The Next Long Swing

Spatialization, Technocratic Control, and the Restructuring of Work at the Turn of the Century

Michael Wallace and David Brady

INTRODUCTION

These are times of dramatic change in the ways in which work is organized in the United States and throughout the world. The new realities of a global economy, the shift from standardized mass production to flexible specialization, fast-paced technological change, and the evolution of new structures and employer strategies for controlling labor have engulfed workers, managers, and employers in a swirl of change and uncertainty. In the past 25 years, the comforting banality of stable, if unimaginative, jobs with high wages, good benefits, and promising careers in bureaucratic work settings has been shaken by such transformations as deindustrialization, outsourcing, downsizing, contingent work, two-tiered employment structures, and perpetual skill restructuring of jobs. These changes have received much attention from scholars of work and the labor process; however, a coherent theoretical framework for understanding the roots of these changes and their possible consequences for work in the next century has not been forthcoming.

In this chapter, we provide a synthesis and extension of social structure of accumulation (SSA) theory (Gordon, Edwards, and Reich 1982) to account for these changes in work organization. SSA theory argues that changes in the organization of work are rooted in “long swings,” approximately 50–60 years in length, of large-scale, historical transformation of the capitalist accumulation process, that is, the social and institutional structure and processes by which capitalists achieve and
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maintain profitable business operations. Gordon et al.'s early work in the SSA tradition identified three such social structures of accumulation in the history of U.S. capitalism—initial proletarianization, homogenization, and segmentation—each characterized by fundamental restructuring of the relations between capitalists and workers. We contend that since the early 1970s or so, the United States has been traversing the exploratory stages of a fourth social structure of accumulation, which we label "spatialization." This new SSA is characterized by the spatial restructuring of work as the primary means of employers to reassert control over the labor process. This new institutional arrangement provides for the efficient, flexible coordination of business operations in far-flung corners of the world, while it effectively distances the social relations between workers and managers to blunt opportunities for worker resistance.

Implicit in Gordon et al.'s (1982) early work is the notion that each SSA is characterized by the ascendance of a unique dominant control system, a historically appropriate configuration of structural and normative mechanisms for maintaining effective control of workers. Edwards' (1979) portrayal of the "contested terrain" of the workplace provides a rich account of the historical evolution of simple (entrepreneurial and hierarchical), technical, and bureaucratic control systems in the U.S. workplace, corresponding approximately to the three SSAs subsequently identified by Gordon et al. (1982). While the notion of control systems is seemingly crucial for linking macro-level institutional changes in the capital accumulation process to micro-level features of the organization of work, the link between the two was not explicitly theorized in Gordon et al.'s work and was ignored altogether in subsequent research on SSA theory (e.g., Kotz, McDonough, and Reich 1994; Reich 1997). Thus, one of the goals of this chapter is to fortify arguments about the connections between SSAs and control systems and to apply this understanding to the analysis of the contemporary workplace. We contend that the new spatialization SSA is characterized by the emergence of "technocratic control" (Burris 1993), a system in which employers adopt new information technologies in order to achieve extensive workplace rationalization. Technocratic control both permits and compels employers to pursue the new possibilities presented by the spatial restructuring of work.

In the remainder of the chapter we outline our theory of the "next long swing" in the organization of work—a protracted shift to spatialization and technocratic control. We provide a retrospective synthesis of SSA theory by integrating discussions of capitalist control systems, followed by an extension of SSA theory to accommodate recent developments and likely future trends in the organization of work. We pay particular attention to developments in the last 25 years that mark the unraveling and demise of the postwar capital-labor accord and have laid the groundwork for the rise of spatialization and technocratic control. Finally, we discuss implications of these new work arrangements for workers and for people who study work and work organizations.

SOCIAL STRUCTURES OF ACCUMULATION: A RETROSPECTIVE SYNTHESIS

David Gordon (1978, 1980) first utilized the term "social structure of accumulation" to explain the tendency for capitalist economies to experience long swings
of economic prosperity followed by bouts of decline and crisis. Although it resembled earlier versions of long-wave theory (Kondratieff 1935; Schumpeter 1939), Gordon's approach differed by arguing that the impetus for long swings was located in the social, economic, and political institutions of the capitalist system, not in new technologies or "epoch-making inventions." Far from being a deterministic picture of social change, Gordon's formulation stressed the historical contingency of the class struggle between workers and capitalists as being a deciding factor in the ultimate path of capitalist development. In other words, the prevailing social structure of accumulation both shaped and was shaped by the character of class struggle, that is, the configuration of power relations between capitalists, managers, and workers.

In subsequent work, Gordon et al. (1982) provided the definitive account of social structures of accumulation. They described SSAs as a complex and integrated system of institutional arrangements conducive to the accumulation of capital, including core technological systems, the ways in which markets are organized, the monetary and credit systems, the pattern of government involvement in the economy, mechanisms for limiting intercapitalist rivalry, and the role of military force in securing access to capitalist markets. Importantly, Gordon et al. focused on the creation and demise of mechanisms for managing conflict. Indeed, the names of the three successive long swings they identified—initial proletarianization, homogenization, and segmentation—centered on the extensive reorganization of the labor process in an effort to achieve altered class capacities that favored capitalists over workers. This emphasis on the labor process became submerged in subsequent SSA accounts (Houston 1992; Kotz et al. 1994; Lippit 1997) and is an element that we seek to restore in this chapter.

Gordon et al. (1982) argued that capitalist accumulation in the United States has been prone to long swings of growth and decline of about 50–60 years in length. Each long swing has an expansion and contraction phase of about 25–30 years and is characterized by a complex set of institutional arrangements that facilitate the accumulation of capital to a greater or lesser degree. SSAs are marked by successive periods of exploration, consolidation, and decay of institutional features as each long swing emerges and eventually plays itself out. Each period of decay is simultaneously a period of exploration as the obstacles to continued capitalist expansion under the old SSA give way to experimental strategies and arrangements for renewed accumulation. Each new SSA consolidates around the experimental arrangement that provides the most promising route for rejuvenating capitalist accumulation while addressing the key problems of controlling and pacifying labor.

Much of the class struggle endemic to each SSA manifested itself in the organization of work in the capitalist enterprise. Gordon's colleague, Richard Edwards, provided the most convincing account of workplace control systems that evolved historically to mediate the "contested terrain" between workers and capitalists. Edwards (1979) contends that different systems of control periodically emerged to address contradictions inherent in the growth of capitalism and the diminishing effectiveness of previous control systems. When control systems were in the ascendance, labor was relatively weak and quiescent; as control systems began to decay, worker resistance to capitalist prerogatives became more likely and had greater prospects for success. Implicitly, as we show later, Edwards's depiction of
the ebb and flow of capitalist control systems coincides approximately with the wax and wane of social structures of accumulation. Indeed, we argue that control systems are the key mechanism in managing the capital-labor conflict under a prevailing SSA, even if this was not ever explicitly stated in Gordon et al. (1982).

In what follows, we provide a historical synthesis of the concepts of social structures of accumulation and control systems to provide the foundation for a discussion of the new era of spatialization and technocratic control. Table 5.1 depicts the historical sequence of the argument.

Initial Proletarianization and Simple Control

Virtually since independence, the United States has qualified as a capitalist nation, that is, an economy based on a wage labor system of commodity production for profit. Accordingly, the ongoing struggle by employers to create an environment conducive to capital accumulation and the related problem of labor control have been present in this country for almost two centuries.

Table 5.1. Historical Forces Shaping the Organization of Work in the United States: Long Swings, Social Structures of Accumulation, and Dominant Control Systems

<table>
<thead>
<tr>
<th>Social structures of accumulation</th>
<th>Initial proletarianization</th>
<th>Homogenization</th>
<th>Segmentation</th>
<th>Spatialization</th>
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<tr>
<td>Dominant control system</td>
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<td>1790–1820</td>
<td>Exploration</td>
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<td>1820–mid-1840s</td>
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<td>Mid-1840s–1873</td>
<td>Consolidation</td>
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<td>1873–late 1890s</td>
<td>Decay</td>
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<td>Late 1890s–World War I</td>
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<td>World War I–World War II</td>
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<td>World War II–early 1970s</td>
<td>Consolidation</td>
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<td>Early 1970s–present</td>
<td>Decay</td>
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Long swings: Long periods of sustained economic growth (perhaps 25 years long) followed by long periods of sustained economic decline (perhaps 25 years long), usually connected to revolutionary, new modes of social and economic organization or "epoch-making inventions."

Social structures of accumulation: The specific institutional environment within which the accumulation of capitalist profits takes place, including such things as core technological systems, the way markets are organized, the monetary and credit systems, the pattern of government involvement in the economy, and the character of class conflict over the accumulation process.

Dominant control system: The "contested terrain" of capitalist–worker relations: the dominant system of control used by capitalists to elicit compliance by workers to a prevailing system of production; a core component and dynamic feature of the social structure of accumulation.

