

THE INFORMATION SOCIETY

THE ROLE OF NETWORKS AND INFORMATION

MORITZ FLACH

THIRD COMMITTEE

SIERRA LEONE

TABLE OF CONTENT

PREFACE.....	3
THE INFORMATION SOCIETY	4
DEFINITION.....	4
THE DIGITAL DIVIDE	4
THE LOGIC OF NETWORKS.....	5
CULTURAL DIVERSITY	5
REQUIREMENTS OF THE INFORMATION SOCIETY.....	6
INFRASTRUCTURE	6
EDUCATION AND LITERACY	7
CONTENT AND INFORMATION	8
THE FRUITS OF THE INFORMATION SOCIETY	8
THEORY.....	9
PRACTICE	9
IMPLEMENTING THE INFORMATION SOCIETY.....	10
TECHNOLOGY FOR SOCIAL INCLUSION	10
MODELS OF ACCESS	11
LITERACY.....	11
CONCLUDING REMARKS.....	12

Preface

As Information and Communication Technology (ICT) advances the transition to the information society accelerates. Societies around the world are required to adapt in order to be able to exploit the full benefits offered by this technological revolution. Nicolas Negroponte chairman of the MIT Media Lab once said: “We live in a world that has become digital and will continue to be increasingly digitised with the advent of ever more sophisticated ICT”. Clearly his vision has become reality and this irreversible development continues to accelerate. According to sociologist Manuel Castells it is the pervasiveness of ICT throughout the whole realm of human activity that qualifies the emergence of modern communication technologies as revolution similar to the industrial revolution¹. The term information society is accompanied by many others, e.g. network society, knowledge society, etc. However, these terms more or less refer to the same thing. Thus this paper will not try to stress the importance and correctness of one over the other but rather to develop an action plan for the world’s transition to an information society.

First, the term *information society* is defined and its implications are outlined. Second, the prerequisites for the transition to the information society are presented. Third, the benefits of a truly global information society are illustrated using a series of examples. The fourth section covers possible approaches to the problems arising in the transition to the information society. Finally, the conclusion integrates the results from the preceding sections into a cohesive whole.

¹ Castells, M.; *The Rise of The Network Society – 2nd Edition*; Blackwell Publishers, 2000

The Information Society

The information society –what is it? The first sub-section identifies the major characteristics of the information society before the most important issues around the information society are presented. Namely, the digital divide, the underlying network logic and the problem of cultural diversity are addressed

Definition

The term *information society* implies a central role of information. In this new era the source of productivity lies increasingly in the technology of knowledge generation, information processing and communication. Especially the utilisation of existing knowledge to generate new insights is ultimately a characteristic attributed to the information society's potential. This virtuous circle of positive feedback loops rests on two main pillars: information and technology.

The information society's ultimate input is information. But information has always been a crucial factor in societies around the world. The difference now is the availability of sophisticated tools in the form of ICT that enable processing, duplication, and dissemination of information and knowledge instantaneously and at virtually zero cost.

The Digital Divide

The *digital divide* refers to the inequality of access to information technology. Factors such as urban living, education level, economic class and industrialisation affect the digital divide. However, the distinction between cause and effect is at best a blurry one. It is obvious that the one reinforces the other – social misery contributes to the digital divide, which in turn accelerates the further backslide of the parties involved.

The problem needs to be tackled now since it aggravate exponentially over time. As hardware processing power advances according to Moore's Law², which predicts a

² An empirical observation that the speed of CPUs doubles every 18 months; first recognised by George E. Moore (Co-Founder, Intel Corp.)

doubling of processing power within 18 months the digital divide can be expected to be affected by this empirical observation as well.

The Logic of Networks

According to the network logic, which already today dominates live in developed societies, the societies left behind are excluded. The logic of networks is plain and simple but has far-reaching implications. There are basically only two scenarios. Either you are connected or excluded. In principle it boils down to this exclusionary aspect of networks: everything that has a certain value is linked up into the network and benefits from its inclusion. On the other hand, everything that has no value is excluded from the network and it is not given the chance to develop its value.

Exclusion often triggers resistance and aggression. Thus it is important to extend the network to include everybody who wants to be connected. This problem of exclusion is a serious issue as recent developments on various occasions have shown (e.g. G7 + Russia Conference in Geneva, 2001).

