for and directed to all that live and work in a community regardless of level of education and culture, occupation or level of knowledge in order to serve their informational needs.

Special role of Public Libraries in Knowledge Society:

- Education – especially self-education where public libraries have a long and successful history, also in life-long learning which is an irreplaceable way of personal growth in today's world;
- Information – ensuring access to information for all, has become an obligation in the realisation of human rights;
- Cultural enrichment – access to different sources of information and knowledge for all. This also includes literacy advancement, which today also means information literacy, as well as awareness of the need to read as a main process to acquiring knowledge, which means not only to see something, but to be informed and acquire knowledge;
- Economic development – public libraries must act as a form of local economic information service, in accordance with the main economic aspects of the areas tourism, agriculture, manufacture, technologies etc. Public libraries are also the most appropriate places to obtain all needed information and statistics concerning all the above.

In this connection, it may be said that no society can effectively function and progress with out proper communication system. This is true even more in case of *knowledge societies* where the process of transmitting and accessibility of information and sources of knowledge are absolutely indispensable. If we accept the fact that public libraries play an important and fundamental role in our societies, they should *adapt themselves and gear their functions* in that direction. This must be one of the strategic goals of their development which should of course, be in accordance with the concept of national advancement of building knowledge society.

The National Knowledge Commission (NKC) of India has recently decided to give priority to the development of public libraries in India as one of the steps to be taken towards transforming Indian society into knowledge society and converting Indian economy into a Knowledge-based Economy (KBE). This effort needs to be applauded.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

5) Discuss the special role of public libraries in a knowledge society.

.....

.....

.....

.....

2.2.4 Special Libraries

The national, university and public libraries form the network of general libraries more or less accessible to the general public. There are a large number of libraries beyond this network. They are established by special groups of users to meet their own needs. Many of these originated with *learned societies* and especially with the great scientific and engineering societies founded during the 19th century to provide specialist material for their members. Thus some special libraries were founded. With the coming of Industrial Revolution arose the need for working class educated in technology, and industrialists and philanthropists provided facilities and books necessary for technical instruction. Special libraries are attached to official institutions, such as government departments, hospitals and the like. For the most part, however they came into being in order to meet specific needs in commercial and industrial organisations. Special libraries are planned strictly on practical lines, with activities and collections carefully controlled in size and scope. They are largely *concerned with communicating information to specialist users in response to –or preferably in anticipation of – their specific needs.* Special libraries have therefore been much concerned with theoretical investigation of information techniques including the use of computers for information retrieval.

A) *Definition and Meaning*

In the expression special libraries the word s*pecial* has to be interpreted to mean *specialist* to get closer to the concept. As a matter of fact, these are libraries that serve a particular institution that has a specific role to play, and they will therefore tend to be *one subject* oriented libraries. For example, they could serve a hospital, or an industrial organisation or a scientific institution, etc. They also vary in size depending in part of the size of the institution they serve whose information needs are defined. Special libraries, some times referred to as *information centres,* are located in multitude of settings including international organisations.

B) *Functions and Services*

- Special libraries organise the resources they collect in ways that best suit local needs;
- Analyse, synthesise and evaluate information and data;
- Provide critical reviews, reports and compilations;
- Provide abstracts, indexes and extracts;
- Perform literature searches and compile bibliographies;
- Disseminate current information and SDI which stimulate research; and
- Establish a monitoring system for the evaluation of performance.

The above stated functions of special libraries make them more user centred engaged in the provision of need-based services.

C) *Services*

Special librarians have become adept at *reading the runes* (to try to guess what is going to happen in the future by examining what is happening now) of the environment in which their parent organisations operate. Therefore,

they scan information sources to find material that they know will interest their clientele. They master the ways and means of presenting information that will save the time of their busy customers. Special libraries generally provide the following services to their user community:

- Reference Service;
- Awareness Services such as Current Awareness and routing, news letters and other bulletin services;
- Personalised and customised information services such as SDI;
- Specialised services like consolidation and repackaging of information; and
- Analysis, synthesis and evaluation of information and data and preparation of critical reports as and when required.

In all these activities they use information technology available to them. For this purpose the staff need to be specially trained in modern information technology, particularly in practical usage aspects. Only then, the staff will be in a position to deliver the type of services expected of them. It goes with out saying that they should be qualified in the subjects in which the parent organisations operate.

In the foregoing pages we have briefly discussed the nature, functions and services provided by different categories of conventional libraries. The discussion provides you the basic knowledge necessary to have a proper understanding of the functioning of different types of libraries.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

6) Discuss the need for special libraries and the services they offer to their clientele.

.....

.....

.....

.....

.....

2.2.5 Digital Libraries

The idea of easy, finger-tip access to information – what we conceptualise as digital libraries today has its origin in Vannevar Bush's Memex Machine and has continued to evolve with each advance in information technology. When computers were connected into large networks forming the Internet, the concept evolved again, and research turned to creating libraries of digital information that could be accessed by any one from any where in the world. The fundamental reason for building digital libraries is a belief that they will provide better delivery of information than was possible in the past with traditional libraries. Therefore,

phrases like *electronic library, virtual library, library without walls, and digital library* have sprung up and all have been used interchangeably to describe this broad concept. But, what does this phrase mean? What is a digital library? And what are the issues and challenges in creating digital libraries? Also what are the issues involved in creating a coordinated scheme of digital libraries? This section is intended to provide a overview of digital libraries and briefly discuss answers to some of the above questions.

A) *Definition*

There is much confusion surrounding the phrase digital library arising out of *three factors*. First, the library community has used several different phrases over the years to denote this concept – electronic library, virtual library, library without walls and it never was quite clear what each of these different phrases meant. Digital library is simply the most widely accepted term and now is used exclusively at conferences, online and in the literature.

The second factor adding to the confusion is that digital libraries are at the focal point of many areas of research, and what constitutes a digital library differs depending upon the research community that is describing it. For example:

- From an information retrieval point of view, *it is a large database.*
- For people who work on hypertext technology, *it is one particular application of hypertext methods,*
- For those working in wide-area information delivery, *it is an application of the Web,* and
- For library science, *it is another step in continuing automation of libraries.*

Third, confusion arises from the fact that there are many things on the Internet that people are calling *digital libraries,* which from a librarian's point of view *are not.* For example:

- For computer scientists and software developers, *collections of computer algorithms* or *software programs* are digital libraries;
- For database vendors, their databases and electronic document delivery services constitute digital libraries;
- For large corporations, a digital library is the document management systems that control their business documents in electronic form; and
- For a publisher, it may be an *online version of catalogue.*

So what is a working definition of a digital library that makes sense to librarians? It may be mentioned here that the most scientific definition arising from the community of library practice is the one set forth by the Digital Library Federation: "Digital Libraries are organisations that provide the resources, including the specialised staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital work so that they are readily and economically available for use by a defined community or set of communities". However, the interest and concerns of both communities

(librarians and computer specialists) are reflected in a broader, *two part definition* that arose from a research workshop on social aspects of digital libraries:

- "Digital libraries are a set of electronic resources and associated technical capabilities for creating searching and using information. In this sense, they are an extension and enhancement of information storage and retrieval systems that manipulate digital data in any medium (text, images, sounds, statistic and dynamic images) and exist in distributed networks. The content of digital libraries includes data, metadata; they describe various aspects of the data (i.e. representation, creator, owner, reproduction rights) and metadata that consists of links or relationships to other data or metadata whether internal or external to the digital library.

- Digital Libraries are constructed – collected and organised – by [and for] a community of users and their functional capabilities support the information needs and uses of that community. They are a component of communities in which individuals and groups interact with each other, using data, information and knowledge resources and systems. In this sense, they are an extension, enhancement, and *integration of a variety of information institutions* as physical places where resources are selected, collected, organised, preserved, and accessed in support of a user community. These information institutions include among others, libraries, museums, archives, etc. Digital Libraries also extend and serve other community settings, including classrooms, offices, laboratories, homes and public spaces".

B) *Characteristics*

It is to be noted that characteristics mentioned below have been gleaned from various discussions about digital libraries, both online and imprint.

- Digital libraries are the digital face of traditional libraries that include both digital collections and traditional, fixed media collections. So they encompass both electronic and paper materials.

- Digital libraries will also include digital materials that exist outside the physical and administrative bounds of *any one digital library.*

- They include the processes and services that are the backbone and nervous system of libraries. However, such traditional processes though forming the basis of digital library work will have to be revised and extended to accommodate the differences between new digital media and traditional fixed media.

- Digital libraries provide a coherent view of all of the information contained within a library, no matter its form or format.

- They will serve particular communities or constituencies, as traditional libraries do now, though those communities may be widely dispersed throughout the network.

- Digital libraries will require both the skills of librarians and as well as those of computer scientists to be viable.

C) *Issues and Challenges in Creation*

The optimism and hype from the early 1990s has been replaced *by a realisation* that building digital libraries will be a difficult, expensive, and long term effort [Lynch, 1995]. Creating effective digital libraries poses serious challenges. The integration of digital media into traditional collections will not be easy, like previous new media (such as video and audio tapes), because of the unique nature of digital information – it is less fixed, easily copied, and remotely accessible by multiple users simultaneously. Some of the more serious issues facing the development of digital libraries are outlined in this section.

D) *Technical Architecture*

The first issue is that of the technical architecture that underlines any digital library system. The architecture will include components such as:

- High-speed local networks and fast connectors to the Internet,
- Relational databases that support a variety of digital formats,
- Full - text search engines to index and provide access to resources,
- Electronic document management functions that will aid the overall management of digital resources.

One of the important things to note about technical architectures for digital libraries is that they would not be *monolithic systems* with which librarians are familiar. Instead, they will be *a collection of disparate systems and resources* connected through a network, and integrated within one interface, most likely a web interface. The resources supported by the architecture may include:

- Bibliographic databases that point to both paper and digital materials,
- Indexes and finding tools,
- Collection of pointers to Internet resources,
- Directories,
- Photographs,
- Numerical data sets, and
- Electronic journals.

Though the above mentioned resources may reside on different systems and in different databases, *they would appear as though they were one single system* to the users of a particular community.

E) *Building Digital Collections*

One of the essential issues in creating digital libraries will be the building of digital collections. Obviously, for any digital library to be viable, it must have a digital collection with the critical mass to make it really useful. There are three methods of building digital collections:

- Digitisation – converting paper and other media in existing collections to digital form;

- *Acquisition of original digital works* created by publishers and others. For example: electronic books, journals etc.,
- *Access to external materials* not held in-house by providing pointers to websites.

F) *Metadata*

Metadata is another issue central to the development of digital libraries. Metadata is the data that describes the content and attributes of any particular item in a digital library. It is a concept familiar to librarians because it is one of the primary things that librarians do. For example, they create cataloguing records that describe the documents. While there are formal library standards for metadata, namely AACR-2R, such records are very time consuming to create and require specially trained personnel to undertake such work.

Therefore, simpler schemes for metadata creation are being proposed. One such scheme is *Dublin Core,* an effort to try and determine the *core* elements necessary to describe materials. The lack of common metadata standards is another barrier to information access and use in a digital library.

G) *Naming, Identifiers, and Persistence*

Another important issue related to metadata is the problem of *naming in* a digital library. Names are strings that uniquely identify digital objects and are part of any document's metadata. Names are important in a digital library just as ISBN number in a traditional library. They are needed to uniquely identify digital objects. Any system of naming that is developed must be permanent and be lasting indefinitely. It means the name cannot be bound up with a specific location. The unique name and its location must be separate. The name must remain valid whenever documents are moved from one location to another. Three of the schemes proposed to solve this problem are: PURLs, URNs, and Digital Object Identifiers (DOI).

PURLs: Persistent Uniform Resource Locators (PURLs) are a scheme developed by OCLC in an attempt to separate a document name from its location and therefore increase the probability that it will always be found.

URNs: Uniform Resource Names (URN) is a development of the Internet Engineering Task Force (IETF). A URN is not a naming scheme in it self, but a *framework* for defining identifiers.

DOI: Digital Object Identifier (DOI) is a joint initiative by American Publishers and the American Corporation for National Research designed to provide a method by which digital objects can be reliably identified and accessed.

H) Copyright / Rights Management

One of the barriers to digital library development is copyright. The current paper-based concept of copyright breaks down in the digital environment because the control of copies is lost. Digital objects are less fixed, easily copied, and remotely accessible by multiple users simultaneously. The problem for libraries is that, they do not own their information. Libraries do

not hold the copyright of the material they possess. Therefore, they can not freely digitise and provide access to copyrighted materials in their own collections. Instead they will have to develop mechanisms for managing copyright. Such mechanisms which allow them to provide information without violating copyright are called *rights management.*

I) *Presentation*

Another important issue associated with digital libraries is preservation that is keeping digital information available in perpetuity. In the preservation of digital materials, the real issue is *technical obsolescence.* In other words, preservation of digital information will mean constantly coming up with new technical solutions. There are three types of preservation that one can refer to. They are:

- The preservation of the storage medium;
- The preservation of access to content;
- The preservation of fixed-media materials through digital technology.

There are many more problems and challenges relating digital libraries, however the scope of the Unit is confined to the basics and hence they are not discussed here.

It has been pointed out that the current technologies focus on conversion of paper to digital formats and *not conversion of the library into a digital format.* In this way, the digitisation is comparable to the technology of microforms. "it is more accurate to discuss the concept of digital libraries in terms of *digital coherence* and its application to library collections than to discuss the *replacement of libraries in general with digital incarnations"*. Digital coherence can become a tool with which the library can provide value - added information services to users. While a good deal of literature on digital libraries emphasises technology and resources at the expense of service perspective, a number of authors and researchers have considered human interaction in the digital library environment. It may be stated that the digital library proponents must consider the role of people (as users and service providers) if the digital library is to be truly beneficial. Technology and information resources on their own can not make an effective digital library.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

7) Explain the concept of a digital library.

.....

.....

.....

.....

.....

.....

2.2.6 Virtual Libraries

Much of the explanation surrounding the emerging 21st century library is based on the opportunities provided by enhanced access to information resources through the use of networked information technologies. Existing libraries are a product of an intersection and an interaction of *people, resources*, and *procedures*.

The delivery of services to patrons and other users, including library staff, is built upon the *collective personnel, information*, and *technological resources* that constitute the library. Library professionals (experts) are accepting the *potential* and *practicality* of *virtual* libraries to better serve users by providing access to a broader range of information than available locally and by supporting traditional resource sharing among libraries.

A) *Definition of Virtual Library*

"A *Virtual Library* is a selected organised collection of units (nodes) of documentary resources

- Spread everywhere (space);
- Accessible always (time);

Where individuals and groups as

- Authors (producers of documents);
- Publishers (editors of documents);
- Readers (users of documents)

Are linked across the global electronic network and related in different ways to documents that are:

- Fast and easily obtainable
- Available in their full version.

In view of satisfying multiple cultural exigencies (information, learning and entertainment, etc.)."

But, according to Allan Powell "the virtual library can have many definitions, including: A library with little or no physical plant of books, periodicals, reading space, or support staff, but one that disseminates selective information directly to distributed library customers, usually electronically. A more traditional library that has transformed some significant portions of its information delivery channels into electronic format, so that many or most of its customers do not need to visit the library to obtain information. A library that operates as a *nexus* of selected information management activities within the organisation, some of them centralised, but most of which happen through the efforts of decentralised staff, resources, systems, and even outside suppliers, who are accessible and dispersed through out the organisation".

"The key characteristics of a true virtual library are:

- There is no corresponding physical collection,
- Documents will be available in electronic formats,
- Documents are not stored in any one location,

- Documents can be accessed from any workstation,
- Documents are retrieved and delivered as and when required, and
- Effective search and browse facilities are available" (Sherwell, 1997).

The realisation that convergence of communications and computing technologies offer opportunities for extending the reach and the range of the traditional library is driving the acceptance of the virtual library concept. The Internet, the Web, and digital collections provide a context for making the idea of a virtual library real.

B) *Virtual Library Design*

A pragmatic approach for designing virtual libraries is to focus on services rather than on technology. A service-based architecture for a virtual library is essential and provides the framework to accommodate both digital resources and the collections that will not be transformed into *bits* and *bytes.*

C) *Service-Based Architecture*

Since the library, by its nature, is primarily a service institution, a service philosophy should guide the *virtual library*. A library collects books and other materials, and appoints qualified staff with a view to provide services to its users. The following components must be taken into consideration while building a virtual library:

- Users,
- Services,
- Resources,
- Technology,
- Management,
- Policy,
- Funding.

If we consider services as the output of the virtual library, the other components should serve as infrastructure for the creation and delivery of services to users. The interaction of different components of a virtual library are shown in the figure.

