UNIT 8 INFORMATION SOCIETY

Structure

8.0 OBJECTIVES

After reading this Unit you will be able to:

- identify the origins of the concept “Information Society” and its meaning;
- perceive the main factors determining its arrival;
- explain whether the concept has some basic economic connotation as an Information Economy or information sector;
- explain the impact of Information Society on the Information Profession; and
- discuss the impact of this concept on the transformation of Indian society into an information conscious society.

8.1 INTRODUCTION

Society is not static. In the language of general systems theory, it is an open system, a dynamic set of interrelated social systems, institutions and individuals that act upon and react to the various aspects of the world around it. Open systems exist in a state of flux, continually reacting and adjusting to changing conditions and developments from both within and outside the system. Generally, these changes are evolutionary. But, at times factors or influences may arise whose impact is truly revolutionary, forcing a more abrupt and drastic modification in the social system, resulting in wholesale transformations in social institutions and relationships.

Scholars, philosophers and scientists have been predicting such a revolutionary transformation of modern industrial society almost since the Industrial Revolution was accepted as an example of revolutionary social transformation (Machlup 1962). There have been hundreds of predictions and discussions about the implications of such a transition in a number of articles across different disciplines. Despite the popularity of such concerns about the next stage of societal evolution, there has been little consensus as to the causes and results of the predicted social revolution. Hence, there are almost as many labels for the resulting society as there have been treatments. Though different causes have been identified as transformations, most of the authors agree that the driving force behind the social transformation as being the result of or related to, rapid development and diffusion of Information Technologies. Information Technology, as many researchers have stated, is in the process of evoking fundamental change in the character of our society. After a period of uncertainty, during which it was perceived that a shift was taking place from *'industrial'* to *'post-industrial'* society, the nature of that society has become apparent. The basic aspect that has been emphasised is that since information is rapidly becoming the driving force behind the industrial development of nations, the most appropriate characterisation to depict that process in the community is by the expression *'Information Society"*. However, a careful examination of literature concerned with emerging forms of social organisations, reveals considerable debate on the precise nature of the 'Information Society'. Although most people concede that western industrial nations and Japan have experienced dramatic social, economic, and technological changes, there is little consensus on the nature and direction of the change.

The idea is that advanced societies are experiencing a transformation to an Information Society, economically based on the exploitation of microelectronic, computing and telecommunication technologies. But, one must understand the status of the Information Society concept. Is it a useful social analytical tool, merely utopian forecast, or what?

There are some who believe that the Information Society concept at present provides neither a coherent tool for social analysis, nor an adequate set of social goals (David Lyon).

In this Unit, we propose to discuss the Information Society concept, its origin, the main factors determining its arrival, the question whether the concept has some basic economic connotation as an Information Economy or information sector, and its impact on public policy and information profession.

Since the term Information Society has been used to describe socio-economic systems that exhibit high employment of information-related occupations and wide diffusion of information technologies, this Unit also presents some data on the size and internal structure of work-force in developing countries such as India, and discusses the transformation of Indian society into an information conscious society.

8.2 THE INFORMATION SOCIETY CONCEPT

At the heart of the 'Information Society' is the idea that advanced societies are entering a qualitatively different phase of existence. Just as the industrial society differed from the preceding society, so also the 'Information Society' will be different from the industrial society. The imagery of Alvin Toffler's *'Third Wave'* captures nicely this epochal transformation. Tom Stonier *(The Wealth of Information,* 1983) makes explicit parallels and contrasts between industrial and Information Societies. In the Japanese context, Masuda asserts that 'The

Information Society will be a new type of human society, completely different from the present industrial society'. (1982, P.29).

The 'Information Society' concept has close affinities with the theory of post-industrial society of Daniel Bell. Bell also theorised about the 'Information Society' *(The Social Framework of the Information Society, 1980).*

Bell's Theory of Post-industrial Society

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 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 proportion of workers is employed in the 'information' sphere.

The important factor, enabling discourse to shift *from* the post-industrialism to Information Society is the massive growth in the economic significance of Information Technology. What gives the Information Society a boost within the political debates is the depressing context of world regression.

Technological Utopianism

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 the 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, appeals 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 the 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 utopian ism, reappear in the literature of Information Society.

Self Check Exercise

1) Identify the essence of an 'Information Society' as can be gleaned from the conceptual analysis. .

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

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

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8.2.1 Definition and Meaning of Information Society

'Information Society' is a much used expression that has been used to denote

many different concepts. The term has been characterised by various dimensions. Several authors have tried to define and interpret this term according to their own perceptions. It is neither possible nor desirable to enumerate and discuss all the definitions of the term due to obvious constraints of time and space. However, an attempt has been made to examine some of the available definitions of the term from the literature and analyse their main attributes.

BIaise Cronin

Blaise Cronin defines Information Society as *one* in which labour has been intellectualised; one in which the expression 'to earn one's daily bread by the sweat of one's brow' sounds decidedly anachronistic". He further observes that - "What began life as a sociological construct and then became a feature of futurologists' clumsy jargon before degenerating into a media cliche, has finally achieved respectability through endorsement by economic and political analysts".