Note. Some "experimental" methods of control that proved insufficient in the late 1800s, early 1900s: scientific management, welfare capitalism, company unions.
The most sweeping change in the American economy in the early 19th century was the dramatic influx of workers into the paid labor force and the establishment of work under capitalist entrepreneurs. Economic forces after the 1820s pushed farmers off the land and small-scale craftsmen and shopkeepers out of their places of business, compelling them to work for the capitalist. This SSA was thus characterized as *initial proletarianization* and represented the first stage in forging an industrial labor force. Initial proletarianization and the concomitant simple control systems entered an exploratory period in the 1820s-1840s, a consolidation period in the 1840s-1870s, and a period of decay in the 1870s-1890s. The key change in work during this period was that workers now worked not in their own homes and on their own time but huddled together under the roof of the capitalist and at his direction. However, this period did not result in any significant reorganization of the work process, since most workers retained their craft methods of production and often even owned their own tools. Still, this new relationship was inherently conflictual, wrenching workers from their customary routines at work, in the family, and in the community, and subjecting them to a new regimen of industrial life.

Since individual firms were relatively small in this period, they were amenable to *simple* forms of control. Typically, the capitalist entrepreneur, who may have been a craftsman himself, supervised day-to-day operations directly or with the assistance of a trusted coterie of managers, what Edwards (1979) refers to as “entrepreneurial control.” Entrepreneurial control was arbitrary, capricious, and often clumsy but usually effective because the hard work and personal entreaties of the capitalist/entrepreneur often inspired loyalty among his workers and obscured the class character of the production process. In short, “entrepreneurial control, despite being informal, erratic, and subject to favoritism and arbitrariness, provided the basis for profitable control” (Edwards 1979:27).

Sustained growth led to the expansion of the firm, which created new challenges for entrepreneurial control, since it became more difficult for capitalist/entrepreneurs and their lieutenants to oversee day-to-day operations directly. As firms outgrew their entrepreneurial origins, authority was delegated to a wider stratum of foremen and supervisors, leading to a new form of simple control known as “hierarchical control.” While providing a temporary resolution to the crisis of growth, the “foreman’s empire,” as Nelson (1975) called it, created new problems: The increasing distance between capitalists and workers undermined the bond of loyalty; disloyal or unmotivated managers failed to achieve capitalist production goals; and, most importantly, capitalist owners and their hired managers lost touch with the craft skills and intimate knowledge of production processes that were retained by workers on the shop floor.

As the initial proletarianization SSA came to a close, two realities produced a renewed crisis of control in the capitalist workplace. First, the harshness of factory conditions and the blatant exercise of arbitrary power by factory managers made the class character of capitalist production transparent to workers. Second, workers had secured a virtual monopoly of knowledge about shop floor production processes that tilted the balance of power in their favor. These two factors—along with the economic crises evidenced in the late 1800s—signaled the demise of the first long swing of initial proletarianization and launched exploratory efforts to construct a new social structure of accumulation. Several labor control systems vied for the attention of capitalists in the early 1900s and attempted to resolve the crises
of simple control. Edwards (1979) discusses the evolution and eventual demise of several "experimental" forms of control—welfare capitalism, scientific management, and company unions—that eventually failed because they sought to re-create the conditions of simple control. As such, they failed to alter the basic power relations in the firm or wrest the knowledge of production from the minds and hands of crafts workers. Nevertheless, each of these failed systems yielded lessons that would be incorporated into the next long swing.

**Homogenization and Technical Control**

The onset of *homogenization* was characterized, at first, by the drive system, which was an intensification of work effort by direct, constant supervision of craft workers in order to elicit more output and, later, by the application of new technologies to achieve the same result. It further attempted to reduce skill levels among workers in an effort to reassert capitalist control of the labor process. This homogenization SSA and its associated technical control system began in its exploratory period in the 1870s-1890s, moved into a consolidation period from the 1890s to World War I, and began to decay between the two world wars. The rise of homogenization coincided with many of the failed, experimental control systems mentioned earlier. However, homogenization succeeded where these other systems had failed because it radically transformed the organization of work in the factories by the application of new technologies. Specifically, the mechanization of production was the logical extension of the drive system because it created a more detailed division of labor, an intensification of work effort, and enhanced control of the labor process by employers.

The new system of control was thus structural in nature because it was embedded in the technical organization of the capitalist firm. This system of *technical control*, epitomized by Fordism and the assembly line, involved designing machinery and planning the flow of work not only to produce greater efficiency in production but also to have more effective control of workers. Moreover, technical control overcame many of the deficiencies of simple forms of control. Because it was embedded in the technical structure of the firm, it was impersonal in nature and blunted the growing class antagonism of the earlier system (at least for a while). It diminished the role of foremen, subjecting them to the same system of control as the workers. Finally, with varying degrees of success, technical control led to a "rationalization" of the labor process that undermined crafts knowledge of workers and reduced them to the status of semiskilled operatives or unskilled laborers (Braverman 1974), hence, the leveling or homogenizing effects of the new system.

Technical control, combined with extensive efforts to create larger pools of surplus labor, was largely successful in reasserting capitalist control of factory work and lower-level white collar work by reducing workers to interchangeable parts in the vast apparatus of production. But it did so only with costly side effects for capitalists. By homogenizing workers and tying the firm's entire workforce to a common rhythm of work, technical control simultaneously raised workers' class consciousness and elevated work conflict to a plantwide phenomenon. In effect, capitalists' resorting to technical control organized, radicalized, and galvanized many workers to engage in broader forms of collective resistance, such as industrial unionism, unprecedented labor militancy, sit-down strikes, and boycotts. As the
nation floundered through the Great Depression, capitalists faced not only an economic crisis but also a renewed crisis of control in the workplace. Both crises were temporarily subdued by the onset of World War II, the implementation of wage and price controls, and the national effort to win the war.

Segmentation and Bureaucratic Control

In the aftermath of World War II, collective memories of the industrial unrest of the Depression Era, the specter of communism in the Soviet Union, and the trajectory of world events during the Cold War heightened many U.S. capitalists' fears of a return to the class warfare of the 1930s. A new social structure of accumulation labeled segmentation emerged to remedy some of the problems of the previous era. The segmentation SSA and its accompanying bureaucratic control system entered its exploratory period between the two world wars, gained ascendance during the consolidation period from the end of World War II until the early 1970s, and has been undergoing a period of decay from the mid-1970s to the present. We argue that the past 25 years or so represent the decay period of the segmentation SSA and the exploratory period of the next long swing to spatialization (see Table 5.1).

Segmentation is marked by a reversal of homogenization and a tendency toward a bifurcation of the labor market between what O'Connor (1973) calls the "monopoly" and "competitive" sectors of industry (cf., Averitt 1968), labor market segmentation in the occupational structure (Reich, Gordon, and Edwards 1973; Osterman 1975; Rumberger and Carnoy 1980), and internal labor markets (Doringer and Piore 1971) as mechanisms creating structured mobility in the primary labor market. Segmentation theorists assume that labor market structures were more or less consciously conceived as part of a "divide and conquer" strategy by capitalists (Marglin 1974; Stone 1974): Workers in different segments of the labor market were subjected to different regimes of work organization, work rewards, and career mobility in an effort to diffuse worker solidarity. For instance, workers in the primary labor market typically achieved stable jobs with good pay and fringe benefits, good job security, and opportunities for advancement through internal labor markets and relatively benign authority systems with due process for the resolution of worker grievances. Workers in the secondary labor market, by contrast, experienced marginal jobs with low wages and few fringe benefits, little job stability, and dead-end career paths and arbitrary authority systems with little or no due process. Employers thus relied on primary markets and internal labor markets to guarantee an ample supply of skilled, reliable workers for the more important jobs in the firm, and on secondary labor markets and the external labor market to provide an adequate supply of unskilled workers for less important jobs.

Processes of labor-market segmentation were reinforced by broader societal changes that were integral to the segmentation SSA and helped restore the conditions for sustained prosperity in the years immediately after World War II (Bowles, Gordon, and Weisskopf 1983). First, there was a capital–labor accord between monopoly capital and organized labor, in which unions guaranteed labor peace in exchange for a growing slice of the economic pie (Weisskopf 1981). This arrangement not only muted levels of industrial conflict but it also channeled strike activity into economistic issues and away from issues that fundamentally challenged the
capitalist organization of work (Wallace 1989a). The capital-labor accord further served to reinforce processes of segmentation by further privileging unionized workers in the monopoly sector at the expense of nonunionized workers in the periphery sector. Second, there was a capital-citizen accord, in which the state devised various programs for economic protection of the elderly, the poor, and the unemployed, thus providing a modicum of economic security for vulnerable segments of the population (Bowles and Gintis 1982). These measures served both to legitimate the role of the state and to guarantee an environment for the sustained accumulation of capital (O'Connor 1973); at the same time, an institutionalized “social wage” effectively set a floor for wages of the working poor. Finally, the Pax Americana, by which the United States emerged after World War II as the dominant economic and military power in the world, helped to extend the reach of U.S. capitalism by opening new markets for labor, raw materials, and manufactured products. During the two-and-a-half-decade period of consolidation after World War II, these mechanisms spurred a “postwar Golden Age” of capitalist accumulation (Arsen 1991).

Broader processes of segmentation in the labor market in the postwar period were complemented by the emergence of systems of bureaucratic control in the firm. Bureaucratic control resulted in part from a confluence of interests of employers, unions, customers, regulators, and the courts but, ultimately, employers fashioned it into an effective instrument for controlling and disciplining labor. Whereas technical control was confined to the technical organization of work, bureaucratic control was embedded in the social and organizational structure of the firm. Bureaucratic control consisted of a promulgation of written rules and procedures that governed job classification systems, work rules, working conditions, wage and promotion policies, evaluation and discipline of workers, and the resolution of worker grievances. Bureaucratic control thus ushered in a restratification of the firm, in which the ever-increasing number of job classifications was associated with subtle or not-so-subtle differences in power, autonomy, prestige, wages, job security, and prospects for promotion. In union settings, these bureaucratized work procedures were typically devised with the assent and willing participation of unions in order to further enhance the job security of their members.

