

THE ANTHROPOLOGY OF INDUSTRIAL WORK

◆9633

*Michael Burawoy*¹

Department of Sociology, University of California, Berkeley, California 94720

The anthropology of industrial work has had a relatively short although turbulent history. During the last 50 years the study of the shop floor has spawned a number of theories, each asserting its claim to universal validity. In this essay I propose to resolve the differences among these general theories by restoring them to the specific context in which they were germinated—a particular period in capitalist development, a particular sector of the capitalist economy, or a particular capitalist society. By interpreting the multiplicity of general theories as reflecting the diversity of the capitalist labor process we can begin to grasp its underlying unity as well as understand the forms and causes of its variation.

OVERVIEW

The first chapter of industrial anthropology was inspired by its arch-priest—Elton Mayo. He helped to direct the first systematic, detailed and intensive studies of the organization of work undertaken at the Hawthorne plant of the Western Electric Company between 1927 and 1933 (3, 24, 66, 94, 123). Drawing on these studies, Mayo pioneered what has come to be known as the human relations school, with its uninhibited focus on the “human” dimension of work (76, 77). This school of thought was a retreat from the examination of the objective conditions of work, from studies of fatigue and monotony, and from an image of men and women as machines, espoused by such representatives of scientific management as Frederick Winslow Taylor (115). It was a turn toward constituting men and women

¹I should like to thank Gretchen Franklin, Kathy Keilch, and Erik Wright for their comments and assistance.

as social and sentient beings with the capacity to construct subjective experiences at work, independent of and in adjustment to its objective constraints. Mayo's perspective eschewed conflict as pathological and isolated the work place from its environment. Many of his ideas are elaborated in the sociological writings of William Foot Whyte (124, 125), Burleigh Gardner and David Moore (48), as well as the more psychological work of Chris Argyris (4) and Rensis Likert (68).

The Mayo school and its descendants were rooted in the concrete realities and aspirations of welfare capitalism—a system of paternalistic industrial relations and company unions which large corporations such as Western Electric embraced during the 1920s. Yet at the very time that Mayo was drawing on the Hawthorne studies to sustain visions of industrial collaboration, the basis of those visions was collapsing. The destruction of welfare capitalism in the 1930s and the militant struggles between capital and labor required a very different framework of analysis than the one offered by the human relations school. Thus, in their study of a strike in 1933 at Yankee City, Warner & Low (121) trace the source of industrial conflict to the progressive loss of control over the labor process experienced by operatives during the twentieth century. In pointing to the conditions for the destruction of skill and concentration of capital, Warner and Low provide explanations for the unevenness of changes in the labor process, in particular the separation of mental and manual labor.

Once crafts are destroyed what new forms of work organization arise to take their place? Answers can be found in the general theories developed as a response to Mayo but which nevertheless reflected particular features of twentieth century capitalism and accentuated particular aspects of its labor processes. The substitution of collective bargaining for paternalism after the depression led both radicals and economists to attack Mayo for failing to come to terms with industrial conflict (9, 64, 81). Economist Clark Kerr, for example, saw the trade union as an instrument for regulating and institutionalizing conflict rather than the implacable enemy of management (62, 63). But his view was and continues to be a partial one, expressing what is more distinctive of the organized "monopoly" sector of industry rather than the unorganized "competitive" sector. A second group of studies responded to the human relations school by emphasizing the constraints new types of technology imposed on management's ability to reconstruct work experience through "person-oriented supervision" and treating employees as "integrated individuals" (14, 119). In Britain the Tavistock Institute inaugurated a new human relations school which paid explicit attention to the constraints of technology (91, 117), while Joan Woodward (127) developed theories in which technological complexity and thus the organization of work were shaped by the size and standardization of the product market.

A third group of studies began to investigate the structure of management. Where Mayo had treated management as a cohesive and isolated bloc distinct from workers, the new studies drew attention to divisions within management and problems of dealing with "environments," categorized as stable or unstable, homogeneous or heterogeneous, differentiated or undifferentiated (37, 116). Out of the study of the environment and its impact on the structure and operation of the firm there grew over-arching theories of organizations which embraced hospitals, prisons, trade unions, political parties, and so on, as well as industrial enterprises (67, 72, 92, 107, 116). But in striving for ahistorical generalizations appropriate to all organizations, the concrete world was left behind and industrial anthropology disappeared in a welter of abstract categories. This assimilation of industrial to all organizations is the reflection in theory of a movement in reality, namely the penetration of bureaucratic patterns into ever wider arenas of social life. The study of bureaucracy became the focus of another school which emerged after World War II under the guidance of Robert Merton. Pushing aside Mayo's concern with harmony, Merton and his students took Max Weber as their point of departure and in a series of case studies showed how the adoption of rules undermined organizational goals (13, 52, 104). Their conclusions seemed as applicable to government agencies, military organizations, and other bureaucratic systems as they were to industrial concerns.