Cultural Diversity

To date, the Internet as the major application of state-of-the-art ICT is directed to a western audience. Indicators are the dominant use of English (~70% of the sites on the web are in English) as well as the western domination of content on the web. This push of western values, norms etc. can also trigger resistance as the terrorist attacks of the recent past have shown. Virtual imperialism might even aggravate the problem that currently exists and thus has to be abandoned – the sooner the better.

In order to make the web a success that is truly global in nature the content has to be tailored to the needs, cultural heritage and interests of the audience. Obviously the requirements and demands vary from society to society. Language and moral norms and values are paramount to these considerations. Both play a major role for the perception

by the user. Language helps to ‘get the message’ and norms affect the attitude towards the medium.

Requirements of the Information Society

The information society needs a set of requirements to be fulfilled. Otherwise the transition to an information society cannot at all begin or will experience serious problems in during its development and thus cannot fully live up to the expectations of its stakeholders. Three main requirements and inputs have been identified and are dealt with in the sub-sections to come. The three ultimate requirements are an ICT infrastructure, literate and educated people, and last but not least, content and information.

Infrastructure

The ultimate prerequisite to the information society is an infrastructure that enables the transition. Modern ICT networks need to be established for the information society to work. A major advantage of these kinds of networks is that the importance of space and time is diminished. It is diminished because communication, collaboration and cooperation can be done asynchronously and from basically anywhere. In order to be able to deal with the ever-increasing volume of information being processed bandwidth considerations enter the equation as well but are a secondary concern. Connecting societies around the world is of utmost importance since the networks can be improved and extended over time. The major focus thus must be development and global participation.³

It should be clear that the private sector assumes a key role in the establishment of these necessary infrastructures. This includes both, enterprises and civil society, in the creation of the information society. The fast diffusion of ICT can best be achieved by a competitive business environment that encourages investment. In turn, this implies that

³ Dryden, J.; *Setting the Content and Themes of the WSIS – a pragmatic approach by the OECD*; OECD, 2002

public and state initiatives can only be leveraged into mass participation if a favourable environment for investments prevails. A favourable environment rests on a sound legal framework and stable state institutions. Where these are not available they have to be established in the first place in order to attract investment in infrastructure.

Education and Literacy

Education and Literacy are other key ingredients to smoothen the transition to the information society. Literacy in this case refers to a broader definition than the mere ability to read and write. This broader concept takes into account the social context of literacy practice. The utilisation of modern communication technologies requires a certain skill level in order to be able to exploit the opportunities offered by these technologies. This level of, as well as the conception of what constitutes skilful reading or writing varies widely across the historical, political and sociocultural contexts.⁴ The best example probably is the changing literacy practices before and after the invention and diffusion of the printing press after its invention by Gutenberg as discussed by Marshall McLuhan.⁵ According to this broad definition literacy includes the skills required to master the processes being used to code culturally significant information.

Obviously, to be a citizen of the information society a set of skills is required. In order to develop or diffuse these skills around the world the developed countries hold an obligation to promote their development in harmony with the specific needs of the society under consideration. The developed world community assumes this role because literacy correlates positively with schooling and education but the availability of schools, teachers and educational material is very much dependent on the economic circumstances. First, less developed countries (LDCs) must be given a starting point to escape this vicious circle in order to be able to participate in the information age – a responsibility that the developed world must live up to in the years to come.

⁴ Warschauer, M.; *Reconceptualizing the Digital Divide*; FirstMonday, 2002

⁵ McLuhan, M.; *The Gutenberg Galaxy: The making of the Typographic Man*; University of Toronto Press, 1962

Content and Information

With the infrastructure and educational institutions in place, the third crucial aspects are the content and the information, which are being provided. Especially the content relevance is of importance. This is related to the aspect of cultural diversity mentioned earlier in this paper. Fundamental aspects include appropriate user skills, knowledge, attitude, the right kinds of community, social support, cognitive processing skills and many more. The content must be available in a local language and address the needs and interests of the subjects in order to become accepted and utilised. If well tailored to these requirements it might even start to evolve into positive feedback loops reinforcing the learning process and increasing the rate of participation. Local content will add much more value than standardised items that fail to attract the users' interest and subsequent participation. Only then people will strive to develop the requisite skills to use the technology and see the relevance of technology in their lives.⁶

The delivery of this content must be initiated by the developed world since LDCs do not have the means available to set it up themselves. Again, the private sector assumes a key role. As profitable opportunities are exploited the dissemination of the local content is expected to accelerate.