Bureaucratic control was ideally suited to the large-scale operations of the huge, multidivisional firms that dominated the monopoly sector of the postwar U.S. economy. It was a system of control that could be extended with equanimity to all workers in the firm, including the growing white-collar workforce. The faceless, impersonal nature of bureaucratic control concealed the class basis of capitalist accumulation, and the hyperstratification of the workforce diffused the “us versus them” mentality that had pervaded the relations of production under homogenization. Internal labor markets routinized advancement within the firm into a perfunctory marriage of structural opportunity and worker seniority rather than leaving it to the personal discretion of managers. Furthermore, unlike earlier control systems that pushed workers to their limits, corporations utilizing bureaucratic control “survive and prosper on their ability to organize the routine, normal efforts of workers, not on their ability to elicit peak performances” (Edwards 1979:146). Bureaucratic control reigned supreme in an era when standardized products and services for mass consumer markets dictated specialized job tasks in a routinized, though not optimally efficient, organization of work (see also Bendix 1956).
Even so, by the writing of Edwards's *Contested Terrain* in 1979, the contradictions of bureaucratic control had surfaced, revealing “a pact with the devil that, while offering temporary respite from trouble, spells long-term disaster” (p. 157). First, the increased security of jobs under bureaucratic control meant that workers could turn their attention to other concerns and individually or collectively vent frustration about jobs that were alienating, boring, dissatisfying, or lacking in challenge. Second, bureaucratic control—aided by long-term labor contracts and cost-of-living agreements—accelerated the process of transforming labor costs from a variable to a fixed cost of production, putting the squeeze on capitalists’ profits especially during downswings in the business cycle. Hence, bureaucratic control had presented a crisis between the desire for a loyal workforce with high job security and the need for flexibility in the allocation of labor—a crisis that could no longer be put off by modest internationalization of labor. Third, bureaucratic struggle had potentially politicized class struggle by making the struggle over rules and procedures within the corporation part of a broader struggle for economic democracy and citizens’ rights in society. This politicization took a decidedly unfavorable turn for workers with the Professional Air Traffic Controllers Organization (PATCO) strike of 1981.

**TRANSITIONAL FORCES SHAPING THE NEW SSA**

Starting about 1973, many forces in the domestic and international political economy converged to create a crisis of productivity and accumulation for U.S. capitalists. The period since then—particularly the 1970s and 1980s—has been marked by periodic recessions and an overall slowdown in economic growth. During this period, four major transitional forces augured a fundamental transformation of the postwar social structure of accumulation. These changes have slowly, but inexorably, transformed the character of work in the last quarter century and portend even greater changes in the next century. In fact, we contend that these four forces—globalization of the economy, technological changes, flexible production and accumulation systems, and the ascendance of finance capital—laid the foundation for the shift to spatialization and technocratic control. Each of these changes are interlinked, so that it is difficult to separate their effects, but we briefly describe their unique contributions to the transformation of work.

First, increasing globalization of the economy fundamentally challenged U.S. hegemony in the world capitalist system, stirring intense foreign competition in domestic industries such as automobiles, steel, and electronics (Hart 1992). Heightened intercapitalist rivalry, domestically and abroad, compelled U.S. capitalists to adopt “lean and mean” solutions to the organization of their production processes while evolving new systems of globally networked production (Harrison 1994). In addition to the sheer forces of economic competition, the internationalization of the U.S. economy took four tangible forms during this period: (1) a growing share of U.S. Gross Domestic Product (GDP) devoted to trade (exports and imports); (2) the rising penetration of foreign direct investment into the United States (Brady and Wallace in press); (3) accelerated capital flight as U.S. firms disinvested in domestic facilities and shifted to foreign production (Epstein 1996); and (4) the flood of legal and illegal immigrants seeking work in the United States. All these
changes bespeak a leveling of the playing field in the global economy and an unprecedented interconnectedness among global capitalists, compelling new forms of economic organization, intercapitalist cooperation and conflict, and work organization. Joint ventures between U.S. and foreign auto manufacturers are but one manifestation of such new economic arrangements.

Second, rapid technological changes are transforming industries, and the nature of work within them, at a greater pace than ever before and eliminating temporal and spatial barriers of the mass production era. Technological innovations in finance, marketing, inventory control, production, sales, and distribution are revolutionizing both manufacturing and service industries, as evidenced, for example, by the new possibilities of the Internet. Although the complexity and variations in the new technological systems are great, the common thread that unites many of them is computerization and the manner in which it facilitates the seamless, instantaneous flow of information and other resources (even capital) among nodes of production and distribution. Perhaps the most profound aspect of recent technological change is its sheer rapidity and the degree of uncertainty that it raises among firms seeking to maintain their competitive edge. These technological transformations that have impacted the capitalist firm have obvious implications for the organization of work and, as we argue later, provide the basis for the new era of technocratic control of the labor process.

Third, there has been a shift from the Fordist production techniques of the mass production era to new modes of flexible production, what Piore and Sabel (1984) call the “second industrial divide.” Flexible production systems in manufacturing, such as computer-aided design (CAD) and manufacturing (CAM) processes, combine the best features of mass production and small-batch production processes. This new system of production might be called “mass customization” because it permits efficient, large-volume production of customized products to meet precise consumer specifications. In the 1970s and 1980s, many U.S. industries found themselves playing catch-up ball against their competitors in Germany, Japan, and other countries that had pioneered flexible production techniques (Florida and Kenney 1991). Hence, the globalization of the economic system hastened U.S. producers’ urgency to move toward flexible production in order to maintain their competitiveness. Flexible production, including just-in-time inventories, offshoring, downsizing, and modular production, has thus been one of the most important “equalizers” in the new global economy, leveling the playing field between the once-dominant United States and other advanced capitalist countries.

Rubin (1996) and others (e.g., Harvey 1989; Perrucci 1994) have argued that the quest for flexibility provides new advantages to managers and owners, and that this quest is not limited to production techniques in manufacturing. Rather, they argue that the economy as a whole is shifting toward a system of “flexible accumulation” in which both manufacturing and services are characterized by flexible production, flexible technologies, flexible distribution, and, importantly, flexible labor processes. Several recent authors contend that the widespread shift to flexible labor processes seeks to overcome the rigidities of the Fordist, bureaucratic regime in three fundamental ways by creating wage flexibility, employment flexibility, and functional flexibility (Rosenberg 1991; cf. Wood 1989). These practices address, in part, the fundamental crisis of the segmentation SSA, the so-called “pact with the devil” created by bureaucratic control (Edwards 1979).
Finally, the continual ascendance of finance capital since the 1920s, as reflected in the role of banks and other major institutional investors who manage loans, stocks, bonds, and other financial assets, is a critical factor in the new global economy (Helleiner 1996). Finance capitalists (with the aid of computers and other information technologies) expedite the flow of capital among distant operations of multinational firms, among networks of economic actors, or through international financial entities such as the World Bank and the International Monetary Fund (IMF). Financial flows can move instantaneously in response to changing economic conditions and directed toward the most profitable ventures in the global economy, and are not constrained by limits of time, space, or national currency (Rubin 1996).

The ascendance of finance capital has two important consequences for large U.S. capitalists: (1) it has reduced their traditional dependency on their workers, their communities, and local, state, and national governments; and (2) at the same time it has forged a deepening integration of the global economy among multinational firms and other global economic actors such as the IMF.

The four interlinked forces of globalization, technological change, flexible accumulation, and finance capital have each contributed to what Bluestone and Harrison (1982) call the "hypermobility" of capital that characterized the recent period. In turn, this hypermobility has laid the groundwork for the transition to the new SSA of spatialization and the system of technocratic control that will mark the next long swing of capitalist accumulation. We now turn to a discussion of this new era of work.

**SPATIALIZATION AND TECHNOCRATIC CONTROL**

The last quarter century has been a period of decay for the old SSA of segmentation/bureaucratic control and a period of exploration in the new SSA of spatialization/technocratic control. Much of this period has been marked by experimentation with numerous work arrangements posed as alternatives to the inefficiencies of bureaucratic control. Job enrichment schemes, worker participation plans, Japanese-style quality circles, and profit-sharing schemes may have humanized the face of bureaucratic control, but they did not fundamentally alter its goals—to secure, within the walls of the capitalist firm, a cooperative, acquiescent, but requisitely skilled and motivated, workforce. As such, like scientific management, welfare capitalism, and company unions of an earlier era, they are simply pale extensions of a faltering system of bureaucratic control and do not fundamentally alter the social relations of production in the capitalist firm.