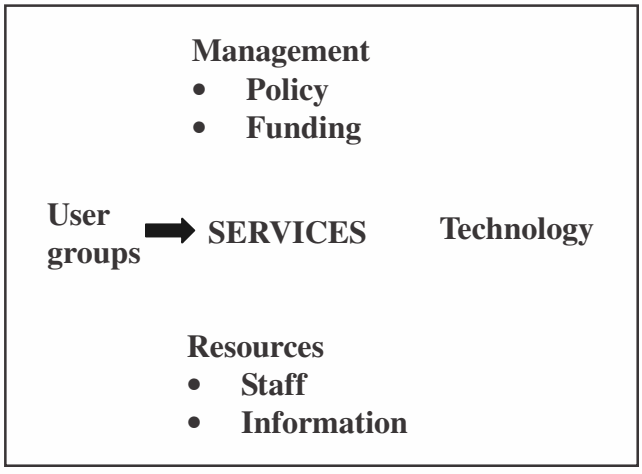


Fig. 2.1: Components of a Virtual Library

It may be emphasised that user needs define and shape appropriate services, which are based on available resources, including staff and information. Technology, in the form of many different tools, supports the delivery of services. Of course, the management *identifies* and *prioritises* the services and formulates overall policy. Management also acquires and allocates the funding necessary for the infrastructure, services and the infrastructure needed for their delivery (resource and technology). Service-based architecture not only identifies components of the virtual library and indicates where funds to be allocated, it also allows the development of service quality benchmarks. For any service, we need to indicate the goals and objectives of the service, and then propose performance metrics by which to assess the utility of a service and ultimately, the value of the service to users.

D) *Virtual Library: Services for Users*

Though demographic characteristics play an important role in deciding users of virtual library, the boundaries can be wider and more inclusive. Focussing on services allows us to think about the *types* and *levels* of services we are going to provide to a variety of user groups. Defining the services for any group directs us to the technologies appropriate to those groups. The types of services provided by a virtual library comprise the following:

- Resource discovery services,
- Access services,
- Reference services,
- Instruction service, and
- Patron account service.

*Resource discovery service***:** This service provides users with a variety of tools and approaches for discovering the existence of appropriate resources. Typically, a user will search one or more repositories of metadata, full text, or images to identify and select resources. Three types of searches are possible: i) Single Database Searching, ii) Broadcast Searching, and iii) Integrative Searching.

Access service: Once the user has discovered the resources, the access service addresses getting the information to the user. It depends on the users' paying capacity.

Reference service: Both cost and quality of service are important considerations for establishing reference service. With the limited resources made available for reference service the library must consider priority of serving various user groups.

Instruction service: This service focuses on appropriate training and instruction activities to assist users. Users will need to know how to use the new and emerging technologies. But, more importantly they may need help in understanding what resources are available, their costs, and their authenticity.

Patron (user) account service: This service area addresses user activities including accessing account information through the network, use the service to order materials, or pay for the resources.

The above list of services is illustrative and not comprehensive. These five services are intended to provide a point of departure for discussing what the virtual library might provide.

E) *Standards and Interoperability for Virtual Library*

The virtual library is a focus for collaboration and collaborative services. In the network environment, there is an assumption that systems and organisations interoperate. Definitions of interoperability reveal common themes: working together, exchanging information, interacting without special effort on the part of the user, or operating together effectively. Usually the content of the interoperability is focussed on technical interoperability between information systems. For example, a system-centric definition of interoperability might be the ability of two or more systems or components to exchange information and use the exchanged information without special effort on the part of either system. In service-based virtual library, a focus on users should inform the concept of interoperability so that the users may successfully search and retrieve information from two or more systems in a meaningful way with confidence.

The implementation of standards such as Z39.50 enables interoperability among systems. But, implementing such technologies and offering services based on interoperable systems require a clear understanding of the information access and use issues.

Collaboration among libraries has always been manifested in resource sharing programmes. Opportunities for resource sharing increase with a virtual library as the research of librarians and users extend to a broader and more comprehensive range of resources. Many different groups can benefit from a virtual library. The challenge is to ensure that the various groups have opportunities to participate in the design, development and governance of the virtual library. Indeed the virtual library offers a new context for taking traditional library collaboration forward.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of the Unit.

8) What is a virtual library? Discuss its characteristics.

.....

.....

.....

.....

9) What is meant by interoperability? How can it help users of a virtual library?

.....

.....

.....

.....

2.2.7 Hybrid Libraries

The hybrid library is a term that has entered the parlance of library and information profession recently. It is stated that the term *hybrid library* was first coined in 1998 by Chris Rusbridge in an article published in the D – Lib Magazine.

A) *What is a hybrid library?*

Hybrid library is a term used by librarians to describe libraries containing *a mix of* traditional print library resources and the growing number of electronic resources. In other words hybrid libraries are a mix of traditional print materials such as books, and magazines as well as electronic based materials such as downloadable audio-books, e-books and electronic journals etc. The challenge associated with the management of hybrid library is to encourage end-user resource discovery and information use, in a variety of formats and from a number of local and remote sources, in a seamlessly integrated way.

Hybrid libraries evolved in the 1990s when electronic resources became easily available for libraries to acquire for public use. In the beginning electronic resources were typically accessed to material distributed on media such as CD-ROM or searchers of special databases. OCLC helped to push libraries towards acquiring digital resources by providing a centralised technology resource for participating libraries. Now, with the widespread availability of digital content, it includes internet resources and documents which are online, such as e-prints.

The hybrid library should be "designed to bring a range of technologies from different sources together in the context of a working library, and also explore integrated systems and services in both electronic and print environments" (Chris Rusbridge, 1998). The hybrid library should not, then, be seen as nothing more than an uneasy transitional phase between the conventional library and digital library, but rather, as worth while model in its own right, which can usefully developed and improved.

It may be pointed out that this kind of library has been given other labels. The concept of "*gateway library"*, for instance, seems to be one which describes a similar idea. In other words, the *gateway library* and *hybrid library* are the same. They describe the *real world* situation where libraries provide access to a range of different media but also express the ideal of greater integration.

Hybrid libraries need staff that is trained in helping users navigate the vast amount of information available in digital age. The staff should have expertise and training in handling electronic media as well as traditional print forms.

B) *Issues in Hybrid Library*

Some of the issues facing the hybrid libraries are: digital divide, interoperability, collection development, ownership of electronic resources and preservation of digital media.

The term *digital divide* is used to describe the gap between those with information technology knowledge and those who do not possess this knowledge.

Usually the concept of interoperability is focused on technical interoperability between information systems. For example, a system-centric definition of interoperability might be the ability of two or more systems or components to exchange information and use the exchanged information without special effort on the part of either system. The hybrid libraries own and subscribe to different resources in different formats. Some of the common formats are e-journals, serials, print monographs, CD and DVD. The main components of digital library framework are user interfaces, repository, handles system, and search system. The handle system and search system are the major components that should be designed with interoperability features to search across different repositories owned by different vendors. The user interface should be designed in such a way that it helps library users develop a common knowledge to do searches across all repositories.

i) *Collection Development*

Collection development is another challenge facing the hybrid libraries. The process is similar to that of a traditional library. In fact, hybrid libraries follow the same policies and procedures followed in traditional library collection development.

ii) *Ownership of Electronic Resources*

This is one of the problematic aspects faced by hybrid libraries. Ownership of electronic materials is *virtual* and not *physical.* There are no clear policies about the ownership of electronic materials once the subscription is cancelled or expired. Libraries have to pay attention to the legal contracts from the database vendors. If the hybrid libraries plan on archiving the electronic resources, then there are legal issues related to it. The most important issues are intellectual property and authenticity of digital information.

iii) *Preservation of Digital Media*

To make the preservation of digital media cost - effective, standardisation of different media format is required. The three possible approaches to the problem are:

i) Technology preservation,

ii) Emulation, and

iii) Migration.

In technology preservation method, both hardware and software related to digital information are preserved. This may not be cost-effective because changes to hard ware and different versions of software need to be either maintained or constantly upgraded. In emulation some emulator software programmes will mimic the hardware and software of the original data and display in the original format. In migration, digital information is converted to a standard media with standard format.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

10) Discuss the concept of hybrid library and indicate some of the issues relating to it.

.....

.....

.....

.....

.....

.....

.....

2.3 SUMMARY

Libraries are an important resource for individuals and for communities of people who are interested in the preservation of knowledge. Their importance stems from their ability to maintain records of human endeavour within a range of different contexts using many different types of media. Libraries will therefore continue to play important social, cultural, technical, and pedagogic roles in the future. Obviously, some changes in the library concept will be needed in order to accommodate the requirements of the new information storage and delivery technologies and what these enable people to do.

This Unit discusses different types of libraries, their characteristics, functions and services. It starts with traditional libraries. In this regard, National Libraries, Academic Libraries, Public Libraries, and Special Libraries have been described and their functions and services have been briefly explained. The entire discussion is centred around the role of the emerging 21st century library based on the opportunities presented by enhanced access to information resources through the use of networked information technologies. In fact, existing libraries are a product of an intersection and an interaction of people, resources, and procedures. The realisation that the converging of communications and computing technologies offer an opportunity for extending the reach and range of the traditional library is driving the acceptance of concepts like *digital libraries, virtual libraries,* and *hybrid libraries.* There fore, the latter part of this Unit is devoted to the discussion on *digital libraries, virtual libraries,* and *hybrid libraries.* A pragmatic approach for designing *digital, virtual,* and *hybrid libraries,* is to focus on services rather than on technology. A service-based architecture for creating the emerging library is a logical starting point because library, by its nature, is primarily a service institution. It may be pointed out that a simple focus on faster access to more information generally has only the end-user of the information in mind, where as service-based architecture can address the roles and responsibilities of the people who staff these libraries as well as the people who use them. Hence, emphasis has been given to this approach in discussing the design, development and management of digital, virtual and hybrid libraries.

2.4 ANSWERS TO SELF CHECK EXERCISES

1) The Final Report of the Regional Seminar on the Development of National Library in Asia and Pacific Area, held at Manila in 1964, contained the following as functions of a National Library can be stated as under:

   - to provide leadership among libraries;
   - to serve as permanent depository for all publications issued in the country;
   - to acquire other types of materials;
   - to provide bibliographical services;
   - to serve as coordinating centre for cooperative activities; and
   - to provide service to government.

   Keeping in view the practices followed in some important national libraries of the World, we may study the objectives and functions under convenient groups mentioned below:

   - functions relating to collection development and conservations,
   - disseminating functions,
   - preparation of national bibliographies, and
   - services offered to users.

   It may be noted that in India, the National Bibliography is published by the Central Reference Library located in the National Library campus at Belvedere, Calcutta.

2) The National Library of Calcutta, India, presently provides the following services:

   - Lending service including inter library loan;
   - Reading facilities;
   - Bibliography and Reference services; and
   - Reprography (document supply) services.

3) Some of the national libraries of the World are:

   i) Library of Congress (L.C.), Washington, D.C.

   ii) The British Library, London, U.K.

   iii) Russian State Library (Formally called the Lenin Library), Moscow.

   iv) The National Diet Library of China, Peking.

   v) Australian National Library.

4) University libraries are intended to help and support the universities in realising the objectives of the University of which they are part. The major functions of a university library are:

   - Development of collection in a wider range of subjects for learning, teaching and research, publications etc.

- Organisation and maintenance of the collected material for use,
- To design and organise and provide a variety of documentation and information services both responsive as well as anticipatory.

A university library is distinct from a college library in functions such as research, conservation of knowledge and ideas and publication of research results. Therefore in a university library, the collections, the different house keeping operations, and the services have to be different from that of college library. The competence of staff required to perform those functions must be high and requires scholarship, effective communication skills and ability to innovation.

5) Public Libraries are intended for and directed to all that live and work in a certain community, to all ages, from children to elders, to all social, national and religious groups, to all regardless of level of education and culture, occupation or level of knowledge in order to serve their cultural and informational needs.

In accordance with this, public libraries participate in five major fields of public life. They are:

- Education – especially self-education and life-long learning;
- Political life – participation in the realisation of democratic and civil rights and duties;
- Information – ensuring access to information for all, has become an obligation in the realisation of human rights;
- Cultural enrichment – access to different sources of information and knowledge for all which includes literacy advancement, information awareness;
- Economic development – public libraries must act as a form of local economic information service in accordance with the main economic aspects of the area.

Since knowledge is the public good and as such intended for all, it must be accessible to every one. Each individual and social group would have equitable access to knowledge and sources of knowledge. It is the obligation of each state to build the knowledge society and public libraries have an important role in this endeavour. In India the National Knowledge Commission has realised this fact and has recommended to the Government of India a development plan for this purpose.

6) It may be mentioned that World War I, and II accelerated the process of industrial development backed by scientific and technological research. Research and Development became increasingly institutionalised. This trend led to the growth of special libraries collections and new services by libraries. Thus libraries were established to serve special groups of users to meet their own needs. Special libraries are planned on strictly practical lines with activities and collections carefully controlled in size and scope. The special libraries are mainly concerned with communicating information to their users. The word *special* must be interpreted to mean *specialist* to get a clear concept of Special Library.

Special librarians have become adept at *reading the runes* of the environment in which their parent organisations operate. They scan information sources to find material that they know will interest their clientele. Special libraries generally provide the following services to their user community:

- Reference Service;
- Awareness Services such as Current Awareness and routing, news letters and other bulletin services;
- Personalised and customised information services such as SDI;
- Specialised services like consolidation and repackaging of information; and
- Analysis, synthesis and evaluation of information and data and preparation of critical reports as and when required.

In all these activities they use information technology available to them.

7) The concept of *digital library* has several differing interpretations, derived from different communities involved in digital library research, practice, organisation, and commerce. In other words, there is no agreed upon definition of digital libraries. Different perspectives about digital libraries, together with competing visions and associated definitions, come from different communities that are involved in digital library work. We shall consider two communities: research and practice. The research community grounded mostly in computer science, asks research questions directed towards their technology oriented aspects and components. On the other hand, the practice community, grounded mostly in library and information science, asks developmental, operational, and use questions in real-life economic and institutional contexts, restrictions and possibilities, concentrating on applications on the use end of the spectrum.

Digital Libraries Federation (DLF) which represents libraries provides an agreed definition of digital library as follows: "Digital Libraries are organisations that provide the resources, including the specialised staff, to select, structure, offer intellectual access to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital work so that they are readily and economically available for use by a defined community or set of communities".

Borgman provides a definition of digital libraries which may be considered as a bridge between the research community definition and the practical community definition in the following way: "Digital libraries are a set of electronic resources and associated technical capabilities for creating searching and using information. In this sense, they are an extension and enhancement of information storage and retrieval systems that manipulate digital data in any medium… The content of digital libraries includes data, metadata; they describe various aspects of the data and metadata… Digital Libraries are constructed – collected and organised – by [and for] a community of users and their functional capabilities support the information needs and uses of that community".

However, it may be emphasised that the *digital library* is not merely equivalent to a digitised collection with information management tools. It is

also a series of activities that bring together collections, services, and people in support of life cycle of creation, dissemination, use, and preservation of data, information and knowledge.

8) The term *Virtual Library* has been defined in different ways. "It is a selected organised collection of units of documentary resources Spread everywhere (across space), Accessible always (through out the time), Where individuals and groups are linked across the global electronic network and related in different ways to documents that are fast and easily obtainable and available in their full version., in view of satisfying multiple cultural exigencies (information, learning and entertainment, etc.).

   In other words, it is a library in which the holdings are found in electronic stacks. It is a library that exists, without any regard to physical space or location. It is a technological way to bring together the resources of various libraries and information services, both internal and external, all in one place, so that users can find what they need quickly and easily.

   The important characteristics of a true *virtual library* are:

   - There is no corresponding physical collection,
   - Documents will be available in electronic formats,
   - Documents are not stored in any one location,
   - Documents can be accessed from any workstation,
   - Documents are retrieved and delivered as and when required, and
   - Effective search and browse facilities are available".

   The types of services provided by a virtual library comprise the following:

   i) Resource discovery services,
   ii) Access services,
   iii) Reference services,
   iv) Instruction service and
   v) Patron (user) account service.

9) In a networked environment, there is a fundamental assumption that systems and organisations will interoperate. The concept of interoperability is focussed on technical interoperability between information systems. It is the ability of two or more systems or components to exchange information and use the exchanged information without special effort on the part of either system. The implementation Z39.50 enables interoperability among systems.

10) The *hybrid library* is a term used by the librarians to describe libraries containing a *mix* of traditional print library resources and number of electronic resources. The term was first coined by Chris Rusbridge in 1998.

    Hybrid libraries evolved in 1990s when electronic resources became easily available to libraries.

    Some of the issues facing the hybrid libraries are: the digital divide, interoperability, and collection development, ownership of electronic

resources and preservation of digital media. The term digital divide is used to describe the gap between those with information technology knowledge and those who do not possess such knowledge. The complicated and changing copyright laws are a challenge for many virtual libraries as it is difficult to make sure whether their users are using digital items lawfully. Also, hybrid libraries need trained staff to help users to navigate the vast amount of information available in the digital age.

2.5 KEYWORDS

Academic Libraries : The libraries associated with educational institutions.

Audio-visual : Hearing and seeing.

Browsing : To look through a book in a casual manner.

Consolidation : Comprehensive account, descriptive or critical reported separately in different sources but brought together on a specific subject for use.

Digest : A Publication comprising summaries of information on a single topic or a number of related topics.

Digital Coherence : It means all the objects in a digital library, whether *sounds, images, texts,* or some other media can be treated in essentially the same way. Prior to digital coherence, libraries needed to treat various media differently. This concept permits equality among various information resources.

Digital Library System (DLS) : A software system that is based on a architecture and provides all functionality required by a particular *digital library.* Users interface with a digital library through the corresponding DLS.

