Chapter 11
Monitoring Social Life and Interactions: A Sociological Perspective of Technologies

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ABSTRACT
The chapter describes the sociological perspective of monitoring technologies and debates its method for analysing social implications of scientific and technical developments. It is articulated in five sections dedicated to social and privacy aspects involved in social analysis of technologies. Particular attention is devoted to social network analysis, an emergent area of sociological research that focuses on the relational implications of technologies in organizations, small groups, and other contexts of social participation. The text integrates examples of technology implementation from healthcare automated assistance to mobile communication devices, video-surveillance, RFID, and smart-meter technology. Case studies, illustrated in separate textboxes, describe the advancements in this field of enquiry and highlight the main elements of the structure of interactions in virtual and technology-mediated communications. Finally, ethical implications of behaviour monitoring technologies are discussed together with recent perspectives of sociological research.

INTRODUCTION
Since its birth as a scientific discipline sociology has been dealing with human sociability; theories of social behavior explain aspects of human life that pertain to a variety of life aspects such as groups organization, participation to collective events and structure of communication. Creation of knowledge and innovation creation and diffusion, in particular, attracted the attention of an emerging area of sociological research that since the eighties committed itself to exploring social relations involved in the development of new technologies and in social awareness assessment.

The aim of the chapter is to provide an introduction to the sociological perspective of technology and to illustrate with the aid of pieces of empirical research its theoretical and methodological bases.

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Therefore in the selection of the examples a special attention is given to sociological analysis of relations between humans and machines or artefacts inside complex or pervasive socio-technical systems. The first two paragraphs are dedicated to describe the principal elements of sociological perspective of technologies and how the enquiry of socio-technical systems involves social relations. These theoretical discussions are integrated with examples from the study of mobile communication (inferring social relations from tracking and analysis of phone users log records), implementation of smart devices (connectivity of the users, environmental sensors) and other technologies supporting localization (mapping out hunting paths with GPS). Paragraph three describes social network analysis (SNA), a specific methodology formerly developed to study small groups interactions, and its progressive application to information technologies and virtual communication. By means of examples these paragraphs will put in evidence social features relevant in establishing receptiveness of innovations, their role in creating relations and structuring social organization.

The rest of the chapter reviews the recent sociological debate on technology using as metaphor the idea of technology as the saviour juxtaposed to the representation of technology as the intruder. By means of the example of video-surveillance, the final paragraph describes sociological concerns for the implementation of advanced monitoring technologies in contemporary society and their ethical and privacy implications.

THE SOCIOLOGICAL PERSPECTIVE OF TECHNOLOGY

Technology is usually defined as artifacts, processes and machines and the knowledge—based on technical or engineering knowledge—used to design and operate them. Technology from the sociological perspective is always a relational object because its creation, use and diffusion is based on social processes of relating things, signs and meaning, humans and institutions. The first social studies (Bijker, Hugues and Pinch, 1987) concentrated on scientific knowledge and historical cases of technical innovation (electricity, nuclear power, pasteurization). Recently the area of research moved to the study of complex interactions between societal interests and design of various technologies from cars, bicycles and missiles to medical devices and plastic materials (Bijker and Law, 1992).

A technology scholar, Werner Rammert (2008), identifies among the rules that should guide social studies of technologies, the necessity to deconstruct technical developments into local projects, where different visions of technical practice (ex. the employ of personal computers, television sets, specific devices) are mixed with heterogeneous elements. According to this perspective the meaning of a piece of technology is socially constructed and negotiated inside specific groups or communities of users: social interpretation of technology may thus involve several years to complete, as well as modify the original intents of inventors and technology professionals (Latour, 1992). Furthermore, the fact that technologies are embedded in places and social contexts make them sensitive to interest groups and collective actors, influencing the development of complex socio-technical structure (see for example the cases of electric automobiles, missiles and satellite communications).

Applying this interpretative framework social researchers analyzed complex socio-technological system (see for example the system that brought to the diffusion of the electric power in the USA in Hughes, 1987) and cultural and market fields resulting from specific technological innovations, such as the GPS (described in second paragraph) or the electronic synthesizer. Reconstructing the historical processes that convey the creation of the Moog synthesizer and the steps of its economic
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