IV.3

Information Societies: Towards a More Useful Concept

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Information Society Plans

Almost every industrialised and industrialising state has, since the mid-1990s produced one or several plans for the Information Economy or the Information Society. They followed the United States 'Agenda for Action' (Information Infrastructure Task Force 1993); the European Commission's 'White Paper on Growth, Competitiveness and Employment', the Bangemann Report (European Commission 1993); and the Japanese report on 'Reforms Toward the Intellectual Creative Society of the 21st Century' (Ministry of Posts and Telecommunications 1994).

The plans show a high degree of political and economic attention to the development of information and communication technologies (ICTs) with the assumption, explicitly or implicitly stated, that they will have a decisively positive socio-economic impact via the development of a 'new economy'. A closer look at these information society programmes reveals that they are mainly traditional industrial policy programmes dressed up in new clothes in the sense that they address the problems and potentials of the traditional strongholds of different countries (Henten et al. 1996). This indicates that, whereas the restructuring effects of ICTs on today's social, economic and technical systems are beyond dispute, the character of these effects is not very well understood. We do not have a firm theoretical basis for analysing or predicting the effects of developments in ICTs.

A Theoretical Foundation

The terms Information Economy, Information Society, New Economy and Network or Networked Economy have been used to encompass a wide range of loose ideas, processes and implications (Bell 1973; Toffler 1980; Negroponte 1995). Most of the work in this area is characterised by deterministic and even naïve technological visions informed by few theoretical insights. Work that does have a solid theoretical foundation is mostly kept within the boundaries of academic institutions. This is so in the case of the seminal work by Fritz Machlup (1962) who began a discussion about the information economy, arguing that a growing proportion of Gross National Product can be attributed to information

activities and that a dominant part of the work force is engaged in information-related activities.

This work challenges traditional General Equilibrium Theory by emphasising the importance of increasing returns (Arthur 1994), but it addresses only a limited aspect of the implications of developments in the new technologies. A distinguishing feature of ICTs is that they play an important role in the value chain, not only within the ICT sector itself, but across the economy. Changes in the value chains have a combined influence on consumer behaviour and on production including their organisation. The resulting changes in the allocation of resources in society is often referred to as the information technology version of the information society (Duff 2000). It puts the emphasis on the technologies of information processing, storage and transmission rather than on knowledge production and communication flows. This is a common conception of the information society which highlights the informatisation of organisational processes and its implications.

Three Aspects of the Information Society

The observation that human development broadly is dependent on the development of the technologies and institutions of social communication is neither new nor original. The relationship between communication and other social structures was considered long before more recent discussions about the information society. Three main aspects can be distinguished (Garnham 1998). First, communication increasingly becomes dependent upon the mobilisation of and access to scarce resources. This leads to a need to understand how control is structured over these resources, but may also suggest that communication is a primary explanatory variable of these relationships. Second, all social communication depends upon and is shaped by technology leading to a search for how these technologies are shaped within a wider social and historical context. Third, the development of systems of social communication has been promoted by, and accompanied by, a class of communication experts.

Three rather different theoretical traditions are associated with each of these aspects. Harold Adams Innis (1950; 1951) and Bell (1973) provide examples of the first aspect. Innis has been described as one of the first and most influential media determinists. He argued that changing forms of communication lead to changes in the nature of society. Although Innis stressed the interdependence of the development of communication and general socio-economic development, the tradition he inspired came to stress communication as the primary explanatory variable. This was epitomised in McLuhan's (1964) statement: 'The medium is the

message'. In this view, the technology of communication ultimately governs socio-economic development in a one-dimensional way.