Manfred Kochen

Manfred Kochen 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 societal invariants;

iii) reason and human values rather than strength and expediency manage conflicts between pressures to conserve invariants and pressures for adaptive change.

Having said all this, Manfred Kochen goes on to say 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 fulfillment ... It will take some decades before this idea is sufficiently widespread and until the first information society appears."

Martin

On the other hand, Martin maintains that "the term has come to represent societies at an advanced post-industrial stage, characterised by a high degree of computerisation, large volumes of electronic data transmission and an economic profile heavily influenced by the market and employment possibilities of Information Technology".

Information Society Claims

From the above stated definitions, it is evident that there are a number of different observations writings analyses on' Information Society'. Also, it can be noticed that two major related factors underlie the Information Society claims. Firstly, that the society is becoming increasingly centered on information handling, processing, storage and dissemination, using microelectronics-based technologies, specially those made available through the convergence of the computer with telecommunications, namely IT. And secondly, that this shift is reflected in an emerging occupational structure in which the category of 'information workers' has become predominant. The 'Information Society' appears on the scene as an outcome of technological and economic changes.

At this point it is appropriate to mention that despite the extensive criticism that may be directed against various interpretations of 'Information Society concept', it does raise crucial empirical and theoretical problems. Daniel Bell has indicated some of these. Others, far more enthusiastic than he, have presented their analysis. The resultant danger as William Melody observes, is that critique of Information Society be characterised more as a direct response to the promotional claims, rather than an attempt to examine rigorously probable implications in the real world. Such rigorous empirical investigation may, of course, detract from or support alternative theoretical explorations. In other words," as a description or theory the Information Society concept is flawed. But, as a problematic which alerts us to some of the most pressing sociological questions of our day, it is vital"

Self Check Exercise

2) Tabulate the different definitions given for an Information Society by various authors cited in this section. Bring out the similarities and differences in their approaches.

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

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

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8.2.2 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 do we know whether the 'Information Society' has arrived? Is it possible to identify the events which signal its arrival? Of course our experts and seers say that such a society has arrived. We have but to listen to the commentators and leaders to perceive the signs all around us.

John Naisbitt, in his often cited and popular book *'Megatrends'* defines the social trends that are shaping our current and future lives and economics. Paramount among these trends is the shift from an Industrial Economy to an Information Economy that began in the United States in 1956. In an Industrial Economy capital is the strategic resource. In an Information Economy, information is the strategic resource, states Naisbitt. Martin mentions that 'a high degree of computerisation, large volumes of electronic data transmission and employment of Information Technology are some of the indicators that signal the arrival of Information Society'.

On the other hand, Cawkell 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".

Garfield recognised the developing 'Information Society' long ago and defined it

as a system "characterised by the fact that the rapid and convenient delivery of needed information is the ordinary state of affairs".

From the above discussion it emerges that a high degree of computerisation, large volumes of electronic data processing and employment of Information Technology with a telecommunication-based information service infrastructure, are the main criteria that signify whether a society has become 'Information Society' or not. Keeping in view the above criteria, one has to judge whether a particular nation or society could be considered 'Information Society'.

Self Check Exercise

3) State the attributes of an Information Society.

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

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

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8.3 ECONOMIC STRUCTURE AND INFORMATION SOCIETY

From the vantage point of the mid-1980s it is possible, applying social wave front analysis techniques, to chart global shifts and displacements in economic activity over time. Toffler identified three rolling waves of change corresponding to the agrarian, industrial and information revolutions. Each of these waves of change coincided with the periods of fracture, discontinuity and novelty in social patterns, technological innovation and economic activity.

8.3.1 Economic Analysis

Each writer on 'Information Society' has referred to the growth of the service sector in the industrialised nations and to the decline of employment in manufacturing. For a number of authors, the dominant characteristic of an Information Society is the nature of its economy.

Machlup's analysis

Machlup initiated this research perspective by analysing the growth of the "Knowledge Sector" in the US economy. In Machlup's analysis, industries primarily concerned with the production and distribution of knowledge were examined separately, rather than as a part of the overall service sector. The knowledge industries included such areas as the educational system, the media and other communication activities, libraries and other information and research institutes. The contribution of this sector to the gross national product was found to be significant (estimated at about 40 percent for the early 1960s) and growing at a rate considerably higher than the industrial sector. Machlup concluded that knowledge industries would soon out space the industrial sector, leading to the rise of a 'Knowledge Society'.

Emaseo's Analysis

A similar conclusion was reached at about the same time in Japan by Emaseo as he predicted the rise of spiritual industries. Under this head, Emaseo included all activities concerned with the production and consumption of information. These earlier approaches distinguished the knowledge or information sector from other economic sectors. In recent years, the overall occupational structure of the economy has come to be associated with the transition to an Information Economy.