Disintermediation : The term is used for the process where by users are encouraged to interact directly with services.

Information Behaviour: The ways in which users seek, acquire and utilise information.

Information Literacy : The knowledge and skills required to locate and use information contained in various formats. The ability to make significant connections to form interpretations, to provide context, etc.

Innovative : Bring in novelties; make changes in.

Interoperability : It is concerned with standards needed to enable systems to interact and information to be stored, transported and communicated between and across them.

Library Network : Interlinking library resources and services by means of computer and communication technologies.

Lifelong Learning : Learning throughout life continues to be emphasised

Metadata : *It is data about data* – consists of descriptions of information *objects* (books, Web pages, audio tapes etc.). The term is usually applied to *structured data* since without structure it is impossible to process the information contained in a metadata record.

Networked Learning : A term used to describe all the methods of delivering, learning which rely on information and communications technologies.

Repackaging : Reports prepared or presented to suit a particular group of users.

2.6 REFERENCES AND FURTHER READING

Abram, S. "Post Information Age Positioning for Special Librarians: Is Knowledge Management the Answer". *Information Outlook* 1.6 (1997): 18-25. Print.

Arms, W.Y. *Digital Libraries*. Cambridge MA: MIT Press, 2000. Print.

Borgman, C.L. *et al.* "Social Aspects of Digital Libraries: Final Report to the NSF". 1996.

Borgman, C.L. "What are Digital Libraries? Competing Visions". *Information Processing & Management*, 38. 3 (1999): 227-243. Print.

Brophy, Peter. *The Academic Library*. 2nd ed. London: Facet Publishing, 2005. Print.

--- . *The Library in the Twenty-First Century*. London: Facet Publishing, 2007. Print.

Candela, L. "Setting the Foundations of Digital Libraries: The DELOS Manifesto". *D-Lib Magazine*, 13.3/4 (2007). Print.

Cleveland, G. *Digital Libraries: Definitions, Issues and Challenges*. 1998 Web. 25 September 2012. http://archive.ifla.org/VI/5/op/udtop8/udtop8.htm

Dolan, J. *A Blue Print for Excellence: Public Libraries 2008 – 2011: Connecting People to Knowledge and Inspiration*. London: MLA, 2007. Print.

The European Library. Connecting Knowledge. Web. 27 September 2012. < http://www.theeuropeanlibrary.org/tel4/ >

Grimes, Deborah Jean. *Academic Library Centrality.* ACRL Publications in Librarianship. 50. Chicago: Association of College and Research Libraries, 1998.

Hybrid Library. Web. 25 September 2012. < http://en.wikipedia.org/wiki/Hybridlibrary>.

IFLA. *UNESCO Public Library Manifesto*. The Hague: IFLA, 1995. Print.

Joint Funding Council's Libraries Review Group: Report (The Follett Report). Bristol: Higher Education Funding Council for England, 1993. Web. 27 September 2012. < http://www.ukoln.ac.uk/services/papers/follett/report/ >

Lesk, M. E. *Practical Digital Libraries*. San Francisco: Morgan Kaufman, 1997. Print.

Levy, D. A. "Digital Libraries and the Problem or Purpose". *Bulletin of the American Society for Information Science*. 26.6(2000):22-26. Print.

Line, M.B. and J. Line. "The Nature and Aims of National Libraries: Introductory Notes". *National Libraries*. Ed. Maurice B. Line and Joyce Line. London: Aslib: 1979. Print.

Lor, P.J. *Guidelines for Legislation for National Libraries*. UNISIST, Paris: Unesco, 1997. Print.

Lynch, C, and Garcia – Molina, H. "Interoperability,Scaling, and the Digital Libraries Research Agenda: A Report on the May 18-19, 1995 IITA Libraries Workshop," *Microcomputers for Information Management: Global Internetworking for Libraries* 13.2(1996).

Majumdar, Uma. *India's National Library: Systemisation and Modernisation*. Calcutta: National Library, 1987. Print.

Moen, W. E. and Murray, K. R. "A Service-based approach for Visual Libraries". *Texas Library Journal*. (Fall 2002): 1-11. Print.

Virtual Libraries: Themes. Web. 25 September 2012. < http://www.problemistics.org/vl/themes.html.>

Miksa, Francis. "The Cultural Legacy of the Modern Library for the Future" (old version). *Journal of Education for Library and Information Science* 37.2 (2007): 100-119. Print.

National Libraries. Ed. M.B. Line and J. Line. London: ASLIB, 1979. Print.

National Library. Web. 26 September 2012. <http://en.wikipedia.org/wiki/National_library

Oppenheim, Charles and Smithson, D (1997). What is the hybrid library? Web. 25 September 2012.<http://jis.sagepub.com/cgi/content/abstract/25/2/97>.

Powell, Alan. "Management Models and Measurement in the Virtual Library". *Special Library.* 85.4 (1994): 260-263.

Riccio, H. M (2001). Features – The Virtual Library – Past, Present and Future. Web. 25 September 2012. <http://www.llrx.com/features/virtuallibrary.htm>.

Rusbridge, Chris (1998). "Towards the Hybrid Library". *D-Lib Magazine*. 4. 7/8 (1998). Web. 25 September 2012. <http://www.dlib.org/dlib/july98/rusbridge/07rusbridge.html>

Stipanov, J. *Knowledge Society and Public Libraries*. Zagreb: The Author, 2005. Print.

UNESCO. *Public Library Manifesto*. UNESCO: Paris, 1994. Print.

--- . *Regional Seminar on the Development of National Library in Asia and Pacific Area, Manila*, 3-15 Februaury 1964. Final Report. Paris: UNESCO, 1964.

Waters, D. T (1998). *What are digital libraries*? Web. 25 September 2012. <http://www.clir.org/pubs/issues/issues04.html/issues04.html#dlf>

A Working Definition of Digital Library [1998]. Web. 27 September 2012. < http://old.diglib.org/about/dldefinition.htm>.

UNIT 3 INFORMATION INSTITUTIONS

Structure

3.0 Objectives

3.1 Introduction

3.2 Evolution of Information Institutions

- 3.2.1 Growth Patterns

3.3 Types of Information Institutions

- 3.3.1 Libraries
- 3.3.2 Documentation Centres
- 3.3.3 Information Analysis Centres
- 3.3.4 Data Centres
- 3.3.5 Referral Centres and Clearing Houses
- 3.3.6 De-institutionalised Information Services

3.4 Indian Situation

- 3.4.1 Growth Pattern
- 3.4.2 Future Directions of Growth
- 3.4.3 Role of Information Institutions in Knowledge-based Economy (KBE)

3.5 Summary

3.6 Answers to Self Check Exercises

3.7 Keywords

3.8 Acronyms used in the Text

3.9 References and Further Reading

3.0 OBJECTIVES

After reading this Unit, you will be able to:

- explain the nature of information institutions and their growth pattern;
- identify different types and nature of information institutions and their specific role in the dissemination of information to individuals, groups, as well as organisations that might require information in different forms and formats;
- explain the importance of "planned institutional building" with particular reference to developing countries;
- discuss how the technologies are impacting the organisational structure;
- discuss the characteristics of new millennium organisations;
- explain the preparedness of and understand the nature of Information Institution for its legitimate role in knowledge-based economy (KBE); and
- describe the indicators of preparation for KBE.

3.1 INTRODUCTION

The significance of institutions in modern society cannot be underestimated. In this context, the opinion of Peter Drucker needs careful consideration. He emphasises that "every major task, whether economic performance, or health care, education or protection of environment, the pursuit of new knowledge or defence, is today being entrusted to big organisations, designed for perpetuity and managed by their managements. On the performance of these institutions, the performance of modern society – if not the survival of each individual – increasingly depends". Drucker further affirms that every institution comprises human beings – men and woman, whose performance brings success or failure to the institution and there by to the society.

It is often stated that modern society is transforming into a knowledge society. *Knowledge* is now recognised as the *driver of* productivity and economic growth, leading to a new focus on the role of information, technology and learning in economic performance. As a matter of fact, the term *knowledge-based economy (KBE)* stems from this fuller recognition of the production, distribution and use of knowledge and information. The concept of *(KBE)* has generated tremendous interest in recent years. As a result, a *paradigm* shift is taking place for information organisations. In fact, organisations, companies and workers are constantly urged to prepare for the new era of *(KBE).* Effective exploitation of information in organisations appears to be distinguishing feature of this new *socio economic model.* Since formal provision of information and knowledge has been the main responsibility of information institutions, it is imperative that to stay relevant in the new environment they respond quickly and appropriately to the challenge posed by KBE. Many writers have stressed that information institutions must find a role in KBE by adopting new methods and tools, re-making and repositioning themselves, furthering their knowledge of customer needs, and embedding themselves in the organisations they work for. Libraries and information centres have also been advised to focus more on evaluating, analysing, synthesising, qualifying and delivering externally created contents. The information professionals in the knowledge economy are also expected to be aware of the changes in the organisational structure in order to make themselves as integral part of new organisation. They should be willing to refine their roles to function as information managers, research analysts, and knowledge facilitators. In this context, it is of interest to note that *different professions are converging on the emerging community of knowledge practice* giving rise to a variety of *specialist knowledge professionals.*

It must be pointed that not many research reports are available on *modern information institutions or organisations* in the literature of library and information science. In this Unit, an attempt has been made to examine and discuss a variety of organisations, whose main stock in trade are knowledge, literature and information evolved out of users needs and demands. The Unit also depicts the information transfer patterns which have resulted in the creation of information institutions with varying functions.

3.2 EVOLUTION OF INFORMATION INSTITUTIONS

In the literature of library and information science we do not come across studies exclusively devoted to the evolution, development, organisational structure and functions of information institutions. However, if we examine the institutions that have come up during 20th century, especially in the latter part, we can discern a typical pattern in their growth. However, this pattern could be perceived only in the industrially advanced countries of the West. As it happens, their influence extended to the Third World Countries also; with the result many Third World Countries have accepted the Western Model in designing and developing their own institutions.

The report entitled "Into the Information Age, A Perspective for Federal Action on Information" prepared by Arthur D Little, Inc. describes the development of information institutions in the USA. In doing so, the report identifies three basic models of information transfer. The report contends that the process of transfer of information / knowledge comprises a chain of activities, the main links being generator, editor, publisher of primary publications, indexing and abstracting journal producers, libraries, documentation and information centres, on-line services, information companies and the end-user. The institutions that normally perform these activities can broadly be grouped into three categories indicated below:

i) Knowledge creating institutions (under this category come: research laboratories, R&D institutions, institutions of higher education and research centres attached to universities, etc.)

ii) Knowledge / information processing and dissemination institutions such as: publishers of books and journals / statistical data organisations, science and technology data centres and the like, and

iii) Institutions that collect, store, process, disseminate and service knowledge / information recorded in various forms such as libraries.

A careful analysis in this aspect reveals that over the years, there has been an increasing interaction and cooperation among all these categories of institutions. It may also be noted, that with the application of modern technologies in information generation, processing, dissemination, distribution and use, many of these functions are getting blended, reducing the distinction between different link elements of information chain. At this point in time, the different types of institutions mentioned above operate with their distinct identity. Therefore, we need to discuss them in their present form.

3.2.1 Growth Patterns

In spite of many efforts to locate latest information on the growth patterns of information institutions, none has been found from surfing the Internet depicting the growth patterns in the context of emerging knowledge society. As such, the effort made by Arthur D Little Inc in the form of Vincent Giuliano's report remains the model historic perspective of information transfer pattern and institutional framework and modes of information transfer. The three modes considered are:

i) The Discipline Oriented Information Transfer corresponding to the value system of pure science, academic and basic research called Era I;

ii) Mission oriented Information Transfer corresponding to the value system of government sponsored missions (such as AEC, NASA in the 1960s) called Era II;

iii) Problem-oriented Information Transfer corresponding to the value system of solving societal problems called Era III.

The principal characteristics and features of the above mentioned eras are briefly discussed in the following paragraphs.

Discipline-oriented Information Transfer (Era-I)

The basic principle associated with *Era-I organisations* is that they are created to provide knowledge and so are to support education, research and development. Knowledge and information are generally disseminated through journals, monographs, seminars and meetings usually associated with academic and research institutions, learned societies, professional bodies, etc. Access to the primary information is provided through bibliographical tools like indexing and abstracting services which are made available by institutions facilitating access to documents and use, mostly the libraries and other departments attached to the parent bodies. The user community comprises academicians, scholars, research workers and students. Financial support to the system is derived from internal budgetary provisions, grants and subsidies provided by the government. This traditional system of free information service has been continuing since a long time, not withstanding the difficulties encountered every now and then. The components of this system namely libraries and journal publishing often face financial troubles. The producer / user complexes control the quality and the content of the system.

Mission-oriented Information Transfer (Era-II)

The organising principle behind the *Era II systems,* is that they exist to accomplish a specific job. For example, information systems developed during 1950s and 1960s have been created to provide information support to mission-oriented agencies such as AEC, NASA and similar purpose-oriented projects. In this context, the information transfer process is characterised by a defined need for coordinating and using information and knowledge concurrently from a variety of disciplines. For example, in the case of NASA mission, inputs of information from diverse subjects like electronics, biology, medicine, aeronautics, chemistry and physics, etc. are necessary. In this context, information is disseminated through *technical reports,* besides conventional publications like journals. Technical information centres attached to the main agencies undertake the responsibility of developing interpretative information services meant for the user communities comprising scientists, engineers, technologists and managers belonging to the agency. The system has a feedback mechanism, which enables it to determine the performance efficacy of the system. The results of the feedback analysis will be constantly fed to the system for its improvement as also to determine changing information needs of the entire range of clientele.

During the period of operation of Era-II institutions importance has been given to the type of dissemination products such as newsletters and trade journals indicating that some Science Technical Information (STI) systems have a major economic value and emphasis has to be given to market-oriented information transfer mechanism.

Problem-oriented Information Transfer (Era-III)

The organising principle that paved the way for the establishment of information organisations in this *era is solving societal problems* by exploiting appropriate information. Systems that evolved in this period reflect a context in which information is used in problem solving such as economic development, industrial planning, agricultural productivity and environmental protection, etc.

The institutions that came into existence during this period had the capability to handle specific type of information and could provide new products and services. However, they could not evolve appropriate structures. Though the systems which were developed during this *era* exhibit characteristics necessary to meet the informational requirements of the times, needed further development and legitimisation. The community of users whose needs the systems were expected to fulfil was somewhat amorphous and ill defined involving a variety of groups such as elected representatives of people, judiciary, technologists, media people and the general public. In addition to the amorphous nature of the users, the information systems had to tackle different types of information largely non – STI – some of the categories being local, ill-organised, proprietary, value-added and reflecting value judgements.

Naturally this situation augured well for the proliferation of information brokers, consultants, information intermediaries in the form of new types of institutions to offer specialised and qualitative services. Repackaged information, collected from a number of sources with validated and authentic data, in the form of new type of specific information service came into being.

It may be mentioned that the STI system has been evolved to meet the requirements of scientists and technologists. It has been addressing audiences of high technical competence and others having the training to understand the material communicated to them. Expanding the context of information usage to societal problem-solving entails interpreting technical results appropriately to non-technical users to take informed decisions adds a new dimension. This type of information is available only at a price.

Preparation and delivery of such information needed a private enterprise willing to invest capital and take risks with the market-oriented approach. This situation gave rise to information industry to satisfy the needs of consumers.

Individual-oriented or Customised Information Service

This period may be considered as the Era-IV. This era introduced new challenges to information professionals in the form of identification of individual users and their needs, and development of new information products and services that could be marketed. Delivery of information to home bound citizens and consolidation, condensation and repackaging of information to scientists and engineers in industry became the prime organising principle behind the development and growth of information institutions of this period. Fee-based

information services, on demand companies, information consultancies, information Intermediaries, information brokers, etc. sprang up in countries like USA, U.K., France, Germany, Austria and Belgium.

It may be mentioned that the major organisations like PREDICASTS, Arthur D Little co. Inc., Lockheed Information Services, SDC, BRS, New York Times Information Bank, etc. have been in existence since a long period whereas others came up during 1970s and developed in 1980s. The industry has further developed in 1990s and in the 21st century.

New Millennium Organisations

The last decade of the 20th century has seen extraordinary change in the way organisations are viewed and managed. Organisations may no longer be considered as production-oriented entities, divided by function (such as R&D, operations research, marketing, etc.) and controlled by layers of management.

