Beyond the Panopticon: Technology, Organizing, and Forms of Resistance

William N. Kaghan
Touro University International
5665 Plaza Drive, Third Floor
Cypress, CA 90630
United States
Tel: (714) 816-0366 x2117
Fax: (714) 816-0367
E-mail: wkaghan@tourou.edu or wkaghan@msn.com

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In this paper, I will argue that both Labour Process studies (of either Bravermanian or Foucauldian stripe) and Schumpeterian studies of large scale systems of innovation and technology and innovation management build off of Marx’s vision of the role of technology in the process of social change but with very different emphases. Labor Process studies (Thompson, 1989; Sturdy, Knights, and Willmott, 1992; Wood, 1992) focus on dominance and control in organized relations of production and view technological innovation in modern economic systems as the mechanism through which social and organizational control is strengthened and maintained. Technological (and organizational) innovation, in this view, is an engine of domination (Braverman, 1974; Foucault, 1977). In contrast, mainstream research in Technology and Innovation Management (Tushman and Anderson, 2004) and Schumpeterian studies of national innovation systems (Nelson, 1993) focus on evolving means of production as the engine through which organizations and national economies maintain a competitive advantage in a struggle that increases both individual wealth and overall social welfare. Technological innovation, in this view, is an engine of progress (Nelson, 1990). Yet curiously, neither of these perspectives pays much attention to Marx’s contention that evolving means of production will serve as the engine through which the relations of production will be transformed (Marx, 1972). This paper will argue that to more fully engage with mainstream research, Critical Management Studies needs to move “beyond the panopticon” and begin to investigate, as Marx did, how technological innovation can be shaped by non-management personnel and the “forms of resistance” that this may entail.

There are three promising avenues by which Critical Management Studies can move “beyond the panopticon.” The first avenue builds on research in interactionist approaches to the Sociology of Work and Occupations that look at processes of struggle, resistance, and negotiation that occur between different occupations with regard to technological innovation in the workplace (Barley, 1986; Abbott, 1988; Thomas, 1994). Research in this stream argues, in concert with Marx and Braverman, that there is a vertical as well as a horizontal split in the division of labor with some occupations (predominantly, managerial and professional) in superordinate positions and other occupations (all the remaining occupations) in subordinate positions. However, in contrast to Marx and Braverman, researchers in this area acknowledge that there are fractures and struggles in both the domain of superordinate and subordinate occupations and that, sometimes, superordinate and subordinate occupations choose negotiation
and accommodation over conflict. In short, the picture of Marx and Braverman of an intense class struggle between superordinate occupations (the bourgeoisie in Marx’s terminology) and a subset of the subordinate occupations (the proletarian factory workers) is overly simple and fails to account for the full set of relations of production both at a single point in time and as they evolve over time. Particularly important in this respect are the role of professional managers and managerial hierarchies in relations of production (Dalton, 1959; Mintzberg, 1973).

The second avenue of research builds on research in the Sociology of Science and Technology (Latour, 1987; Bijker, 1996; MacKenzie, 1996). This stream of research is useful because it provides a way to investigate the “pro-technology bias” (Rogers, 1995) found in both mainstream micro and meso level research in the Management of Technology and Innovation and in more macro-level and Schumpeterian research on national innovation systems without accepting the seeming “anti-technology bias” found in many Labour Process Studies. In particular, this stream of research provides a rich set of mechanisms for “opening the black box” of scientific and engineering work both in terms of the internal workings of laboratories and R&D facilities and the relations between scientists and engineers and members of other occupations and to the technological systems that they create and maintain. In particular, it is important for Critical Management Studies to become more cognizant of the sometimes competitive and sometimes cooperative relationships between scientists and engineers and managers with regard to technology as well as the relationships between managers and employees or managers and customers in relation to technology. Are scientists and engineers a mechanism for domination or a mechanism for progress or a bit of both?

The final avenue of research builds on labeling theory and research in the Sociology of Deviance (Becker, 1963; Erikson, 1966). A clear implication of much research in Critical Management Studies and in mainstream research in Technology and Innovation Management is that people who “resist” technological innovation are, in some fashion, deviants. Critical Management Studies focuses on mechanisms through which compliance is enforced and deviation is minimized. Mainstream research in Technology and Innovation management usually takes compliance for granted and if deviance occurs accuses deviants of Luddite resistance. However, both views fail to note that at least two perspectives have to be taken into account – the perspective of the people doing the labeling (typically superordinates) and the
perspective of the person or people being labeled (typically subordinates). Figure 1 indicates the implications of taking both perspectives into account.

