Chapter 20
The information society

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Approaching the end of the twentieth century, societies all over the world are changing. In countries of many different kinds information now plays an increasingly important part in economic, social, cultural and political life. This phenomenon is taking place regardless of a country's size, state of development or political philosophy. Changes that are happening in Singapore, with a population of 2.5 million, are similar to those taking place in Japan with its population of 125 million. Developing countries like Thailand are striving to build information-intensive social and economic systems just as hard as countries like the United Kingdom or France. And the goal of creating an information society is shared by the capitalist states of North America as well as the communist states of China and Viet Nam.

The characteristics of information societies

Information societies have three main characteristics. First, information is used as an economic resource. Organizations make greater use of information to increase their efficiency, to stimulate innovation and to increase their effectiveness and competitive position, often through improvements in the quality of the goods and services that they produce. There is also a trend towards the development of more information-intensive organizations that add greater amounts of value and thus benefit a country's overall economy.

Secondly, it is possible to identify greater use of information among the general public. People use information more intensively in their activities as consumers: to inform their choices between different products, to explore their entitlements to public services, and to take greater control over their own lives. They also use information as citizens to exercise their civil rights and responsibilities. In addition, information systems are being developed that will greatly extend public access to educational and cultural provision.

The third characteristic of information societies is the development of an information sector within the economy. The function of the information sector is to satisfy the general demand for information facilities and services. A significant part of the sector is concerned with the technological infrastructure: the networks of telecommunications and computers. Increasingly, however, the necessity is also being recognized to develop the industry generating the information that flows around the networks: the information-content providers. In nearly all information societies, this information sector is growing much faster than the overall economy. The International Telecommunications Union (ITU) estimates that in 1994 the global information sector grew by over 5% while the overall world economy grew by less than 3%.

The creation of individual information societies is taking place within a much greater, international process of change. Partly this is because the developing information systems are global, or at least international, in their reach: satellite broadcasting systems do not recognize national boundaries; telecommunication networks provide connections between countries and continents, while the Internet is perhaps the ultimate example of a global system.

Both developed and developing countries are being transformed into information societies. Most of them are concerned to use information to improve their relative competitiveness or, at least, to retain their position in an increasingly competitive global market. As part of this, countries of all kinds, from Australia to Zimbabwe, are actively developing their local information industries so that they can participate in the growing international market for information. But it goes beyond international trade. The development of information societies represents a series of attempts to achieve more general economic and social advance. Countries as diverse as Singapore, Sweden and South Africa are building economies that encourage information-intensive companies. And they are creating information systems that will raise levels of education, strengthen community links and stimulate public participation in decision-making.

There is a concern, however, that the shift towards information societies will increase the gap between the developed and the developing countries. To counter this, the World Bank has recently launched its Information for Development initiative.

Origins and causes

The origins and causes of information societies lie in two interrelated developments: long-term economic development and technological change.

In the long term, the structure of economies changes. It begins with a reliance on the primary sector: agriculture, forestry and mining. Gradually, the secondary sector – manufacturing industry – becomes more important, contributing a larger proportion of Gross Domestic Product and usually also contributing to exports. The rise of the secondary sector is then followed by an expansion of the tertiary sector. The commercial and service sector grows and makes a greater contribution to the national income.

At each stage in this progression, the productivity of labour grows, more value is added by each worker, capital investment increases and the economy expands. Just as significantly, the relative importance of the different sectors of the economy changes. The effect of this is shown quite clearly in the United Nations Development Programme (UNDP)'s *Human Development Report* (1994). This shows that in economies as diverse as Singapore or Senegal, Hong Kong or Hungary, the service sector accounts for more than 60% of the nation's economic activity. Even in the world's least developed economies, the share of the service sector (43%) is higher than agriculture (37%) or industry (20%).

