

# **Social Study of Information Technology Workshop**

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**Towards a Theory of Network Society - from Sociology to New Informatics**

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What can information systems learn from the social sciences? The discipline information systems has been dominated by a combination of American engineering science, with its belief in methods and systems science, and management science, with its rationalistic, economic man approach to social organizing. The social sciences, and particularly sociology and ethnography, have an important role to play in correcting this naive, abstract, rationalistic perspective with a much more complex, concrete, irrational, social perspective. The mechanistic world view of information systems needs a healthy antidote of romantic thinking (to use the terminology of Computers in Context).

And yet, I don't want to use this paper to explain how the discipline information systems will change under the influence of romantic, social thinking. I want to go further and I want to use a Scandinavian perspective on the discipline to do so. In Scandinavia, information systems has already changed in the way indicated, and this change has been going on for decades. One aspect of the so-called Scandinavian approach is such anti-American interest in more Romantic ideas and ideals.

Instead, I want to argue that both information systems and the social sciences more generally have been much too slow in appreciating the (changing) role and impact of information technology.

In spite of being a practice oriented discipline - or perhaps for this very reason? - developed to support the practice of information systems development, information systems as a discipline got stuck in a particular (administrative) use of information technology and has been unable to adjust to new waves of information technology use (such as the personal computing of the 1980s, to give just one example).

Sociology, and social science more generally, is a theory of the industrial revolution and industrial society. To the extent that it has taken even a marginal interest in technology, it has remained stuck in an understanding of technology as machines, as production technology. Now that information technology is taking us out of industrial society we need a theory of the information technology revolution and a theory of information society. And that theory has to realize that computers are not machines, that information technology is not for production but for services.

The IT revolution of the 1990s has given birth to a new information technology use discipline, taken over some of the role played by information systems in relation to enterprise. In Sweden, we call it, simply, informatics. It is a discipline that does ethnographic studies of IT use, develops prototypes and applications, exemplifying new sorts of services, typically today running on mobile terminals, or interfaces for such terminals. In this paper, I want to say something about this new discipline, how it relates to information systems and computer science, and what it can contribute to the social sciences more generally.

Much work has already been done in philosophy, architecture, literature, and sociology on developing a theory of postmodern, postindustrial society. What informatics can contribute to this theorizing is mainly (a) a general appreciation of the role of technology in shaping society and in shaping our understanding of society (section 1 below); (b) an account of the details of the information technology revolution, how it unfolds, the stages it goes through, and the changes it brings (section 2); (c) an improved understanding of how the social sciences get infused with technology and begin to develop

a design, engineering interest (section 3); and (d) a reinterpretation of recent postmodern theorizing in view of the new information technology (section 4).

## **1 Technology and Society**

Technology is the most powerful change agent in society. And yet, the social sciences have largely neglected technology and its role as a social force. Postmodern sociology has given us good analyses of postmodern society, but where is the technology in these analyses? The details of technology in everyday life: photo copiers, laser printers, personal computers, telephones, mobile phones, walkman, and so on. Once we have seen how technology shapes modern society we will not remain content with sweeping and general references to the role of technology, with abstract discussions pro and con technology determinism, or the social construction of technology. And we will not take for granted that technology is a black box phenomenon that we can refer to without examining the details of its use and use potentials. Instead, we will realize the importance of the perspective on society (by necessity) characterizing the discipline of archeology.

In order to see the role of information technology in society, we shall have to look closer at its use. The first thing we then notice is how radically that use has changed and developed in the fifty years we now have had computers. It was natural, in the beginning, to think of computers as machines. The first computers were machines and the role they played were those of machines, automating what used to be human tasks and activities. Artificial intelligence, information systems, expert systems were all examples of this.

This does not mean that it was so smart to use the industrial process as metaphor for what computers do: information processing with information as the material. But it was a handy metaphor and it made the computer a natural ingredient in modern, industrial society. But that has changed now that we have understood that rather than supporting industrial production, computers have taken us out of industrial society into a new sort of economic order.

Machines are production technology, IT is service technology. In industrial society focus is on the production of goods, in information society focus is on the delivery of services. We buy functions, services, experiences rather than goods. IT is a light weight technology for services, media, experiences. Certainly we can go on to focus on more machine like aspects of information technology, like automation, standards, infrastructure, and so on, but then we have to realize that we are dealing with marginal aspects of a technology that is developing away from such aspects. We are still waiting for someone to give us an analysis of postmodern society in terms of its technology, we are still waiting for the Marx of post-industrial society. The first pretender to this epithet, Manuel Castells, is stuck in traditional Marxism, defining the information economy in terms of information production (1996, p. 67). Castells relies on Marx' notion of mode of production to define information society, and fails to see that this society is not really a production oriented or production based society at all. If we want to understand the role of technology in post-industrial society, we have to break out of industrial age thinking.