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In the cases (true conflict, true domination) where superordinate and subordinate evaluate their behavior the same way, the actions of subordinates convey their actual subjective attitudes with relatively predictable consequences for ongoing interaction. However, in the cases (secret resistance, false accusation), the actions of subordinates are misinterpreted by superordinates with much less predictable consequences for ongoing interaction. The situation is made even more complex by the realization that the perspectives of superordinate and subordinate may change over time and thus the subordinate may have an unstable identity and move from one category to another depending on the situation. For example, a subordinate may over time move from true domination through false accusation to true resistance. Alternately, a subordinate might travel from true domination to secret resistance to true resistance. Thus, there are several forms of resistance and a person may change from one form of resistance to another over time.

In the three sections that follow. I will explore each of these three avenues of research in more detail. In the first section, I briefly examine both Marx’s understanding of industrial work organization as a simple class struggle between owners and workers over the means of production and the nature and conditions of work in early industrial society and the relationship between the work of Marx and Braverman and Foucauldian analyses of the labor process which are much more concerned with scientific and technical expertise of professionals. I contrast this with the interactionist perspectives in the Sociology of Work and Occupations in which workplace interaction is more differentiated, negotiation more significant, and local resistance more effective than in standard Marxian or Labour Process accounts. In the second section, I draw on research in the Sociology of Science and Technology to look at the role of scientists and engineers in the modern workplace. I argue that it is likely that Marx did not fully appreciate the coming changes associated with the Second Industrial Revolution and the associated emergence of professionalized scientists and engineers and professional managers in industry. Where Marx anticipated that the bourgeoisie would own, organize, and administer the means of production and the fruits of production and the proletariat would own their labor but gain skill in using the technology, engineers and professional managers in the Second Industrial Revolution actually
became dominant in the design, organization, and administration of the workplace and, at least to some extent, expert in the use of advanced tools that were deployed in the workplace. Though Braverman’s basic argument about the “deskilling” of the proletariat might be accurate in some cases, it was not universal and power relations are not so easily subsumed in a simple class struggle model. In the final section, I argue that much Foucauldian inspired research depends on an implicit model of deviance in which deviant behavior is easily identified and firmly punished either through the iron fist of physical force or the velvet glove of coercive persuasion. The Benthamite panopticon symbolizes this situation. I draw on research in the Sociology of Deviance to suggest that this picture – though certainly accurate in some instances – is overdrawn. Identifying deviant behavior, which is essential for the application of power, is difficult and “deviants” (as Marx seemed to understand) are capable of coalescing into resistance groups with “deviant” values.

Class Struggle, Technology, and Work Organization

Marx explains the history of the world as a succession of stages. In terms of the means of production, each stage from prehistoric communism to ancient slave societies to feudal society to capitalist society and ultimately to socialist and/or communist societies represented an advance over the previous stage. Each advance in the means of production made the human race more productive. Society viewed as a whole became wealthier. At the same time, each stage of history was characterized by a class struggle between a dominant class who controlled – through a variety of institutional mechanisms - the means of production and the distribution of wealth and those of a dominated class who were exploited in the sense of having the wealth that they were responsible for creating being siphoned to the benefit of the dominant class. At each stage in history, Marx saw a conflicting dynamic (or dialectic) at work in which the dominant class continually improved the means of production and in the process brought about the emergence of a new class that grew progressively more powerful in relation to the dominant class and would eventually replace it. Thus Marx viewed the capital accumulation – both financial and

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1 The author admits that this is an unfair reduction of Marx’s thought and his Marxist interpreters. Nevertheless, the author will argue that this captures the basic logic of Marx’s argument.
technological – of the bourgeoisie as something good but a process that would in the long run lead to the overthrow of the bourgeoisie by the industrial proletariat.

In the 122 years since Marx’s death in 1883, the means of production have changed in ways that were unimaginable to Marx. Arguably, the changes in the means of production over the past 122 years have surpassed the changes in the means of production in the 122 years (1761-1883) that preceded his death (which more or less correspond to the life span of the First Industrial Revolution in England and its spread to the rest of the developed world.) Yet Marx and Marxists would certainly concede that capitalism has not withered away during these years and the socialist and communist regimes that emerged during the twentieth century never – even in a society like Stalin’s Russia or Mao’s China where the internal bourgeoisie were largely eliminated – matched the technological prowess of capitalist states or managed to fully institute the sort of egalitarian society envisioned by Marx. Many – both Marxist and non-Marxist – have provided many reasons for the failure of advances in technology to lead to the overthrow of class relations that typified capitalism.