These changes have been taking place throughout the world for the last thousand years. Over the

last fifty years, however, as economists like Fritz Machlup, Marc Uri Porat and Daniel Bell have shown, the tertiary or service sector has become ever more concerned with processing information in different forms.

Technological change is a major contributor to this process of economic development. Certainly in recent years, the rapid development of information and communication technologies has vastly increased our capacity to process information and in so doing has undoubtedly accelerated growth in the information-intensive tertiary sector.

Some economists claim that in addition to relatively short-term economic cycles it is possible to identify periods of sustained economic growth that are triggered by technological change. The development of steam power, it is argued, triggered the expansion of economies in Europe and America during the Industrial Revolution. Electricity and the internal combustion engine accounted for the dramatic economic expansion during the mid-twentieth century. And now we have information and communication technologies.

The impact of information technology arises from three of its characteristics. First, it is an enabling technology. It can be applied in a wide range of different circumstances and can itself contribute to further technological change. Second, the capacity of the technology has been increasing at an exponential rate for nearly twenty years and shows no sign of slowing down. Finally, and perhaps most important, the cost of the technology has fallen rapidly over the same period and, again, seems likely to continue to do so. These three factors have led economists like Chris Freeman to reason that information and communication technologies will trigger a new long wave of economic growth stimulating the development of information societies.

The impact on employment

The structural changes that continue to take place in the economies of different countries have an enormous effect on the patterns of employment, bringing with them displacement, unemployment and social disruption. Throughout the world there has been a steady shift in the pattern of employment: from the primary to the secondary sector, and again from the secondary to the tertiary. In each case, however, capital investment has meant that, even though the labour input has declined, output has grown.

In the primary and secondary sectors, labour was displaced by machines. It is now possible to see the same thing happening in the emerging information societies. Large numbers of clerical and administrative workers are losing their jobs as work is automated. In developed countries, for example, the introduction of electronic financial transactions is causing substantial reductions in the numbers of people employed in the banking sector. It is likely that many of these people will find other jobs in new information-intensive industries as the structure of the economy evolves, but for others there will be a very uncomfortable period of disruption.

As well as structural change, there is a great deal of change in the nature of employment. Many jobs are quite simply becoming more information-intensive – that is, they require workers to spend a greater proportion of their day processing information and working with information technology.

This information-intensive way of working brings both benefits and disadvantages. Working arrangements become more flexible: for many it is even possible to spend part of the time working at home. But the price of this is a considerable blurring of the boundary between work and home life. Employers also want more flexibility and greater power to hire and fire their employees as the nature of their business changes. This is introducing a much higher level of insecurity into the labour market. The technology makes it easier for staff to keep in contact with their workplace – notably through mobile communications – but many are becoming concerned

about the level of stress that comes with never being offline. It will take a long time for us all to adjust to the changes that are taking place in the way we work.

Methodological issues: defining and measuring the information society

It is proving very difficult to define and describe in quantitative terms information societies. We have seen that it is possible to identify some common characteristics of information societies, but it is not at all easy to go beyond generalized definitions, such as: an information society is one in which information is used intensively as an aspect of economic, social, cultural and political life. This presents a major problem for statisticians who have to collect the data that governments need for economic management. The question they face is quite simple: if it is not possible to define and to measure the information sector, which we know is such an important contributor to the economy, how can we really know what is happening in our economy? The question is simple but the answer is far from obvious.

It is possible to define the information sector of the economy. Broadly it consists of the organizations, in both the private and public sector, that create the information content, or intellectual property; those that provide the facilities to deliver the information to the consumers; and those that produce the hardware and software that enable us to process information. It is more difficult, however, to define and measure the information activity that takes place within organizations outside the information sector.

The matter is further complicated by the intangible nature of information. It is a good that does not easily fit into the economists' scheme of things. Its value can vary widely, particularly over time, which makes it very difficult for accountants to value it for company balance sheets. Also, the value of information, unlike most other goods, does not decrease as it is consumed; indeed, the value may increase as one piece of information is added to others. It has other interesting economic characteristics: for example, the cost of creating information is usually very high, but the cost of reproducing an extra copy is very low – an encyclopedia or a dictionary costs a great deal to compile but an extra copy on a compact disc costs less than a meal in a Paris brasserie.