Marc Porat's Analysis

Marc Porat initiated much of his 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 defined information activities as including all resources consumed in producing, processing, and distribution of information goods and services. According to Porat, the information sector may be classified into primary and secondary sectors. The primary information sector provides the technical infrastructure for a variety of information processing and transmission activities. It also offers information for sale as a commodity. Included under this head are such diverse industries as computer manufacturing, telecommunications, printing, mass media, advertising, accounting and education. On the other hand, the secondary information sector includes the informational activities of the public and private bureaucracies. These include such activities as research and development, planning, control, marketing and co-ordination. Porat's secondary information sector has led to the identification of the information sector in an organisation.

OECD's Analysis

The Organisation for Economic Cooperation and Development (OECD) proposed in 1981 an inventory of information occupations. This contained 284 unit groups embracing 1,506 occupation categories. Information occupations are divided into four categories: information producers, information processors, information distributors and information infrastructure. Information producers create new information or package existing information into a form, appropriate to a particular recipient. Information processors are mainly concerned with receiving and responding to information inputs. Information distributors are primarily concerned with conveying information from the initiator to the recipient. This group includes production of elements of information but its main activity is considered distributive. Information infrastructure occupations install, operate and repair the machines and technologies used to support information activities.

Many studies on estimating the information sector as a portion of total labour force have bcen undertaken in developed countries. For example, it has been stated that in the USA, 31.6 percent of the labour force was engaged in the information sector in 1959, 33 percent in 1963 and 46 percent in 1978. In Australia, the information sector occupied 27.5 percent of total labour in 1976 while in the UK, the information work-force is stated to be 36 percent of the total in 1971 and 1977, and in West Germany it was 30.7 percent in 1971 and 1977.

8.3.2 Measurement of Economic Value of Information

In 1983, Jonscher examined the causes of the growth of information sector. He argued that the increased complexity of the production process and the increased output from it required rapid growth of information sector. The number of information workers grew much more rapidly than the number of production workers.

Attempts to measure the information sector in terms of economic value were made by a few economists like Machlup (1962) and Porat (1977). Machlup estimated that in the USA 136,436 billion dollar or 29 percent of the US Gross National Product(GNP) was spent on knowledge production, processing and distribution. He also found that 29 percent of adjusted GNP consisted of the output of the knowledge industries. Machlup estimated that knowledge production has been increasing at an annual rate of 8.8 - 10.6 percent, more than twice the rate of production of other goods and services.

Marc Porat attempted to break down the National Income Accounts for the year 1967 in order to observe that portions may be attributed directly or indirectly to information activities. In doing this he used three measures to compute the GNP. One is *final demand,* which estimates the intermediate transactions that would add up double counting; the second is *value added,* which is the actual value added by a specific industry or component of an industry to the product; and the third is the *income or compensation* received by those who create these goods and services. Porats' conclusion was that in 1967, 25.1 percent of the USA's GNP originated with the production, processing and distribution of information goods and services sold in markets. In addition, the purely informational requirements of planning, coordinating and managing the rest of the economy generated 21.1 percent of GNP. These information activities engaged more than 46 percent of work-force, which earned over 53 percent of all labour income.

8.3.3 Definition of an Information Economy

Researches seem to indicate that the Information Economy can be defined as the total value occurring from information activities through the production, processing and distribution of information goods and services that are sold by markets and consumed internally by organisations. A research perspective that places its focus on the Information Economy as the primary attribute of the Information Society, has both conceptual appeal and empirical support. Examining the economic structure alone, provides only a limited view of the social and cultural implications associated with 'Information Societies'. Moreover, the concepts and methods employed by these researchers has received substantial criticism. For example, several critics contend that Porat's classification of information workers is far too broad-based to be meaningful, and does little to suggest social implications of the shift to an 'Information Society'.

In concluding this section it may be emphasised that "the contribution of information to successful economic functioning is beyond question, but that is not quite the same as saying that information has become the primary output of developed economies. We are moving towards information based economies, but are a long way from being wholly dependent on the production, sale and exportation of information goods and services for the preservation of our economic well being" (Cronin). "

Self Check Exercise

4) State the economic implications of an Information Society.

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

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

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8.4 IMPACT OF INFORMATION SOCIETY ON INFORMATION PROFESSION

Information Society and information economy present a set of challenges at national, international, institutional and professional levels.

Perhaps, nowhere else is the impact of Information Society more acutely felt than in the information profession. The information profession is the body of people engaged in the generation, collection, codification, storage, retrieval, manipulation, management, dissemination, packaging, evaluation and marketing of information. Until recently, the profession's strength came from the fact that it operated as society's institutionalised information retailer. The universal non-availability of information allowed the profession to play a useful role at the societal, organisational and individual levels. In many cases, access to information was and is via designated institutions, such as information centres and/or libraries. This pattern has begun to change as a result of fast developments in computing and communication technologies. Technology appears capable of deinstitutionalising information and handing over access to the individual, thus cracking the mould of the library. This situation led to what is known as 'info-business'. The new information-related industries are commonly referred to as '*quarternary industries* to distinguish them from the primary (agriculture), secondary (manufacturing), and tertiary (services). An idea of the work-force employed in these industries could be obtained from studies conducted by Porat and others. The many challenges facing the information profession in 'Information Society' can be divided into two main categories

- technological absorption and determinism,
- social, cultural and educational mission.