The second aspect is associated with the techno-economic paradigm tradition developed by Christopher Freeman and his colleagues (Dosi et al. 1988). This tradition argues against mechanistic economic models and for an evolutionary approach which stresses the interaction between environment (natural, built and institutional) and innovation as the basic nature of the techno-economic relationship (Freeman 1982). Innovations or systems of innovations are characterised according to their potential for changes in the techno-economic paradigm that have profound transformational effects throughout the economy. This provides a framework for analysis that provides insight into the potential restructuring effects of ICTs. However, the evolutionary diffusion processes are described as a 'general system dynamic' which underpins the 'expression' of a techno-economic paradigm and the relative cost structure of production (Freeman 1982). As a result, this approach does not provide a tool for understanding the relation between structures of innovation and the character of ICTs.

The third aspect is associated with the work of Manuel Castells (1996; 1997; 1998). The basic claim is that the industrial society is being transformed by a new mode of production; informational capitalism. The consequences of this transformation are explored for the social dimensions from mass communication to global power restructuring. The transformation is analysed using a labour theory of value framework with its virtues and weaknesses. A major weakness in this context is that it is inherently technologically deterministic. For example, it leads to the claim that ICTs have a direct impact on the socio-economic totality by creating a 'culture of real virtuality' (Garnham 1998).

The Need for a Demonstration

This characterisation of some of the dominant theories of the information society suggests a stylised fact (or assumption). Most theories of the restructuring effects of ICTs on social, economic and technical systems do not fully explain the nature of the changes that are underway. William Melody's efforts to address this deficit clearly stand out (see also Miles and contributors 1990). Melody's point of departure was neither an apocalyptic vision nor a technologically deterministic analysis, but rather reflected an understanding that changes in the telecom industry opened the possibility for profound socio-economic changes and that there is a close interdependence between these two sets of changes (see Melody 1975; 1990a; 1996a,b; 1999b).

He recognised that, while ICTs predominantly are shaped and developed as a response to corporate needs, they can also be used for broader public goals such as greater participation in the processing of information, the production of knowledge and the sharing of meaning. The shaping of telecom reform is crucial to the potential of this process and an information society is understood as one where the possible benefits of new ICTs are increased and the risks of loss and harm are reduced (Melody 1996c). It follows from this definition that the development of the information society can only meaningfully be analysed as a unique construction in each country.

As a stylised fact, the information society is seen as being constructed by two interdependent key components: the telecom facility system, and by information content and communication services. The telecom system is a critical component and establishing it is a far more complicated task than simply establishing a superhighway or a broadband network. Ultimately, however, it is the system's capacity to accommodate new and increased requirements for future services that opens up the potential for major benefits. This involves a number of issues from design of network standards for components and terminals, to intellectual property rights, privacy and security and, not least, development of a skills base which is crucial for the application of new services. These applications lead to complex restructuring of organisations and other institutional changes. All this occurs within highly dynamic structures. Melody's great achievement has been to develop an adequate framework for analysing these developments empirically.

This framework calls for an analysis where the supply side is made up of the technical capacity including equipment, telecom infrastructure and services terminals and skills and content. The demand side is comprised of applications in organisations (professional use involving services, skills, organisational and sectoral reforms) and in households (demand or need, skills, income, changes in habits and reallocation of resources) (Melody 1996c: 252-3). Each element on the supply side and the demand side is characterised and compared.

Conclusion

This framework and methodology has been applied with very interesting results in a set of studies for the Danish Telecom Agency (Melody 1999c; 2000; 2001c). The information infrastructures in different countries are analysed using indicators such as Internet services development, preparation throughout the economy for applications of new services, and the expansion of bandwidth capacity. The results have drawn attention to the fact that the development of the information society is not only a question of international technological and structural trends, but also of priorities and investments specific to each country.

Rather than a theory of the totality of the restructuring effects of the ICTs on the social, economic and technical system, Melody seeks to establish an empirical demonstration of the impact of ICTs and of the conditions necessary to realise an information society where broader public ends, such as greater participation in the processing of information, the production of knowledge, and the sharing of meaning, are achieved. This approach has been successful in the sense that it has been used within the political and administrative systems in Denmark to develop policies and procedures for reactions to the challenges and potentials suggested by developments in the new technologies and services (Telestyrelsen 2000).