The globalization of the information sector poses further problems. Someone working in Africa can use the Internet to obtain information about a firm operating in Europe that has been compiled by an American-owned information company based in Switzerland using a database that was compiled by Eurostat, the statistical arm of the European Commission. Who regulates the information? Under which set of laws is it collected, compiled, delivered and consumed (see Chapter 26)? If the user has to pay for the information, where does the revenue go? Which governments are entitled to levy a sales tax on the information? To which set of national accounts should the financial transactions be credited? It is possible to arrive at answers to most of these questions, but in doing so we raise further questions about the ability of our economic and statistical systems to cope with the changes that are taking place. A major effort is needed to bring these economic and statistical systems up to date.

The emerging information industries

A defining characteristic of an information society is an emerging or developing information industry. A few countries rely on external organizations to supply all the information systems and services that are required, but such cases are rare. Most countries are actively encouraging the development of an indigenous information industry to meet the country's needs and, in many cases, to enable the country to participate in the rapidly expanding international information market.

It is useful, when considering the development of the information sector, to divide it into three distinct segments: the first concerned with the creation

of information – the content sector; the second concerned with the delivery of the information; and the third concerned with information processing.

The information-content industry

The information-content segment comprises the organizations in both the public and private sectors that produce and develop intellectual property. The information originates from writers, composers, artists and photographers, assisted by editors, film-makers, television producers, animators and a host of allied occupations. These information creators sell their work to publishers, broadcasters, distributors and production companies that take the raw intellectual property and process it in different ways so that it can be distributed and sold to the information consumers.

In the past, the work of creation and publication took place in quite separate organizations. Authors worked with publishers and rarely had much contact with video- or film-makers. But now that it is possible to present the different types of information in a common digital format, the boundaries are breaking down and it is possible to identify multimedia companies that bring written, audio and visual material together in the same information package (see Chapters 16 and 21).

In addition to this genuinely creative information, a large part of the information-content segment is concerned not so much with the creation as with the compilation of information: the compilers of reference works, databases, statistical series and 'real-time' information services that supply constant flows of information about things like share and commodity prices. These information providers account for a very significant proportion of the total revenues of the information-content sector. It is here that the public sector plays a key role. Governments of all kinds are major collectors and compilers of information. They hold, use and in some cases publish large amounts of information. In recent years a number of countries have encouraged the private sector information providers to exploit this information, partly to stimulate the dissemination of the information itself but also as a means of supporting the development of the information sector.

Linking all this is an important subset of the information-content segment that is concerned with the management of and trading in intellectual property rights. This part of the information-content industry is considered in some detail in Chapter 26.

The information-delivery industry

The second part of the information industry is concerned with delivery, that is the creation and management of the communication and dissemination networks through which we communicate information. This includes the telecommunication companies, many of which are still state-owned enterprises; companies that provide cable television networks; and satellite broadcasters, cellular telecommunication companies, and radio and television stations. This segment of the industry is considered in greater depth in Chapters 17 and 21.

Allied to these organizations is another set that is concerned with the use of these and other channels to distribute the information content. This is where we find the booksellers, libraries, broadcasting companies and the providers of what are known as value-added network services – these are services provided through the telecommunication networks, but which offer more than basic voice telephony: anything from information about the weather to traffic news.

The information-processing industry

This segment of the information industry can be conveniently divided into two parts: hardware producers and software producers.

The hardware producers design, develop, manufacture and market computers, telecommunications equipment and consumer electronics. They tend to be concentrated in the United States and East Asia,

deal in very high volumes and are operating in a market where unit prices have been falling steadily for over twenty years.