Many terms have been employed to describe the new type of organisations. Each of these descriptions conveys a vivid impression of new millennium organisations. For instance, one of the descriptions conceives it as a *knowledge-based* organisation in which employees' knowledge is the organisation's primary asset. Another perception of a new millennium organisation is that it will be a learning organisation in which the individuals, teams, and the organisation itself continuously learn from the environment and from their activities, and act on what they have learnt. A third view is that it will be a knowledge-based organisation in which the products and services are customised and continually enhanced or changed to reflect what has been learnt from customers. In other words, it will be an extended enterprise, in which customers, clients, suppliers, governments and other stakeholders are included explicitly in the definition of organisation itself. Yet, another view is that it will be a "networked organisation" in which computer-based communication networks enable wide spread and rapid communication among all groups in the extended enterprise. Network technologies like the Internet will enable *any time, any place* communication and access to information. The Internet has often been described as a new frontier housing endless possibilities within a democratic atmosphere. Information likes to be free – an expressive phrase on the Internet reflecting a mentality of open critical minds that were part of the net's genesis. It may be mentioned that two important considerations shape the modern organisations. One is the focus on learning and knowledge and the other is the convergence of information technology, telecommunications, and information resources and networked environment. The rise of knowledge management as the focus of organisational improvement efforts calls for knowledge managers. This aspect has implications for information profession. In other words, information professionals must identify knowledge management process to which they can contribute. Knowledge management is concerned with the acquisition, transfer and use of knowledge in organisations. The primary role of management is to develop the *intellectual capital* of the organisation. In this context, it must be noted that for any organisation the knowledge of its workers is the foundation of the organisations' *intellectual capital.* Knowledge management strives to improve the organisation and its contribution to the economy by increasing *the intellectual* capital of the organisation.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of the Unit.

1) Briefly describe the growth pattern of Information Institutions.

.....

.....

.....

.....

.....

2) How do you characterise a new millennium organisation.

.....

.....

.....

.....

.....

3.3 TYPES OF INFORMATION INSTITUTIONS

In the literature of Library and Information Science we come across different types of information institutions. The primary objective of all these organisations happens to be *collection, processing, organisation* and *dissemination of information* to individuals, groups and organisations as and when they require it. The most important type of these institutions are: libraries, documentation centres, information analysis centres, etc. Apart from these traditional institutions, which have been in existence for long, many de-i*nstitutionalised information services* have sprung up lately. Some of these are discussed in the following sections of this Unit.

3.3.1 Libraries

Libraries are important resources both for individuals and for communities of people who are interested in the preservation of knowledge. Their importance stems from their ability to maintain records of human endeavour within a range of different contexts using many different media. Libraries will, therefore, continue to play important social, cultural, technical, and pedagogic roles in the future. Indeed, for majority of people libraries will act as a powerful multimedia window on the outside world, particularly through the use of computer network systems. Obviously, some changes in the *library concept* will be needed in order to accommodate the requirements of the new information storage and delivery technologies and what these enable people to do. It may be noted that the increasing availability of information generally and of *new kinds of information more particularly* will lead *to a redefinition and integration of the different categories of information organisations.* Traditionally these have been created to manage different *formats* and *media* such as print and its surrogates (*libraries*),

objects (*museums*), and paper records of organisational activity (*archives and record repositories*). Differences in organisational philosophy, function and technique have arisen from the exigencies *presented by these different formats and media.*

The current wave of predictions that electronic technology will soon replace books and libraries, is inspired by a rapidly accelerating series of developments, in that technology which multiplies its power while drastically reducing its costs. Among those developments are communication satellites, cable TV, inexpensive mass – storage in the form of optical and digital video discs and powerful microcomputers on chips. With them, we have acquired a technology which *fires the imagination* and gives credence to even the most *fanciful forecasts!* In this sort of environment, there is a danger that those responsible for the financial support of libraries will neglect or prematurely abandon traditional libraries in favour of more glamorous alternatives in promising but as yet untested technologies.

The experts who are predicting the early demise of books and libraries have impressive credentials. They include management experts, information entrepreneurs, government officials, university professors, and popular futurists. Their forecasts of things to come are based on insights that come from solid knowledge and years of experience. They can neither be ignored nor accepted uncritically.

The insights and perspectives of theoreticians and futurists are useful: they help us to see and understand the complex social, economic, and technological forces that are at work in our larger environment, but only those with authority and responsibility can decide how and when these forces might affect any particular enterprise. Futurists can tell us what the future may be like, but they cannot tell us how to go there or when to make our moves. The really important decisions about any organisation or institution must, in the end, be made by those responsible for it, based on their best *judgement* and as much *practical wisdom* as they can muster. Prominent among and representative of those who are predicting an early end to books and libraries are: Dr. F. W. Lancaster and Dr. Vincent E Giuliano. Of course, their views are well known and documented. Dr. Lancaster is a proponent of the thesis *paperless society* and sums up his views in the following words: “We are moving rather rapidly and quite inevitably towards a paperless society. Advances in computer science and communications technology allow us to conceive a global system in which reports of research and development activities are composed, published, disseminated, and used in a completely electronic mode. Paper need never exist in this communication environment. We are now in an interim stage in the natural evolution from print on paper to electronics”. In the event a paperless society arrives as envisioned by Lancaster, there will be transformation of our society and our way of life. Obviously in that society, not only libraries but also the institutions and the scholars they serve, may also become obsolete. The best remedy is to cope with the changes, and try to plan for the future.

Giuliano has put forward many arguments which in effect plead for the abandoning of traditional libraries. Of these, the most important one demanding a careful consideration is “as far as the information institutions in our society go, libraries are of minor importance. Technology has already evolved to a point where access

to most of the world's literature can be obtained with in a couple of days through combination of online bibliographic searching utilities and vendors-supplied computerised order fulfilment system for books, documents and periodical articles". If Guiliano is right on this point, then libraries would have indeed served their purpose and may fade away. But, the truth is that most of the new technology based information business, are still largely dependent on the library market for their survival and the information brokers ultimately rely on libraries as the source for most of the documents they supply to their clients. Most of the books and journals go out of print with in a few years of their publication and are no longer available except in libraries. Another point to be noted in this connection is that most foreign books and journals and some specialised documents are not available through normal trade channels. Only a few research libraries manage to acquire and preserve them. Such materials are dispersed among a number of libraries in every country of the world. Older and out of print books can be had only from libraries.

Not with standing the arguments relating to the demise of the libraries by the futurists, and the idea that electronic technology in the hands of information entrepreneurs is going to put an end to libraries can be laid to rest. Libraries are here to stay but by no means are they going to stay the same. Their functions will remain, but the ways and means they used to perform those functions will change in varying speeds for different kinds of libraries in different countries.

It is worth noting that the World Wide Web (WWW) is changing the face of libraries – the way we use them and value them. The WWW will impact greatly upon the library, whether the library wants or not. This impact, to a large extent, would be dictated to the library by forces based both technologically and socially. As a result of the Internet and WWW technology, libraries are now presented with lack of linkage between the general user mainframe environment and having library resources on a separate machine or machines. The WWW can overcome the general user mainframe environment's lack of features for information discovery, as well as, provide the ability to create virtual site, where they can create an electronic presence that patrons (users) can easily locate – a starting point for library services. In fact, the WWW provides the tool for integrating other systems of library such as online catalogues, and searchable text databases, as well as allowing new resources and services. It may be stated that WWW is a technology, which could smell the end of library, as we know it today or be the beginning of a great transformation. It will surely have influence with or without libraries' participation. What will become of the library is not clear yet, as it often takes many years for a technology to come into its full stride. Given the rapid pace of changes that we are experiencing today, it might be inferred that technological change can force social change upon society and its institutions. Viewed from this point, the library of next few decades will be: i) a place where people won't come as a physical location of information resources; ii) will become an access facilitator; iii) will coordinate access to locally built digital resources.

In other words, it must be emphasised that the *stereotype of libraries* as *static* unchanging institutions, is no longer valid, they have to demonstrate a remarkable ability to grow, to adopt to changing conditions to meet new demands, and to implement new technologies. If these aspects are taken care of, then one need not give much weightage to the predictions made about their future existence.

3.3.2 Documentation Centres

Before World War II, research activity was largely an individual affair. But, the situation changed rapidly and it has become a team work. Both government and private organisations came forward to fund research and development activities in a big way. Specialisation became the order. Information explosion took place in science as well as in technology. Keeping abreast of new developments in any one discipline became a problem for scientists, engineers and technologists. Library-based information services proved inadequate to meet the specialised information needs of many research workers. To cope up with this new demand documentation centres came into existence. One of the basic functions associated with any documentation centre is that it brings to the notice of specialist users current and recent literature of value to them. However, the functions that are assigned to a documentation centre vary from one documentation centre to another. For example, a local documentation centre has the sole function of providing information services that support the activities and programmes of its parent organisation of which it is a part. It would collect and serve information concerning the actual work in progress of the parent institution. Towards fulfilling this objective, the local documentation centre may be engaged in the selection and acquisition of worth while material and its organisation for use. Its services may be designed both to satisfy the existing and anticipated needs of users. In other words, the local documentation centre might provide both anticipatory service as well as services designed to satisfy specific demands of users. A national documentation centre on the other hand will perform certain residual functions and might undertake activities, which are beyond the means of local documentation or information centres. Generally local documentation centres are attached to individual R&D institutions, business houses, industrial enterprises, and government departments, etc. and are administered by their parent institutions.

At the national level, it might be the responsibility of appropriate government agencies to establish and administer such a centre. The general norm recommended for financial support is 5% of the budget spent on R&D must be diverted to meet the expenditure of a national centre. In India, documentation centres are mostly established by the government. In this context, it may be mentioned that varying patterns of organisation exist in different countries. Centralised as well as decentralised structures have come into existence. Countries like UK have adopted a mixture of centralised as well as decentralised models. But, the network concept has gained importance in the modern times and the trend is now towards pooling and sharing of resources for achieving maximum economy and productivity.

3.3.3 Information Analysis Centres

The origin of activities pertaining to information analysis may be traced back to the 19th century. But the idea of a systematically organised centre for information analysis activity is relatively new.

The Weinberg Report extensively discussed the role of information analysis centres (IACs) and their importance and emphasised that the activities of most successful IACs are intrinsic part of science and technology. The centres not only disseminate and retrieve information; they create new information …. The

process of sifting through large masses of data often leads to new generalisations … In short, knowledgeable scientific interpreters who can collect relevant data, review a field, and distil information in a manner that goes to the heart of a technical situation, are more helpful to the over burdened specialist than is a mere pile of relevant documents. Such knowledgeable scientific middlemen, who themselves contribute to science are backbone of the information (analysis) centre; they make information centre a technical institute rather than a technical library. The essence of good technical centre is that it is operated by highly competent working scientists and engineers – people who see the operation of centre as an opportunity to advance and deepen their own personal contact with their science and technology. The COSATI standing panel wrote the following comprehensive definition into its *charter*: "An Information Analysis Centre is a formally structured organisational unit, specifically (but not necessarily exclusively) established for the purpose of *acquiring, selecting, storing, retrieving, evaluating, analysing* and *synthesising* the body of information and / or in clearly defined and specialised field or pertaining to a specified mission with intent of *compiling, digesting, repackaging* or otherwise *organising* and *presenting* pertinent information and / or data in a form most authoritative, *timely* and *useful* to a society of peers and management".

The key activities of IACs are: *analysis, interpretation, synthesis, evaluation,* and *repackaging* of information carried out by subject specialists, resulting in the production of new, evaluated information – in the form of *critical reviews, state-of-the-art-monographs,* or *data compilations*, as well substantive, evaluated responses to queries – for the purpose of assisting a community of users more broadly representative than the staff of the parent institutes or laboratories. Fig. 3.1 illustrates the main activities of a typical IAC.

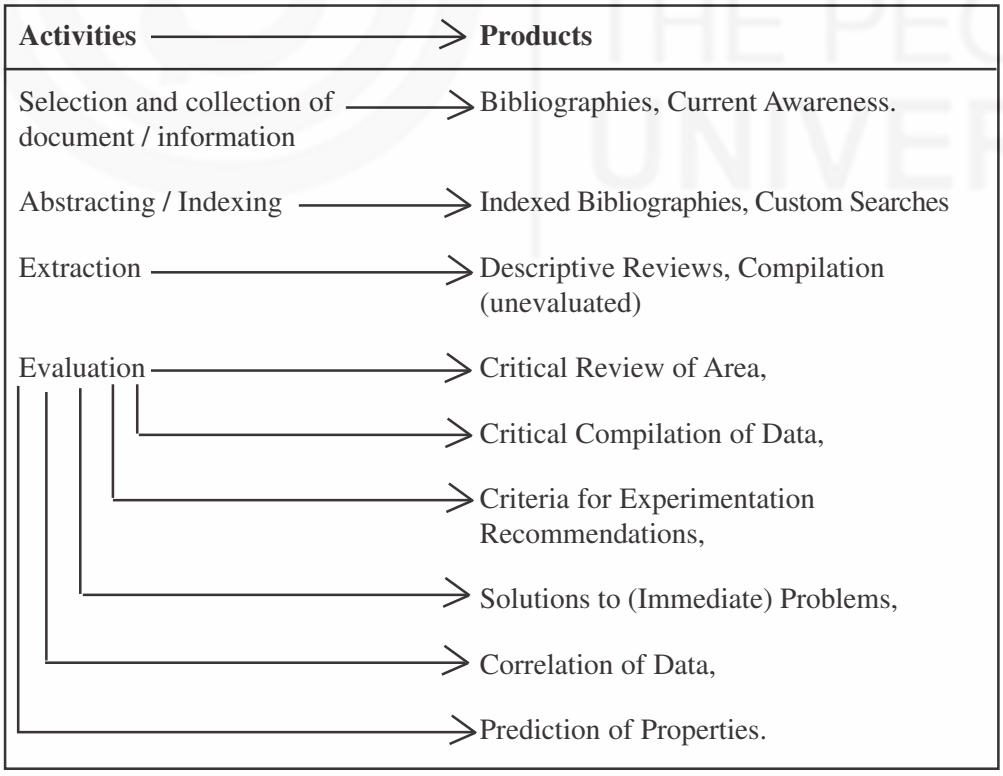


Fig. 3.1: Activities of an IAC

3.3.4 Data Centres

Data is an important ingredient of research. Its societal importance can not be under estimated. The contemporary society needs data for various activities such as planning, development and decision-making, etc. in every sphere of human progress.

Data must be collected, processed and organised so as to facilitate its utilisation in an effective manner. Managing scientific data has been identified as one of the most important emerging needs of scientific community because of the sheer volume and increasing complexity of data collected. Effective generating, managing and analysing the data requires a comprehensive approach that encompasses all the stages from the initial data acquisition to the final analysis of the data. For this purpose, an institutional mechanism is essential. Such institutional mechanisms are known as *data centres*.

According to UNESCO a data centre "constitutes an organisation handling quantitative numerical material data". Such centres take the primary function of collecting, organising and disseminating data and also provide a measurement service and are in a position to advance relevant measurement techniques. The term *data centre* is used interchangeably to define a range of information centres, not all of which are critically evaluating data. Data centres vary both in scope and size. There can be data centres at local, national, regional, and international levels.

A data centre generally includes three major components:

- An organised data collection (i.e. the database);
- A connection with data sources which feed the database; and
- A contact with users who are expected to interact with the data base with different types of questions.

These can be diagrammatically represented as:

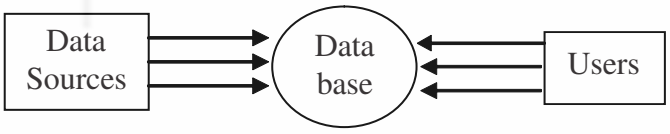


Fig:3.2 Component of a Data Centre

Modern data centres are usually maintained by organisations in order to handle core operations in information services including the Internet connectivity, intranets, LANs, WANs, and extranets. The most basic *data centre* will have a computer network and security applications which amounts to very large amounts of data stored in a number of computers. Generally larger companies will have IT infrastructure to handle the activities of a data centre.

It may be stated that the activities of data centre comprise:

- Data collection,
- Data control,
- Data codification,

- Data organisation and structuring into a database and
- Data retrieval.

For accomplishing all these functions a data centre should be equipped with suitably trained manpower. In India many data centres have been established under the erstwhile NISSAT programme. National Information Centre for Crystallography is an example of a data centre.

The World Data System (WDS) was established to achieve and distribute data collected from the observational programmes of the 1957-1958 International Geographical Year. It was originally established in the United States, Europe, Russia and Japan, since then the WDS expanded to other countries and to new scientific disciplines. The WDS presently includes 52 centres in 12 countries. Its holdings include a wide range of solar, geographical, environmental, and human dimensions data. It is funded and maintained by host countries on behalf of the international scientific community.

3.3.5 Referral Centres and Clearing Houses

There are a variety of organisations involved in information dissemination activity. These different organisations need to be properly coordinated by an agency for their effective functioning. A new type of establishment with specific mandate to act as a *switching mechanism* among different information dissemination institutions is an essential requirement. Such an organisation is referred to as *Referral Centre.* The Harrods's Librarian's Glossary provides the following explanatory annotation to the term *Referral Centre:*

- **"**An organisation for directing researchers for information and data to appropriate sources, such as libraries, information evaluation centres, documentation centres, documents and individuals;
- A Referral Centre is some sort of an *Information Desk* for the scientific and technical community which does not provide enquiries directly with the information they need, but suggests sources likely to satisfy the users / clients;
- Referral Centre is an organisation for the indication of sources (of persons, institutions and publications) from which scientific information may be obtained on a given subject".

In other words, a referral centre serves as an intermediary, directing those who have queries relating to information requirement on scientific and technical subjects, to the organisations as well as to individuals who have specialised knowledge in those fields and are willing to share that knowledge with others. To carry out its functions referral centre must:

- be equipped with an inventory of all significant information resources in different disciplines;
- compile and publish directories of scientific and technical information resources;
- analyse the operating relationship that exists in the scientific information complex.