However, in the arena of industrial relations the emergence of rules to regulate relations between capital and labor, management and unions was not only historically specific but also geographically specific. As I suggest in the final part of this essay, much of what is taken for granted by industrial anthropology no longer holds in other countries outside the United States. American industrial anthropology turns out to be the anthropology of industrial work in the United States. It then becomes necessary to incorporate national characteristics such as the history of class struggles, the form of the state, and the manner and timing of insertion into the world capitalist order so as to reach a more complete understanding of the forms and causes of variations in the labor process.

WELFARE CAPITALISM AND THE ROOTS OF INDUSTRIAL ANTHROPOLOGY

Welfare capitalism emerged during World War I as a managerial strategy to preempt unionization (16). One of the earliest schemes followed the Ludlow Massacre of 1914, in which battles raged between the National Guard and battalions of armed miners from the Colorado Fuel and Iron Company. As chief executive of the company, John D. Rockefeller brought in Ivy Lee and Mackenzie King to set up a system of "industrial democ-

racy" which would offer wage guarantees and fringe benefits and would erect a grievance machinery and a plan for employee representation. According to the new welfare philosophy, industrial strife was the product of misunderstanding and the failure of different sides of industry to treat one another as human beings:

It follows, therefore, that the relations of men engaged in industry are human relations. Men do not live merely to toil; they also live to play, to mingle with their fellows, to love, to worship. The test of success of our social organization is the extent to which every man is free to realize his highest and best self. . . . If in the conduct of industry, therefore, the manager ever keeps in mind that in dealing with employees he is dealing with human beings, with flesh and blood, with hearts and souls; and if likewise the workmen realize that managers and investors are themselves also human beings, how much bitterness will be avoided (93, p. 12).

During the 1920s, welfare capitalism became the dominant ideology of enlightened business, and many large corporations adopted one of its plans. After becoming president of General Electric, Gerald Swope spread the gospel to plant officials:

production, costs, and relations with men. Usually . . . we think of the first two only. . . . The last thing our foremen will remember is the relations with men who work for him and that, as a matter of fact, is the most important consideration that bears on the results that any executive is to achieve.

As Charles Swab, head of Bethlehem Steel, put it, "Industry's most important task in this day of large-scale production is management of men on a human basis" (cited in 20, pp. 152-53).

The school of human relations founded by Elton Mayo was but a continuation in academic garb of what was being preached in industry by corporate executives. It is no accident that the first major investigations into human relations in industry should be supported by the Rockefeller Foundation and located in a plant of a leading practitioner of welfare capitalism. It fell to Harvard Business School and Elton Mayo in particular to use these early investigations to bestow legitimacy and universality on the words of John D. Rockefeller. Mayo sought to recreate the emotional bonds of the human group, which were breaking down outside the factory gates, on the shop floor. There individuals would give free reign to their repressed propensity toward spontaneous collaboration. Drawing on Durkheim, Pareto, Malinowski, and Warner, Mayo aimed to install the mechanical solidarity of preindustrial societies inside the industrial plant. The large corporation would become the home of solidarity, binding people together in the pursuit of common goals.

Following studies of industrial fatigue and monotony in Britain and of the causes of labor turnover in a textile mill near Philadelphia, the Haw-

thorne experiments were designed to explore the effects of changes in working conditions such as rest pauses, length of working day, length of week, wage incentives, and illumination on worker output. The series of experiments all showed that variations in hourly or weekly output could not be linked to any one of these factors. Rather, it was argued (76, 94), variation in output had to be understood as the interrelated effect of objective conditions on the sentiments of the work group. In line with this interpretation, the final phase of the Hawthorne studies was directed toward examining the work group as a whole and not merely measuring the impact of different isolated variables. This was the famous bank wiring room experiment. The "relay assembly" and "mica splitting" experiments seemed to suggest that if management were to seek the cooperation of the informal work group which naturally springs up at the work place, through paying attention to employees' social and psychological needs, worker output would increase. The bank wiring room, however, seemed to illustrate the opposite tendency, namely the capacity of the informal group to enforce definite limits on worker output. Mayo (76) argued that the spontaneous solidarity that emerged on the shop floor could undermine managerial logic if workers did not understand that logic or acted out of irrational fear. Restriction of output was presented as an irrational response to the economic rationality of management.

