"Summary of article By Stanley Aronowitz and William DiFazio: The End of Skill?"

Computers and automation are pervasive in the workplaces of the last half of the twentieth century. Sociologists of the workplace often view technology in one of two ways: either as destructive of the traditional skills that once gave meaning and control to craft-based work, or as a potentially liberating force that can relieve the burden of backbreaking or tedious labor. The first viewpoint romanticizes the past; the second romanticizes the future. But neither deals with the specific context in which new technology is introduced. All too often cybernetics are used as a cost-saving device, freeing industrial, commercial and professional workers from toil, but hardly in a liberating way, since their livelihood is lost with the loss of work.

Nevertheless, "the computer ... provides a persuasive case for the claim of the newest technophiles that finally, after nearly three centuries of the rationalization of the labor process, we can envision the reintegration not only of work, but also of humans with nature and with their own species.... [I]n its most visionary form, computer-driven technoculture claims to fulfill the dream of the 'whole' person by healing the rupture between intellectual and manual labor and freeing time for the full development of the individual."[82]

TECHNOLCULTURE AND WORK

In the early days of computer development following World War II there was a clear sense that what was at stake was the reduction of production costs to be achieved by reducing the cost of labor. Unions were prominent and had won good wages and benefits in key industries, as well as work rules which constrained management on the shop floor. In a well publicized encounter, the CEO of General Motors asked the President of the United Auto Workers, "Who's going to pay union dues?" The union leader responded, "Who's going to buy your cars?"

By the 1970s the U.S. faced a changing economic environment. Imports increased and the production of many products and components moved offshore. Employment in many mass production industries and heavy industries diminished. For the workforce, this had mixed effects. Work in these industries was tightly controlled and coordinated, paced by the speed of assembly lines and machines. But some sense of solidarity and power remained within the workforce; a disruption in any one part of the production process could quickly affect all of it.

The new technoculture in the workplace which emerged with automation continued the long process of disempowerment. Little or no skill was needed to monitor controls for robots or automated processes. In fact the worker is often monitored in turn by the equipment he or she

operates. The potential which computerization offered to reintegrate mental and manual labor was often subverted by reinforced hierarchies with a new differentiation among levels of expertise.

KNOWLEDGE OR SKILL?

Harry Braverman argued that the capitalist labor process degrades all workers through techniques of domination and deskills them by separating the conception and planning of production from its execution. The new composition of the workforce involved unskilled or semi-skilled laborers working under the direction of engineers and scientists who designed products, machines and techniques, and managers who supervised and coordinated production. Writers following Braverman often see science and technology as forms of capitalist domination. These forms of control, however, can be contested by workers who struggle to design a science and technology that is not about degradation, but about creativity and freedom. In this way, they can struggle to redesign their world.

Paul Adler's is a leading critic of Braverman's perspective. Adler theorizes that technology upgrades, rather than degrades, skill. Technological change is beneficial to most workers, whereas deskilling affects only a minority. As old skills are destroyed, new skills are created and the creation of new skills outweighs the effects of deskilling. "Adler argues that Braverman's notion of skill is based on a romantic view of the nineteenth century craftworker and that skill must be redefined in the context of modern technological advances..." [92]

However, Adler does not take the next step beyond the discourse of skill to recognize that, "[i]n a production process in which science and technology are central, knowledge, not skill, defines the process."[92] This constitutes a fundamental shift from experience as the basis of training and acquisition of skill to formal education as the basis of training and the acquisition of knowledge. Skill could only be attained as a result of a long apprenticeship in a trade. Entry to the craft was controlled by masters who protected their skills through associations (guilds, unions, professions), and carefully selected apprentices who would learn the secrets of the trade and carry it on.

Women were historically denied entry to most crafts, and are poorly represented in the skilled trades that remain active, even today when they are entering the workforce in great numbers. "Skill is a male discourse. If women were to succeed, they had to change the field of discourse...High technology created a new knowledge space that is not burdened by the gendered history of skill." [96] Even though high tech is still largely a male domain, it is new and not bound by tradition. Hence it presents an arena in which women can struggle to belong.

FLEXIBLE SPECIALIZATION

Some analysts, however, argue "that computer-mediated work *could* provide unprecedented opportunities for the full development of the operator's knowledge and authority over the labor process .... [and] a new regime of craft production. For them this is is the result of a flexible-specialization, decentralized, community-based, small-batch, skilled-worker production process."[90]

2

Michael Piore and Charles Sable developed the idea of flexible specialization to describe the change from mass production to a system of innovative, constantly shifting components as the impetus for growth and the rebirth of skilled work. But flexible specialization has contradictory tendencies on the issue of skills. It can displace workers as well as shifting the knowledge base to new groups of workers. The change in industrial structure has been accompanied by unemployment, underemployment and wage reductions, even in industries where the need for computer knowledge is rising or equipment is becoming more sophisticated..

If flexible specialization is the wave of the future, four crucial questions must be answered. First, does it increase skill levels in post-industrial production regimes? As we have seen, there is little agreement on this point. Second, does it create more jobs? Here it is widely agreed that the answer is no. Instead "flexible automation" means that there are fewer jobs overall, but the remaining jobs require more skill.

The third question is, should there be a return to a skill-based system as in the nineteenth-century craft tradition? This system enhanced exclusion at the expense of innovation and quality; turning back the clock seems unlikely and undesirable. Finally, is it skill that is being increased in these flexible specialization regimes? Skilled work still exists, but it is increasing only at the margins of new production processes. The logical outcome of future production regimes is a technoscience-based, knowledge-centered labor process.

The computer gives a new dimension to communication, "[b]ut the ethic of knowledge sharing ... has been seriously undercut by rampant privatization; knowledge is organized on a need-to-know, ability-to-pay basis."[100] Ultimately, it may be concluded that the computer mirrors its masters. Despite being employed by corporations who own the rights to dispose of their inventions, there are some who retain the utopian, even anarchist, impulse to finally bridge the gap between intellectual and manual labor. Whether or not the computer is employed as a way to facilitate the emergence of a democratic workplace is indeterminate from the internal constitution of its technology. The uses and social meaning of computer technology depend on the context within which computer-mediated work is done.