8.4.1 Technological Absorption and Determinism

Technological absorption and determinism refer to the tendency to assume that the shape of things to come will be inexorably conditioned by the gathering momentum of technological innovation. The fundamentalists' view is that the pace of development in computer and communications technology will soon make the traditional librarian/information worker obsolete. Lancaster has remarked that there is no long term future for any library in the form we know it today and that libraries, as collections of physical artefacts are rapidly becoming obsolescent. The most important action that the members of information profession can take now to ensure the human use of information technology, is to give their profession the value, form, status and identity it needs to meet the challenge: human beings come first, technology comes second. Whenever new technology is introduced into the society, there must be a counter balancing human response.

8.4.2 Social, Cultural and Educational Mission

The social, cultural and educational mission of the Information Profession in the Information Society is also being challenged. Without any further expansion on the social, political, economic and legal implications of the Information Society, it is worth noting that the major problem confronting different governments in the 1980s and 1990s is, according to Stonier, the need to devise ways of effecting a smooth transition from an industrial to an Information Economy - to shift labour from manufacturing to the knowledge industries. Partly the answer is to effect a massive expansion of updated education system to provide new, mainly information skills, which will be useful in an Information Economy. The question

remains as to what role the Information Profession will play in the educational resurgence of the 'Information Society'.

The Information Profession should become involved in the social changes. With its members identifying problem areas in their own communities and organising the people and the information that is required to reach solutions. Information must be repackaged into the media most convenient to the people needing it. It must be noted that every one in the society has the right to the information he needs in life, in a form that he can understand and use.

Self Check Exercise

5) Examine the effect of the Information Society on Information Profession.

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

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

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8.4.3 Education for the Information Profession in the Information Society

One of the major tasks facing library educators is to translate all the challenges posed by the Information Society into a rationale for curriculum revision.

There are indications that educational pluralism can become the norm and that Library Science Schools will co-exist with a variety of other departments in an attempt to meet the manpower needs of particular sectors of information market place.

The rationale for the future development of Library Science Departments is to combine the traditional curriculum with a wider variety of programmes geared to the needs of the 'Information Society'. The market position will have to be surveyed very carefully. This may mean that we will have to invest considerable energy in the promotion of our curricula and our products amongst potential employers if the opportunities afforded by the 'Information Society' are to be grasped. The efforts of all Library Science Schools will have to be directed to provide the students with:

- a broad based education that will enable information professionals to function effectively in a wide variety of information related agencies, organisations and environments;

- an education grounded in a much expanded, empirically derived, body of general knowledge about the nature of information, and the character of the information in the transfer process;

- an education that develops the capacity of the student to identify general principles that are relevant to specific problems of professional practice, to exercise sound judgment in modifying and adapting these to the needs of a particular environment or an individual client, and to accept responsibility for

the consequences of exercising independent professional judgment, a learning environment that rewards, problem solvers and not answer producers;

- an education that prepares the individual to function effectively as a professional in an environment where basic assumptions may be subject to searching review, sweeping modification, or may even be discarded in the light of changing conditions;

- an education that prepares information professionals to assume higher level responsibilities early in their careers and to operate effectively in competitive markets;

- an education that lays foundation for life long independent learning.

In case sufficient attention is paid and these new developments in educational system take place, the Information Profession will be in a position to play its role more effectively and in a purposeful manner.

Self Check Exercise

6) Enumerate the direction of Library Science School curricula to respond to the requirements of the changes taking place in the Information Society.

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

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

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8.5 INFORMATION SECTOR GROWTH: DEVELOPING COUNTRIES

The term 'Information Society' has been used to describe socio-economic systems that exhibit high employment in information related occupations and wide diffusion of information technologies. The growth in demand for information workers and rapid diffusion of information technologies have been identified and studied mainly in the case of developed countries.

Many of the developing countries are also starting to show, if only-partially, some of the traits of an Information Society. Inspite of all this, research on the analysis and explanation of this trend among developing countries is rather scarce. In one such study Katz mentions that information work-force in developing countries is driven by the combined impact of three factors:

i) the expansion of the government;

ii) the over supply of educated labour force; and

iii) the managerial complexity.

As per this observation, expansion of the information sector in developing countries

has to be explained by two demand functions and a supply function, and integrated with the conceptual framework shown in diagram 1.

Fig. 1: Information Sector Growth in Developing Countries

8.5.1 The Information Work-force in India

The above mentioned three factors may have relevance to the study of the growth of Information work-force in India. After 1947 India has also embarked on industrialisation. In the course of industrial development in India, the services sector might have expanded as an automatic accompaniment and an accelerated rate of development could have been achieved if priority were given to the informatization of the services or information sector.