The Fruits of the Information Society

This section covers the prospective benefits of the information society in theory and practice. First, the theoretical benefits of an integrated information society are presented. The second section evaluates what benefits have already been appropriated. To do so, the United States have been chosen to illustrate what the information society can do for a country, especially in the economic sphere.

⁶ Seiden, P.; *Bridging the Digital Divide*; Reference and User Services Quarterly 39; Gale Group, 2000

Theory

Economic theory predicts that many networks increase in value as the network expands. Adding another node to the network increases the theoretical number of connections by $N-1$ where N is the total number of nodes in the network.⁷ This relationship prevails if all nodes can theoretically connect to every other node in the network, which is a reasonable assumption given the technological nature of modern ICT networks.

Furthermore, the digital nature of modern ICT facilitates information dissemination, communication, collaboration and cooperation by immense reductions of transaction costs. ICT has often been characterised as an enabling technology that is capable of exploiting previously unexploited opportunities. Obviously the inherent characteristics of digital networks are the major contributor of value for society. Availability of information increases flexibility and supports life-long learning another essential characteristic of the information society. The ultimate skill required in the information society is the ability to use existing skills in the creation of further knowledge and the ongoing sophistication of already existing skills.

Practice

In practice the benefits of the transition could already be observed, especially in the US. The persistent growth during the 1990s, coupled with low inflation and an unemployment rate below the natural level lead to a questioning of the Phillips curve. The Phillips curve depicts the relationship between unemployment and inflation as the two are inversely related to each other. However, this well accepted relationship did not hold during the 1990s in the United States. This success story can only be explained with the productivity increases brought about by the utilisation of ever more sophisticated ICT. During this decade the diffusion of information and communication equipment really accelerated and penetrated all spheres of human life in the country. Coupled with breakthroughs in hardware design and the establishment of broadband connections on a large scale the technological revolution remains the major explanatory variable for this unprecedented era of growth and prosperity.

⁷ Shy, O.; *The Economics of Network Industries*; Cambridge University Press, 2001

In retrospective, after the stock market bubble had busted, the conclusions presented above have to be considered a little more carefully but still remain true and valid. Whether all of the growth is only to be attributed to the advent of innovative ICT remains open to debate. What should be clear by now is the leading role that has been played by these new technologies.

Implementing the Information Society

In this section means to promote the information society are discussed. First, the role of technology to expand the network and increased participation are proposed. Next, models to increase access to ICT infrastructure are reviewed. Finally, initiatives to stimulate literacy as defined above are suggested.

Technology for Social Inclusion

According to the inclusion/exclusion logic of networks means to stimulate participation and inclusion are central to the success of the information society. Social inclusion refers to the ability to fully participate in society and control the own destiny. Related are factors such as economic resources, employment, health, education and culture. Furthermore, social inclusion is a matter not only of an adequate share of resources, but also of “participation in the determination of both individual and collective life chances.”⁸ Even if the poor do not have an equal share of economic resources they can have better opportunities to participate than is currently the case.

The concept of social inclusion reflects partially well the imperatives of the current information era, in which issues of identity, language, social participation, community, and civil society have taken central stage.⁹ This statement clearly shows the urgency

⁸ Stewart, A.; *Social inclusion: An introduction*; Macmillan, 2000

⁹ Castells, M.; *The power of Identity – 2nd Edition*; Blackwell Publishers, 2000

with which this issue must be addressed. The information age has already begun and LDCs run the danger to be left behind even further.

To be able to increase social participation and collective action has to be taken and the private sector must remember that it has a social responsibility to fulfil. It is not only about shareholder value and profit maximisation.