Given rising levels of unemployment and the widespread adoption of Taylorism, the fear that speed-up or rate increases would result from breaking output norms was far from irrational. As Kerr & Fisher (64) were to point out after World War II, when collective bargaining had been established, Mayo's insistence on regarding the work place as the locus of harmony and spontaneous consent was at odds with the reality of industrial life. Workers were not "aborigines." Instead, Kerr and Fisher preferred to view industrial behavior as an expression of conflict or competition among economically rational individuals. Support for such an interpretation is to be found in Roy's study of output restriction among machine operators at the end of World War II (95-98). Roy highlights two particular forms of restriction. In the first—goldbricking—workers respond to impossible piece rates by not attempting to make the quota, content to earn the minimum guaranteed wage. In the second—quota restriction—workers respond to easy rates by keeping their output within a well defined upper limit for fear that exceeding this bound would cause management to cut the prices. This fear was grounded in the presence of time-study men stalking the aisles with stop watches in hand. Even more significantly, Roy shows that in order to make any of the rates, workers had to erect informal groups to counter managerial inefficiency and managerial regulations which obstructed the smooth operation of the machine shop. Thus, it was the economic *rational-*

ity of workers which led them to establish informal groups designed to defeat *managerial irrationality*.

This turning of Mayo's world on its head is not quite the demolition it appears. A closer reading of Roy's work reveals a number of significant departures from the rational pursuit of economic advantage. First, there are limits beyond which the search for increasing rewards becomes too costly. Exactly where that limit lies is not arrived at through rational calculation but through socially defined norms. The rationality of shop floor behavior, although couched in the idiom of dollars and cents, is nonetheless the product of a piece rate game—making out—which defines the rules and goals of the working activities of each operator. Second, as Mathewson (75) suggested and as Roy's study demonstrates, far from springing from autonomous resistance to management, making out is facilitated, encouraged, and in part organized by shop floor management in opposition to directives from higher management.

In other words, closer examination of the machine shop does vindicate an essential postulate of the Mayo school: that worker behavior cannot be understood outside of the particular culture (ideology) created in the work place. However, where Mayo might look upon the informal group as constituting an opposition to management, more careful analysis of both the bank wiring room and the machine shop indicates that management depends on the informal group to elicit the cooperation of workers. At the same time, this cooperation is not a manifestation of some universal human propensity to spontaneous collaboration, but is something produced and reproduced on the shop floor. Thus, to criticize Mayo for not recognizing the inevitable, structured conflict of interests between workers and management (17, 81) is to commit the same fallacy which Mayo himself commits in insisting on an underlying harmony. Interests are not given primordially but are organized and shaped by the labor process itself. The point is not to *assume* consensus or conflict but to *explain* them.

With labor wars being waged in other corporations around unionization, how was it possible for Hawthorne management to continue to achieve such a level of cooperation? What had happened to the labor struggles prior to the rise of welfare capitalism—struggles which had in fact brought about welfare capitalism? In part the answer is hidden in the Hawthorne data themselves, but has remained obscure until recently. The conventional interpretations (76, 94) share a vision restricted by their roots in welfare capitalism. The independent variables used to explain variation in output are precisely the ones subject to managerial manipulation. When these do not account for the observed changes, Roethlisberger, Dickson, and Mayo invoke the metaphysic of "human relations" as the missing link. In a remarkable reanalysis of the data from the first relay assembly experiment

which lasted the entire 5 years, Franke & Kaul (43) demonstrate that shifts in output can be explained by variables that were not examined by Roethlisberger and Dickson either because they were beyond managerial control (economic depression) or because they were not deemed important (intensification of supervision). The reanalysis shows that an amazing 78.7 percent of the variation in output can be attributed to the enforcement of tighter discipline occasioned by the replacement of two members of the work group after nine months; 14.5 percent can be attributed to the onset of the depression after another 19 months; and a further 3.9 percent to changes in scheduled rest times, leaving 3 percent unexplained. So much for human sentiments. Moreover, although the quality of output also diminished during this period, 65 percent of the decline was due to defective materials, 14 percent to changes in rest stops, while only 5 percent was due to the economic depression.

Franke and Kaul go no further than to present their results, but the story cannot rest here. How do these results match those obtained from the other Hawthorne experiments? In the case of the bank wiring room the level of output remained fairly steady despite the development of the depression's effects, in particular a shorter working week. Since there is no record of supervision changing in the bank wiring room, one may conjecture that the depression had no effect on output due to the absence of managerial intervention. Equally, without the coercive sanctions implicit in increasing levels of unemployment and shortage of work, the intensification of supervision might not have been attempted, or could have been resisted.