The software producers provide us with operating systems like UNIX, DOS or Windows, applications packages like spreadsheets and wordprocessors, and increasingly computer games. In recent years most of the software industry has been concerned with producing software for mass consumption. There is still, however, a significant element that produces custom-built software systems for use in individual organizations.

Convergence and consolidation

The three segments of the information industry – content, delivery and processing – are about the same size in Europe, although in the United States the information-content segment is estimated to be larger (Table 1).

Table 1. The size of the information industry in Europe and the United States (all figures are for 1994 and are in US$ billions)[1]

Information-industry segment	European Union	United States
Information content	186	255
Information delivery	165	160
Information processing	193	151
Total	544	566

1. Size is measured in terms of sales within the European Union and the United States.
Source: European Commission.

While the lack of reliable statistics makes it difficult to reach firm conclusions, it does appear that the information-content segment is growing in value and economic importance. One way to look at this is to consider the value chain, or where value is added in the process of bringing an information product to the market. Work by the European Commission suggests that the value chain for information products is as follows: creation, development and packaging adds 48% to value and is growing; distribution adds 38% to value and is declining, and user access adds 14% to value and is stable. The ITU, in a similar analysis, estimates the value added by the telecommunication companies at the distribution stage to be as low as 20%.

The growing appreciation of the significance of the information-content segment accounts for much of the restructuring that is taking place in the information industries. The 1990s have seen a dramatic series of mergers, acquisitions and joint ventures as companies try to reposition themselves along the value chain. It is likely that this flurry of activity will continue for several years until a new pattern of corporate ownership emerges. What does seem certain is that the holders of intellectual property rights will be in a stronger and stronger position.

The impact on the information professions

The technological changes and the wider developments in the information industries are having a big impact on the information professions: librarians, information scientists, archivists and publishers. These professions are facing two complementary pressures. First, the technology of information work is vastly extending the scope of their work. It is now possible to gain access to and process much greater quantities of information than was possible only five years ago. Second, user expectations are rising constantly, creating a demand for ever more sophisticated, high-quality information services.

These pressures call for more highly qualified professionals who not only understand the underlying principles of information work but also possess the technical skills needed to exploit the full potential of the technology. The result is a demand for high-level, initial-qualification courses, usually at the Master's level. But initial education is not enough. It needs to be supplemented throughout a professional

career with continuing education and training that enable professionals to develop and refine their skills.

In the 1960s professional education was largely provided on the job and was controlled by professional associations. Perhaps as a consequence, the education tended to focus on the development of practical skills. In the 1970s and 1980s responsibility for initial education passed to academic institutions. The link with professional associations became weaker and emphasis shifted from skills towards a theoretical understanding of information work. In the 1990s these initial academic qualifications now are being complemented by a wide range of training courses. Technical skills are once again important and much of the training takes place while people are at work. The focus is on high-level conceptual ability as a foundation for the rapid acquisition of a changing set of skills, aiming for flexible competency.

The convergence of technologies and in particular the widespread use of digital information are blurring the distinctions between subgroups within the information professions. It is becoming increasingly feasible, for example, for authors to become their own publishers; indeed, many organizations now use desktop publishing facilities to produce a wide range of publications. The new technologies are also creating demands for people with new sets of skills. Very many organizations, for example, have developed a presence on the Internet by creating their own pages on the World Wide Web. This alone has generated a need for a group of information professionals who possess a combination of skills and understanding that was not previously thought necessary.

Information as an organizational resource

Information is now seen as a valuable resource within organizations, a resource that if properly managed and used can stimulate innovation, speed product development, raise levels of productivity, ensure consistent standards of quality and, through all these means, raise the relative level of competitiveness.

The private sector

Much of the interest in the use of information as a resource is concentrated in the private sector, where productivity and competitiveness can determine the success or failure of individual companies. It can also determine the overall health of a country's economy.