As in the case of IACs the referral centres exist at different levels (i.e. local, regional and international).

Clearing Houses

In scientific parlance, a *clearing house* is a relatively new concept. It represents a depository for documents with the additional objective of servicing as a central agency engaged in the distribution of information. It also includes such functions as collecting and maintaining records of research and development. Sometimes, subjective questions about items in these records are referred to the source and thus a *clearing house* may have to perform the function of a referral centre. In the United States as well as UK such clearing houses are in existence and are functioning. Most of the clearing houses have *information gathering networks* to acquire documents in their subject areas. They answer specific and general type of questions and may act as central searching place for enquiry especially relating to R&D reports.

3.3.6 De-institutionalised Information Services

In the preceding sections of this Unit, we have discussed different types of information institutions and their role in the dissemination of information to people at large. We shall now discuss the deinstitutionalisation of information services caused by advances in information and communication technologies. For a long time information handling has been the preserve of a group of trained people called librarians or information professionals. The profession's strength stemmed from the fact it operated as society's *institutionalised* information retailer. The universal non-availability of information allowed the profession to fulfil a useful role at the societal, organisational and individual level. In many cases access to information was, and is, via designated institutions like libraries, information centres, etc. However, technology appears capable of de-institutionalising information and handing over access to the individual, thus cracking the mould of library. This de-institutionalisation of information has created a lot of dissonance within the profession and the burgeoning of *info-business.* However, the information service is no longer exclusively defined in terms of activities carried out in a traditional library and information centre. It may be observed that during the last two or three decades the *phenomenon* of *information broker* has developed apace, especially in the USA and other advanced countries. In the USA itself there are a number of brokerage firms in operation, the important ones being *Information Store* and *Information Unlimited.*

Information Broker

The information broker is an individual or a firm, who, on demand seeks to answer questions using all available sources and who is in business for profit. Broking rests on the *axial principle: information for payment.* In case of libraries information is provided but costs are not charged to the user. One must understand the important distinction between information which is freely available and information which is free. The services offered by brokers comprise:

- Briefing or instant education;
- Information repackaging;
- Market research / analysis;
- Personnel recruitment;
- Press cutting service; and
- Seminars / workshops.

Information brokers specialise in providing fast and efficient services. These firms largely staffed by the people with library backgrounds provide literature searches, retrieve and supply documents. These firms may not pose any threat to libraries. In fact, they supplement them by filling needs and demands that publicly supported libraries cannot try to meet by providing special and expensive services to business, professional and other users who can afford them.

Human Networks

Traditionally the major focus in information management, information science literature has been on the physical nature of the information resource and its enabling technology rather than on the *soft, more qualitative human dimensions* of information processing. Understanding the *human factors* behind information transfer and the nature and the role of informal communication networks in organisations including the primacy of interpersonal sources of information, is crucial to the effective management of the organisational information resource. Human networks are central to information dissemination in organisations. With most of us, it is the people rather than printed or computer-based information resources that constitute our primary information source.

Information Networks and Information Flows

In management organisations, normally two channels of communication operate. They are formal and informal channels. Formal structures represent an ordered system that regulates authority and communication flows, links decision makers at different levels, and generates orderly flow of information and decision processes. The general flow takes place from top to bottom levels with feedback arrangement which enables the authorities to asses the performance and problems at lower levels.

On the other hand, the informal channels represent the social interactions that occur within organisations. While the two concepts are not necessarily mutually exclusive, a distinction is made between them. In other words, in contrast to formal flows, informal communication patterns tend to be spontaneous, without much of regulation. However, certain individuals within one group play a key role in organisational communication, linking different hierarchical levels or divisions or acting as *gatekeepers* of strategically important data emanating from outside organisational boundaries. The informal network exerts a powerful and constant influence in organisations. In the analysis of informal networks the organisation is regarded as a mutually independent social system made up of *components* and *connections* among those groups. In 1960s, there has been involved research into communication networks by J. J. Allen and others. They identified particular informal communicative and informational roles within organisational settings. The *technological gatekeeper*, the *internal communication star* and the *external communication star* are some of the new concepts that were put forward and discussed by them. These *stars* are approached by others in the organisation for advice or technical matters due to their perceived knowledge and experience.

Information Filters

Information filters is a new concept, which is related to personalised information delivery. It involves a variety of processes involving delivery of information to people who need it. The *Information filters* are essential mediators between

information sources and information users. In most cases, both information sources and information users possess no mutual knowledge that might guide them in finding the information most relevant for the users' immediate or long term needs. *Filters,* which are positioned logically as *third parties* to the communication between the users and sources, should possess both the knowledge and functionality to critically examine the information in the sources and to forward the information they *judge* as relevant to individual users.

The special feature about *information filters* is that they can work *on behalf of users as well as sources.* In the first case, which is the most common today, filters assist users in finding relevant information and overcoming the *information flood.* In the second case, filters can be used by sources to *target* information to potentially interested users.

Disintermediation

This concept means the finding of the information by an end-user without the need for a third party. In other words, the process whereby users are encouraged to interact directly with services and service providing systems such as online systems. Similarly the *introduction of self service issue* is a process of disintermediation. This concept is also closely related to what is known as *end-user empowerment.* End-user empowerment refers to users having access to information and having the necessary skills to retrieve their information according to their own needs. With empowerment, they should be less dependent on information specialists. This does not, however, necessarily mean that the information specialist as an intermediary will become obsolete. This is because all end-users will not have the time or the interest to do their own information searches. Although, there is a connection between end-user empowerment and disintermediation, end-user empowerment does not necessarily imply disintermediation. It may be emphasised that with the advent of the Internet and the increase in both the access to and awareness of information, it seems inevitable that end-users will be doing their own information searching. It is obvious that there will be some form of disintermediation. The level and extent of disintermediation will depend on many factors, such as: organisational policies on end-user searching, available technology, and the services provided by individual information services. To minimise disintermediation, information specialists will require *critical self-reflection,* refinement of their existing skills, continuing expansion of new skills and active research involvement. As end-users' job requirements, their access to information, and their need for information change, therefore, there have to be simultaneous changes in the role of intermediaries. This is important for intermediaries who aim to improve society's access to quality information.

Knowledge Mediators

The process where libraries provide users with insight into the existing body of knowledge and assist users in acquiring resources referring to or containing such knowledge is known as knowledge mediation. The institution or persons involved in such process are called *Knowledge Mediators.* They certainly constitute a link in *information transfer chain.*

In the foregoing paragraphs an attempt has been made to explain some of the important concepts relating to non-traditional information organisations or deinstitutionalised information services. This is only illustrative and not exhaustive.

Self Check Exercise

Note: i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of the Unit.

3) Describe briefly different categories of Information Institutions.

.....

.....

.....

.....

.....

4) Mention the activities and products of Information Analysis Centre (IAC).

.....

.....

.....

.....

.....

5) What do you understand by the concepts *disintermediation,* and *end-user empowerment?*

.....

.....

.....

.....

.....

3.4 INDIAN SITUATION

After the independence from colonial rule in 1947, the Government of India designed plans and made efforts to initiate societal development. Deliberate policy decisions were taken to harness science and technology for the economic growth of the nation. In the process, a variety of institutions have sprung up in every sphere of activity in the country. Scientific research received increasing patronage from the government. Development of infrastructural facilities necessary for organising appropriate and effective information systems and services received governmental support. This situation paved the way for the development of libraries and information institutions distributed through out the country. In a way; in the growth pattern we can observe the influence of the *Three Era Frame Work,* though not with all its characteristics.

3.4.1 Growth Pattern

Institutions such as libraries, documentation and information centres at academic and professional levels, R&D institutions and laboratories, government agencies

and many public and private sector undertakings have emerged in large numbers. In the initial stages, all these organisations functioned in isolation without any linkages among themselves. But, with the passage of time, we could perceive established linkages among some categories of institutions that emerged during era-I.

On the other hand, during era-II organisations which were established during 1950s and 1960s fulfil the needs of mission-oriented establishments like the Atomic Energy Commission (AEC), the Indian Space Research Organisation (ISRO), and the Electronics Commission. Also, Council of Scientific and Industrial Research (CSIR), Indian Council of Agricultural Research (ICAR), Indian Council of Medical Research (ICMR), Defence Research and Development Organisation (DRDO), and other research complexes may also be included in this group. However, there has not been any effort to coordinate the informational activities of these *two eras* of institutions.

From 1970s, it may be stated that era-III type of organisations started to emerge. Institutions like Small enterprises documentation centre, documentation centres attached to National Health and Family Welfare Institute, and few others, might be considered as information support centres to problem solving type of institutions. Most of the CSIR Laboratories started problem-oriented research and required specialised information centres. This enabled the development of organisations like the National Medical Library, etc. Public sector enterprises like BHEL, CMTRI, SAIL and private sector industries like Bharat Electronics, Tata Energy Institute, RANBAXY, etc. also developed their own specialised information cells for meeting their technical information needs. Since most of the above mentioned organisations grew in the context of serving scientific and technical information and hence they did not attempt provision of societal information. The National Informatics Centre (NIC) tried to integrate societal information with administrative information in its efforts to design an administrative information system for India. At this stage, it may be emphasised that information services in India have not reached the level of sophistication either in terms of utilising modern technologies to offer versatile services or in the production of reprocessed and consolidated packages of information which could meet the specific information needed at policy and decision-making levels. In other words, the institutions that emerged as result of three era framework could offer only traditional type of information services with hardly any distinction inspite of an urgent need to introduce distinctiveness in their services and products.

The period of 1980s however witnessed a change in the policy of government towards information infrastructure in the country. As a result, many changes have occurred. For example, the government encouraged modernisation of information systems in a systematic manner. This resulted in the development of national information systems like NISSAT (now discontinued), ENVIS, and BTIS, etc. Coordination of these national information systems and sharing national information resources using modern communication technology became an important step in the reorganisation of information institutions in the country. Efforts were made to establish resource sharing networks. Projects such as INFLIBNET, DELNET, and CALIBNET making use of facilities provided by INDONET and NICNET have been designed and made operational. Networking and resource sharing concept is being seriously pursued in the development of information services and products at different levels. The *organising principle*

behind this growth appears to be optimum and effective use of available resources for societal development. In this context, the progress achieved by DELNET and INFLIBNET is considered significant.

3.4.2 Future Directions of Growth

The perspective of information institutions discussed in the earlier sections of this Unit, indicates the manner in which these institutions grew. The growth has been uneven, and not necessarily based on a well drafted plan. This situation needs to be rectified through a well-thought-out National Information Policy, which provides guidelines relating to *priority areas* for developing and fostering information institutions in the country. It is needless to emphasise that these institutions should have flexible structures which will enable them to meet the changing needs of the emerging information society and the new *competitive era.*

It may be mentioned that the strategies and approaches for institution building vary from country to country in accordance with its own environment, requirements, priorities and the level of existing institutions. In fact, the perspective mentioned earlier is meant to serve precisely this purpose. Information institution building is a complex process. It involves men, material, machinery and money which should be managed for obtaining optimum results. Of the components essential in institutional building manpower is considered to be the most complex and difficult component.

Human resources that operate the institutions are primarily responsible for the success or failure associated with them. It is human resources that provide leadership, technical skill, managerial control and evaluation of performance of any institution. Such manpower need to be built up systematically. Many factors need to be considered in manpower building.

The main objective should be to build a cadre of information scientists and technologists with diverse specialisation and skills, operating with cohesion to organise and offer high quality information services. Constitution of a National Manpower Consortium for Information Professionals would enable such a task. The consortium should formulate a unified approach that would enable the formation and sponsoring of research projects on manpower development studies. If such measures are taken well in time, the manpower needs of the newly established institutions could be taken care of. The consortium should be a representative body comprising members from information institutions, applied manpower research institutions and professional associations etc. The National Knowledge Commission may also be approached for its advice on the matter. The above suggested steps if implemented would lead to the establishment of effective information institutions in the country.

3.4.3 Role of Information Institutions in Knowledge-based Economy (KBE)

In the foregoing pages, we have learnt about a range and variety of information institutions existing in India. However, we have not attempted to know how far these organisations are prepared for their role in new competitive era, called Knowledge-based Economy (KBE). We do not find case studies assessing the preparedness of Indian information institutions reported in the literature. However,

on studies conducted elsewhere, some *performance indicators* which might prove helpful as parameters for such studies are presented in the following paragraphs.

The parameters are:

- Organisational restructuring: these include
  - i) Reorienting the structures according to markets, products or processes;
  - ii) Becoming flatter and more flexible;
  - iii) Relying more on informal communication; and
  - iv) Creating flexible work groups.
- Expansion in roles and functions
  - i) IT specialists
  - ii) Trainees / educators
  - iii) Negotiators
  - iv) Filters
  - v) Navigators
  - vi) Knowledge managers.
- New initiatives in products and services
  - i) Development and / or involvement in the Intranet
  - ii) Customisation and development of databases
  - iii) Design of websites, web pages and interfaces
  - iv) Introduction of push-technology-based services
  - v) Creating and launching of knowledge products.
- Strategic alliances and networking
  - i) Enhancing internal communication
  - ii) Strengthening networking
  - iii) Building new partnerships
  - iv) Expanding external relations.
- Effective user liaison mechanisms
  - i) Redefining user groups
  - ii) User consultation and defining information needs
  - iii) Refocusing newsletters
  - iv) Initiating, briefing and online delivery of hot news.
- Creative use of out sourcing of operations
  - i) Procurement of information materials
  - ii) Processing operations and services
  - iii) Automated delivery of documents
  - iv) Portals

Case studies must be conducted taking Indian information institutions as *bases* to asses their preparedness for the KBE using the above listed parameters. The new facts that such studies reveal will form the premise for revamping these organisations and making them relevant to the new era.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

6) Explain the growth and development of Information Institutions in India.

.....

.....

.....

.....

.....

3.5 SUMMARY

This Unit emphasises the significance of institutions in modern society specially that of information institutions. In the absence of latest studies on the subject, the report entitled *Into the Information Age* is found helpful in delineating the contents of the Unit. The *three modes of information transfer* with important features associated with *three eras* have been briefly discussed. The basic characteristics relating to different types of information institutions emphasising their specific role in the process of information dissemination have been explained. The impact of non-traditional institutions such as information broker, etc. and new emerging concepts like *information filters, human networks, knowledge mediators, technological gate keeper* on information *flow among researchers* and *dissemination* to user community has been explained in simple language. The Unit also briefly discusses *disintermediation* and *end-user empowerment* phenomena as new trends which initiated a professional debate relating to the need and relevancy of services of information specialists in the changing environment. The Unit concludes by emphasising the role of information institutions and their paradigm shift to meet the new challenges posed by Knowledge-based Economy (KBE). Some suggestions relating to the future direction of growth of information institutions in India have been included in this Unit. It is hoped that the information provided in the Unit will be found helpful to the candidates pursuing the BLIS Programme.

3.6 ANSWERS TO SHELF CHECK EXERCISES

1) The growth pattern of Information Institutions has been described under *three* basic modes of information transmission. Each mode follows a different value system. These have been categorised as:

i) The Disciplinary Information Transfer corresponding to the value system of pure science, academic and basic research called Era I;

ii) Mission Oriented Information Transfer corresponding to the value system of government sponsored missions (such as AEC, NASA in the 1960s) called Era II;

iii) Problem-oriented Information Transfer corresponding to the value system of solving societal problem called Era III.

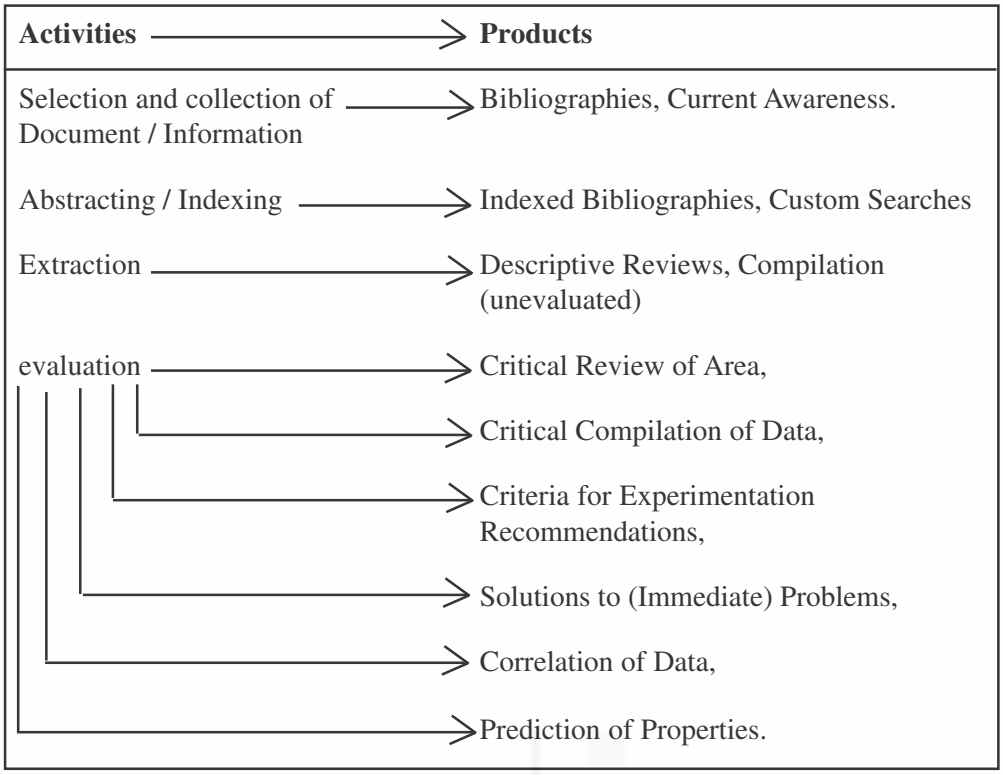
In the present context networking and resource sharing concept is given importance in the development of information services and products at different levels through various institutions. The main organising principle behind this new pattern appears to be optimal and effective use of available information resources for solving complex societal problems related to development. Efforts towards designing Institutions using enabling technologies which will be successful in delivering information support to the emerging Knowledge Society and in achieving Knowledge-based Economy (KBE).

