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From information society to biosociety? On societal waves, developing key technologies, and new professions

Toni Ahlqvist

Department of Geography, University of Turku, FIN-20014 Turku, Finland

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Abstract

The article discusses the possible societal transition from information society toward biosociety. Furthermore, the impacts of this possible transition on professional and educational branches (PEBs) are examined. It is based on the study completed in Lahti Center at the Helsinki University of Technology between years 2001–2003. In the study, the most important developing key technologies were defined and their impacts on professions analysed through the application of Delphi technique. The developing key technology groups were information and communication technology, biotechnology, and material and nanotechnology. In addition, combinations of these technologies, that is, so-called fusion technologies, were also subjects for analysis. The first empirical aim was to analyse the plausibility and the timing of the so-called technological theses. The following technologies (technological theses) were deemed to be the most important ones: highly selective drugs, sensors, integrated technology, biomedical materials, photonic materials, 3G technology, intelligent materials, diagnostics, and virtual reality. The second empirical objective of the study was to analyze the professional and educational impacts of these technologies. Moreover, the article takes an experimental glance into the future through the creation and evaluation of “future professions”.

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E-mail address: toni.ahlqvist@utu.fi.

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1. Introduction

Is there an ongoing transformation from information society toward biosociety? The question is intriguing, and it can be answered in myriad ways. Behind the concepts of information society and biosociety is an interpretation of the relations of technology and society. Painting with broad brushstrokes, there are at least three ways to understand these relations.

Firstly, technology can be understood as a kind of comprehensive frame of societal development. For example, the popular thinker of science and societal development, Jeremy Rifkin [1], has made a broad statement that technological development is taking mankind through the era of fire toward the era of biotechnology. Arguing this, Rifkin defines the “nature” of the era as constructed of a certain all-pervasive “prime” technology. Until the start of the third millennium, this prime technology was fire and now it is quite rapidly changing to biotechnology [1]. Other social theorists, for example, Castells [2], emphasize the accumulation of information and the societal effects of information technology. Furthermore, other interpretations of societal development would probably characterize different eras resting, for example, on different technological innovations and applications. Yet, it can be argued that developmental characterizations like these reflect the notion of technology as a comprehensive frame for societal change.

Secondly, technology can be understood literally as being “technical.” Technology is comprehended as a societal “outsider” manipulated by specialists. Technology is a kind of absolute value and criterion in itself conditioning the economic and societal development. In this view, the connection of technology and society is structural—technology channels the development of society through intensifying ladders of development. Technical interpretation of society could be the following: a technology is developed>certain activity is changed>technology is applied in production and everyday life>society is changed. This kind of linear ladder theory tells a teleological tale about a society evolving toward utopian developmental climax. It reveals more about cultural patterns of thought than actual relational dynamics of technology and society. Anyhow, linear ladder theory is a very convenient way of building a tale about societal development because of its appeal to “common sense” sprung from modern scientific rationale.

Thirdly, technology can be understood as the contextual outcome of dialectical processes of social and physical, material and societal structures. The dialectical approach emphasizes the conceptual construction of technology and society as a complex. It seeks to trace the contextual genealogies of the technology–society complex and uncover its embedded geometries of power. This framework forms the notion of technology utilized throughout this article. Technology is understood as a kind of sociotechnical network combining social and physical dimensions. Therefore, the empirical part begins with the analysis of the material aspects of developing technologies, then moving toward the societal implications of these technologies.

This article presents an outlook on the developing key technologies and their impacts on professional and educational branches (PEBs). The first part of the article presents a theoretical framework. The waves of information society and emerging biosociety are discussed [3]. Moreover, the distant wave on the horizon—fusion society—is sketched. The second part of the article presents empirical results of the study executed in the Helsinki University of Technology Lahti Center, Finland. Generally, the article seeks to discuss the societal and professional changes triggered by the possible rise of biosociety and developing key technologies.

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