In manufacturing industry, information can make a contribution to economic success in a number of different ways. It is an important element in the process of research and innovation. For many years companies have recognized the need for their R&D departments to have access to the most up-to-data information. Good products alone, however, will not ensure a company's success. They need to be developed and designed to meet the requirements of the market. This implies a high level of market intelligence and an understanding of the ways in which consumers respond to different products. The market-research industry has grown dramatically in recent years in an attempt to meet these needs (see Chapter 22). Information also makes a significant contribution to the management of manufacturing processes. Indeed, many modern approaches to manufacturing – just-in-time production, for example – depend on the processing and communication of substantial flows of information.

All this calls for a strategic approach to the management of information in manufacturing industry, and many have argued that to achieve significant productivity gains in industries like car manufacturing it is necessary first to develop a radically different approach to the management of information.

The impact of information on the commercial part of the private sector is possibly even greater than in manufacturing. Commerce generates large quantities of clerical and administrative work, and it is this work that is most open to automation. The introduction of automated reservation systems

revolutionized the airline industry, and in so doing created a set of global systems that now makes it easy and cheap to book air travel, car hire and hotel accommodation. Similarly, the electronic transfer of money is transforming retailing and the banking system. In both these cases, the introduction of automated systems has dramatically reduced costs and caused the loss of many thousands of clerical and administrative jobs. In retailing, for example, information systems are being used to improve stock control. Information is collected when goods are sold, the shop's inventory is automatically updated and, when the level of stock becomes low, additional stocks can be ordered from suppliers. Some highly efficient retailers have developed these stock-control systems to the point where they no longer need warehouses – stock is delivered directly from the suppliers to the shops where it is sold.

Information systems are also making it much easier for companies to balance supply and demand. Ticketing systems on airlines, for example, monitor the rate at which seats are sold on each flight and adjust the number of discounted tickets made available to travel agents. Similarly, many car-hire firms no longer have published hire rates: the rate is constantly adjusted to ensure that the supply of cars always balances demand.

In other areas, decision-support systems are used to reduce risk. An application for a loan used to be considered by a middle manager in a bank or financial institution who would review a range of factors before deciding whether or not to lend the money. Now this is all done automatically by computers that construct what is known as a credit score. Applicants who score above a certain level receive the loan. Systems also exist to monitor credit card use, alerting the credit card company to any significant changes in the behaviour of the cardholder. By adopting these systems, financial institutions can greatly reduce the level of risk in their business.

Extensive use is made of information in marketing. Shops and supermarkets provide customers with discount cards or their own credit cards. This enables retailers to monitor the customer's shopping habits and to build this into their marketing strategy. Some use the information to promote different products for different kinds of customers.

The long-term success of many commercial organizations will be determined by their capacity to use and manage information to reduce costs, to extend their range of services, to reduce risk and to become more sensitive to customer demands.

Information is even making an impact on the traditional professions like law and medicine. Lawyers now have access to sophisticated legal information systems and they make extensive use of computers to monitor their work and to account for their time. Similarly doctors are now able to keep much closer track of their patients through sophisticated records management systems.

The public sector

Information is having a similar impact on the public sector. Public authorities at national and local levels are beginning to find that information can change quite dramatically the way they work. At one level it enables them to improve their general efficiency in ways similar to those used in commercial organizations: through the automation of clerical and administrative tasks, through the use of decision-support systems and through the development of electronic payment systems. Some are also beginning to develop electronic transactions services so that people can access departments, filling in forms and processing claims electronically.

We have yet to see the full impact on democracy and participation. There have been a number of experiments, usually at a local level, where the local authority has set up electronic voting systems and explored the scope for public participation in decision-making. The results are inconclusive. It seems

difficult to retain sufficient levels of public interest in the issues, and politicians are understandably wary about opening the door to a form of participation that might ultimately undermine the very democratic institutions it sought originally to support. There does seem to be greater potential, however, for using cable television to generate more interest and participation in local community affairs. It is now possible to allocate broadcasting channels for use by quite small communities, and in this way it becomes possible to broadcast live events like school governors' meetings. Where this has been done a surprisingly high level of interest has been shown by members of the public.

