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## The Information Society- introduction to vol. 2

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## **The Information Society**

### **Critical Concepts in Sociology**

#### **Editor's Introduction**

### **Volume 2, Information Societies: Knowledge, Economics and Organization**

Knowledge has been at the heart of economic growth and the gradual rise in levels of social well-being since time immemorial. The ability to invent and innovate, that is to create new knowledge and new ideas that are then embodied in products, processes and organizations, has always served to fuel development. (David and Foray, 2003: 20)

#### **Knowledge and Economics**

In this volume the focus is on the relationships between knowledge and the economy and organization that are interwoven with conceptions of 'The Information Society' and related ideas such as 'The Knowledge Society'. The papers in the first part centre on economic perspectives and are followed by papers focusing on new open network models of organization, works on the digital divide, and lastly, papers representing research on organizational change.

Economists have concluded that knowledge creation is an important driver of the economy, typically, making little distinction between information and knowledge. From this perspective, it is a very short step from The Information Society to The Knowledge Society, the terminology most often used in the papers in this volume. Of course, ideas about knowledge are not the exclusive preserve of economic analysis

and there have been many efforts in the policy arena to identify the implications of the labels ‘knowledge society’ and ‘knowledge economy’. For example, UNESCO’s (2005: 5) definition emphasizes capabilities and the variety and especially the plurality of societies: ‘Knowledge societies are about capabilities to identify, produce, transform, disseminate and use information to build and apply knowledge for human development’. This contrasts with OECD’s (1996) definition of a knowledge-based economy as one that is very strongly dependent on production, distribution and use of knowledge as embodied in human beings and in *technology*. These labels and the terms network economy and network society are not entirely interchangeable. However, those who use the ‘knowledge’ terminology are likely to highlight features that are dependent on digital information and the cognitive processes and learning that are necessary to transform information into useable knowledge.

The economist’s emphasis on the knowledge-based economy reflects an interest in intangible sources of economic value. As Paul A. David and Dominique Foray (2003: 20, 27) indicate:

The crux of the issue lies in the accelerating (and unprecedented) speed at which knowledge is created, accumulated and, most probably, depreciates in terms of economic relevance and value. This trend has reflected, *inter alia*, an intensified pace of scientific and technological progress. ... Knowledge-based activities emerge when people, supported by information and communication technologies, interact in concerted efforts to co-produce (i.e. create and exchange) new knowledge.

## *The Problem of Information*

Developments in information societies pose interesting questions for market analysis. This is because, from an economic vantage point, information has peculiar characteristics compared to tangible goods. Information is intangible, non-rivalrous (one can give it to someone else and still possess it) and non-excludable (it cannot be taken back once it has been given and receivers can pass it on without giving it up). It is difficult, therefore, to analyse market dynamics where information plays a significant role because conventional economic models are not designed to take account of these features of information. In particular, once information is produced it requires considerable effort to prevent its being passed on to others, while information and communication technologies (ICT) make the costs of information reproduction negligible, creating a paradox over how to finance its initial (first copy) production costs. Although George Stigler (1961: 213) was quick to realize this, he suggests that mainstream economics has been reluctant to challenge the uncertainties that the growing dependence on information creates for economies:

One should hardly have to tell academicians that information is a valuable resource: Knowledge *is* power. And yet it occupies a slum dwelling in the town of economics. Mostly it is ignored: the best technology is assumed to be known; the relationship of commodities to consumer preferences is a datum. And one of the information-processing industries, advertising, is treated with a hostility that economists normally reserve for tariffs and monopolists.

Stigler was mainly concerned with information and the determination of prices in markets.<sup>1</sup> Another economist who specialized in the study of the economics of information, Donald Lambertson (1986, 1971), identified further issues, including those relating to Information Society debates. He warned that an over-emphasis on information processing technologies could lead to a situation in which much information is processed, but little knowledge creation or learning occurs. This might be the outcome if too little attention is given to human capital and to the importance of different kinds of knowledge. As the Internet has become the site of growing volumes of commercial activity, the argument that information is an ‘experience good’, that is, that the ability to make choices about information depends on the experience of the person choosing, was discussed and popularized in the economics and management literatures, notably by Carl Shapiro and Hal Varian (1999) in their book *Information Rules*.