The industrial base in India is quite comprehensive, having as a constituent part, every component of the primary and secondary production sectors. Even so, India is not regarded as, an industrially advanced country because industrialisation has not been accompanied by a structural shift of the labour force from the traditional occupational categories. In other words, industrialisation has been grafted on to a society that continues to function to a large extent in its traditional mode. As a result, many occupational roles in services sector that could be contributing to the efficiency and productivity of the primary and secondary sectors have not been created. This is one basic reason for the low level of information consciousness that is common to all socioeconomic activities. No matter how it is measured (i.e., in terms of newspaper circulation, books, telephones, radios, etc.) information consciousness is much less than in the developed countries.

In India, only 10 percent of the work-force constitute white collar workers, and approximately 60 percent are farmers. An estimated 65 percent of the population are illiterate and their lack of education prevents them from widely sharing the benefits of the information sector in Indian society. Yet, within the huge population of 800 million citizens, several million urban educated individuals are there whose life-styles are similar to those of the information workers in developed countries. Information workers in India, while still a small percentage of the population, are growing in numbers and importance. This growth may certainly drive the Indian society towards information sector.

8.5.2 India Moving Towards an Information Society

In their book *entitled "India's Information Revolution "*, Singhal and Rogers describe at length developments taking place in India in the areas of communication. They specially highlight developments taking place in telecommunications and computer industry, high-tech microelectronics. Having analysed and interpreted factors leading to India's information revolution, the authors state that 'whether information workers will ever out-number farmers and industrial workers is a problematic, as it will depend on government policies, world-wide competition in microelectronics and other unpredictable factors...as India moves toward becoming an Information Society".

On the face of it, this assertion may sound a tall claim. But if one examines the Science and Technology base India has, its progress towards rapid industrialisation, its efforts in building up effective infrastructure in telecommunications, one need not entertain any doubts towards the evolution of Indian society into an information conscious society and Indian economy into an information based economy in the distant future. Therefore, it is not wrong to state that Indian society does exhibit some traits of becoming an Information Society at least by the second decade of the 21st century.

Self Check Exercise

7) State the attributes of the Indian society which have some relation to the attributes of an Information Society.

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

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

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8.6 INFORMATION SOCIETY AND PUBLIC POLICY

The claim that we are entering the Information Society has some important policy implications. If that claim is mistaken or incorrect, it is surely the task of social analysts to draw attention to this and to suggest modifications or alternatives.

In his book *'Social Science and Public Policy'*, (1976), Martin Rein observes that Social Science is a form of *'story telling'* dependent upon analogy, metaphor, and so on. The 'Information Society' concept is part of such story. It depends upon analogy (with the familiar image of industrial society) and metaphor (social activities being predominantly bound up with information and its technological objects like computers). However, in this story what is observable appears as more or less inevitable trends which are also desirable.

The validity of the received 'Information Society Story' has been tested in several ways and found wanting. Nonetheless, as a problematic which alerts us to crucial social trends (and may be transformations) it may still have a significant policy related role. This aspect is clearly revealed from the following actions of different governments. The British Department of Trade and Industry, for instance,

uses a booklet entitled *'Information Technology: The Age of Electronic Information'* to encourage firms in their use of microelectronics - based technologies. It will, they say 'revolutionise' the handling, 'storing and processing of information'. It will also transform our way of living.

This conviction about the social transformation is at the back of other policy background documents as well. The Science Council of Canada produced a report for the Ministry of Supply for Science and Technology, entitled *"Planning Now for Information Society: Tomorrow is too late"*, (1982). More recently the same body issued *"The Uneasy Eighties: The Transition to an Information Society"*, (Cordell, 1985). Microelectronics advances are causing a worldwide technological revolution which all societies must accommodate; (Science Council of Canada, 1982, p.10). In Canada's case the ability to make a successful transition to an efficient, integrated Information Society depends on the strength of telecommunications infrastructure.

Many similar reports (including the Canadian) quote the well known French study by Simon Nora and Alain *Minz. 'The Computerisation of Society"*, (1980). Interestingly, this report, while stressing the revolutionary nature of the new technologies, along with their social and political impacts, also calls for a more cautious and measured approach: 'In order to make the Information Society possible, it is not only necessary to have knowledge but also to have time. The reciprocal learning process of the disciplines and aspirations takes place slowly...' (Nora and Minz, 1980).

Japan was probably the first to use the term Information Society in the context of technological change and policy formulation, In the 1970's several commentators wrote about *Johoka* (Information Society) as the social equivalent of biological evolution. Yoneji Masuda wrote *The Plan for Information Society: A National Goal Toward the Year 2000'* and many of the ideas it contains have been adopted by the Ministry of International Trade and Industry (MITI) in Japan. Masuda sees his work on Information Society as both an analysis of what is happening, and a 'blue print' for policy information.

As a conclusion to this section it may be stated that a number of different observers, analysts and policy makers - insist that the diffusion of information technologies will bring about an Information Society. The production, processing and distribution of information is becoming a central activity of this society. Thus, it is not surprising to hear the claim that 'the concept of the Information Society' proposed in the works of such American writers as Machlup, Ben and Porat is providing the foundation for a new paradigm for policy research and analysis (Edgar and Rahim, 1983).

Self Check Exercise

8) State the policy implications of an Information Society.