One of the features of information societies is their emphasis on education. A recent report on the information society in Europe has emphasized the need to create a learning society. UNESCO's report from the International Commission on Education for the Twenty-first Century (*Learning: The Treasure Within*) underlines the impact of the information society on education and studies some of its consequences. Certainly, technology has revolutionized our ability to deliver education in ways that were not previously possible. A wide range of training courses is already available in the form of multimedia CD-ROMs, and schools and universities are experimenting with the electronic delivery of distance learning courses. Such developments are likely to make a real impact on rural areas, very specialized courses and adult learners.

Health is the other public service likely to be greatly affected by information. Indeed, advances in the provision of health information are likely to raise the level of public health considerably. They will do so in three ways. First, doctors and other medical staff will simply be better informed. They will know more about their patients and they will have ready access to much more information about diseases and their treatments. They will also be able to gain access to medical specialists in other towns or even other countries, consulting them on unusual cases. Second, there will be much better systems for epidemiology – the science of tracking diseases – so that we shall be able to trace many of the environmental causes of disease more easily. Improved medical records will also make it much easier to track and monitor patients, alerting them, for example, to new treatments as they become available. Finally, improved consumer health information will enable us all to take better care of our own health. There is now much more information available on the causes of heart diseases and illnesses like lung cancer. This, allied to better provision of information about the content of foods, the tar levels in cigarettes and pollution levels, etc., enables us to adjust our patterns of behaviour so that we avoid many of the things that make us ill. This could be the next major breakthrough in public health care.

The evolving demand for information services

All these developments are generating new demands for information in organizations. In most organizations, whether in the public or private sector, the initial focus tends to be on information technology, and often this has resulted in a great deal of expenditure for only modest results. There is now a growing awareness that before investing in the technology it is first necessary to understand information flows and requirements.

Many of the organizations that are successfully using information as a resource began by analysing the ways in which information could contribute to business. From this it becomes possible to develop an information strategy which sets out how the information will contribute to the achievement of business goals. It is then possible to develop an information systems strategy that specifies the ways in which information will be collected and processed and how it will flow around the organization. Only then does it become possible to define an informa-

tion technology strategy which sets the framework for the acquisition and use of the technology.

There is also a growing recognition that technology alone is seldom the answer. Effective management of information calls for people who understand information, how it can be collected, processed and used for different purposes. This is leading in many organizations to the redefinition of company libraries and information services, many of which were originally established to serve a research and development department. It is also causing a reassessment of the organization's archives and records management functions (see Chapter 24).

An interesting development is the emergence of a new category of information professional – researchers and information analysts. Their task is to work with managers and others, collecting and processing information on particular topics, analysing it and producing a synthesis that can be understood easily by someone who would otherwise be too busy to undertake the task. Such positions are now common in many organizations and reflect a general desire to make more constructive use of information as a corporate resource.

Information and citizenship

As well as using information when we are at work or studying, we all use information as part of our daily lives. We use information as consumers of products and services, whether provided by the private or the public sector. We also use information in our roles as citizens. Here we use information when we are exercising our rights and responsibilities.

Consumer information

At a very basic level people need information so that they can choose which products and services to consume. Most of us live in market economies and those markets only function effectively if consumers are well informed. People need to know about the full range of products and services that are available so they can allocate their resources wisely. Many governments have begun to introduce the consumer principle into the provision of public services. In the United Kingdom, for example, schools are required to publish their examination results so that parents can make an informed choice about schools for their children.

As well as simple consumer choice, people need information so that they can exercise their rights and entitlements to services. This is particularly important in countries that have well-developed welfare systems. In such cases individuals are entitled to a wide range of benefits and, consequently, need to be well informed if they are to claim what is due them.