2) The last decade of 1990s has witnessed many changes. Organisations are no more considered as *production-oriented entities,* divided by functions such as human resource management, accounting, R&D, and marketing service, etc. According to management experts, modern organisations are *flexible structures* characterised by geographically dispersed work-force in which client oriented terms based around organisational process act independently to fulfil the objectives and goals of the organisation.

Many adjectives have been used to describe the new millennium organisations. For example, one of the descriptions conceives it as a *Knowledge-based* organisation in which the knowledge of the employees is the *primary asset.* Another perception of a new millennium organisation is that it will be a *learning organisation* in which the individuals, teams, and the organisation itself continuously learn from the environment and from their activities, and act on what they have *learnt.*

3) There are different categories of Information Institutions. Of these, the popularly known types are: Libraries, Documentation Centres, Information Analysis Centres and Data Centres, etc. Apart from these traditional institutions referral Centres and Clearing Houses, and many *deinstitutional* information services came up lately. Libraries - public, academic, governmental and special provide the only means of access in our society to any book, journal or document that is out of print or more than a few years old. Most foreign books and journals and specialised documents which are not obtainable at all through normal trade channels are acquired and preserved by libraries. Documentation Centres are basically for specialist users in the field. These are organised at local, regional and national levels in the country. Information Analysis Centres not only disseminate and retrieve information, they create new information. Data Centres collect, control, codify, organise and retrieve data for users.

4) The main activities and products of an Information Analysis Centre are represented by means of a table indicated below:



5) Technological developments have influenced the services provided by libraries and other information institutions. Many commercial services aimed at end-users have come into being. The introduction of more user friendly services and the introduction of CD ROM data bases enabled end-users doing their own online searches for information. This growth was rather slow and did not pose a problem to information professionals. All of sudden, the information specialist is confronted with a changing social and working environment. This situation is triggered by the advent of the Internet. More and more people who have access to computers and get connectivity to the Internet are in a position to access information. This situation enabled end-users to perform their own information searching. Thus, *disintermediation* and *end-user empowerment* have become *buzzwords.*

   Disintermediation relates to the finding of information by an end-user without a need for a third party. As applied to libraries *disintermediation* means diversion of information from centralised physical repositories to alternate sources available directly through computer networks.

   End-user empowerment refers to the end-users having access to information and having the necessary skills to retrieve their own information according to their own needs – in other words, they can do it on their own. With *empowerment* they should be less dependent on information specialists. This, however, does not mean that the information specialist as intermediary will become obsolete. This is because not all end-users will have the time or interest to conduct their own searches.

6) The growth of Information Institutions can be discussed on the analogy of *Three Era Framework.* It may be observed that in India, *Era-I* institutions such as Libraries, Documentation and Information Centres, R&D institutions, government and public sector organisations have come up in large numbers.

Initially, these institutions functioned in isolation without any sort of coordination. On the other hand, the institutions established during 1950s and 1960s fulfilled the exclusive information needs of mission-oriented organisations like CSIR, ISRO, ICAR, and Atomic Energy Commission. These efforts may be likened to Era-II organisations.

From 1970s Institutions like small Enterprises Documentation Centres; Documentation centres attached to CSIR Laboratories gave rise to specialised information centres which provided information support to problem solving type of research activities. Public sectors enterprises like BHEL, CMTRI, SAIL and private sector industries like Bharat Electronics, Tata research Institute, RANBAXY, etc. also developed their own specialised information cells.

In 1980s the government encouraged modernisation of information systems in a systematic and in a more organised manner utilising modern technologies. As a result, national information systems like NISSAT (now discontinued), ENVIS, and BTIS etc. were developed. Networking and resource sharing concept using modern ICT is being pursued seriously. These developments enabled India to take a forward leap into the Knowledge-based Economic era.

3.7 KEYWORDS

Development : Process of differentiation of activity (ies).

Disintermediation : Relates to the role of the *intermediary* in acting between information (and other products) and its end-users. In other words, it is the finding of the information by an *end-user* without the need of a third party.

As applied to libraries, disintermediation means the diversion of information from centralised physical repositories to alternate sources available directly through computers and computer networks.

End-user Empowerment: Refers to end-users having access to information and having the necessary skills to retrieve their own information according to their own needs – in other words, they can do it on their own. With empowerment, they should be less dependent on information specialists.

Era : Period of history.

Evolution : Process of organisation by development.

Growth Pattern : Process of increase in size and number with some consistency.

Information Broker : An individual of a firm, who, on demand, seeks to answer questions using all available sources and who is in business for profit.

Information Filter : An essential mediator between information sources and their users.

Information Institution: An institution which normally performs the activity (ies) related to the knowledge / information transfer.

Information Manager Network : Network consists of a group of information managers each of whom is assigned information responsibility for a specific technical division while remaining organisationally linked.

Information Transfer : A chain of activities, the main link being information generator, editor, publisher of primary publications, indexing and abstracting journal producers, libraries, documentation and information centres, on-line services, information companies and the end user.

Intelligent Agents and Push Services : Sometimes called *bots* (and information industry *know bots*) are persons who assist user in document access and delivery.

These agents take query from a user and act on his/ her behalf to find a solution. They form the part of the *portals* infrastructure. Typical example is the *Shopping bot.*

Invisible College : An elite of high performing scientists who has an informal network of scientific communication and the published literature.

Knowledge Mediators : Persons or libraries who provide users with insight into the existing body of knowledge and assist them in acquiring resources referring to or containing such knowledge.

Technological Gatekeeper : Expert both internal and external communication star, having much higher incidence of exposure to the professional literature, attends more conferences and has more professional affiliations.

3.8 ACRONYMS USED IN THE TEXT

AEC	Atomic Energy Commission
CDRI	Central Drug Research Institute
CFTRI	Central Food and Technological Research Institute
CMTRI	Central Machine Tools Research Institute
COSATI	Committee for Scientific and Technical Information
CSIR	Council of Scientific and Industrial Research
DRDO	Defence Research Development Organisation
ICAR	Indian Council of Agricultural Research
ICMR	Indian Council of Medical Research

ISRO	Indian Space Research Organisation
NASA	National Aeronautic Space Agency
SAIL	Steel Authority of India Limited
STSI	Scientific Technical and Societal Information

3.9 REFERENCES AND FURTHER READING

Chase, Roy. "Knowledge Navigators: Changing Practice of Librarians". *Information Outlook*. 2.9 (September 1998). Print.

Drucker, P. F. "The Coming of the New Organisation". *Harvard Business Review.* 66. (Jan-Feb, 1988): 45-53. Print.

Guiliano, V. E. [et al]. *Into The Information Age: A Perspective for Federal Action on Information.* Chicago: ALA. 1978. Print.

Klobas, J. E. *Information Infrastructure: Organisational Capability for Online Information Provision*. London: Oxford, 1996. Print.

Lancaster, F. W. "Future Librarianship: Preparing of Unconventional Career". *Wilson Library Bulletin.* (1983): 747-753. Print.

--- . "Science, Scholarship and Communication of Knowledge". *Library Trends.* 27.3(1979): 367-388. Print.

Matarazzo, J. and S. Connolly. *Knowledge and Special Libraries*. Boston: Butterworth Heinemann, 1999. Print.

Nayudamma, Y (1980). "Science and Technology-Patterns of Institution Building". *Society and Science.* 3(4), 137-138, 141. Print.

Neway, J. *Information Specialist as Team Player in the Research Process*. Westport, CN: Greenwood Press, 1985. Print.

Raizada, A. S. and Satyanarayana, R. "Data Base Services". *Annals of Library Science and Documentation.* 22.1 (1975): 30-37. Print.

Rajagopalan, T. S. and T.N. Rajan . "Information Institutions: Patterns of Growth and Development with a Perspective of Future". Ed. T.S. Rajagopalan *Ranganathan's Philosophy: Assessment, Impact and Relevance.* New Delhi: Vikas, 1986. 64-75. Print.

Rajan, T. N. A New Perspective for Information Organisation in US. *Annals of Library Science and Documentation.* 27.1-4 (1980):135, 144. Print.

Remeil, L. "Knowledge Management-Role for Information Professionals". *Finance Bulletin,* 100: 41-43. Print.

Special Libraries Association. Enhancing Competitiveness in the Information Age: Strategies and Tactics for Special Librarians and Information Professionals. Washington, DC: SLA, 1997. Print.

UNIT 4 LAWS OF LIBRARY SCIENCE

Structure

4.0 Objectives

4.1 Introduction

4.2 The Five Laws of Library Science

- 4.2.1 First Law: Books are for Use
- 4.2.2 Second Law: Every Reader His /Her Book
- 4.2.3 Third Law: Every Book its Reader
- 4.2.4 Fourth Law: Save the Time of the Reader
- 4.2.5 Fifth Law: Library is a Growing Organism

4.3 New Insights and Wider Interpretation of Five Laws

4.4 Summary

4.5 Answers to Self Check Exercises

4.6 Keywords

4.7 References and Further Reading

4.0 OBJECTIVES

Ranganathan's five laws provide a paradigm of how libraries function, how they grow and serve, how they live, and so provide for us, a framework through which to examine our professional lives and our libraries. Hence the need for this Unit.

After reading this Unit, you will be able to:

- explain the characteristics of laws in general and identify them in Ranganathan's five laws;
- describe the Five Laws of Library Science;
- explain the nature of work in library, documentation, and information services in tune with the guiding principles governed by the Five Laws;
- make use of the Five Laws as a set of principles to initiate any new activity in library, documentation and information services;
- discuss the services of the library to a variety of information needs of users in different contexts, in an information society;
- examine relevance of Five Laws in the context of revolutionary changes taking place in library and information world; and
- discuss the appropriateness of revisions, and additions to the Five Laws attempted by different authors.

4.1 INTRODUCTION

One of the most significant contributions of Dr.S.R.Ranganathan to the field of library and information science has been the enunciation of his *Five Laws*. These laws were first stated and their formal exposition was provided by the author at

the Provisional Educational Conference held at Chidambaram (Tamil Nadu) in December 1928.

To have a proper understanding of the Five Laws, it is necessary to know the context in which these laws were formulated. It may be noted that Dr. Ranganathan had his education in librarianship in the University of London, School of Librarianship, in the year 1924. After formal training at the University, he had undertaken an extensive tour of England. This tour provided him an opportunity to observe the working of the libraries in England. Dr. Ranganathan took keen interest in understanding the principles and the practices followed in those libraries and the services rendered to their clientele. He was not convinced of the prevailing practices in libraries and the rules that were taught to be remembered in the organisation of library operations. He was not sure of the rationale behind them. They sounded to Ranganathan more like the rules of thumb (i.e. *take it as such* or *leave it*) type His analytical mind could not submit itself to such mechanical practices. Therefore, he was engaged in efforts to discover some scientific basis using which the practices followed in libraries, that he observed, could be generalised and reduced to certain minimum number of *cardinal principles.* In other words, Dr. Ranganathan was in search of normative principles which could enable us to understand the measures to be devised in order to know what needs to be done in the library field to make library organisation, management and operation efficient and universalise its services Also, it was his wish that these basic principles may contain *in a latent form,* many other practices not known at that time, but may surface later. The outcome of this line of thinking on the part of Dr. Ranganathan resulted in his enunciation of *Five Laws of Library Science*. Subsequently, these laws were fully developed and published in book form in 1931.

It must be noted that the Five Laws are a first step towards putting library work on a scientific basis, providing general principles from which all library practices could be deduced. Every activity relating to library services has a rationale in one or another of these laws or in all of them collectively. At this juncture, it is necessary to emphasise that merely stating the Five Laws – or even understanding the words – will not automatically lead to enlightenment about the functions of libraries. Although the laws are simple statements, they demand contemplation and experience before the richness and import of their meaning will be revealed. However, contemplating them as we go about our business in our libraries will provide us with basic tenets to guide us in performing work that fulfils our mission as librarians and information professionals.

In this Unit, we shall try to study the implication of the Five Laws in the context of conventional librarianship as well as their relevance in the context of revolutionary changes taking place in the library and information science (LIS) profession.

4.2 THE FIVE LAWS OF LIBRARY SCIENCE

Laws are scientific principles, rules of procedure or behaviour. Law is a generalisation based on a recurring fact or event. Achinstein, P [1971] considers the following lingual characteristics of a stated law:

- Laws are simple, precise, and few in number

- Laws are essentially general in nature
- Their subject is general
- Syntactically they are general and begin with *All, Every* or *No*
- A law expresses a generality which can be used to express regularities.

Keeping the above mentioned characteristics in his mind Dr. Ranganathan propounded his Five Laws as follows:

- Books are for use
- Every reader his/her book
- Every book its reader
- Save the time of the reader
- The library is a growing organism.

When Ranganathan used the expression *books* and *readers* he naturally meant that books stand for knowledge and information and readers stand for users of library and information services. In modern studies of knowledge and information and all related expressions, it must be noted that the carriers and channels of information and knowledge have changed from print to other forms, but all the services are revolving round *information* and *users.* Hence, the dimensions of services have expanded widely in scope, although the basic philosophy of the service remains unaltered. Therefore, these five laws might be restated to suit the changing context and modern developments taking place in the world of libraries and information science as such. For example, the five laws were restated even during the life time of Dr. Ranganathan as under:

- Documents / Information are for use
- Every user his/her document / information
- Every document / information its user
- Save the time of the user
- Document / Information system is a growing organism.

Let us now discuss each of the five laws and its interpretation and implications.

4.2.1 First Law: Books are for Use

By using first law *Books are for use* you are prone to think that it is a self-evident truth or simple statement which does not merit serious consideration and contemplation. But, on deep pondering you change your opinion. This will become evident if we examine the history of books in libraries. In fact, the earlier accent is on the preservation of books rather than their use. Medieval libraries were an example of chained libraries. The books literally were attached to the shelves with brass chains and could only be used in a single location. Obviously, this was done for the preservation of books rather than facilitating their use. This was a natural inclination, at a time when it was very difficult to produce books. This habit some how continued even after the invention of printing, which facilitated the easy production of several copies of each book. Although, isolated examples of reluctance to permit the unrestricted use of books can be occasionally seen even today, the general position is that books are available for use without

any let or hindrance. In fact, policies relating to a library should be helpful in promoting the objective of books being put to maximum use. Let us now examine the implications of the first law in the functioning of a library.

I) ***Implications***

The first law of library science has some important messages for library work. Some of these relate to the location of library, its working hours, library building and furniture and the staff.

a) ***Library Location***

For example, it has a forward thinking message in terms of the emphasis on library location. The law advocates that library be located in a more accessible place in order to encourage more users to use the library. Obviously, it will be a discouragement for people to use books, if they have to walk long distance to reach them. At the same time, the location where the library is situated should be free from noise and other disturbances, so that serious study is possible. An ideal place for a public library should be a quiet central area, while a school library should be located in a prominent place in the school premises. The idea that a university library should constitute the heart of the university, then it should be reflected in its geographical location as well.

b) ***Working Hours***

Another important message inherent in the first law is that the working hours of a library should be convenient to most of the users. Many of the libraries in India need to pay special attention to this aspect and keep them open when their clientele are not engaged in other activities so that they are in a position to visit the library. This type of proactive approach in deciding the working hours of the library will certainly yield good results.

c) ***Library Building and Furniture***

The first law demands that proper attention be paid to the planning and designing of the library building and the different items of furniture equipped to the library. The library building should be functional and at the same time, aesthetic in appeal. The items of furniture should be functional, attractive to look at. The racks should be designed in such a way that books are placed at convenient heights facilitating their removal and use by the clientele. Particularly furniture in children's library should be specially designed to attract children. Comfortable furniture always tempts users to frequent the library. The law also implies the concept of a open-shelf library that is equipped with tools and furnishings which makes the books it contains useful. In other words, the first law alerts us to the requirements of properly designed functional building and comfortable furniture to invite and promote the use of its resources.

d) ***Staff***

Staff form an important component of any library. The first law of library science for its fulfilment calls for certain qualifications and qualities for library staff. Though Dr. Ranganathan has spent considerable space in discussing about library staff in his exposition of the first law, the essence boils down to these important attributes: The library staff should possess

qualifications that would enable them to organise library efficiently and provide satisfactory services. Obviously, this would ensure the proper use of books. But, much more important than formal qualifications are, perhaps, the personal qualities of the library staff. They should be courteous, cheerful and helpful. *Service with a smile* should be the *motto.* The staff should always remember that, everything that they do in the library is a means towards an end, and *the end is service to the readers*. If a potential library user encounters an unhelpful attitude on the part of the member of the staff, s/he is sure to turn away permanently from the library.. in such a contingency, the cause of the first law is *not served rather it is defeated.* The credibility of the staff, in respect of their knowledge, ability and personal attitude to readers, is a crucial factor in the promotion of the use of the books. The attributes discussed above deserve special consideration while library staff is recruited. This is necessary to satisfy the requirements of the first law.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

1) State briefly the implications of the first law with references to library staff.