### *Productivity Paradox*

Economists seek to understand what factors lead to increases in productivity, that is, the possibility of producing more with constant capital and labour inputs. Increasing productivity is sufficient for economic growth, a central goal (or bias) of capitalist societies. Together with those offering optimistic views of the Information Society, economists have sought to attribute increasing productivity to technological innovation, especially in ICTs. Because these technologies can be employed in many different contexts to improve productivity, Timothy Bresnahan and Manuel

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<sup>1</sup> In 2001 George A Akerlof, University of California Berkeley, A. Michael Spence, Stanford University and Joseph E Stiglitz, Columbia University in the United States were awarded the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, for their work on the economics of information, specifically, on markets with asymmetric information.

Trajtenberg (1995) coined the term General Purpose Technologies (GPT) which has been taken up by others (e.g. Helpman, 1998 and Lipsey et al., 2005), to explore processes of growth and development. Bresnahan and Trajtenberg (1995: 84) argued that, ‘most GPTs play the role of “enabling technologies”, opening up new opportunities rather than offering complete, final solutions’. Other economists have extended the use of the GPT terminology to identify earlier technologies with a pervasive effect such as the steam engine and electricity. David (1990), for example, suggested that there might be similarities in productivity growth between the eras of electrification and computerization.

The implications for firms, industries, national economies and the global economy of the convergence of digital information and communication technologies and their application to create global networks and new means of economic and social interaction, are still being worked out. Pronounced differences in the economic performance of different countries cannot be explained fully by their levels of investment in new digital technologies. For example, the implications of investment in these technologies for changes in productivity are not straightforward. Robert Solow (1987: 36) challenged his colleagues by declaring ‘you can see the computer age everywhere but in the productivity statistics’, prompting contributions from economists such as Moses Abramovitz and Paul A. David (1996), Robert Gordon (2004), Dale Jorgenson and Kevin Stiroh (2000) about the sources of productivity improvement. Other economists, such as Erik Brynjolffson (2003) in the United States and Nick Bloom and John Van Reenen (2007) in Britain, are conducting enterprise-level studies of productivity to account for aggregate patterns of

productivity change and to identify the contribution of specific business processes to performance.

Much of this research is quantitative, but there is a strand of research in this area which adopts a multi-method approach, bringing together micro- and macro-level empirical analysis. In Europe this is represented, for example, by the work of Christopher Freeman (1982, 1988, 1990, 1997) and others, including Luc Soete and Carlota Perez (1983), which was influential in debates about knowledge economies and the way technological innovations lead to shifts in technological 'style' or in 'techno-economic paradigm' (Perez, 1985). The work of these authors explained how changes in micro-electronics technologies could have destabilizing effects on the economy, and led to research on how technological change influences productivity and economic growth. They argued that as a new technology spreads, a new 'common sense' takes hold which begins to pervade all aspects of individual and institutional endeavour. Change is disruptive, resulting in the obsolescence of skills and qualifications, the dislocation of people, and wealth creation for some and not for others, and therefore needs a policy response.

### *Institutional Dynamics*

Looking at information societies from a perspective that combines insights from economics and political theory, reveals more of the features of institutional dynamics. For instance, Dallas Smythe (1977, 1981) was concerned with inequality and what he thought was a 'blindspot' in Western Marxist analysis, that is, the failure of scholars to understand that the commodification of information relies upon the willingness of

audiences (users) to market goods and services to themselves for the benefit of advertisers and information producers. Smythe's approach sparked a debate (Murdock, 1978) which is relevant today as online marketing comes increasingly to depend on audiences or users who are willing to co-produce information and to click through advertising-supported content.

Other work related to information societies and their institutional dynamics includes William Melody's (1985, 1991) research on oligopolistic competition and the behaviour of transnational corporations in the information economy and his particular interests in the mechanisms of unequal exchange and human capital formation. Others working in this tradition include Hernan Galperin (2004) who analysed the strategic interests and incentives that motivate individuals within policy making institutions to influence outcomes in the information and communication marketplace. My work has also addressed the strategic interests of those shaping policy institutions and those active in the private sector (Mansell, 1997). Antonelli et al. (2000), more centrally within economics rather than political economy, provide an account of the relationship between knowledge production and ICT, also signalling the importance of the co-production of knowledge and its need for sophisticated human capabilities.