**Spatialization**

Underlying these surface currents is a sea change of more profound transformations that marked the exploratory phase of spatialization. Spatialization centers on the employers' constant quest for the optimal spatial arrangement of their business operations in order to maintain the desired proximity to labor markets, natural resources and raw materials, and consumer markets. With regard to labor, spatialization involves the spatial restructuring of the labor process so that different work tasks can be done in different geographic locations, with no loss in profitability or
capitalist control of the overall process. No longer bound by conventional temporal or spatial constraints, employers can use spatial relocation, or threats of relocation, to discipline workers, keep wages relatively low, and maintain an ample supply of quiescent labor. Spatialization thus involves a new twist on an old theme: the capitalist quest for a reserve army of workers who stand ready to replace existing workers at lower wages and under more degraded conditions of work. Simply put, spatialization affords capitalists wider access to cheap sources of labor in the new global economy.

The onset of spatialization is made possible by the historical configuration of U.S. capitalism in the latter part of the 20th century, as outlined in part in the previous section. In particular, however, the real or threatened use of capital flight as a means of securing labor discipline is made more viable due to (1) the increasing modularization of work tasks (i.e., fragmentation of work into discrete components or modules and a highly integrated, spatial division of labor that allows different modules to be carried out in different locations); (2) advanced transportation technologies that expedite the transport of raw materials and finished products to their desired destinations; (3) advanced information systems and telecommunications technologies that enable capitalists to coordinate and control disparate operations around the world; and (4) new geopolitical agreements addressing trade, investment, currency reform, and immigration that facilitate economic liberalization and globalization (e.g., NAFTA, EU, GATT, etc.). Having sufficiently routinized work tasks in many manufacturing and service industries (point 1), technological innovations in transportation, telecommunications, and trade (points 2, 3, and 4) have made entire segments of work geographically fungible.

We argue, however, that employers' ultimate goal in pursuing spatialization is not spatial relocation as an end itself but rather the realization of a mature system of flexible accumulation of which a flexible labor process is a vital component (Rubin 1996). The actual threat of spatial relocation may be as effective as relocation itself, in many instances, in achieving a willing and compliant workforce that facilitates flexible accumulation. Hence, spatialization is a very efficient process for achieving the three major aspects of labor flexibility identified by Rosenberg (1991): wage flexibility (adjusting wages to meet labor market conditions); employment flexibility (altering the number of workers or number of hours as needed); and functional flexibility (varying the work tasks performed by individual workers in response to production needs).

Nascent forms of spatialization are apparent in many workplace trends of the past quarter century. For instance, the "deindustrialization of America," which began in the 1970s, cost millions of blue-collar workers their jobs as plants closed and moved their operations overseas or consolidated them into more streamlined operations domestically (Bluestone and Harrison 1982; Wallace and Rothschild 1988). Bluestone and Harrison document a loss of 37 million jobs in the 1970s, offset by a gain of 38 million jobs—primarily in the low-wage sector—during the same period. Flaim and Sehgal (1987) show that deindustrialization was not confined to blue-collar workers but also affected managers and professional workers; sales, service, and technical workers; and workers in nonmanufacturing industries. Deindustrialization signaled the beginning of a new "hypermobility of capital" (Bluestone and Harrison 1982) in which capital could flow quickly toward low-wage labor pools first in the American "Sunbelt" and then in developing countries or even
other developed countries (Alderson 1997; Brady and Wallace 1999). Meanwhile, sophisticated communications technologies permitted U.S. companies to monitor their global operations on a daily basis from the comfort of their U.S.-based headquarters. The end of the Cold War in 1989 helped make the world safe for capitalism, and U.S. capitalists reached out to Latin America, China and Southeast Asia, and Eastern Europe (Bradshaw and Wallace 1996).

In the early 1980s, U.S. workers who were fortunate enough to keep their jobs faced the prospects of accepting deep wage concessions, fringe benefit givebacks, or more flexible work rule arrangements. Bitter labor struggles at companies such as Hormel and Caterpillar frequently ended in futility as workers either buckled under or lost their jobs. During the heyday of the wage concession movement, average wage increases among unionized manufacturing workers plummeted from 10.2 percent in 1980 to 1.5 percent in 1986 (Wallace 1998). Workers in nonunionized settings fared better in some cases but generally followed the pattern set by unionized workers. The long-term effect was to undercut seriously the wage structure for middle-class workers, reassert capitalists' claims for labor process flexibility, and send a sobering message to workers who stepped out of line. Thus, even for workers who retained their jobs, spatialization had a significant impact: The threat of relocation served to keep worker resistance in check.

Deindustrialization set in motion a broader employer assault on labor unions in the 1980s, which was critical for transforming the social structure of accumulation. The watershed moment of this assault—President Reagan's crushing of the PATCO strike in 1981 by discharging striking air traffic controllers held to be in violation of laws regarding the conduct of federal employees—signaled once and for all the demise of the capital-labor accord and fundamentally altered the rules of the game for employer-worker relations in the emerging regimen of flexible accumulation. New employer strategies for weakening unions were replete with signs of spatialization: whipsawing (pitting two distantly located unionized plants, or in some cases, a unionized and nonunionized plant, in the same company against each other in order to force concessions); two-tiered wage structures (offering new employees lower wages and benefits than longtime employees doing the same jobs); outsourcing (having workers in lower paying nonunionized plants do part of the work formerly assigned to unionized employees); and industrial homework (a special type of outsourcing in which work is hired out on a contingency basis to workers in their homes). An especially pernicious variation of industrial homework is the rise of child labor, in which corporations either hire directly or, more typically, work through subcontractors to employ children indirectly in developing countries to work in deplorable conditions for contemptibly paltry wages.

These deunionization strategies were essentially precursors to the contingent labor movement that exploded in the 1990s. The "temping of America" has affected all segments of the occupational structure. While contingent workers are now common in data entry, clerical, word processing, general labor, light industrial, and warehouse work, varieties of contingent work are also infiltrating professional, technical, managerial, and academic work. Estimates of contingent work—a lot depends on how one defines the gray areas—vary between 17 and 25 percent of the labor force in the 1990s (Henson 1996:2). Rifkin (1995:191) cites estimates that temporary, contract, and part-time work may constitute as much as 35 percent of the labor force by the year 2000. The meteoric rise of contingent work is closely
associated with the trend toward downsizing that has pervaded corporate America (Wallace 1998). Estimates of the number of U.S. workers who were downsized between 1980 and 1995 range between 13 and 39 million (Sennett 1998:49). A 1995 *New York Times* survey determined that worker experience with downsizing is widespread: About one-third of all households have a member who has been laid off at least once since 1980, and another 40 percent know of a friend, relative, or acquaintance who has lost a job. Of those who were downsized, 29 percent said it caused a major crisis in their lives, and another 47 percent said that it caused a minor crisis; 43 percent took six months or longer to find new jobs, and 29 percent exhausted unemployment benefits; 24 percent were unable to find jobs in the same line of work, and 42 percent, who found new work, had to take jobs that paid less than their old jobs (*New York Times* 1996).

The link between downsizing and contingent labor is supported by another finding from the *Times* survey: 30 percent of downsized workers were unable to find a permanent job to replace the one they lost. Presumably, still others had to settle for part-time work or work that paid substantially less than their former jobs. Sometimes the connection between downsizing and contingent work is too close for comfort. In 1992, Aetna Life & Casualty laid off 2,600 workers, then rehired them to do the same work for less pay and no fringe benefits (Zachary and Ortega 1993; Reskin and Padavic 1994). Downsizing and contingent labor are vital components of the lean-and-mean look of the new, flexible corporation and are clearly manifestations of the spatial restructuring of work in which permanent workers are constantly reminded by the temporary workers alongside them how contingent their own employment really is (Smith 1997; Budros 1997; Biewener 1997). In the wake of downsizing over 120,000 workers at AT&T, one manager’s statement spoke volumes: “We need to recognize that we are all contingent workers in one form or another. We are all victims of time and place” (Andrews 1996:D1, D6). Ethnographic studies of contingent work suggest that permanent and temporary workers are victims of a “divide and conquer” strategy whereby both groups experience distrust and resentment of each other, an intensification of work effort, greater job insecurity, and tighter managerial control (Parker 1994; Rogers 1995; Henson 1996; Smith 1998).

Although spatialization implies a multilayered (i.e., local, regional, national, transnational, global) spatial division of labor, it is inextricably linked to globalization. In fact, numerous extant visions of globalization explicitly incorporate key features of spatialization and give us a glimpse of the future of this SSA. Giddens (1990:64) identifies the key feature of globalization as the “space–time distanciation”; in other words, globalization can be defined as “the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa.” Similarly, others note that globalization implies a “shrinking” of the world through the compression of time and space (Harvey 1989; Mittleman 1996). Gordon (1996:144) distinguishes between a “high road” path to capitalist development in the global era that “seeks to build economic growth and prosperity through cooperation and strong worker rewards, including relatively rapid real wage growth” and the “low road” that “relies on conflict and insecurity, control and harsher worker punishments, and often features relatively stagnant or even declining real wage growth.” While both paths might conceivably result in economic growth at some level, the
“low road” path followed by the United States in recent years is characterized by radical deindustrialization and capital flight to foreign countries in a single-minded pursuit of lower labor costs. While this strategy is likely to yield immediate, short-term gains for corporations, managers, stockholders, and pension and mutual funds, it is not likely to result in a sustained, broadly shared economic prosperity either domestically or in the host country.