We can continue to use Marx as an inspiration, but we have to be careful not to use his machine metaphors (like infrastructure) to force information society into an industrial mold. We can continue to be historical materialists, but we have to be careful how we understand the role of the material in a nomadic society, and refrain from thinking of it as a "basis." And we have to be careful in our understanding of materialism itself when we go from agricultural and industrial societies creating wealth by moving and transforming matter to information and media societies in which fortunes are made by exploring and exploiting virtual worlds. It is difficult to express this Marx's view of society as an organization of the use of technology, to avoid speaking of society and technology, as if they were two separate phenomena. I like Latour's expression: "technology is society made durable" (Latour 1992), but that expression may of course be misleading too. It is more true of industrial society than of information society with its light weight technology, in comparison with which human habits seem terribly inert.

## **2 The IT Revolution**

The IT revolution can be understood on the model of the industrial revolution. In the industrial revolution, machines entered farming societies and there was no longer need for people on the farms. People left the farms and moved to the factories in the cities. The IT revolution proceeds in stages

(like the industrial one did too). Thus far we have seen two such major changes. First, computers entered the factories of industrial society, making people leave the factories to go to the offices to work with computers, laser printers and copying machines. Later, when the use of IT, i. e. email, www, and mobile phones, increased, people began leaving the offices to begin working on the market. The first use of computers was for numerical analysis. With information systems a new discipline was born. With mobile services yet another discipline appeared.

When the focus shifts from information systems to IT applications and services, then the discipline information systems will be replaced by a new, more application oriented discipline, developing mobile services for the nomads of information society. The organization, administration, accounting focus of information systems changes into a focus on sales, customer relations, marketing.

The modern organisation is a creation of the industrial revolution. Systems thinking is the adequate foundation for theorising about that organisation. With information systems it became possible to control such organization in detail, and Management Information Systems was the discipline developing theories and methods for how to do this.

When information technology is changing the focus of business from production to sales, by automating industrial production on the one hand and creating a global market on the other, then the factory organisations of industrial society will have to change too. The opaque factories at the outskirts of society, so typical of industrial society, will change into mobile, distributed sales companies with no clear boundaries to their environment. Rather than using information technology to control their internal organisation, they will prefer to use information technology as a public communication medium to participate in the world.

### **3 Artificial Science**

Technology is a social phenomenon. Traditional engineering tried to abstract from the social dimensions of technology, and the social dimensions suffered. At the same time the social sciences largely neglected technology and its role as a social force. It has taken a long time for most of us to really appreciate what Marx saw clearly, that society is best understood as technology, an organization of the use of technology, and ideas about technology and its use. With such a materialistic conception of society as the basis, it is time to bridge the gap between engineering and society. Technology as a social phenomenon is the bridge and it will merge engineering and social science into a design oriented, artificial science. Informatics is an artificial science. Sociology is either history or natural science.

### **4 Postmodern Society**

The IT Revolution is what drives the postmodern movement. Postmodernism is an example of how philosophy begins to change well before the technical revolution driving the change is clearly visible. Modern philosophy is industrial age philosophy - the mechanistic world view. This philosophy was developed together with notions of machines and mechanics already in the 17th century. It will have to change when we leave industrial society behind. We have to realise that the social sciences were established, in the midst of the industrial revolution, to explain that revolution, as theories of modernisation and industrialisation. As we leave industrial society behind, there will be need for a more fundamental rethinking of the conceptual and theoretical frameworks of the social sciences. In informatics, we have to get rid of systems thinking, and we have to develop new ways of thinking about technology.

Postmodern sociology tends to stress the lightness of being. Life in welfare society has lost the stability it had on the farm and in the factory. Social relations turn into casual affairs, organizations become flexible organizing. People become nomads - both physically and socially - surfing on top of the world rather than being cogs in a social machine. Rather than fulfilling one's destiny or pursuing a career, postmodern beings are waiting for opportunity to knock. Life is a series of auditions, tests, a cocktail-party.

Sociology could build on a well tested understanding of machine technology. The mechanistic world view was developed already in the 17th century and it provided a good understanding of machines, mechanisms and the nature of a mechanized society. When the machine revolution really got going in Europe, in the 19th century

Do we have something similar when it comes to information technology? Symbols, services, media, sales, fashions, brands, communication. An analysis of networking in terms of opportunities, cocktail-parties, life as a tourist. Philosophy and life without foundations. Wie Schiffer sind wir, die ihr Schiff auf offener See umbauen müssen, ohne es jemals in einem Dock zerlegen und aus besten Bestandteilen neu errichten zu können.