Models of Access

Models that aim to increase access to information and communication infrastructure most often are based on physical ownership. However, the initial purchase costs represent only a small fraction of the total costs of access. Further positions include software, connection fees, peripherals, maintenance and ongoing training just to name a few. However, these problems are rather secondary compared to the infrastructure issue. Again, the private sector plays a pivotal role in the establishment of the infrastructure. The physical availability is achieved if there is a market for the service or product under consideration. In order to achieve this ability and skills to utilise modern ICT are central to the success of models of access. According to this hypothesis the next section on literacy becomes even more important.

Literacy

Promotion of literacy needs to address various margins in order to be truly effective and successful. Crucial inputs to the development of literacy as demanded by the information society are a variety of skills, knowledge and attitude. Moreover, motivation and desire and confidence are required on the user side in to meet the requirements placed on the citizens of the information society. All these factors need to be present to make meaningful use of ICT. But the acquisition of literacy is not merely limited to these factors. In addition to cognitive aspects and culture, power and politics enter the equation as well.

Furthermore, literacy is a social concept. It involves the existence and availability of physical artefacts, content skills and social support.

In a nutshell, the four main resources required to be ready for the information society are:

1. Physical resources
(e.g. Computers and telecommunications)
2. Digital resources
(e.g. relevant content tailored to specific needs)
3. Human resources
(e.g. literacy and education)
4. Social resources
(e.g. norms and values, proper institutions)

It should be obvious by now that these four factors are affecting each other and consequently need to be considered together. If properly balanced against each other and in an integrated fashion they can form a virtuous circle of motivation and ambition. Improper handling will lead to the opposite, namely a vicious circle of frustration and depression.

The promotion of literacy to meet the requirements of the information society is the ultimate challenge for the international community. Success or failure in dealing with this issue will affect the efficacy of other initiatives such as the promotion of access and social inclusion. Thus extreme care and thorough planning is demanded in the promotion of ICT literacy.

Concluding Remarks

The development and the transition to the information society are already underway and must be considered an irreversible development. During the early days of the ICT diffusion into all spheres of human activity the consequences have been overlooked or where dealt with in an inappropriate fashion leading to the digital divide. This development is reasonably expected to aggravate if not addressed quickly and appropriately. The underlying logic of networks that dominates the information society is another force that contributes to the problem. Lack of customised content and the limited use of local

languages is another factor that has led to the digital divide and unequal participation on a global scale. Of course, in many cases the necessary infrastructure was lacking and thus the society has been excluded from the very beginning and did not even have the chance to participate in the first place.

The benefits of the information society are reductions in transaction costs, facilitated communication, cooperation and collaboration as well as omnipresent access to information. These advantages translate into increased productivity and thus economic prosperity. The size of the network is another factor, which positively correlates with economic value.

In order to exploit all possible benefits attributed to the information society an infrastructure needs to be established in the first place. The private sector assumes a key role to achieve this. Furthermore, a second margin that is crucial to the information society is the promotion of access and social inclusion. Ultimately, all these requirements are affected by the level of literacy that prevails in society. Literacy has been identified as the key margin, which has positive implications for the other margins mentioned before. Literacy increases the demand for an infrastructure and the corresponding products and services. The same is true for access and social inclusion of citizens.

Furthermore, stimulation of literacy is capable of starting a virtuous circle that will reduce the need for external support and financial aid. Taking another perspective initiatives to promote literacy are a way to support the less developed societies to help themselves – the only way to reduce dependency of these societies and eventually end the misery of the societies affected.

Bibliography

- Castells, M.; *The Rise of The Network Society – 2nd Edition*; Blackwell Publishers, 2000
- Castells, M.; *The power of Identity – 2nd Edition*; Blackwell Publishers, 2000
- Castells, M.; *End of Millennium – 2nd Edition*; Blackwell Publishers, 2000
- Dryden, J.; *Setting the Content and Themes of the WSIS – a pragmatic approach by the OECD*; OECD, 2002
- McLuhan, M.; *The Gutenberg Galaxy: The making of the Typographic Man*; University of Toronto Press, 1962
- Seiden, P.; *Bridging the Digital Divide*; Reference and User Services Quarterly 39; Gale Group, 2000
- Shy, O.; *The Economics of Network Industries*; Cambridge University Press, 2001
- Stewart, A.; *Social inclusion: An introduction*; Macmillan, 2000
- Warschauer, M.; *Reconceptualizing the Digital Divide*; FirstMonday, 2002