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

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

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8.7 SUMMARY

From the foregoing discussion, it can be inferred that scholars agree that we are in the process of transformation to an Information Society. However, there appears to be little consensus on the inherent nature of such a society. The writings certainly present some dimensions of 'Information Society'. The degree of emphasis given to these dimensions, the context in which they are used, and the values given to them may differ. It is unlikely that any single perspective of Information Society may accurately represent the many manifestations to be found in advanced nations of the world, which are alluded to as Information Societies. Therefore, this Unit provides different perspectives to the concept of 'Information Society'. These may be explained as follows:

i) Most of the authors who have written about the 'Information Society', have projected the growth of the service sector in the industrialised nations and the decline of employment in manufacturing highlighting the fact that the dominant characteristic of an 'Information Society' is its nature of economy, which is rapidly transforming from an industrial based economy to an information based economy. It may, however, be stated that economic structure alone provides only a limited view of the social and cultural implications.

ii) A second perspective on Information Societies that emerges out of the literature is concerned with the consumption of information goods and services rather than their production. This research perspective is primarily concerned with the behavioural patterns of consumption of information goods and services. In fact, the RITE (1976) attempted to formulate a precise definition of Information Society, concluding that such a society should have the following characteristics :

   i) a per capita income of more than 4,000 dollar;

   ii) the number of service workers exceeds 50 percent of the total labour force;

   iii) university students exceed 50 percent of the total appropriate age group of population; and

   iv) the information ratio (ratio of household expenditures for various information related activities to total household expenditure) is greater than 35 percent.

   iii) The third perspective emphasises diffusion of computer and telecommunications technologies as the defining characteristic of an Information Society. In other words, this approach emphasises the technological infrastructure almost to the exclusion of other social, economic and political attributes.

   iv) Some authors recognise that technologies are a political and cultural product and that their implementation and use will serve the interests of those in power. The 'Information Society', in the view of these authors, is characterised by economic and information inequities, unemployment among masses, deskilling of jobs to weaken the power of workers and domination of governments by large multinational organisations.

In addition to the attributes of Information Society already enumerated, there are other characteristics that merit attention. These include:

1) the pervasiveness of information and knowledge;

2) temporal characteristics; and

3) spatial characteristics.

Research needs to be conducted in these areas so as to unfold more about the traits of Information Society. It is hoped that such a research effort will be undertaken in the near future and the results utilised for providing further information relating to Information Society

8.8 ANSWERS TO SELF CHECK EXERCISES

1) 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 a transformation. Majority of these writers are of the opinion that the transformation of the society is either due to the result of or related to rapid development and diffusion of Information Technologies.

   Two major factors underlie the Information Society claims. Firstly, that the society is becoming increasingly centred on information handling, processing, storage, and dissemination, using microelectronics-based technologies, made available through the convergence of computer with telecommunications, namely, IT. 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 outcome of technological and economic changes.

2) Different Definitions of Information Society and Their Approaches:

Blaise Cronin	Manfred Kochen	Martin
*Labour has been intellectualised;	*Information rather than material flows constitute most of its communication and control exchanges;	*represents societies at an advanced post-industrial stage;
*to earn one's daily bread by the sweat of one's brow sounds anachronistic;	*Information consistently reflects basic societal invariants;	high degree of *computerisation, large volumes of electronic data transmission;
*started as a social construct and became a feature of the futurologists and now gained respectability from economic and political analysts.	*reason and human values rather than strength and expediency manage conflicts;	*an economic profile heavily influenced by market and employment possibilities of IT.
	*a stage in the evolution of community brains towards a world brain.	

The table of definitions- provided above indicates that there is a common thread that runs through all the definitions; that is, all the definitions emphasise the point that the society is becoming increasingly information centred, with an economic profile biased towards Information Industry, involving the use of modern Information Technology.

The major difference in approach is dependent on the answer to the question whether the concept is a social construct or not. Secondly, whether Information Society could be realised through the use of Information Technologies alone.

3) Attributes of an Information Society are:

   i) Shift from an industrial economy to an Information Economy; that is to say that in industrial economy capital is the strategic resource, while in Information Economy information is the strategic resource;

   ii) A telecommunication-based information service infra-structure;

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

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

4) 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.

   It has been stated that technologically advanced countries are in the process of moving beyond industrial capitalism to Information-based Economies. This transformation may bring profound changes in the form and structure of the economic system in those countries. It has been claimed that some of the developed countries are already devoting majority of their economic resources to information-related activities. The computer, telecommunication and Information-content Industries are among the most rapidly growing global industries and are expected to be so in future. Many national governments are counting on these industries to provide the primary stimulus to their future growth.

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

   Machlup initiated studies by analysing the growth of the '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. His finding was that the contribution of this sector to the Gross National Product (GNP) was 40 percent for early 1960s and is growing at a rate which is higher than that of the industrial sector.

   A similar conclusion was arrived at by Emaseo in Japan at about the same time. Emaseo predicted the rise of 'Spiritual Industries' and stated that these industries would serve the planning and control functions of the society. All activities concerned with the production and consumption of information were included in this category.