In this paper, I am not particularly interested in non-Marxist accounts. Rather, I am interested in exploring Labour Process accounts of Braverman and Foucault which rely on the ability of the bourgeoisie to continue to dominate the labor process through their control over the development and deployment of technologies in the workplace and/or over the discourse of technological innovation and change. Whether Bravermanian or Foucauldian, labour process theories are Weberian in the sense that they seem to see the relations of production of capitalism as an “iron cage” where technological innovation is used to reinforce the dominant class by deskillig the proletariat and/or a discourse of technological progress, economic growth, and capital accumulation. Technological progress ceases to be part of the dialectic of class struggle and becomes a material (in Braverman) or a discursive (in Foucault) tool of continued class domination.

In contrast to many Labour Process theorists, I argue that Marx’s dialectic of “class struggle” in the midst of an evolving means of production continues to be a fruitful way in which to consider the relationship between technical and social change. Rather than eliminating the dialectic of class struggle, it is necessary to complicate the concepts of the bourgeoisie and the proletariat as classes and relate these concepts to struggles within individual workplaces and organizations, struggles among occupations in the labor market, and struggles over the nature of
the proper structure of the labor process in society as a whole and to think about how all these struggles are affected by the continued evolution of the means of production.

Interactionist approaches to the Sociology of Work and Occupations, particularly those associated with the Chicago School of Sociology have much to order in this respect (Hughes, 1971; Becker, 1970, 1982; Strauss et al, 1964, 1985; Friedson, ; Abbott, 1988). In contrast to Marx’s focus on owner and worker and the wage contract, their focus is on the interaction of members of particular occupations in particular workplaces and to the competition among occupations in the labor market. In particular, interactionist approaches suggest that at the time that he was writing that Marx’s analysis may have captured the essence of the simultaneous struggles in individual workplaces, within labor markets, and over the basic institutions that governed the labour process. However, the means of production and relations of production evolved in unexpected ways. New occupations with new relations to the means of production and new roles in the relations of production evolved as well. The simple identification of the factory owner and merchant as the dominant class, the bourgeoisie and the factory worker as the dominated class whose mutual relationship was mediated by their joint relationship to the means of production ceased to fit reality very well. There were important shifts of power in the workplace. In particular, professional engineers and administrators became more powerful in the workplace due, at least in part, to their relationship to changing means of production while, at the same time, remaining employees of the firm (though the nature of their employment contracts may be different from “workers”). These occupations, while important in the labour process were difficult to classify as either as bourgeois or proletarian. In the next section, we draw on ideas from the Sociology of Science and Technology to examine these developments in more detail.

The Third Class: Scientists, Engineers, and Technicians in the Labour Process

The Second Industrial Revolution can be characterized as a period in which tools and concepts discovered in scientific laboratories were developed by inventors like Edison or Bell (and later research engineers working in industrial research labs at places like General Electric or AT&T) (Hounshell & Smith, 1988; Hughes, 1989) and put into production under in large scale firms under the supervision of professional administrators (Chandler, 1977). The factory system characteristic of the First Industrial Revolution that had been studied by Marx and the relations
of production between owner and unorganized workers were transformed into new relations of production between owners/top executives/boards of directors, salaried white collar workers (such as scientists and engineers, operations managers, financial and cost accountants, and corporate lawyers), and organizing and “class conscious” blue collar workers (technicians, production line, and customer support personnel).

Viewed from the perspective of the Sociology of Science and Technology, “technical workers” (scientists, engineers, and technicians) formed a distinct class. “Technical workers” were responsible for developing and maintaining the advanced large-scale technologies of the workplace. They had a different relationship to technology than either the owners/executives of firms who owned machines and the traditional proletariat who used machines but were not involved in developing or maintaining machines. Though owners and executives formally owned, financed, and commanded the means of production, owners and executives (in line with Marx’s view of the growing power of the proletariat within the capitalist system) were increasingly dependent on the “brainpower” of technical workers for continued economic growth and competitiveness. Similarly, scientists and engineers (including industrial engineers such as Frederick Taylor and social psychologists such as the Tavistock School) were largely responsible for developing and maintaining the technical systems within which blue collar workers worked. However, by resisting the designs of scientists and engineers (unknowingly or knowingly, as individuals or as an organized group), workers could exert influence on working conditions at the local level and, at times, on the labour process as a whole (Roy, 1954; Thomas, 1994; Sewell; 1998).