Castells (1996:92), who succinctly defines the essence of a spatialized, global economy as “an economy with the capacity to work as a unit in real time on a planetary scale,” envisions a globalized network of production in which information and capital flow freely without boundaries of time and space. In this network, a variety of new organizational forms are emerging (see also Heydebrand 1989). By their very nature, numerous aspects of flexible accumulation systems such as outsourcing and just-in-time inventory systems require greater interorganizational coordination and cooperation. Partnerships, joint ventures, subcontracting, and temporary relationships with independent contractors—along with traditional mergers—will increasingly blur organizational boundaries. Many of these new arrangements—like the spate of recent joint ventures in the international automobile industry—intentionally transcend national boundaries in order to exploit market advantages held by one partner or the other, achieve economies of scale, pool information or know-how, or simply share the risk of uncertainty in quickly changing or turbulent markets (Hollingsworth 1998). Whatever the reasons, these new organizational entities and arrangements further deepen the web of transnational relationships among owners of capital and their managers and agents. Modularization of production enhances this process, since different production modules can be placed in different locations without sacrificing effective coordination of the entire system. Such a system, some have argued, is ensconced in a web of “collective institutions” such as cooperative training institutes and cooperative marketing facilities that forge a delicate balance of cooperation and competition among capitalist interests (Hollingsworth 1998). In this scenario, individual organizations become simply nodes in a globalized network of production and conduits for the international flow of capital and information. As such, capitalism in the era of spatialization increasingly approaches Harrison’s (1994) moniker of “concentration without centralization,” in which capitalist economic power is enhanced despite institutional decentralization.

**Technocratic Control**

A vital component of any social structure of accumulation is a system of labor control that is compatible with and facilitates profitability within the emerging SSA. Spatialization requires a fundamentally new control system in order for capitalists to maintain effective control and coordination of the labor process even as it becomes more decentralized and spatially dispersed. Following Beverly Burris’s (1993) *Technocracy at Work*, we anticipate the emergence of a system of technocratic control and contend that it allows both the flexibility and the coordinating features necessary to facilitate work in a spatialized setting (for earlier discussions of technocracy, see Akin 1977 and Alvesson 1987). While technocratic control may incorporate elements of earlier control systems, it centers on the use of computerized technologies in the workplace and the reliance on technical expertise in the
creation, dissemination, and interpretation of computerized information. Computers are fast becoming one common denominator that cuts across a variety of workplaces today, including, but not limited to, "superautomated factories, high-tech firms, telecommunications companies, insurance companies, [and] medical systems" (Burris 1993:143). Rifkin (1995:61) cites one estimate that there may be one billion computers in the world by the turn of the century—one for every six people on earth. Of course, these computers are increasingly concentrated in the United States and other advanced capitalist nations. Two recent surveys of Indiana workers found that almost two-thirds of all workers surveyed worked with computers at least a few hours on the job each week, that average computer usage is on the rise, and that the use of computers cuts across the occupational spectrum. Even workers who do not use computers directly cannot escape a computerized world in which they are likely to be impacted by the use of computers by supervisors, subordinates, co-workers, customers, or competitors.

Computers in the workplace can be simultaneously a tool for unimaginable autonomy, creativity, and spontaneity (Hirschhorn 1984) or an instrument for mind-numbing routinization and drudgery (Shaiken 1984). In Zuboff's (1988) terms, computers can be used to either "informate" or "automate" the work of those who use them. Empirical accounts of the impact of computerization on worker skills levels, autonomy, and power show decidedly mixed or offsetting effects in a variety of work settings (Vallas 1993; Iacono and Kling 1996; Creighton and Hodson 1997); other studies suggest technological displacement of workers, particularly lower-skilled workers (Aronowitz and DiFazio 1994; Rifkin 1995). Some scholars believe that the computer revolution might eventually entail widespread use of "smart machines" or artificial intelligence that will have far-reaching implications for humans' place in the organization of work (Rifkin 1995). Perhaps the only certain conclusion to be drawn from the vast literature on computerization in the workplace is that the real possibilities and limitations of computerized work are determined not so much by the machine itself but by the capitalists, entrepreneurs, and managers in whose interests computerized work is organized. Burris (1998) contends that computer technologies are both more flexible and more variable than previous workplace technologies, leading to a wide range of applications and consequences for the organization of work.

Numerous aspects of technocratic control coincide with prevailing tendencies in spatialization and mark fundamental departures from previous work arrangements. First, there is an underlying centralization of control of work processes despite physical decentralization of computers and related technology, a feature that is epitomized in the emerging pattern of telecommuting, teleconferencing, and telework. This aspect of technical control parallels the aforementioned "concentration without centralization" that characterizes global capitalism in the spatialization era. This control is typically programmed into the design of computers through management information systems (MIS), e-mail, and other software that allocates the flow of work, monitors quantity and quality of worker output, and provides technological surveillance of work (and nonwork) activities. In some cases, workers may operate in an aura of relative freedom and autonomy, and exercise some discretion over the pace and flow of day-to-day work activities, retaining the traditional distinction between conception and execution of work that prevailed
under more mechanical technological systems. In more routinized work situations, however, the very execution of tasks is essentially carried out by computerized processes and the worker's status is reduced to that of a machine tender who monitors the performance of the system and the quality of the output, and reports breakdowns or malfunctions to qualified technicians (Burris 1993).

Some have argued that, in either circumstance, technocratic control tends toward a form of "algorithmic control" characterized by the reduction of "decision-making as much as possible to a set of self-contained rules (algorithms) implementable by a computer" (Applebaum and Albin 1989:252; cf., Vallas 1999). Such algorithmic control processes are increasingly prevalent in occupations as diverse as medical technician, automobile mechanic, baker, insurance adjuster, machinist, travel agent, bank teller, stockbroker, and UPS delivery person. Garson's (1988:521-552) depiction of the computerization of the work of airline reservation clerks is typical of the degree to which computerized systems of control monitor worker productivity, keep track of errors, and routinize interactions between clerks and customers despite ostensible decentralization of the computer hardware. In extreme cases, such as various forms of professional work, technocratic control threatens to undermine traditional proprietary rights to intellectual property, to compromise confidential information exchanged with clients or customers, or to undermine the autonomy and professional judgment that has been the hallmark of many professions, as in health management organizations (HMOs). Consequently, technocratic control is premised ultimately on a logic of not only routinizing nonroutine work activities to the extent possible but also of bringing them under closer, more omnipresent managerial supervision than is possible under previous systems of control (for a discussion of routinization in the service sector, see Leidner 1993).

Second, just as spatialization is transforming relationships between the haves and have-nots in the global economy, technocratic control is leading to a polarization between the haves and have-nots in the new computerized workplace (Burris 1993). This new polarization mainly centers on a dichotomy between those "experts" who analyze, manipulate, and interpret information contained in computerized systems, or design and repair the system itself, versus "nonexperts," such as clerical workers or data entry personnel, who merely collect, store, and perform routine (algorithmic) operations on computerized information. Kraft (1977, 1979) was among the first to note this polarization between expert and nonexpert sectors among computer programmers and operators in the 1970s. This dichotomy between expert and nonexpert sectors that now pervades all sectors of work is the pivotal axis of the reconstituted core and periphery of the contemporary workplace in which essential personnel are retained as permanent employees and nonessential personnel are downsized and rehired as contingent workers. Kunda (1992) suggests subtle distinctions in the form of control exercised over workers in these two sectors: Experts are subjected to "normative control" whereby they are expected to demonstrate their identification and internalization of the goals of the organization by working extra hours, volunteering for more challenging work assignments, and socializing with influential insiders in the workplace, while nonexperts are subjected to more coercive, utilitarian forms of control and are excluded from informal interactions with influential workers. Hence, technocratic
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control is not only a key force in sculpting the lean-and-mean look of the modern capitalist enterprise but also an important feature shaping the informal culture of the workplace.

Third, technocratic control facilitates a new level of social networking among managers, workers, suppliers, customers, and other outside agents that reinforces the prevailing pattern of interorganizational networks that characterizes spatialization. E-mail, the Internet, and other computerized systems of communication defy the rigid, hierarchical boundaries that constrained social interaction in the bureaucratic firm and spawn denser, more dynamic, fluid lines of social interaction that cut both laterally and vertically within the organization, as well as spilling over, outside organizational boundaries. These new modes of communication have contributed to the “delaying” of work organizations; spontaneous, less formal, even serendipitous interactions among workers that cut across traditional status and power boundaries; and new possibilities for interorganizational linkages to exchange information and ideas. Importantly, the social networking capacities of computerized communications have made possible new “network forms of organization” that operate in the interstices of Williamson’s (1975) classic distinction between markets and hierarchies.7 Network forms of organization are flexible entities that occur whenever “any collection of actors … pursue repeated, enduring exchange relations with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during the exchange” (Podolny and Page 1998:59). As this statement implies, the networking functions of technocratic control may pose problems of coordination of internal organizational functions and also may have potentially empowering aspects for workers. For instance, among professional workers, computerized communication enhances possibilities for collaboration and more efficient provision of services; for all workers, it has potentially democratizing features that allow workers to pool resources and share information in a manner that potentially runs at cross-purposes to the goals of managers (Wellman et al. 1996).8

Fourth, technocratic control gives rise to a neo-Taylorist, technocratic ideology in which workplace and organizational decisions are driven by technical imperatives that are believed to be discernible only by technical experts and are beyond the comprehension of ordinary workers (Burris 1993, 1998). This ideological quest for Taylor’s vision of the “one best way” to accomplish specific work tasks or organizational goals places a premium on technical expertise and tends to subordinate all other considerations in how work should be organized. Moreover, this technocratic ideology tends to depersonalize managerial control, since workers blame computers, not managers, for more onerous conditions at work. Importantly, technocratic ideology preempts discussions of alternative arrangements of work, obscures what might otherwise be viewed by some as political choices about the restructuring of work, and legitimizes new status and power arrangements that place technical experts in critical roles in the organizational authority structure. In this way, the microdynamic of technocratic ideology compliments the macro-level “low road” mentality that drives spatialization and globalization of the economy (Gordon 1996). Both ideological systems share a deterministic, bottom-line mentality that centers on profitability and managerial control to the exclusion of initiatives that enhance the quality of working life and the human potential of workers. The convergence of these ideological traditions is revealed in the words of one manage-
ment spokesperson describing the motivation for moving production facilities from the United States to foreign countries: “The rule of the game seems to be if more than 50 percent of your manufacturing costs is labor in the United States, you either automate or you get out” (quoted in Gray, Bohlen, and Fernandez-Kelley, 1989).