The knowledge economy is said by many to depend on content creation, but this may not be the main consideration as the knowledge-based economy expands, at least in terms of economic growth. Andrew Odlyzko (2001) argues, for example, that 'content is not king' and that the real driver of the economy will be communication services. This raises questions about whether Web 2.0 developments, which rely on the co-production of content and information, will support online business models organized



around the willingness of the majority of users to produce. In a broader context, content industries, or what are often called the ‘creative industries’, have been examined from an institutional perspective by Andy Pratt (1997) and Paschal Preston and Aphra Kerr (2001).<sup>2</sup>

### *Knowledge Codification*

Information cannot be transformed into useful knowledge without a process of learning. In the economics literature there is debate about whether the possibility of codifying knowledge using advanced digital technologies means that learning can now occur more easily, assuming the learner has the appropriate literacy and access to knowledge repositories. Some argue that tacitness (knowing more than one can say) still matters and that a rapid expansion, on a global basis, of the opportunities for learning will not occur, at least not in a way that enhances the opportunities for the poor.

The issue here is whether digital technologies can be used to represent knowledge as information, that is to store and reproduce information in a way that will enable more people to gain knowledge without the benefit of interaction with others who are already knowledgeable. This is examined by Edward Steinmueller (2000) and by Robin Cowan et al. (2000), who argue that methods for such ‘knowledge codification’ exist and can be extended, while Björn Johnson et al. (2002) are more sceptical that

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<sup>2</sup> Healy (2002) provides a survey of the literature on digital technology and cultural goods; while Deuze (2006, 2008) examines digital culture in terms of participation and the experience of work.

digital codification of information will make a substantial difference to learning and, ultimately, to knowledge creation and wealth creating opportunities for the poor.

### **Open Networking**

Discussion about the potential of the knowledge economy to facilitate new opportunities for learning and knowledge accumulation is also found in the literature on the benefits of open networks and information sharing. Magnus Bergquist and Jan Ljungberg (2001) surveyed the literature attempting to explain individuals' collaboration in open source software development projects, while Josh Lerner and Jean Tirole (2005) advanced a specific economic theory of such individual collaboration, and Brian Fitzgerald (2006) reflected on these activities from the software engineering perspective.

Others including, David Lancashire (2001), Stefan Koch and Georg Schneiger (2002), Erik von Hippel (2001) and von Hippel and Georg von Krogh (2003), have done extensive work on processes of innovation and learning in these open software projects. They examine the new models of innovation and the extent to which altruism and other factors support the sustainability of open network models. And a focus on the potential benefits of the distributed organization of work within these settings and for innovative activity and new sources of wealth creation is present in the work of Jean-Michel Dalle and Paul A. David (2007) and David and Francesco Rullani (2008).

### **Inequality and the Digital Divide**

Notwithstanding the opportunities created by the spread of digital technologies, the increasingly global reach of the Internet and mobile telecommunication networks and open collaborative models for innovation and learning, there is concern that these developments also give rise to new sources of inequality. Many authors argue that the digital divide terminology emphasises arbitrary dualisms (information haves and have nots). It is argued that it is the structural dynamics and power relations in a given society that influence the terms by which people may be able to participate in their information societies. Mark Warschauer's (2002, 2004) work has been influential in calling for an analytical framework that focuses on social inclusion, rather than on arbitrary divides. Jan van Dijk's (2005) and Pippa Norris's (2001) work highlights the need for comparative research and studies to address the shortcomings of digital divide research: for example, van Dijk's (2006: 1) claim of 'its lack of theory, conceptual definition, interdisciplinary approach, qualitative research and longitudinal research'.

Contributors to research on the digital divide include those who argue that eventually the new technologies and applications will 'trickle-down' to reach even the poorest users (Compaine, 2001) and those who claim that poverty will prevent effective access and participation in the absence of market intervention. Others argue that the design, cost and application of new technologies must be tailored to specific needs and choices (Couldry, 2003). Patricia Arriaga's early work, criticizing the idea of The Information Society, is a strong statement, consistent with Couldry's viewpoint:

it cannot be assumed that the effect on capital accumulation of ‘informatization’ policies and programmes – that is, the massive introduction and utilization of information goods and services in all spheres of social life – would be the same for every social formation regardless of any other economic, political and social determinants. ... The information society is not the clean, antiseptic and apolitical society we have been told it is, where democracy and freedom will rule. Capitalism is still the name of the game and profitability its main drive. (Arriaga, 1985: 294)

Ernest Wilson (2004) demonstrates how difficult it is to address the sources of exclusion for those located in areas with severe structural and institutional constraints. A comprehensive review of these constraints is provided by William Drake and Wilson (2008), who also provide insight into the policy measures that may encourage greater equity in, access to and use of global networks. Eszter Hargittai’s (2003, 2004) work illustrates empirical research on the way the spread of the Internet varies in the industrialized countries, pointing to factors that may explain this. This work is very instructive, because it should sensitise those who envisage a rather globally homogeneous Information Society to the fact that developments in the wealthy countries have been quite heterogeneous – thus, this should also be expected for developing countries.