Information can also help people take charge of their own lives. As was mentioned above, health information helps us all take more control over our lives.

In many countries people are considered to be more than just passive consumers of goods and services produced by the public or private sector. Consumer groups have developed the notion of active consumption, where consumers hold producers and service providers to account for their products. Information plays an important part in this. Whether it is a company being forced to publish information about its pollution record, or nutritional information listed on a tub of margarine, it is all information that helps to make producers accountable to the people who consume their products.

Citizens' access to information

As citizens we possess a range of rights, although the range varies from society to society. We have basic human rights: to be treated as a human being with intrinsic worth. We have civil rights: freedom of speech, assembly, religion and the right to justice. We have political rights: the right to vote. We also have a range of social rights, usually interpreted as the right to a minimum standard of life. We also play a role as members of a community and as citizens of a nation-

state. In some parts of the world individuals are beginning to develop a further set of citizenship rights and responsibilities as members of a regional grouping of nation-states, like the European Union or the Association of South-East Asian Nations (ASEAN).

But there is a great deal of difference between having a right and being able to exercise it. Poorly informed people are often denied their rights because they lack the power to exercise them. Because of this, some have argued that we can define a further set of rights – the right to information and advice. If we had this additional right, then we would be in a much stronger position to exercise all the other rights. This is the rationale that underlies the concept of freedom of information. Freedom of information legislation gives citizens the right of access to information about what is happening in government so that they can make better judgements about those who govern them. This principle of freedom of information is deeply embedded in some national constitutions, notably those in France, Sweden and the United States. In other cases the principle has been adopted more recently, while in yet others it is still a matter of considerable debate.

The need for citizenship information, however, extends beyond a right of access to government information. It should include access to all the information that people need to exercise their right as citizens. They should not be denied, for example, access to information about the legal system because, if they are, they cannot fully exercise their legal rights. And this right of access should not be dependent on an individual's ability to pay, language skills, level of literacy or on any other factor that can impair an individual's ability to obtain information.

The problems of access

The list of factors that can reduce an individual's access to information is long. There is growing concern that in creating our information societies we may be creating a further division in society: the divide between those who have access to information and the ability to use it and those who do not. More particularly, the concern is that such a division would deepen other divisions that exist in most societies: the division between rich and poor; between the educated and the inarticulate; between the majority and minority ethnic, linguistic or religious groups; and between the physically and mentally able and disabled people.

All these factors place barriers in the way of gaining access to information, and slowly people are beginning to recognize the need to develop services that will overcome these barriers. In some cases we need to raise basic levels of literacy and numeracy, and this can only be tackled successfully through educational programmes. In other cases it is necessary to provide information and advice services that meet the particular needs of specific groups within the community.

Public libraries have traditionally provided access to information for a wide range of people, and in many countries efforts have been made to meet the needs of particular minority groups. But general information services alone are insufficient. Disabled people, for example, have particular needs that require special provision. First, they need information on particular subjects that relate to their disability. Second, they have particular access problems that call for special provision. Third, many would argue that for the information and advice to be fully effective it should be delivered by someone who has personal experience of what it is to be disabled. These arguments could be applied to almost any minority group.

We need also to recognize that information alone is not enough. Life is increasingly complex. None of us can expect to understand fully all the information we need to manage our lives in these complex societies. We need to be able to turn to specialist advisers who can interpret information and

relate it to our individual circumstances. This is not a new idea – people who could afford it have always turned to lawyers, accountants and other advisers to help them through the intricacies of life. Many countries now recognize that they need to make access to advice accessible to everyone.

The problem, of course, is one of cost. Acceptance of the arguments for a public information and advice service implies also acceptance of the principle of information being free at the point of use. And that implies public expenditure at a time when, in many countries, there is pressure to reduce government expenditures in general, including public libraries and information services.