These four areas, then, represent a sort of functional compatibility between spatialization and technocratic control that suggests a resilient edifice for the next social structure of accumulation. In the next section, we draw upon these observations to outline briefly some of the implications for the future of work in the United States in the next century.

**IMPLICATIONS FOR THE FUTURE OF WORK**

Our discussion of the emergence of spatialization and technocratic control holds several important implications for the future of work in the United States. In this section, we draw upon these observations to outline what we believe are likely to be the cutting-edge issues in the organization of work in the first half of the 21st century. These issues will not only shape the contours of work in the future but will also constitute the core areas of research by scholars of work.

**Flexibility**

We have argued that the key goal for employers in the era of spatialization is the realization of a system of flexible accumulation in which a flexible labor process is a vital component (cf. Rubin 1996). Consequently, the key feature that will dominate most discussions of workplace organization in the era of spatialization is flexibility, but flexibility for whom? We contend that flexible accumulation systems emerging in both manufacturing and service settings have created an impetus toward mass customization, that is, large-volume production of customized products and services to meet consumer demands. Mass customization compels employers to adopt flexible production systems, flexible technologies, flexible arrangements with other actors in their environments, and flexible labor processes.

A sharp debate has emerged about the implications of the new flexibility for work arrangements (cf. Vallas 1999). Some have argued that the new flexibility implies the creation of “high-performance work systems” in which employers give greater latitude and discretion to workers and encourage collaborative work teams (Cappelli et al. 1997). Bridges (1994a, 1994b), and others contend that the new flexibility awakens an entrepreneurial spirit among workers, in which they carve out their own niche in a constantly changing work environment. While there is some evidence that some high-end workers enjoy more autonomy and freedom from supervision as a result of the new flexibility (see, e.g., Adler’s 1992 study of work restructuring at the GM NUMMI plant), most recent empirical evidence supports an alternate view, namely, that work in flexible firms is more standardized than ever (Shaiken, Herzenberg, and Kuhn 1986), that hierarchical organization of work is slow to disappear (Vallas and Beck 1996), and that many employee-involvement plans and team systems of work are simply newfangled schemes of social control (Graham 1995). Ethnographic studies of the temporary help industry show that while employers espouse flexibility in hours, job assignments, and work
routines, in fact, temporary workers are tightly constrained by the exigencies of the industry (e.g., Henson 1996). The common theme of much of this research seems to be that the benefits of flexible accumulation systems redound overwhelmingly to employers as they seek to eclipse the rigid and encumbering labor arrangements under bureaucratic control by achieving wage, employment, and functional flexibility (Rosenberg 1991).

**Rising Levels of Job Insecurity**

One defining feature of primary labor-market employment under the SSA of segmentation/bureaucratic control was the social contract that existed between workers and employers. This contract essentially promised that workers who did a good job for their employers would be rewarded with secure, career-long employment at an economic level sufficient to support themselves and their families. With the demise of the capital–labor accord, this social contract has vanished. In its place, the new SSA of spatialization/technocratic control offers constant threats of capital relocation and technological displacement of workers' skills, and suggests a constantly churning occupational structure in which jobs are created and destroyed, redesigned and transformed. Recent workplace trends of downsizing, two-tiered occupational structures, outsourcing, and contingent labor signal that job insecurity may be the dominant feature of the new era of spatialization, and that the threat, if not the reality, of job loss cuts across the occupational structure. In the future, researchers in the area of work will devote increasing effort to understanding the implications of rising job insecurity for workers' lives.

**Perpetual Skills Restructuring**

Previous debates on the impact of workplace technologies on the skill requirements of workers have centered on skills upgrading (Bell 1973), deskilling (Braverman 1974), and mixed effects arguments (Spencer 1990). The new SSA of spatialization/technocratic control may render all those debates obsolete as continual evolution of computerized systems of work creates a condition of perpetual skills restructuring in which some workers are constantly challenged to learn new tasks and routines on the job, and others experience the obsolescence of manual or intellectual skills. Constant "skill disruption," as Hodson (1988) calls it, is created by constant shifts in capital and computerization. It suggests that a discontinuous pattern of skill acquisition may supplant the pattern of gradual, but steady, accumulation of skill that characterized the career path of primary labor market workers under bureaucratic control. Some studies suggest that the end result of such skill restructuring is skill polarization in which an expert sector acts upon computerized systems and a non-expert sector is acted upon by the system (see below) (Shaiken 1984; Vallas 1993; Milkman 1997:151-152). Whatever the name—skill restructuring, disruption, or polarization—this process has numerous implications. It suggests that workers will leave and reenter the workforce several times in their career in order to upgrade their skills, and that the payoffs of such retraining are uncertain. It further suggests a virtually continual process of reengineering of jobs in the workplace and a constant reshuffling of the status hierarchy in the workplace as workers with new skills supplant those with old skills.
Polarization of Work Structures

The trend toward the polarization of work structures, specifically, the dichotomization of work between expert and nonexpert sectors, will continue at both the micro (organizational) and macro (societal) levels of work (Burris 1993; Harrison and Bluestone 1988). This is a marked countermovement to the evolution of work structures under the segmentation/bureaucratic control era, in which there were larger proportions of workers in the middle layers of work organizations that possessed moderate levels of authority, skill, status, and economic rewards. This dichotomization to a large extent will correspond with what has been called a “reconstituted core and periphery” in which the organization retains a core of valued (expert) employees with indispensable skills as permanent employees, while employees with easily replaceable skills (nonexpert) are hired on a contingency basis as needs arise. While the relative size of, and social distance between, these two sectors is open to speculation, a continuation of this trend has numerous implications that will ripple through the workplace. One such implication is the difference in the control regimens that might characterize the expert and nonexpert sectors: Expert workers are likely to be exposed to normative control in which the expectations of peers and other influential people is critical in eliciting a good performance, while nonexpert workers are likely to be exposed to more utilitarian, instrumental regimens of control. This will undoubtedly have implications for variations in the work cultures of these two settings.

Decentralization of Work, Centralization of Control

The centrifugal force of spatialization will accelerate the trend toward the decentralization of work in spatially varied settings within the United States and around the world. Spatialization will contribute to the expansion and integration of a global economy in which space and time will diminish as obstacles to the transaction of business and the organization of work. In addition, “telework,” working at home, and working in cyberspace, or in “virtual workplaces,” will become more common. At the same time, computerized control of work-related information will become more centralized in the hands of managers and technical experts. These forces lead to what many have called “concentration without centralization” (Harrison 1994; Sennett 1998; cf. Burris 1993), an insidious system of power that is increasingly obscured by the appearances of participation, autonomy, and self-determination of the component units in the network. Decentralization of work lends tremendous legitimacy to the system of power by unchaining the worker from the iron cage of bureaucracy, but the micromanagement of time and the technological surveillance of labor create a faceless but omnipresent instrument of centralized control.10

Intensification of Work Effort

Bureaucratic control was the first system of capitalist control that was not based on maximization of work effort. Instead, it was premised on the assumption that bureaucratic rules and standardized procedures that elicited a routine performance from all workers would suffice to create an optimal performance for the
organization. This approach to work control was satisfactory in the post–World War II era, in which U.S. capitalists enjoyed a preeminent position in the world economy and held a commanding edge over other countries in technological areas, market control, and worker productivity. However, in the 1980s, the United States faced new challenges from global rivals such as Germany and Japan, which presented the appearance, if not the reality, of workers who were highly committed and highly engaged in the success of their firms. U.S. capitalists concluded from this threat that they must adopt a more vigorous posture that demands more out of its workforce both at home and abroad. Spatialization/technocratic control entails intensified work effort by workers at both ends of the labor market—through normative control at the upper end and technological surveillance and the threat of spatial relocation at the lower end. This intensification is reflected particularly in recent portrayals of the “overworked American” (Schor 1991) and the toll that work is taking on family relations, physical and mental health, and the quality of life.