   These earlier studies differentiated the knowledge or information sector from other sectors of economy. But, in recent studies the overall occupational sector of the economy is associated with the transition to an Information Society. Marc Porat initiated much of this work. Porat enlarged the scope of information work to include all the 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 information activities accounted for 45 percent of the GNP in 1967. He also stated that half of the total labour force employed in the USA was employed in information related activities. Porat defined Information Economy as a total value accruing from information activities through the production, processing and distribution of information goods and services that are sold by markets and consumed internally by organisations.

In conclusion, it may be emphasised that the contribution of information to successful economic function is beyond question. However, it is not quite the same as saying that information has become a primary output of all developed economies. No doubt, we are moving toward Information-based Economies, but we are still very far from being wholly dependent on the production, sale and exportation of information goods and services for the preservation of our economic well being.

5) The Impact of the Information Society on Information Profession:

Information Society and Information Economy present a number of challenges at national, international, institutional and professional levels. The Information Profession is a body of people engaged in the generation, collection, codification, storage, retrieval, manipulation, management, dissemination, packaging, evaluation and marketing of information.

The primary function of the Information Professional is to ensure that society will have the information it needs to function. Till recently, the strength of the profession depended on the fact that it operated as the society's institutionalised information retailer. The non-availability of information ensured a useful role for the information profession at the societal, organisational and individual levels. In many cases, access to information was provided through institutions such as libraries and information centres. This situation is changing radically as a result of advances in computing and communication technologies.

Technology possesses the capability for deinstitutionalising information and handing over the access to the individual, thus minimising the role of the library. Libraries, as we know them today, may slowly become obsolete in course of time. This situation has led to what is known as info-business. The new Informationrelated Industries are commonly referred to as 'quaternary industries'. These industries are providing employment to a large body of persons called information work-force.

The challenges faced by the Information Profession in Information Society could be categorised into two groups:

i) technological absorption and determinism;

ii) social, cultural and educational mission.

Technological absorption and determinism refer to the tendency to assume that the shape of things to come will be conditioned by the gathering momentum of technological innovation. The fundamentalists' view is that the pace of development in computer and communications technology will soon make traditional librarian/ information worker obsolete. The important action that the members of the information profession can take now to ensure the human use of Information Technology is to give their profession the values, form, status and identity it needs to meet the challenges posed by the 'Information Society'.

The social, cultural and educational role of the Information Profession is the need to devise ways of effecting a smooth transition from an industrial to an Information Economy. In other words, to shift labour from the manufacturing to the knowledge industries. The answer to this has been to involve a massive expansion of an updated education system to provide new, (mainly information) skills, which will be useful in an Information Economy. The Information Profession should become involved in social change, with members identifying problem areas in their own communities and organising the people and the information needed to reach solutions. Information must be repackaged into the media most convenient to the people needing it

One of the major tasks facing the library educators in this context is to translate these challenges into a rationale for curriculum revision and renewal. Many of the Library Science Schools are keen to expand their areas of concern to reflect the many-sidedness of information work. The rationale for the future development of Library and Information Science is to combine the traditional curriculum with a wider variety of programmes geared to the needs of the Information Society. The market position should be carefully surveyed accordingly.

6) The term 'Information Society' describes the characteristics and structure of a society in which the driving force will be the production of information values and not material values. It will be a society that brings about a flourishing state of human intellectual creativity.

The Information Profession has to review its service delivery philosophies and mechanisms to meet the requirements of the Information Society. This entails evaluation exercises, the design and promotion of new systems and facilities, new educational and training programmes for the acquisition of new and relevant skills and competencies for those in the profession.

Library and Information Science education is, therefore, in a transitional phase. There are indications that educational pluralism may become the norm. Library and Information Science Schools will co-exist with a variety of other departments in an attempt to meet the manpower needs of particular sectors of the information market place. While traditional curriculum in established areas of study would still be required to organise library materials, educational provision should be made for careers in information to cater for the needs of the Information Society. Coverage of the following topics should be considered.

- Information skills
- Information technology
- Information management
- Information systems design and implementation Information analysis and retrieval
- Information products and services
- Database design and DBMS
- Networking
- Transborder data flow
- Hardware/Software evaluation
- Information policy

The rationale for such a development should be to combine traditional curriculum with a wider variety of programmes geared to the needs of the Information Society.

7) Indian Society Moving towards Information Society:

The term 'Information Society' depicts socio-economic systems that exhibit high employment in information related activities. Many developing countries like India are also starting to show, if only partially, some of the traits of an 'Information Society'. Katz mentions that information work-force in developing countries is driven by the combined impact of three factors:

i) the expansion of the government,

ii) over supply of educated labour force, and

iii) the managerial complexity.

The above factors are relevant to the study of the growth of information workforce in India. The industrial base in India is quite comprehensive having as a constituent part, every component of the primary and secondary production sectors. Even so, India is not regarded as an industrially advanced country because industrialisation has not been accompanied by a structural shift of the labour force from the traditional occupational categories. In other words, industrialisation has been grafted on to a society that continues to function in its traditional mode. This is the main reason for the low level of information consciousness that is common to all socio-economic activities.

