THEORIES OF THE INFORMATION AGE

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Summary

This chapter covers theories of the modern information age in a number of steps: First, there is a description of some of the intellectual precursors that give rise to the notion that we are living in an information or knowledge age. Second, an enumeration of some of the perspectives that lead to the idea of modern societies as knowledge or information societies. Third, the usage of the term knowledge, defined as a capacity for action is explicated in greater detail. Fourth, the core sections of the article deal with the theory of the knowledge and the information society as well as some of its competitors such as the network society. The article presents the argument that advanced societies are best conceptualized as knowledge societies, last but not least because economic growth, social change and inequality generally but also the nature of social conflicts and identity formation are increasingly generated by knowledge. That is, knowledge does not merely open up the secrets of nature and society but is the becoming of a world.

1. Introduction

It is virtually impossible to transcend the contest and the conflation of the terms information and knowledge in much of the discussion about the information age. However, in the context of an examination of some of the important theories of the information age, it is unavoidable to take up the contentious question of the meaning as

well as relation between knowledge and information. The main puzzle at this juncture of the theoretical discourse on the role of knowledge and information in social action is whether it is even possible and sensible to distinguish between them. The conceptual distinction between information and knowledge, is in any case at best relative, appears to be most difficult, if not impossible to sustain in the light of the fact that these notions are often employed as virtual equivalents.

Many dictionaries simply define information as a certain kind of knowledge. A similar symmetry between information and knowledge is evident if one defines information as "knowledge reduced and converted into messages that can be easily communicated among decision agents". In other definitions of information and knowledge, information is simply conceptualized as a subspecies, as an element or the raw material of a number of knowledge forms. For example, information is codified knowledge as well as indirect knowledge, or knowledge is defined as the cumulative stock of information; similarly, knowledge in general is seen to extend to "tacit knowledge" (a term used by Polanyi) and other forms of knowledge. In short, the outcome of many efforts to define knowledge and information appears always to lead to the same result: knowledge and information become indistinguishable.

2. The Origins Of Information/Knowledge Age

John Stuart Mill (1806-1873) in *The Spirit of the Age*, published in 1831 after his return to England from France, where he had encountered and taken in the philosophy of history in the political thinking of the St.-Simonians and of the early Comte, affirms his conviction that progress is possible in society as the result of the intellectual accomplishments of his own age. But progress and the improvement of social conditions are not, Mill argues, the outcome of an "increase in wisdom" or of the collective accomplishments of science. They are rather linked to the general diffusion of knowledge throughout society as Mill wrote in 1831:

Men may not reason, better, concerning the great questions in which human nature is interested, but they reason more. Large subjects are discussed more, and longer, and by more minds. Discussion has penetrated deeper into society; and if greater numbers than before have attained the higher degrees of intelligence, fewer grovel in that state of abject stupidity, which can only co-exist with utter apathy and sluggishness .

Mill's observations in the mid-nineteenth century, a period he regarded as an age of profound moral and political transition, and in particular his expectation that such beneficial consequences for society as increased individual choice for a greater number of people (and hence emancipation from "custom) will be the result of a broader diffusion of knowledge and education but not necessarily scientific knowledge in the narrow sense of the term resonates with the idea of modern society as a knowledge society.

By the same token, the notion that we have begun to live in an information age often refers to the same historical period, yet the notion of the information age emphasizes the growing presence of certain technical devices and tools in society that allow the much more rapid communication of information and knowledge than was the case in previous

periods. Thus, in a recent exhibition devoted to the "Information Age" in the Smithsonian National Museum of American History, it is argued that the modern information age began with Samuel Morse's invention of the telegraph transmitter and receiver in 1837. It was the first instrument to transform information into electrical form and transmit it reliably over long distances.

The promise of more knowledge and information cannot really be separated either from its counter image, for example from the fears and the darkness associated with a lack of knowledge or, from the allegedly mistaken or false use of knowledge even when it is available in abundance. The general point here is that much is gained from an analytical point of view that confronts a particular perspective with its opposite, its negation or competitor. Such conscious confrontation also serves, as a useful reminder that knowledge tends to be contestable and is developed is response to contenders that after a time may only be implicitly accessible, especially as a certain form of knowledge acquires authority and power. The mixture of fears and warnings with blessings and compliments exhibits a trait of virtually all forms of knowledge, namely its controversial nature and the fact that it was, and is, developed in opposition to other forms of knowing. The exclusion of other means and purposes is inevitable. In the case of knowledge, the contestable context is provided for, on the one hand, by arguments that question or promote knowledge per se and, on the other hand, by opinions that at times differ sharply on the uses to which knowledge ought to be put. In contemporary society, doubts about the social consequences of knowledge are bound to give rise to a new field of political activity, namely knowledge politics concerning with the regulation and control of new knowledge and technical artifacts.

3. Knowledge Society Predecessors

In retrospect, some *ancient societies* may be described as knowledge societies. Ancient Israel, for example, was founded upon its law-like Torah-knowledge. And in ancient Egypt religious, astronomical and agrarian knowledge served as the organizing principle and the basis of authority. More recently, Marxist theories of society have assigned decisive importance to the (cultural) forces or means of production for societal development since "man's understanding of nature and his mastery over it by virtue of his presence as a social body ... appears as the great foundation-stone of production and of wealth', so that general knowledge becomes a direct force of production". Max Weber's seminal inquiry into the unique features of Western civilization stresses the pervasive use of reason to secure the methodical efficiency of social action. The source of rational action and, therefore of rationalization, is located in particular intellectual devices.