**Rise of Interorganizational Networks**

Both technical and bureaucratic control were “structural” systems of control in that they were embedded in the technical and social structure of the firm, respectively. Technocratic control, although integrating many features of technical and bureaucratic control systems, is structural in a different sense. Technocratic control and spatialization are embedded in the structure of interorganizational networks that connect workers and firms in different industries and countries in a web of economic production. In keeping with the new logic of flexible accumulation, “loose networks are more open to decisive reinvention than are pyramidal hierarchies” (Sennett 1998:48). Interorganizational networks afford organizations some security in an uncertain economic environment by allowing them to pool and exchange information and other resources, but they are implicitly impermanent, allowing firms to uncouple quickly if circumstances change. Powell and Smith-Doerr (1994:381) state succinctly, “Networklike arrangements are lighter on their feet; they are more readily decomposable and redefinable than the fixed assets of hierarchies.” Even so, these networks provide partial control over external forces that can impact intraorganizational structures and procedures, and, consequently, imply greater uncertainty for workers who are more vulnerable to outside forces that they can neither anticipate nor control. As with earlier systems, this new structural dimension tends to depersonalize the control apparatus and obscure the antagonistic social relations among capitalists, managers, and workers that lie at the heart of the system.

**Delayering of Organizations**

The old regimen of bureaucratic control was premised on the hyperstratification of workers into countless job classifications, status gradations, and pay scales that caused large U.S. firms to display distinctly steep, pyramidal structures. These rigid, hierarchical structures were based partly on the need to create the illusion that everyone had at least a small stake in the internal governance of the firm and partly on the reality that a large amount of human resources in fact was needed to control effectively and coordinate day-to-day activities within the firm. (Edwards
notes the precipitous rise in the ratio of supervisory-to-nonsupervisory personnel with the onset of bureaucratic control; see also Bendix [1956].) Under spatialization and technocratic control, many of the forces that lead to greater interconnectedness among organizations also lead to delayering of the internal structure of organizations. Sophisticated management information systems will continue to routinize many management functions; e-mail will streamline communications both vertically and horizontally in organizations; new modes of technological surveillance of workers will be built into the technostructure of many organizations. In addition, the interlinking of organizations creates some economies in the management of human resources. All of these changes require fewer management and supervisory personnel, suggesting fewer layers between the top and bottom tiers of workers and a more fluid internal structure (Hodson 1988; Burris 1998).

The Jobless Future?

Numerous visions of the future of work share the common theme that work, as we have known it since the dawn of the Industrial Revolution, will undergo a fundamental transformation as we move into the flexible age. This change is described variously as “the end of the job” (Bridges 1994a, 1994b), the “jobless future” (Aronowitz and DiFazio 1994), or the “end of work” (Rifkin 1995). Bridges (1994b:62), whose account has been most influential within business circles, contends that the job, a rigidly defined bundle of work tasks, is a “social artifact … that is going the way of the dinosaur.” In a flexible work culture that pivots on technology and changes rapidly, jobs are an increasingly unwieldy means of packaging work. Bridges and his disciples in the world of business warn that the future will be “jobless, but not workless” (Andrews 1996:D6). They contend that workers will increasingly work in collaborative teams on specific projects of limited duration and move frequently—from project to project or employer to employer—over the span of their careers (cf. Capelli et al. 1997). Workers who prosper in the new world of work will be those who can maintain a sleek portfolio of skills that are in constant demand by employers. They will become the architects of their own careers, negotiating their compensation packages for each project, scheduling their own vacations between projects, providing for their own health and retirement benefits, and taking responsibility for acquiring the training they need to compete in the labor market. Upward mobility will no longer be structured by predictable movements along internal labor markets within the firm; indeed, the flattened organizational structures erode the potential for such built-in advancement (Osterman 1996). Rather, according to Bridges, career advancement will hinge on the resourcefulness of workers in anticipating and creating new opportunities in a dynamic marketplace. Their work tasks and responsibilities will constantly be reinvented with each new assignment and their talents alone will guarantee their employment—not job—security. Bridges (1994a, 1994b) comes frighteningly close to saying that in the future all workers will be contingent workers, a view receiving wider acclaim among corporate powerbrokers, as indicated by the remarks by one manager at AT&T: “In AT&T, we have to promote the concept of the whole work force being contingent, though most of the contingent workers are within our walls” (Andrews 1996:D6). One need not accept Bridges’s argument to this extreme to recognize
some kernels of truth in his observations: In a spatialized economy, the relative impermanence of jobs is likely to be a defining characteristic. This, in turn, will raise new issues for workers and scholars of work alike in coming years regarding such things as the portability of pensions and other benefits, wider availability of child care and other family-friendly programs, and new mechanisms (such as the Internet) for facilitating the match between workers and work assignments.

Declining Intrinsic Rewards of Work

Researchers are beginning to see the signs of the effects of increased job security and the "dejobbing" of work on the attitudes and behaviors of American workers. Despite a booming stock market, low unemployment, and low inflation, there is an underlying sense of anxiety and despair among vast segments of the working population (Wallace 1998). In a recent survey of workers in Indiana, respondents expressed concerns about the deterioration of the middle-class way of life because of declining job security. Of these respondents, over two-thirds thought that it was becoming harder to find a high-paying career with good job security, to own their own home, to take family vacations, and to prepare for a comfortable retirement. Almost 90 percent or more thought that it was getting harder to pay for a college education, to have enough savings to obtain affordable health care, to have enough money to fall back on in an emergency, and to make ends meet financially (Wallace, Jamison, and Laubach 1998).

Other studies have found that the demise of the social contract that structured employer-worker relations during the bureaucratic era has led to mutual distrust by employers and workers. The previously cited 1995 *New York Times* survey found that 75 percent of respondents felt that companies now are less loyal than they used to be to their workers, and that 64 percent felt that workers were less loyal to their companies (*New York Times* 1996:294). In the future, researchers should be attuned to how spatialization and technocratic control affect many of the intrinsic aspects of work: the amount of autonomy and discretion exercised by workers on the job, the degree of organizational commitment and job satisfaction, and the quality of social interaction with co-workers and supervisors at work. Also, as technological tools such as fax machines, cell phones, pagers, and e-mail keep workers in constant touch with their work, the boundaries between work and family are likely to blur, diminishing the quality of life in both spheres (Wallace 1989b).

Gender and Race Divisions

There is ample evidence that the vortex of change created by spatialization and technocratic control will exacerbate existing workplace inequalities based on gender and race. The polarization of the opportunity structure, the erosion of internal labor markets, and the heightened importance of social connections for access to the upper echelons of the labor market will make it more difficult for women and minorities to find and keep quality jobs. The emphasis on educational credentials as a gateway into the expert sector and economic advancement within it works as a disadvantage to those without the resources to gain educational credentials. Access to computers, in particular, is highly segmented along racial and, potentially, gender
lines, and these divisions are likely to enlarge the existing gap between the haves and the have-nots. The malleable and constantly fluctuating nature of the workforce will make it more difficult to identify and remedy instances of race and gender discrimination in the workplace. While some trends point to greater opportunities for women and minorities, the social backlash against Affirmative Action and similar public policies to counter discrimination are major obstacles to continued progress. Similarly, resentment against immigrant (both legal and illegal) workers is likely to grow. Hence, gender and race divisions in the workplace will likely continue to be important concerns.

**Altered Class Capacities**

Edwards's (1979) original characterization of the workplace as a "contested terrain" suggests that the exploration, consolidation, and decay of new social structures of accumulation and labor control systems are accompanied by fundamental shifts in the class capacities between workers and employers, and transformations in the existing articulation of class conflict. Each new SSA restructures the work process in ways that shift the balance of power to employers, which, in turn, compels labor to seek new forms of struggle and resistance to counter capital's strength. The new SSA of spatialization hinges on the spatial restructuring of work as a vehicle for empowering the managerial bureaucracies of multinational companies and solidifying their control over labor (Gordon 1996). But technocratic control innovates and elaborates beyond recognition the bureaucratic system of control that existed under segmentation by allowing managers to impose a neo-Taylorist system of supervision across great distances and with greater efficiency than ever. Under spatialization, workers are separated by national, cultural, and linguistic barriers from co-workers in other countries, regions, and states. These barriers reduce workers' power by obscuring class solidarities and hindering communication among workers. Thus, the essential character of the emerging SSA, at least in its early stages, is "the strengthening of capital relative to labor" (Lippit 1997:13). (In addition, spatialization augments the class capacities of capitalists relative to national, state, and local government, and to citizens-as-consumers via the increased threat of capital mobility and the greater geographic dispersion of production.) SSA theory suggests that as the spatialization regimen consolidates and begins to decay some time in the next century, new channels of worker accommodation and resistance to spatialized work will emerge, swinging the advantage back to labor.

**New Challenges and Opportunities for Labor**

While the new SSA implies tremendous challenges for labor, it may also imply some potential opportunities. On the one hand, the traditional role of labor unions as a viable vehicle for effecting progressive change in the workplace will continue to come under serious assault. Transformations in the industrial and occupational structure are jeopardizing the traditional posture of American labor unions as advocates for the "blue-collar aristocracy." Their longtime failure to address the issues of working women, minorities, and poor people, and the increasing perception of their irrelevance by many workers, is of major concern for the future. At the
same time, the global consolidation of capital and the ascendance of technological systems that diminish labor seem to be accelerating the fragmentation and disorganization of workers on an international scale (Rifkin 1995). In addition, technocratic control, while depersonalizing control structures to some extent, raises new concerns about the invasion of privacy and technological surveillance of work. Many of these same forces, however, will likely augur an ever-broadening definition of workers' rights, that is, "legitimate and enforceable claims to some desired treatment, situation, or resource" (Edwards 1993:26). In addition, the new information technologies may offer new opportunities for workers to organize and act collectively on a worldwide scale. And computerized work settings may also create new vulnerabilities for managers to sabotage and other forms of collective resistance by workers. Just as the factory system gave rise to unforeseen forms of resistance by industrial workers of the 1930s, computer systems may be sowing the seeds of resistance for office workers of the future. In short, while it is obvious that organized labor must reinvent itself to keep pace with technological and organizational changes presented by the new SSA, it is likely that these same changes will foster new modes of resistance and conflict that might be effectively utilized in future decades.