.....

.....

.....

.....

.....

4.2.2 Second Law: Every Reader His/Her Book

The second law "Every reader his/her book" (the variant form of which is "books for all") is perhaps the most under stated; even Dr. Ranganathan acknowledged that with this one principle lies so much of what libraries mean for society. "The law relates to the fact that we all have diverse interests and that there is a book out there to satisfy that for all of us". In other words, the law stands for the mandatory provision of library service to each person according to her/his need. Stated in a different manner, the law advocates the universalisation and democratisation of library service. However, in earlier days only a privileged few belonging to aristocracy and upper classes of society were given access to libraries and books. But, with the advent of democracy which ensured the participation of every citizen in governance, the position dramatically changed. Democracy, for its sustenance and survival, needs an educated knowledgeable citizenry. Hence, education and acquisition of knowledge through whatever institution possible became the basic right of all citizens without any discrimination. Hence, the law "Every Reader His/Her Book".

I) ***Implications***

This law has many important implications for the library. The fundamental issue it reveals, tension (conflict) between the cost of materials and the basic right of all persons to have access to materials they need. In providing a library for the

use of books, one must be mindful of the fact that since no one individual or library can acquire all the books, this responsibility needs to be accepted at the governmental level. Therefore, the second law imposes certain obligations on the state, library authority of the state, the library staff and the reader.

a) ***Obligation of the State***

It must be emphasised that it is obligatory on the part of the State to develop and organise a library system capable of providing adequate library service to all people. This has to be accomplished through suitable legislation, which should make provision for financial support of the library system and create suitable mechanism with authority for the coordination of all activities pertaining to its different units. A goal should be set for the library system and services best suited for the society must be initiated. The legislation must be so framed that it would serve as an effective instrument for achieving the goals and the stated objectives envisioned therein. Finances are always limiting factors for library development and the objective should be to derive maximum benefit in terms of library services, with the available limited funds. The library system envisaged through legislation is the public library system, which is available to the entire community. But, public library system, by itself will not be able to provide every reader the books he needs. In fact, public library system plays only a minimal role in fulfilling the book requirements of students, teachers and other researchers. Therefore, the government has an additional responsibility to establish school and college libraries as also, university and special libraries to cater for the demand of students, teachers and researchers. Only when the library system of a state is comprehensive providing library service to all categories of its people, it can be said that the demands of the second law are met.

b) ***Obligations of the Library Authority***

The second law emphasises the fact that it is obligatory on the part of the library authority to accept responsibility in respect of book selection and provision of suitable staff. No library will have enough funds to purchase all the books that it may require. This is the reason why libraries have to take recourse to book selection process. In other words, the available finances have to be judiciously used to purchase most relevant and wanted books. This necessitates the libraries to ascertain the requirements of their clientele and formulate proper book acquisition policy. Systematic user surveys help in identifying the user requirements. It may be emphasised that acquiring a book which has no suitable or potential demand is a negation of the spirit of the second law.

The second law implies that an adequate and competent team of staff is essential to provide every reader her/his book. In other words, a reader should be able to exploit the resources which are relevant to her/his needs available in the library. The staff has to play a proactive role in this exercise. In the absence of competent staff willing to help the reader, s/he may not be in a position to locate a good number of books useful to her/him. More often than not, a library finds itself in such a predicament, where users are not served properly for want of adequate qualified staff. Such a situation should be avoided.

Reference service gains its legitimacy and its purpose from the second law. In his description of the second law, Ranganathan explains that reference function is critical. He observes that it is the business of library staff "to know the reader, to know the books, and to actively help in the finding by every person his or her book". Reference librarians are trained to bring readers to their books, either through formal research instruction, informally in one to one *reference interview* or by the compilation of bibliographies, research guides, exhibits, etc. In a sense, patrons *use* the skill of reference librarian to find the library materials they need.

The reader also has certain responsibilities cast on her/him by the second law. It particularly wants the reader adhere to the rules of the library in respect of loan and use of books. If the reader retains the book beyond the period of loan, s/he is depriving other readers, who may want to use the book. There are some readers who misplace books with a view to monopolise, or tear off pages from books or even steal them. This undoubtedly leads to the gross violation of the s*econd law.* The readers should be made conscious of such violations and their consequences by the library staff through short programmes of user education.

With best efforts, it will not be possible for any library to be self-sufficient. There would be hardly any library which is capable of ensuring all the demands of its clientele depending on its own resources. In other words, this points to the need for resource sharing among libraries. The second law envisions emergence of resource sharing library networks, both at national and international levels, to satisfy its expectations fully.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

2) How does the second law provide guidelines for book selection in a library?

.....

.....

.....

.....

.....

.....

4.2.3 Third Law: Every Book its Reader

The third law of library science is "Every Book its Reader". The approach of this law is oriented towards the book. As per the law, every book in a library should have a chance of finding its appropriate reader and be useful to her/him. In other words, investment in unused books amounts to wastage of funds and must be avoided under all circumstances. The mission of any librarian is to build a well-organised collection of resources in order to maximise the chance that users will find what they need. The third law *implicitly means that "resources look for users"* in fact, the duty of the librarian is to help the library resources find the people who want and need them most. Dr. Ranganathan points out, that library

users often, do not know enough about available resources to identify what to ask for. According to him "the majority of readers do not know their requirements, and their interests take definite shape only after seeing and handling a well-organised collection of books". This principle naturally addresses the fundamental issue of open access. In the open access system, books are arranged in the shelves in classified order and readers have freedom of access to them. In the course of readers browsing through shelves; they may come across books of interest to them, the existence of which they may not be aware of. The chances of readers noticing the books and reading them are enhanced by the open access system. The third law, therefore, definitely advocates open access.

Adopting an open access system for a library imposes certain responsibilities and obligations on the part of the staff as well as the readers. For example, the classified arrangement of books i.e. the arrangement of books in the order of their relationship with particular subject should be constantly maintained. This means that the shelf-rectification, i.e. restoring the misplaced books to their correct place on the shelf should be done by the library staff on a regular basis. They should also provide shelf guides, bay guides, etc, which guide the readers to their appropriate regions and shelves in the stack room.

Readers, on their part, should conduct themselves with a sense of responsibility. They should not try to replace the books they have taken out because in that process they are likely to misplace books. They are also advised to resist the temptation to misplace books deliberately, mutilate or steal books or indulge in other unsocial activities. Readers should note that *a book misplaced is a book lost for ever.* There are both advantages and disadvantages in practicing open access system. In case, the open access system is practiced, it must be done in a balanced and orderly manner, so that its advantages outweigh the disadvantages, the system definitely contributes to the satisfactory fulfilment of the third law of library science. In addition to have open access system; the library should adopt aggressive promotional activities and innovative services in order to bring the library resources closer to their users. There are many ways to do this. One of the ways is distribution of monthly list of books added to the library to the readers on a regular basis. This will be helpful in bringing such books to the notice of their potential users. The newly added books should be displayed prominently in the library for some time before sending them to the stacks, so that they may catch the attention of the readers and are read by those who are interested in them.

Another innovative technique to draw the attention of the potential users to library resources is organisation of book exhibitions, which have a bearing on topical themes to enhance the chances of the books finding their appropriate users.

The third law also advocates maintenance of a well designed library catalogue with effective cross references, and added entries meeting the different approaches of readers. Of course, the importance of reference service cannot be over emphasised in this connection. Ultimately, as Ranganathan asserted "it should be the business of … the librarian … to adopt all the recognised methods of attracting the public to the library so that every potential reader may be converted into an actual one, thereby increasing the chances for the fulfilment of the *third law.*

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit.

3) Explain briefly how open access facilitates better use of the library.

.....

.....

.....

.....

.....

4.2.4 Fourth Law: Save the Time of the Reader

The *fourth law* presents the biggest challenge to the library administrator. Policies must always be formulated keeping in view the needs of the readers (users) in mind. For example, aspects like hours of operation must be set in such a way to ensure the most appropriate and convenient access to patrons who rely on the library for their study and research needs. The collection must be arranged in an inviting clear and obvious way so as not to waste the time of the user in searching for the books they need. Library users may be busy people, and they should not be made to wait longer than necessary to get their needs met. They should get exact and fast service from the library. It must also be noted that in many individuals, intellectual interest may exist only momentarily and unless it is satisfied at the moment of its existence, it may vanish. Hence, the importance of the law "Save the Time of the Reader". It means satisfied library users. In other words, the *prime* measure of library's success, it is important to note that frustrated or disappointed users means that the library has failed in its responsibility and has grossly violated the dictates of t*he fourth law* and failed in its fulfilment. Let us now try to analyse the full implications of this law and the various operational methods employed by libraries to save the time of readers.

I) ***Implications***

Just as the third law the fourth law also pleads for open access system in libraries. The justification is that in closed access libraries, the readers are not allowed to the stacks where books are shelved and have to requisition for books they need. The procedure is that they prepare a list of books they want after consulting the catalogue, and hand over the list to a library staff member. S/he may locate some of the books asked for and report the non-availability of others. On seeing the books, the reader may discover that none of these books is relevant to her/his need. S/he has to prepare another list and repeat the operation and wait again for the result. This trial and error method may consume lot of her/his time before her/his needs are met. A lot of time is spent counter productively in these processes. Obviously, this frustrates the library user. A lot of user's time is saved, if the library follows open access system and maintains a well organised collection of books.

There are other ways to satisfy the law. One of them is following proper classification system which would bring together books on specific subject and

also related subjects. Another way is to construct a well designed catalogue which meets the different approaches of readers. It is important to note that while catalogues are tools for retrieving items accurately, they become items that waste the time of the reader, if items are haphazardly catalogued or if the cataloguing is excessively focussed on the intricacies of the technique.

Another important aspect which has a great relevance to the Fourth law is the charging system (i.e. loan of books) followed in the library. Earlier systems were time consuming and some what cumbersome. Hence, efforts have been made to simplify the process with a view to reduce the time involved in the operation. As a result, modern systems like photo-charging system, ticket system, computerised charging system, barcode system and radio frquency identification (RFID) system have been evolved. Adopting any one of these systems will lead to substantial reduction of time in the issue and return process which the fourth law strongly advocates.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit

4) Discuss the operational methods employed by libraries to save the time of readers.

.....

.....

.....

.....

.....

4.2.5 Fifth Law: Library is a Growing Organism

The fifth law is *Library is a growing organism.* Dr. Ranganathan compares library to a growing organism. In a living organism the growth is of two kinds: the child growth and the adult growth. We can notice that child growth is characterised by increase in physical dimensions and it is fast and visible. On the other hand, the growth in adults is mainly in the nature of replacement of cells. It is a kind of internal qualitative change, which may not be perceived, and as such, not visible. When we say library is a growing organism, we mean that library is not a static entity, but a dynamic growing entity. In other words, the dynamic nature of the library be properly grasped and provided for right from the time of starting of a library so that its growth is not inhibited due to lack of far-sight and planning. On further analysis, we know that the basic components of a library comprise: i) the book stock (or resources), ii) the staff, iii) the readers, iv) the physical infrastructure such as the building, furniture and equipment. When we say that a library grows, we envisage growth in all these components. Naturally, the fifth law has implications for each one of these components.

I) ***Implications***

Let us try to analyse these implications and try to understand the guidance we can derive from the fifth law in solving the problems presented by the dynamic growth associated with the library.

a) ***Book Stock***

In the initial stages of development, the growth of books including the periodicals will be rather fast. This naturally impacts the size of the stack rooms, size of card cabinets, size of the catalogue room, number of periodical display cabinets and the number of book racks for accommodating the books. Also, as the book collection grows, and the newly added books are interpolated in the classification arrangement, there will be constant movement of books on shelves. This would necessitate re-labelling of shelves periodically. This is essential to reflect the correct position of arrangement of books for easy retrieval.

b) ***Readers***

When the library functions properly in keeping with the spirit of the first law of library science, the readers of the library are bound to grow. That means the readers need proper facilities by way of reading space etc. and new types of services need to be organised.

c) ***Staff***

It must be mentioned that mere quantitative growth does not mean anything. There must be qualitative growth also. This requires the number of staff must be increased commensurate with the increase in readers and books to initiate new services to suit the needs of the new readers and to improve the existing services to meet the changed demands of the readers and personalise them with reference to service. The qualifications and skills of the staff need to be updated to meet the changing circumstances. The staff should be provided with opportunities to receive training in new areas of professional development. The motto of the staff should be to render efficient service and save the time of the readers. For this purpose, constant updating of skills and growth in professionalism by learning innovative techniques and new areas of professional development is necessary.

d) ***Classification and the Catalogue***

One of the implications of increasing intake of books on a variety of new subjects is that the classification scheme adopted should be hospitable to new subjects. It must enable the classifier to allocate a unique class number to each subject and must facilitate easy retrieval. The growth factor also calls for a card catalogue built on sound principles to help the readers to know the contents of library without difficulty and the catalogue should facilitate easy interpolation of entries. It should be a easy locating tool.

Libraries which grow fast, especially, the larger ones, need to modernise their services by taking recourse to computerisation of all the house keeping operations. This results in the efficiency of service.

The fifth law also advocates that care be taken while planning and designing a library building by making provision for the expansion of the building both horizontally and vertically. The need for more space often arises *sooner than anticipated* and *lack of provision for expansion* would block the development of library.

e) ***Weeding of Books***

The development plans for a library should also include provision for weeding out obsolete books and adding new ones which are relevant and useful. Weeding need not necessarily mean the discarding of books. It only means removal of books from a library where their relevance has ceased in order to make room for current and relevant books. Such books may be stored where they are available for occasional use. Different libraries in a region may cooperate in planning a storage facility for locating the weeded out books in a central place so that readers in need of such books may go there and consult them.

In the foregoing pages, we have discussed the implications and interpretations of the five laws of library science in a traditional manner. Their adequacy and relevance in meeting the demands of changing information environment is discussed in the next section.

4.3 NEW INSIGHTS AND WIDER INTERPRETATION OF FIVE LAWS

A sea changing is taking place in all facets of human society. While knowledge and information have always been instrumental in promoting the material progress at every stage of societal development, the last 50 years have witnessed spectacular developments in the growth, access and availability of information and knowledge. This change is generally attributed to the advancements that have taken place in information communication technologies (ICTs). As a result, knowledge and information can be accessed today instantaneously, irrespective of its location and made available on a computer screen, downloaded and stored for future use. Though, the bulk volume and variety in which knowledge and information is disseminated do not pose any problem of access and availability, the fundamental problem of *use* and *service* to the user remains still some what unsolved even today. Ranganathan's laws, though formulated in the context of traditional libraries and their use, and services rendered by them to the user community, it is the opinion of many professional experts that these laws have not lost their relevance even in the context of new developments such as the Internet System, World Wide Web, Digital and Virtual Libraries.

These laws "continue to give us a blue print for our professional values that is as relevant now, as it was in 1931. The language may be seen as restrictive, but the underlying values inherent in them means they can be continuously interpreted for the future" . As a matter of fact, many of the scholars have attempted to do so. For example: Rettison [1992], Chappell [1976], Naun [1994], Gorman[1998], Kuronen and Pekkarinen [1999], Croft [2001], Leiter [2003], Satija [2003], Noruzi [2004] and Choudhury et al. [2006] have provided new insights relating the adequacy and relevance of Ranganathan's f*ive laws* in the present context and their future value.

Let us try to understand the significant aspects discussed in their writings.

- James A Retting [1992] while paying his tributes to Dr. Ranganathan on the occasion of his birth centenary discussed the f*ive laws* and opined that these laws needed to be extrapolated. He conceived a sixth law "Every reader his

freedom" as applicable only to the type of service such as instruction or provision of information.

- Michael Gorman has reinterpreted Ranganathan's laws in the context of today's library and its likely future, and reformulated them calling them as [Gorman's] "Five New Laws of Librarianship".

They are:

1) Libraries serve humanity;
2) Respect all forms by which knowledge is communicated;
3) Use technology intelligently to enhance service;
4) Protect free access to knowledge; and
5) Honour the past and create the future.

Gorman's laws are not a revision of Dr. Ranganathan's laws. They are another completely separate set, from the point of view of a librarian practicing in a technological society [Middleton 1999].

- Kuromen and Pekkarinen Paivi in their work entitled Ranganathan revised: a review article, made a critical study and analysis of the *five laws* and concluded that the underlying philosophy of the Five Laws is fundamental and works well in the context of traditional library environment. But, in the context of modern technological developments and the changes that have taken place in the very concept of a library resulting in a paradigm shift in the information world, giving rise to a situation in which the information – which is instant power – flows globally and is delivered or accessed at the speed of light, Ranganathan's laws, though valid, may be inadequate. With convincing reasons and rationale, they established the need for additional laws to cope with the situation. They proposed two new laws in their writings. These are: 6th Law: "Every reader his library".