It is possible, however, to make a strong case for public information. The citizenship argument suggests that access to information is a right to which we are entitled like justice, and that in common with other public services it should be provided free. The efficiency argument reasons simply that society functions better when everyone is well informed. The equity argument is based on the fact that an effective public information and advice service is unlikely ever to be fully provided by the private sector and, because a significant majority lacks the resources to buy it, it should be provided at public cost.

All these arguments point to the fact that a basic element within an information society should be the provision of a comprehensive public information and advice service.

The policy framework

The last five years have seen a sudden burst of policy-making related to the creation of information societies. This is unusual. Seldom does a social development stimulate such an obvious process of policy development. The need for policy is not, however, universally acknowledged. Let us consider the examples of Singapore and Hong Kong. In Singapore developments are shaped by a strong, all-encompassing framework of information policies, whereas in Hong Kong there are almost no formal policies; instead developments are shaped by market forces alone.

Most countries fall between these two extremes. Broadly, the aim is to make use of the power of market forces but to do so within a framework of policies. There are a number of reasons for this. First, the magnitude of the changes is considerable, involving major industrial, economic, social and, possibly, political upheaval. Faced with this, few governments are prepared to hand over responsibility to market forces alone. Second, the levels of investment required are huge. In developed countries it may be possible to contemplate delegating investment to the private sector, but when it is necessary to build an infrastructure from scratch, then a government must usually be prepared to commit public funds. Third, the scale of the social impact is becoming apparent: it could strengthen social cohesion or destroy it. Again, few governments are prepared to stand aside and simply observe what happens. Finally, there are the possible consequences of failure. If a country gets it wrong it could suffer long-term damage.

All these factors have led to a wave of policy-making, most of it focused on the development of the information infrastructure and, as such, covered in greater detail in Chapter 21. Here it is simply worth noting that such policies are being created in developed countries like the United States, Canada, Australia and Japan, as well as in regional groupings like the European Union, culminating in the policy adopted in 1995 by the G7 group of nations. It is also a characteristic of many newly industrialized countries, particularly those in East Asia, such as Malaysia, the Republic of Korea, Singapore and Thailand. A concern for information policy can also be seen in developing countries like China, South Africa and Viet Nam. While most of these policy frameworks originate in a concern to develop the

information infrastructure, they are becoming increasingly focused on the social implications of this infrastructure. Governments are recognizing the need for policies to shape the development of information societies.

The influence of UNESCO

UNESCO has played an important role in laying the foundations for the development of information policies. The work of its General Information Programme was built upon the twin foundations of the NATional Information Systems (NATIS) and UNISIST, both of which in the 1970s actively encouraged the development of information policies at the national and international levels.

The present concern about the social impact of the information society means that in the next ten years there will be a steadily growing demand for an organization like UNESCO to contribute to the development of policies that ensure that we all obtain the maximum benefit from the shift towards information.

Further reading

The relative newness of the concept of information societies means that there are relatively few general texts available. One very good source of up-to-date information is provided by the Information Society Project Office of the European Commission. It can be found on the Internet at http://www.ispo.cec.be. A publication from the Office, *Information Society Trends*, provides a valuable source of up-to-date information on developments worldwide. The European Commission has established a High Level Group of Experts on the Information Society, whose interim report, *Building the European Information Society for Us All: First Reflections*, is an excellent review of many of the issues involved in the creation of information societies.

Information about the terms of reference of the Group and copies of its reports can be found at http://www.ispo.cec.be/hleg.html.

Many countries have policy statements that describe how they intend to reconstitute themselves into information societies. An overall perspective is provided by the policy framework adopted by the G-7 countries following their Summit on the Information Society, held in Brussels in February 1995. The report of the summit and other useful documents, including the background papers leading up to it, can be found at http://www.ispo.cec.be/g7/g7main/html.

For educational issues, see International Commission on Education for the Twenty-first Century, *Learning: The Treasure Within*, Paris, UNESCO, 1996, 266 pp. ■

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