



**Chapter XIV**

**Manufacturing Knowledge:  
Technology, Culture, and  
Social Inequality at Work**

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*Research on the restructuring of work has tended to neglect the autonomous effects that symbolic or cultural influences can have on the utilization of new technologies. This article draws on fieldwork conducted in three pulp and paper mills to explore the symbolic boundaries that occupational groups bring to bear on the process of workplace automation. As sophisticated technologies and management methods were introduced, process engineers engaged in subtle yet important efforts to portray manual workers' knowledge in derisive terms. Such boundary work led managers to institute credential barriers that restricted manual workers' opportunities, eventually enabling engineers to gain exclusive control over analytic functions as their own "natural" domain. The study suggests that symbolic representations can have powerful consequences for the restructuring of work, reproducing social inequalities even when new technologies render them unnecessary.*

The history of technology is that of human history in all of its diversity. That is why specialist historians of technology hardly ever manage to grasp it entirely in their hands. — Fernand Braudel

...what happens when computers are introduced has much more to do with organizational culture, occupational culture, gender, class, power, or a host of other mediating social forces and cultural constructions than it has to do with the technology *per se*. — David Hakken

## INTRODUCTION

The widening availability of information technologies has contributed to a dramatic restructuring of social and economic institutions throughout much of the advanced capitalist world, with potentially massive effects on the relation between work and home, the structure of urban life, and the nature of the employment relationship. Despite the importance of the technology question, however, the past quarter century of scholarly debate has produced remarkably little agreement as to its specific effects. Especially with respect to the trajectory of workplace automation—the focus of the present paper—consensus seems even more remote than a decade ago.

This uncertainty is particularly apparent on examination of two of the most influential approaches toward work and technology. The first is held by theorists who view the arrival of programmable technologies as likely to overturn the centralized, Fordist pattern of work organization that has characterized industrial capitalism for most of the twentieth century (Adler, 1992; Heckscher, 1994; Hirschhorn, 1984; Kern and Schumann, 1989; 1992; Zuboff, 1988). A second, sharply different view holds that new technologies have begun to undermine the economic position of large proportions of the labor force, rendering less educated workers entirely superfluous while exalting the privileges conferred on professional, technical and managerial employees (Rifkin, 1995; Aronowitz and DiFazio, 1995; Derber and Schwartz, 1991; Reich, 1992; Burris, 1993). Thus where one perspective sees technology as leading toward a freer and more flexible, post-Fordist future, the other sees instead a stark and Satanic economic world that privileges a handful of thinkers while offering only a “jobless future” to the masses.

My paper begins by arguing that neither of these perspectives provides a fruitful basis for scholarly research and debate on work and technology. Each hinges its arguments on futuristic speculation rather than on demonstrably apparent trends. Each adopts a one-sidedly materialist or instrumental approach toward technology that marginalizes the cultural meanings with which actors invest new technologies. For this reason perhaps, the conflict between these two rival views seems only to reproduce the long-standing debate between utopian and anti-utopian approaches toward the question of technology (Segal, 1985; Alexander, 1992). The result, I suggest, tends seriously to distort and simplify the real implications of workplace technologies. Developing a more viable conception of the work/technology nexus, I suggest, requires that we widen our focus beyond the instrumental or material aspects of workplace change (Shields, 1997), including in our purview the symbolic boundaries and systems of classification that rival occupational groups impose on the process of technological change. To illustrate my argument, I briefly present findings from ethnographic research conducted in three manufacturing contexts. My research is not meant to be conclusive, nor to test formal hypotheses; instead, it aims merely to provide the empirical referent for the reconceptualization of the field that I propose.

I begin the paper by briefly sketching the dominant images of work and technology in the sociological literature, subjecting them to critique. I then consider some recent efforts to take seriously the linkage between culture and social inequality, focusing particular attention on theories of symbolic boundaries (see Bourdieu, 1984; Lamont, 1992; Lamont and Fournier, 1992; Abbott, 1995). Applying such theories to the empirical case at hand, I present fieldwork conducted at three manufacturing plants in the pulp and paper industry. By scrutinizing the manner in which occupational groups have struggled to define the boundary between legitimate and illegitimate work practices, I seek to show how cultural

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