CONCLUSIONS

In this chapter, we have sought to rejuvenate the original focus of social structure of accumulation theory by concentrating on the central role of the labor process and the shaping of dominant control systems. We have argued that the next long swing of capitalist economic development will be a social structure of accumulation called "spatialization," which involves the spatial restructuring of work in an effort to reassert capitalist control of the capital accumulation process. Spatialization will be complemented by a system of technocratic control that centers on the transcendent power of the computer to organize disparate nodes of economic activity and the ascendance of technical expertise in all areas of work. The end result of this next long swing is a system of flexible accumulation that can adapt quickly to opportunities and pitfalls of rapidly changing technologies, market upheavals, and other environmental challenges. The system diversifies risk and consolidates gain by embedding capitalist accumulation in a supple institutional network aimed at achieving the goal of mass customization of products and services. While this flexible system will immensely benefit consumers and capitalists, its ramifications for workers are dubious. If recent trends such as deindustrialization, downsizing, contingent labor, and labor market polarization are any indication, job insecurity, flexibility, and uncertainty will be constant features of a spatialized work context.

We have tried to situate our discussion of spatialization in a historical context by showing how current transformations in the workplace reflect the long-standing tendency of capitalism to generate and resolve crises in the accumulation process. Each of the previous SSAs sought to facilitate capitalist accumulation by developing a historically appropriate set of social, economic, and political institutions to facilitate capitalist accumulation. Importantly, each new SSA centered upon a fundamental rearrangement of the labor process in order to achieve this goal. Proletarian-
ization sought to elicit more reliable and intensified work effort by bringing workers under more constant supervision in the capitalist’s shop or factory. Homogenization advanced a detailed division of labor to simplify work tasks and destroy the skills of crafts workers. Segmentation sought to restructure the workforce and structure work rewards in a manner that divided workers’ loyalties along occupational, industrial, gender, and class lines. Spatialization employs a spatial division of labor and the threat of spatial relocation to defuse potential workers’ resistance and fragment their interests along regional and national lines.

Each of these social structures of accumulation was anchored by a dominant control system that sought to address a fundamental crisis of labor control in capitalist production by devising a strategy for eliciting optimal cooperation from workers. Simple control sought to elicit peak performances from workers by creating a bond of loyalty with the entrepreneur, whose own efforts in the workplace served as a model for his employees. Technical control attempted to use machine technology to tie workers to a common rhythm of work in the large capitalist enterprise when the capitalist’s direct supervision was no longer practical. Bureaucratic control tried to use a hierarchical arrangement of positions, with various degrees of authority, status, economic rewards, and prospects for advancement, as a way to elicit the “routine performances” that would allow the firm to prosper. Technocratic control centers on the use of sophisticated computer systems and an aura of technical expertise to organize and direct the labor process across networks of organizations.

SSA theory posits that as each system of accumulation reaches a level of maturity, it carries the potential for creating new crises of accumulation and control. It is therefore appropriate to ask what crises might emerge for the spatialization SSA in the next half-century? While social forecasting can be perilous, certain broad patterns can be anticipated. First, while spatialization currently is rife with signs of the global consolidation of capital and the fragmentation of labor, it is altogether possible that the passage of time will create new opportunities and strategies for labor to organize collectively against capitalists if nationalistic and ethnic divisions among workers can be overcome. Second, the synchronization of the accumulation process around a single common technology—computers—poses potential opportunities for workers themselves to communicate, organize collectively, and challenge the authority of technocrats and capitalists. Third, the reintensification of work effort among both high- and low-end workers, and the growing disparity between the experience of citizens in their roles as consumers and workers, will elevate a discussion of quality of working life and workers’ rights in the workplace to a new level. Fourth, the growing contradiction between society’s technological capacity to produce enough food, shelter, and comfort to support the global population and the inequalities of an economic system that technologically displaces or deskills vast numbers of workers, and creates legions of poor, hungry, and desperate people around the globe, will potentially create a crisis of legitimacy for the current system (Rifkin 1995).

In any event, workers in the 21st century will increasingly work in an economy without borders—neither the borders of national boundaries nor the less obtrusive boundaries of space and time that have structured human interaction through the centuries. This will undoubtedly create new frontiers in the world of work for workers and scholars alike.
NOTES

1. Numerous scholars have made an effort to theorize about aspects of the emergent SSA after segmentation (see the collection in Kotz, McDonough, and Reich 1994; see also Gordon, Bowles, and Weisskopf 1987; Houston 1992; Peck 1996; Lippit 1997; Reich 1997). Surprisingly, these attempts have produced little consensus on the nature of the new SSA and no scholar has formally named and defined the new swing. Our theory of spatialization remains the only attempt to label the new SSA and, for that matter, the only application of a theory of a new SSA within empirical research (Grant and Wallace 1994; Grant 1995, 1996; Grant and Hutchinson 1996; Brady and Wallace 1999).

2. While we agree with Gordon (1994, 1996) and Sutcliffe and Glyn (1999) that globalization by itself does not constitute a new social structure of accumulation, we argue that globalization is an important component of whatever new SSA emerges in the 21st century.

3. Moreover, these new work rule arrangements went far beyond the normal "speedups" and "stretchouts" that characterized the Fordist era to encompass a total redefinition of job requirements, work roles, and labor-management relations.

4. For extensive discussions of the global and domestic forces underlying the unraveling of the capital-labor accord, see Edwards and Podgursky (1986) and Nilsson (1996).

5. The New York Times survey defined "layoffs" as events that are not temporary or seasonal in nature but are due to "employer downsizing, reductions in force, corporate restructuring, permanent plant closings, jobs moving overseas, or jobs just permanently disappearing."

6. The two surveys, the Indiana Quality of Employment Survey (IQES; Wallace, Jamison, and Shin 1996:24) and the Indiana Survey of Work in a Polarized Economy (ISWIPE; Wallace, Jamison, and Laubach 1998:22-23), were conducted under identical circumstances and used identical sampling frames. The IQES was conducted in 1996 and the ISWIPE in 1998. The percentage of persons using computers at their work rose from 61.3 percent in 1996 to 64.7 percent in 1998 (a statistically nonsignificant difference, $t = 1.42$) and the average hours per week spent using computers rose from 12.04 in 1996 to 13.72 in 1998 (a statistically significant difference, $t = 2.19$).

7. The capacity for computerized systems to forge networks for sharing information among different organizations is illustrated by recent changes in the retail sales industry. For instance, Rifkin (1995:104) discusses how large retailers such as Wal-Mart use scanners at the checkout counter to transmit electronic data to suppliers such as Procter & Gamble as products are sold. The suppliers can then determine what items to ship to the various Wal-Mart stores and bypass warehouses altogether.

8. Nevertheless, one recent USA Today article reported that many employers quietly condone or even encourage employees' personal use of e-mail, company computers, and the Internet at work, because it allows them to grow more comfortable and facile with information technologies. One AT&T manager is quoted as saying, "You need to have people growing increasingly comfortable with the best management tool to hit the country in decades: the e-mail" (Armour 1999:1B).

9. One recent development that is significant because it runs counter to the main trend is the most recent contract between the United Auto Workers (UAW) and the automobile manufacturers, in which special provisions are made to protect the job security of union workers. Specifically, the new contract between the UAW and Ford stipulates that further downsizing of the company is allowed only through attrition and that the 23,500 employees of Visteon Automotive Systems, the recent spinoff of the Ford's auto parts division, would remain "Ford employees" for life, with pensions and pay checks from Ford (see Meredith 1999a, 1999b).

10. Sennett (1998) notes that the system of computerized control of work is more pervasive for workers who are physically remote from the central office.

11. Edwards (1979:134) recounts the description of the Polaroid Corporation, which classified jobs into 18 different job families, 300 job titles, and 7 different pay grades within each job title. The firm thus created a hypothetical 2,100 (300 x 7) job slots for its 6,400 hourly workers.

12. The New York Times recently reported on a Department of Commerce study that said that "while minorities are increasingly gaining access to computers and the Internet, the racial divide remains stark, with black and Hispanic families less than half as likely to explore the Net from home, work, or school" (Sanger 1999).

13. The AFL-CIO is currently offering a plan for its 13 million members to provide discounts for the purchase of computers and Internet access to AFL-CIO "portals" for each of its 68 member unions in which members can communicate with e-mail, access the latest information on workplace and
contract bargaining, and news related to their occupations, and receive communications from union officials regarding union activities and initiatives. According to a spokesman for the company contracted by the AFL-CIO to set up the program, its goal is to "create a network that really becomes the center of your membership life." Morton Bahr, president of the Communication Workers of America, noted the potential of the new on-line program: "Can you imagine being able to instantly ask millions of union members to refuse to buy a product or to bombard elected officials with e-mails to protest?" (Greenhouse 1999:Cl).

REFERENCES