The theory of *industrial society*, as developed by Raymond Aron, which encompasses both socialist and capitalist forms of economic organization as a single social reality of industrial civilization, accentuates first and foremost the extent to which science and technology shape the social organization of productive activities. Even more recent theories of postindustrial society, in particular those of Daniel Bell, have elevated theoretical knowledge to an axial principle of society. That "rational knowledge", fabricated in one system, apparently travels with great ease and without loss across the boundaries of social systems, for instance, from science into the economy or state

institutions, is hardly ever questioned.

The first to employ a related term, "knowledgeable society", appears to have been Robert E. Lane. Lane's conception of a knowledgeable society, however, is closely tied to a particular theory of science and it reflects the excessive optimism of the 1950s and the early 1960's that (social) science will help to bring about a society in which common sense has been replaced in major social institutions by scientific reasoning. Lane argues that the members of such a knowledgeable society will be guided in their conduct, if not always consciously, by the standards of "veridical truth".

In the late 1960s, Peter Drucker, in *The Age of Discontinuity*, refers to "knowledge society". Drucker regards knowledge as central to modern society and as the foundation of its economy and of social action. Daniel Bell also employs this term in the context of his discussion of the emergence of *post-industrial society*, a designation he himself prefers. Bell at times uses knowledge society interchangeably with "postindustrial society", since he regards knowledge as a "fundamental resource" of postindustrial society.

The theory of post-industrial society recognizes a particular central principle, viewed as a kind of dominant logic, which allows the observer to impose a specific conceptual order on vast societal developments of modern (Western) society. Bell describes his theory as concerned primarily with changes in the social framework of "society", that is, its *social structure* that analytically along with the *polity and culture* comprises society. The social structure of a society refers, more specifically, to its "economy, technology and the occupational system" and the structure of social roles. The kind of changes in the social structure Bell attempts to chart primarily are those induced by the "axial principle" of his theory of society, namely "the centrality of theoretical knowledge". Theoretical knowledge has a dual function. It is both the source of innovation and a foundation for policy formation in society. For Bell the axial principle is likened to "director of social change" in and for post-industrial society.

Post-industrial society is no longer organized around the co-ordination of individuals and machines for the production of commodities, but around knowledge. It is a game between persons. Post-industrial society witnesses a shift from the production of commodities to the tertiary or service sector and a corresponding decline in the pre-eminence of the occupations of the manufacturing sector of society. One important contrast, therefore, is that a desirable standard of life in post-industrial society is no longer defined by the quantity of goods but by the quality of life as reflected in ready access to services and amenities such as health, education, leisure, and the arts. The kind of work individuals increasingly perform requires theoretical knowledge. The chief "resource of the post-industrial society is its scientific personnel".

The knowledge referred to in virtually all theories of modern society that elevate knowledge to prominence, and the groups of individuals that are seen as acquiring influence and control by means of this knowledge, tend to be conceptualized narrowly. This does not mean, however, that such a concept lacks cultural centrality and public or political influence. On the contrary, the narrower notion of knowledge and the often accompanying stress on the role of technical innovation that attributes enormous

efficacy to scientific and technical knowledge resonates strongly with the dominant public as well as political conception of knowledge, information and its role in society. The narrow definition of knowledge is also testimonial to the success of the scientific community in installing a particular conception of knowledge as the dominant public concept of knowledge. Whatever the limitations of this "scientistic" conception of knowledge, its centrality clearly reflects the diminishing social role of nonscientific conceptions of knowing and forms of knowledge.

In much the same way, a systematic *sociological* reflection about the nature of "theoretical knowledge" (and its interrelation to technology) is virtually absent from Bell's *The Coming of Post-Industrial Society*. The concept of knowledge found in Bell's work is formulated in deference to a philosophy of science dominant a few decades ago that describes knowledge as objective, truthful and in conformity with reality. Knowledge is treated as a black box. Paradoxically, there is the tendency to overestimate the efficacy of "objective" technical-scientific or formal knowledge. We are not offered a sociological perspective of the knowledge process. The central question about knowledge posed by the theory of post-industrial society is a functionalist one: What are the consequences of objective knowledge for both society and the individual, and how can these results of knowledge be apprehended? The lack of sufficient detail and scope in explicating the social role of knowledge results in a deficit of accounts for the reasons of the growing demand for more and more knowledge in modern societies, for the ways in which knowledge travels, for the rapidly expanding groups of individuals in society who in some way or another live off knowledge, for the many forms of knowledge considered pragmatically useful and the various effects knowledge may have on social relations. Since the constitutive mechanism of "knowledge" is defined in a restrictive objectivist manner, the social, political and economic consequences to which these theories allude tend to be confined to rather straightforward effects that include the hope for (or the fear of) highly rationalized forms of social action. A more adequate understanding of knowledge requires that one open the black box.

Therefore this article introduces in greater detail a contrasting concept of knowledge that will be employed in explicating the idea of modern society as a knowledge society.

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disastrous consequences for both the world's poorest people and its physical ecology.]

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Stehr, Nico (2004) *Knowledge Politics*. *Governing the Consequences of Science and Technology*. Boulder, Colorado: Paradigm Publishers. [The concern in much of modern society is not that we do not know enough but that we may know too much. As a result, there is a growing preparedness in society to discipline knowledge in the form of modern knowledge politics.]

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Biographical Sketch

Nico Stehr is Karl Mannheim Professor of Cultural Studies at the Zeppelin University, Friedrichshafen, Germany. His research interests center on the transformation of modern societies into knowledge societies and associated developments in different social institutions of modern society (e.g. science, politics, governance, the economy and globalization) as well as the societal consequences of climate change. Among his recent publications are: *Biotechnology: Between Commerce and Civil Society* (Transaction Books, 2004); *Knowledge* (with Reiner Grundmann, Routledge, 2005), *Moral Markets*

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