A major shortcoming of research in this area is the comparatively small amount of work on the poorest countries. Lishan Adam and Francis Wood (1999), Johannes Britz et al. (2006), and Leo Van Audenhove et al. (1999, 2003) go some way to

redress this.<sup>3</sup> Many of the policy measures aimed at addressing divides are influenced by neo-liberal assumptions about markets and regulation, an issue discussed by Jairo Lugo and Tony Sampson (2008) in their discussion of ‘other pathways’ to overcome exclusion. My own research (Mansell, 1998, 2001, 2002, 2006) also highlights the inappropriate transfer of assumptions about information societies and the uses of technologies in developing country contexts.

### **Widespread Organizational Change**

Early studies on innovations in data processing leading to the automation of public services were conducted in the United States, for example, by Kenneth Kraemer et al. (1980) who suggested that the introduction of information systems might lead to both centralized and decentralized systems, with contradictory implications for policy and practice. Rob Kling’s (1991) work was influential in encouraging a focus on the social and cultural implications of the information systems used within public and private sector organizations, as was Robert Galliers’s (1991) work on strategic planning. In taking issue with technology driven approaches, Galliers (1991: 60) argued that: ‘if one takes a socio-technical perspective on information systems (i.e. a more holistic stance), it can be argued that information systems are as much concerned with human activity and organisation as they are with technology – if not more so’.

A socio-technical approach was central to Claudio Ciborra’s (1992, 2002) analyses of information systems and his suggestion that ‘tinkering’ best characterizes the design and implementation of these systems. He underlined the need to understand the

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<sup>3</sup> Initiatives to map the developments in information and communication technologies in sub-Saharan Africa and Asia include Research ICT Africa at <http://www.researchictafrica.net/> and LIRNEAsia’s initiative at <http://www.asianict.lirneasia.org/about.php>. See also Banerjee & Logan (2008).

phenomenological experience of interaction with technology.<sup>4</sup> Research in this tradition focuses on the situated character of information systems implementation and on processes of negotiation and meaning creation within communities. Wanda Orlikowski (1992, 2002) adapted Anthony Giddens's structuration theory in her analysis of how new practices are developed. This work was complemented by Susan Leigh Star and Karen Ruhleder's (1996) research on the infrastructure (technological and organizational), which provides insights into the reasons for success and failure in the development of information systems.

The implications of new ICT systems, in the light of associated organizational changes in the workplace have been extensively investigated by Shoshana Zuboff (1988, 2004), and also by Michael Brocklehurst (2001) through his research on homeworking, which highlights the reproduction of power relations.

## **Conclusion**

This volume of Master Works on The Information Society focuses on the economic features of information and factors that contribute to a growing emphasis on the dynamics of knowledge-based economies – accentuating the role of markets and highlighting that information is a peculiar resource. The knowledge-based society perspective of The Information Society also underlines the way that organizations that are becoming more dependent on information operate. The problems created by inequalities in capabilities to design, access and use new ICT – often described as the

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<sup>4</sup> Lave and Wenger (1991), Wenger (1998) and Brown and Duguid (2000) offer accounts of how communities and networks of practice evolve and sustain themselves. These have been applied in analyses of how network technologies and information applications are used by social actors.

result of a digital divide - are illustrated here, as is research on the power relations articulated within organizations when these technologies are introduced.

The papers selected for this volume focusing for the most part on economic issues, treat markets as institutions embedded in specific political, social and cultural contexts. This work points to the variety and uncertainty accompanying the evolution of today's information societies as does the work of mainstream economists who tackle the peculiarities of information markets. The difference lies in the former's openness to the idea that the situated aspects of ICT systems within organizations require detailed empirical analysis if they are to be understood. It is clear from the works collected in this volume that there are no inevitable consequences associated with the evolution of information societies. However, there are dominant models and visions that require empirical assessment.

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