Viewing scientists, engineers, and technicians as a third class is useful for two major reasons. First, including a third class distinct from the bourgeoisie and the proletariat into modern relations of production makes the dynamics of the class struggle much more complex. As indicated in the previous paragraph, each of these classes has a distinct relationship to emerging technologies. Owners own the technology and, in general, have the right to direct how technology is introduced into the labor process. Scientists, engineers, and technicians have the knowledge to design the technology and the labour process and are necessary if the technical system is to be maintained in good working order. Workers are all those salaried and hourly employees who do not own, design, or maintain technology but rely in some capacity on technological systems to do their work. In addition, each of these classes has interdependent but
somewhat different interests. Owners (both as individuals and as a class) are interested in returns on financial capital. Technical workers (both as individuals and as a class) are interested in returns on their technical skills (or intellectual capital). Non-technical employees (whether white-collar or blue collar and both as individuals and as a class) are interested in returns on their organizational and labor skills.

Each of these classes can exert some level of power in the labour process and the interests of each of these different classes may intersect in a variety of ways. For example, in conventional labour process studies in either the Bravermanian or the Foucauldian tradition, the owner class and the technical class are viewed as allied and as having complementary class interests. For Braverman, technical workers gain more power vis a vis the proletariat by developing technology and maintaining large scale technical systems that deskill workers and owners gain more power vis a vis the labour process (because machines are more “docile” than workers.) However, Braverman does not take into account that though machines may be “docile” that the technical workers who design and maintain the machines may not be docile or that, viewed from the perspective of technical workers that machines are less “docile” than conventional wisdom portrays them. Though Braverman’s analysis is persuasive for cases where the interests of owners and technical workers are clearly aligned, it is much less useful for analyzing cases in which their interests are not aligned. Similarly, for Foucauldians, the interests of owners and technical workers are aligned but the “docility/compliance” of workers is maintained as much through the control of knowledge and discourse by owners and technical workers as by their control over the means of production. Again, Foucauldian accounts are persuasive in situations in which the image of the panopticon is appropriate but researchers be aware that there are many situations (as Marx understood) in which the panopticon cannot be maintained and resistance can be effectively mounted.

The second reason why considering technical workers as a third class is useful is that it helps to illustrate that contrary to the standard Marxian story, there are fractures with classes that are not necessarily the result of “false consciousness.” In particular, there are fractures between the scientists and engineers who certify scientific and technological knowledge and design technical systems and the technicians who are responsible for operating and maintaining these systems (Barley & Orr, 1997; Bechky, 2003). There are distinct hierarchies within technology intensive departments such as applied R&D, product development, operations, and information
systems between managers and designers and “hands-on” technicians. Members of these
different groups of technical workers actively negotiate over the nature of working conditions
both in individual workplaces and within industries. Furthermore, these different groups are
likely to have different types of connections to the non-technical portions of the organization.
Scientists and engineers are more likely to have links to top executives and owners and are often
considered a pool of potential recruits for managerial positions. Technicians, on the other hand,
are more likely to have regular contact with non-technical end-users and be more aware of
(though not always sympathetic to) the problems that end-users face in working with the
technologies that they support. How these “class struggles” around the means of production play
out in the workplace and the labor market are topics that deserve more research attention in
Critical Management Studies.

**Deviance, Lines of Action, and Class Consciousness**

(This section is a work in progress. It will be finished by the start of the conference. But I feel
that it is better to turn the paper in as is and continue to work on this section.)

**Conclusion**

Combining the insights from these three streams of research provides insight into the
logic of Marx’s vision of a subordinate proletariat eventually supplanting a superordinate
bourgeoisie. The bourgeoisie would push technological innovation to increase production and
redistribute the material gains from technological innovation to themselves rather than the
proletariat. However, by promoting technological innovation (and consolidating capital), the
bourgeoisie would gradually weaken itself and empower the proletariat. Furthermore,
eventually, the proletariat would come to realize that they had been empowered and move to
seize control of the means of production and change the relations of production. In Marx’s
terms, the expropriators would be expropriated (and subsequently be reincorporated into the
ranks of the proletariat) and the slave would become the master. Clearly, history has not
followed the path that Marx envisioned. Neither has it followed the path that Weber envisioned.
or Schumpeter envisioned or Braverman envisioned or Foucault envisioned. The possibility of a materially secure and ideologically emancipated society which is the purported goal of Critical Management Studies certainly remains elusive. But the possibilities for such a transformation may be more possible than many researchers in Critical Management Studies focused too exclusively on the image of the panopticon might predict (Kaghan and Phillips, 1998; Kaghan, 2000).
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<tr>
<th>Resistance</th>
<th>Compliance</th>
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<tr>
<td>True conflict</td>
<td>False accusation</td>
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<td>Secret resistance</td>
<td>True domination</td>
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Chicago: University of Chicago Press.