In India only 10 percent of the work-force constitute white collar workers, while 60 percent are farmers. Information workers in. India, while still a small percentage of the population, are growing in numbers and importance. This growth may certainly drive the Indian society towards informatization. According to Singhal and Rogers rapid developments are taking place in telecommuni-cations, computer industry and high-tech microelectronics. Having analysed and interpreted factors leading to India's Information Revolution, the authors assert that India is moving towards becoming an Information Society. This apart, the Science and Technology base India has, its progress towards rapid industrialisation, its efforts in building up effective infrastructure in tele-communications, reinforce the contention that Indian Society is evolving into an information conscious society, and Indian economy into an Information-based Economy in the distant future. Therefore, it will not be wrong to state that Indian society does exhibit some traits of becoming an Information Society at least by the second decade of the 21st century.

8) Despite various national and cultural variations, the idea that the advanced societies are entering a new phase of history, is a common theme of economic and political discourse. The concept of Information Society is intended to evoke a new image, contrasting with the old image of industrial society.

There are many hints in policy of the outcomes this revolution is expected to bring forth. The validity of the Information Society has been tested in many ways and has been found wanting. However, as a problematic which alerts us to crucial social trends, it may have a significant policy related role. This aspect is clearly revealed from the actions of different governments. The British department of Trade and Industry, for instance, uses a booklet entitled *'Information Technology.. The Age of Electronic Information to Encourage Firms in their Use of Microelectronics-based Technologies.'* "It will, they say, revolutionise the handling, storing and processing of

information. It will also transform our way of living."

This conviction about social transformation is at the back of other policy background documents as well. The Science Council of Canada produced a report for the Ministry of Supply which advocates the use of microelectronics, and emphasises the significance of the strength of telecommunications infrastructure in transforming Canadian Society into an Information Society.

The well-known French study by Nora and Minz, while stressing the revolutionary nature of the new technologies along with their social and political impacts, also calls for a more cautious approach. In order to make the Information Society possible, the report maintains that it is necessary to have knowledge but also to have time. Japan was probably the first to use the term 'Information Society' in the context of technological change and policy formulation. *'The plan for Information Society: A National Goal toward the year 2000'* by Masuda has been adopted by the Ministry of International Trade and Industry (MITI) in Japan. Masuda sees his work on Information Society, as both an analysis of what is happening, and a blue print for policy information.

Thus, it is not surprising to hear the claim that the concept of the 'Information Society', propounded in the works of American writers such as Machlup, Bell and Porat, is providing a new paradigm for policy research and analysis.

8.9 KEY WORDS

Information Economy : The total value accruing from infor-mation activities through the produc-tion, processing and distribution of goods and services that are sold by markets and consumed internally by organisations, is defined as Information Eco-nomy. Advanced countries are evolving as information economies in which information is the key factor in the economic growth of the nation. The major components of such an economy are:

i) information work-force;

ii) information goods and services;

iii) emergencne of Information Industry and mar-kets; and

iv) information infrastructure.

Information Profession : The Information Profession is the body of people engaged in the generation, collection, codification, storage, retri-eval, manipulation, management, dissemination, packaging, evaluation and marketing of information. OECD categorised information professionals as:

i) information producers;

ii) information processors;

iii) information distributors; and

iv) information infrastructure.

Information Ratio : Based on the work of Machlup and Emaseo, the

Japanese initiated a series of studies attempting to measure the degree of Johoka in Japanese Society. One of the indices developed for this purpose by RITE was Information Ratio; which was defined as the ratio of household expenditures for various information related activities to total household expenditures.

Information Work-force : The term Information Work-force 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 category, while Marc Porat defined three subsectors of the Work-force as :

i) Workers whose final product is information;

ii) Workers whose main activity is informational in nature:
- Information creators;
- Information transmitters;
- Information processors;

iii) Workers who operate Information Technologies. Generally the OECD categorisation is considered more helpful and acceptable in professional parlance.

Johoka : The Japanese equivalent of Information Society. The two indices: the Information Ratio and Johoka Index (a measure made up of the following categories of data):

i) amount of information;

ii) quality of information activities, as well as the information ratio are the main attributes of Information Society. The Johoka perspective advises us to look beyond the occupational structure, and incorporate the communication and information behaviours of people into our definitions of Information Societies.

Post-industrial Society : The concept emphasises the centrality of theoretical knowledge as the axis around which new technology, economic growth and the ramification of society will be organised. Empirically, one can try to show that this axial principle is becoming more and more predominant in advanced industrial societies.

Technological Utopianism : In the writings of Masuda, Stonier and Naisbitt we come across a dreamy picture of a new kind of society, which on the one hand, appeals to empirical analysis and on the other, projects 'good society' imagery. For example, in the US history it was felt that the US would realise through a

marriage of nature and mechanics, an unprecedented solution to the problems of industrial-isation... the ideals of decentralised democracy, community partici-pation, an end to hierarchy and class, etc.

8.10 REFERENCES AND FURTHER READING

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