  7th Law: "Every writer his contribution to the library".

  In the opinion of these authors, reader means a *searcher* and library perhaps *connotes the virtual type?* These two new laws dwell on the new cooperative and interactive relations between the users and the documents of the virtual library. However, their interpretation in consonance with the five laws of Ranganathan needs to be further studied before their validity is established. Even Francis Miksa … opines that "it is appropriate to paraphrase S. R. Ranganathan's second and third laws of library science. Instead of, *Every reader his book* and *Every book its reader,* new technology appears to be making possible, *Every reader his library* and *Every library its reader*".

- Recognising Ranganathan's five laws of library science and their underlying concepts as powerful inspirations for social change, Mentor Cana [2003], analysed the "Open Source Software", as defined by Open Source Initiative (OSI) and its congruency with the five laws. He felt that since the underlying concepts upon which the five laws are built had profound impact on our society, then the proponents of open source movement can learn a lesson or two from that example in achieving their objective. Cana explains that a *book* is a basic element of Ranganathan's laws: it contains objective knowledge. This calls for defining the comparative basic elements of software

development. Hence, he takes the term *Software* to be the basic element: it contains objective knowledge. He uses the term *Software* to connote a software product or software modules that can be used to build software products and believes that the five laws of the "Software Library" could be:

1) Software is for use
2) Every user his / her software (or software for all)
3) Every software its user
4) Save the time of the user
5) A Software Library is a growing organism.

It must be mentioned here the OSI definition is congruent with the first law: Software is for use. The very reason open source software is developed is that, it can be used. The second, third and fourth laws are dependent on the existence of the software library. Though, there are repositories of various open sources online, the collections are not as organised as the library system. Open source movement can attempt to apply some lessons from the evolution of libraries in establishing and streamlining the software library concept bearing in mind here that the producers and users of software are different than producers and users of books. In this connection we can just imagine the importance and power of bibliography control over software in information society, being that software has the potential to be more pervasive when compared to pervasiveness of books in our society.

- One of the most useful papers which provides significant insights and wider interpretation of Ranganathan's five laws and establishes their relevance in 21st century is the paper authored by Alireza Noruzi A[2004] entitled "Application of Ranganathan's Five Laws to the Web". The paper poses the question; "does the web save the time of users?" and attempts to answer the question by analysing the application of f*ive laws* of Ranganathan to the Web and reinterpreting them in the context of the Web. "The Five Laws of the Web" formulated by him are:

  1) Web resources are for use.
  2) Every user his / her Web resource.
  3) Every Web resource its user.
  4) Save the time of the user.
  5) The Web is a growing organism.

  Before we actually discuss the impact on the Web, we need to know briefly what the Web is and what it actually contains? The World Wide Web (WWW) is an Internet system that distributes graphical, hyperlinked information, based on the hypertext transfer protocol (HTTP). The Web is the global hypertext system providing access to documents written in a script called Hypertext Markup Language (HTML) that allows its contents to be interlinked, locally and remotely. The Web was designed in 1989 by *Tim* Berners-Lee at the European Organisation for Nuclear Research (CERN) in Geneva [Nouzi, 2004]. It provides materials and makes them online accessible, so that they may be used. The Web consists of contributions from any one who wishes to contribute, and the quality of information or the value of knowledge is rather

opaque, due to the lack of any kind of peer reviewing. It may also be mentioned that the Web is an unstructured and highly complex mix of all types of information carriers produced by different kinds of people and searched by a variety of users. It was designed to meet the human need to share information resources, knowledge and experience. The Web masters want people to interact with their websites and pages, click on them, read them, and print them if they need. In other words, websites are meant for use and *not for admiration.* The main objective of the Web is to help users all over the world, by catering for their information requirements. It is in this context, *The five laws* of the Web came into existence. In fact, they are really the foundations for any Web user-friendly system. What they advocate is universal access right of cyber citizenship in the information age.

- *The first law:* "Web resources are for use" is very important because information serves no purpose, if it is not utilised and at least available for people to attempt to learn. The role of the Web is to serve the individual, community and service, and to maximise social utility in the communication process. To satisfy the first law, the web must acquire materials and make them accessible so that they can be used. Some webmasters are currently closing their files by password protective systems, and others are charging fees – the first law admonishes such people. Another point that the first law emphasises is about service. In order to deliver and reap the rewards of services, the Web must identify the benefits that society can reasonably expect and then devise means of delivering those benefits. In other words, the law dictates the development of systems that accommodate the use of Web resources. For example, updating and regular indexing of Website resources facilitates the use of site resources and the Web in general.

- *The second law:* "Every user his / her Web resource" has many implications. It reveals the fundamental need anywhere in the world. This makes diffusion and dissemination very important. In other words, each web resource should think of potential user before Website is created. This means webmasters must know their users well, if they are to provide them the materials they need for their study and research. The second law also dictates that Web serves all users, regardless of social class, sex, age, ethnic group, religion or any other consideration. The law emphasises that every cybercitizen has a right to information. Webmaster and search engine designers should do their best to meet cybercitizens' needs.

- *The third law:* "Every Web resource its user". How can a webmaster find a user for every web resource? There are many ways in which a web can actively work to connect its users. But the most important aspect which should be kept in mind, in this context, is that webmaster should add content with specific user needs in mind and they should make sure that the users can find the content they need easily. Webmasters should make certain that the content they add is something their users have identified as a need and avoid cluttering up their Website *with content no one seems to care about.*

- *The fourth law:* "Save the time of the user". This law has been responsible for many reforms in Website administration. A Website must examine every aspect of its policies, rules, and systems with the one simple criterion that *saving the time of the user is vital to achieve the Website's mission.* In order

to save the time of the user, Websites need effectively and efficiently design systems that will enable user to find what they are looking for *quickly* and *accurately.* At the same time, the Websites they are searching should make them available most of the information that could be *potentially useful.* In other words, the fourth law emphasises efficient service to the users. This implies that a well designed and easy to understand guide map or index to the Website.

- *The fifth law:* "The Web is a growing organism". The web reflects and represents the changes taking place in the World as the society moves forward. In the process, a large quantity of information is added to it. Hence, a Web is a growing organism. We need to plan and build with the expectation that the Web and its users *will grow and change over time.* To cope with the dynamic situation, it is necessary to keep our own skill levels moving forward. The fifth law alerts us by emphasising the vital point that *change and growth go together,* and require flexibility in the management of Web collection, in the use of cyberspace, in the retention and deployment of users, and in the nature of Web programs. The law advocates proper and systematic planning to meet the requirements of change and growth.

  In conclusion, these laws are not only applicable to the Web in general, but characterise the establishment, enhancement, and evaluation of online databases and digital library services, as well. These five laws concisely represent the ideal and the organisational philosophy of the Web. No doubt the five laws of the Web prove useful in the evaluation of Websites.

Self Check Exercise

Note: i) Write your answer in the space given below.

ii) Check your answer with the answers given at the end of the Unit

6) Explain briefly the implications of five laws in the wider context of changes taking place in the library and information world.

.....

.....

.....

.....

.....

4.4 SUMMARY

This Unit discusses the five laws of library science propounded by Dr. S.R. Ranganathan. While these laws seem simple on first reading, on second thoughts and deep contemplation, the richness and import of their meaning will be revealed. The f*ive laws* provide a *paradigm* of how libraries function, how they grow and serve, how they live, and so provide for us a *framework* through which to examine our professional lives and our libraries. These laws are the lens through which practitioners can inform their decision making and set their business priorities, while staying focussed on the user. It may be emphasised that the five laws of

Ranganathan continue to give us a blue print for our professional values that is as relevant today as it was in 1931. The language may be seen as restrictive, but the underlying values inherent in them mean they can be continuously reinterpreted for the future. New information and communication technologists suggest that the scope of Ranganathan's laws may appropriately be extended to the Web. In Noruzi's opinion "these laws are as applicable to the current practice of the Web as of tomorrow. These laws are not only applicable to the Web in general but characterise the establishment, enhancement, and evaluation of online databases and digital library services as well. These five laws concisely represent the ideal service and organisational philosophy of the Web. … we can evaluate web site by applying the Five Laws of the Web". Since 1992, the 100th anniversary of Ranganathan's birth, several modern scholars of library science have attempted to update his five laws, or they reworded them for other purposes. Some of these are referred to in this Unit.

4.5 ANSWERS TO SELF CHECK EXERCISES

1) The first law is a statement that emphasises the use of materials available in library. Evidently the staff that serve the readers of library must have the abilities to organise their collection efficiently. The law dictates the development of systems that accommodate the use of library material. For this purpose, they should have the knowledge about the collection available in the library. The staff should know how to use the various tools in the library to provide access to the documents stocked in the library. The more the knowledge about the staff about subjects, the better would be the service to users. For instance, proper and regular shelving of library materials by the staff and logical and topical arrangement of materials facilitate their use by readers. Besides knowledge and skills, the library staff should be courteous and should be cheerful to help the readers. In other words, the first law advocates that the library staff must take care to provide a facility and an organised collection that invite and promote the use of library resources. Users rate the library on the basis of the way the library staff shows keenness to assist them. In fact, the credibility of the staff, both in respect of their knowledge and their personal attitude to readers, is a general factor in the promotion of the use of books.

2) The second law has many important implications for the library. '*Books for all'* irrespective of the type of readers is the *main message* of the second law of library science. It may reveal the conflict between the cost of materials and the *basic right* of all persons to have access to the materials they need. In providing a library for the use of books, one must always be mindful of the fact that since no one individual can own all the available books, one of the primary obligations of the library is to acquire body of literature or research materials that will benefit each of the readers and researchers. The freedom to access writings of all kinds and inform their own minds on topics that others may wish to suppress. The second law reminds us to be impartial in our dealings with our users. We may not like what they request from us, we may think a book or other resource is low-brow, but we should never place our own prejudices in the way of access. Users' information requirements are the prime consideration for building a collection in a library. In other words, the collection the library is building and maintaining must be

representative and adequate to fulfil the expectations of the majority of its community of users. The book selection policy should therefore be determined on the basis of the findings of the users' survey. Library should not be stocked with material that is not wanted by its clientele.

3) The third law of the library science addresses the fundamental issue of access. The need to provide easy access to materials is one way of putting people together with what they require. Equally putting, books into the hands of the people who do not necessarily know which book they actually need is at the heart of the third law. We could interpret reader development as being part of the third law, since within its remit we promote books to the users that may not be known to them and that we feel may offer them opportunities for enrichment those other titles. Allowing readers to browse a collection through open access is one of the inherent messages provided by third law. The open access system facilitates better use of books because it gives freedom to readers to choose what they want. The browsing facility provided by the open access system ensures the readers chances of getting at their particular item. It certainly saves the time of the reader to get the appropriate documents. The advantages of the open access system outweigh the disadvantages associated with its implementation.

4) Time is a precious commodity. Saving the time of the reader has always been a concern of the librarian. In fact, the fourth law presents the biggest challenge to the library administrator. This is the reason why libraries create catalogues, bibliographies, indexes and abstracts. Saving the time of the reader also relates to how we actually organise the library. The most important aspect which the staff of the library should remember in this connection is that catalogues and other devices are tools for retrieving items accurately; they become items that waste the time of readers, if items are haphazardly catalogued or if the cataloguing is excessively focussed on the intricacies of the art. However, when considering the time of the user as the vital notion, a *simple and effective system* is what is called for. Adequate staffing of reference, information, and circulation desks, as well as telephone reference, also helps patrons find needed materials quickly. Saving the time of the reader means providing efficient, thorough access to materials. It means satisfied library users. This is the prime measure of success of any library; frustrated or disappointed users mean that the library has failed in its duty and its responsibility. Hence, the library staff must make every effort to make its service more efficient.

5) The five laws of library science of Ranganathan were a first step towards putting library work on a scientific basis, providing general principles from which all library practices could be deduced. During his life time Ranganathan himself revised and reworded them to suit the work of documentation centres and documentation service. During the period when Information Science was developing Ranganathan's five laws were interpreted to suit the information work (service) and the functions related to information institutions. However, since 1992, the 100th birth anniversary of Dr. Ranganathan, a number of modern scholars of Library and Information Science have attempted to update, reword, or reinterpret the five laws of Ranganathan. Some of the major efforts in this direction are briefly considered in the following paragraphs.

In 1992, James R. Retting enunciated a sixth law, as an extension of Ranganathan's five laws. It read as "Every reader his freedom". It was supposed to be applicable only to the type of service (i.e. instruction or provision of information).

It may be noted that *book, readers, and library* are the basic elements of Ranganathan's laws. Even if we replace these key words with other elements, Ranganathan's laws still work very well. Based on five laws (of Ranganathan), many researchers have presented different principles. For example, "Five new laws of librarianship" by Michael Gorman became famous. Gorman, it appears, reinterpreted Ranganathan's Laws in the context of today's library and its likely future, and reformulated them calling them as [Gorman's] "Five New Laws of Librarianship".

They are:

1) Libraries serve humanity.
2) Respect all forms by which knowledge is communicated.
3) Use technology intelligently to enhance service.
4) Protect free access to knowledge; and
5) Honour the past and create the future.

Obviously, Gorman's laws are not a revision of Dr. Ranganathan's Laws, but another completely separate set, from the point of view of a librarian practicing in a technological society. It may be mentioned that new information and communication technologists suggest hat the scope of Ranganathan's five laws may be appropriately be extended to the Web. In fact, Noruzi has analysed Ranganathan's five laws in the context of the Web and provided the rationale as to how they are applicable in the case of Web design and Web sites evaluation. The five laws in their interpreted version help to identify the Web a powerful inspiration for technological, educational and social change.

Cana (2003) established the fact that Ranganathan's five laws could be used as normative principles in the case of *open source* software, and advocated that they be used as guiding principles. Similarly David Mc Menemy observed that Ranganathan's laws remain relevant in numerous areas of modern library and information practice, and will continue to be reinterpreted by the profession for a long time to come.

4.6 KEYWORDS

Book : A packaged carrier of information and knowledge.

Growing Organism : A biological phenomenon indicating growth, not necessarily indicated externally.

Information : A recorded message, irrespective of physical form or content.

Information Society : A new form of social existence in which the storage, production, flow, etc. of networked information plays the central role.

Knowledge	:	Organised information irrespective of the physical form.
Reader / User	:	A person using the resources of library; a customer of information institutions.
World Wide Web (WWW)	:	An Internet System that distributes graphical hyperlinked information, based on the hypertext transfer protocol (HTTP) the Web is the global hypertext system providing access to documents written in a script called Hypertext Markup Language (HTML). It was designed in 1989 by Tim Berners - Lee at the European Organisation for Nuclear Research (CERN).

4.7 REFERENCES AND FURTHER READING

Achinstein, Peter. *Law and Explanation: An Essay in Philosophy of Science*. Oxford: Oxford University Press, 1971. Print.

Cana, M (2003). *Open Source and Ranganathan's Five Laws of Library Science.* Web. 21 September 2012 <http://www.kmentor.com/socio-tech-info/archives/000079.html>

Cloonan, M.V. and J.G Dove. "Ranganathan Online: Do Digital Libraries Violate the Third Law?" *Library Journal* (1 April 2005). Web <http://www.libraryjournal.com/index.asp?>

Dasgupta, Arjun (2007). "Library Staff and Ranganathan's Five Laws". *IASLIC Bulletin* 57.4(2007): 195-204. Print.

Gorman, M. (1995). "The Five New Laws of Librarianship". *American Libraries* 26.8(1995): 784-785. Print.

--- . "The Five Laws of Library Science: Then and Now". *School Library Journal* 44.7(1998): 20-23. Print.

Jayarajan, P. "The Increasing Relevance of the Five Laws of Ranganathan". *DESIDOC Bulletin of Information Technology* 12.5(1992): 21-23. Print.

Kuronen, T. and P. Pekkarinen. "Ranganathan Revisited: A Review Article". *Journal of Librarianship and Information Science* 31.1(1999): 45-48. Print.

Leiter, R.A. "Reflections on Ranganathan's Five Laws of Library Science". *Law Library Journal* 95.3 (2003): 411-418. Print.

Mc Menemy, David. "Ranganathan's Relevance in the 21st Century". *Library Review* 56.2 (2007): 97-101. Print.

Middleton, t. (1999). The Five Laws of Librarianship. Web.< http://wwwz.hawaii.edu/-trishmi/610a.html>

Noruzi, A. "Application of Ranganathan's Laws to the Web". *Webology* 1.2 (2004) Article 8. Print.

Rajan, T.N. (1999). "Laws of Library Science". *Library and Information Society.* Unit - 2. BLIS 01. New Delhi: IGNOU, 1999. Print.

Ranganathan, S.R. *Five Laws of Library Science*. Madras: Madras Library Association, 1931. Print.

Satija, M.P. "The Five laws of Information Society and Virtual Libraries Era". *SRELS Journal of Information Management*, 40.2 (2003): 93-104. Print.

Satyanarayana, R. "Dr. Ranganathan and Library Profession: A Centenary Tribute". *IASLIC Bulletin*, 37.3 (1992): 129-135. Print.