In summary, our brief return to the Western Electric Studies and their reinterpretation leaves us with three sets of questions. First, how is consent organized on the shop floor and under what conditions might it break down? Second, does the intensification of coercion always have the effect of increasing output? If not, on what does it depend? Third, what is the impact of the environment on the organization of work and the activities of workers? How is the labor process shaped by factors that are beyond managerial control? We shall carry these questions into the remainder of the essay, but they can only be answered by going beyond the Western Electric studies both in time and place.

THE UNEVEN DESTRUCTION OF SKILL

Welfare capitalism might have continued were it not for the depression. Companies could no longer afford to maintain wage levels and extend welfare concessions. They defaulted on the promises of paternalism (20). The ensuing struggles for union recognition were bitter and violent. Only after the state intervention of the New Deal, in particular the Wagner Act

of 1935, did the ideology of benevolence give way to collective bargaining. Just as welfare capitalism was antithetical to independent unionism, so its representation in theory—Mayo's school of human relations—had difficulty in recognizing the company as made up of disparate interests. Attempts to develop the framework so as to be in tune with changes in the pattern of industrial relations often sought to present the union as an instrument of collaboration, a means of facilitating communication between managers and managed rather than a bargaining opponent (125). Strikes were interpreted as breakdowns of communication between workers and management (103) rather than a fundamental conflict that divided the corporation into two antagonistic camps.

To understand the development of class struggle and the collapse of paternalism, a new perspective would have to emerge: it would have to incorporate the work place as part of, and influenced factors which the earlier studies had either ignored or taken for granted. Paradoxically, it was Lloyd Warner, strongly identified with the human relations approach, who continued where Mayo left off. In a study that deserves much more attention than it has received, Warner & Low (121) examine the economic, political, and social forces which were transforming relations between capital and labor in the 1930s.

In normal times the various parts of the capitalist world appear fragmented and disconnected. The work place appears separate and relatively insulated from family life, distant markets, and so on. Appearances hide the links which bind the disparate parts of society together. In times of crisis, however, these bonds become transparent. Thus, in their interpretation of the causes of a 1933 community-wide strike by the workers of Yankee City's major industry—shoe-making—Warner and Low are forced to move far beyond those shop floor

by management to the factors contributing to the changing patterns of labor control and worker solidarity that had been emerging in the twentieth century.

The factors precipitating the strike were closely linked to the economic depression: wage cuts threatened minimal livelihood even for those with jobs; workers spent a great deal of their time waiting for jobs and were paid nothing for the waiting periods; as a result of attempts to boost sales, retail outlets were continually introducing new styles of shoes, which for the factory operatives meant more work for the same pay. Underlying these immediate grievances, however, were broader changes to which workers and managers sometimes alluded when explaining why there had never been a major strike in Yankee City before and why for the first time workers were united behind a union leadership. First, operatives were losing control over the labor process as a result of mechanization and fragmentation of jobs.

Second, control of the shoe companies themselves was passing out of the hands of the community and into the hands of financial bodies in distant centers such as New York. Major retail outlets were now dictating terms to the manufacturers in Yankee City, and residents had to confront the prospect of companies moving out of town and relocating in other cities where labor was cheaper or which were closer to the major consumer markets. The concentration of capital outside the community forced labor to similarly organize on a regional basis. The industrial union was the new vehicle which labor adopted to combat the vertical and horizontal integration of the shoe industry. To highlight the changes that had overtaken shoe-making, Warner and Low describe how mechanized, assembly line mass production for national markets, monopolized by one or two retail outlets and ultimately controlled by a distant complicated financial structure, emerged from the family-controlled craft production for local demand which had prevailed at the beginning of the seventeenth century.

Inasmuch as they examine workshop behavior, Warner and Low present a stark contrast with the exponents and philosophers of the Western Electric Studies. Where the latter stress the subjective dimension of adaptation to the inexorable features of industrial work, the former focus on the objective changes in the labor process, with little attention given to social and psychological mechanisms of adjustment. With the destruction of skills, wages are increasingly determined by the solidarity that workers can achieve in opposing management. This is as true at the collective level of the industry as it is for particular groups of workers within a single company. Thus, they argue that because women have not been able to build resistance to management, "women's work" is paid less than men's work irrespective of any skill. Similarly the newer ethnic groups—"the foreigners"—being socially insecure are more compliant and less assertive than the Yankees, the Irish, or the French. This is reflected in their earnings. By allocating jobs on the basis of gender and ethnicity, management creates antagonistic divisions within the labor force and thereby undermines its collective strength.

In their analysis of the fate of Yankee City shoemakers, Warner and Low anticipated Braverman's work (17), which has recently sparked a resurgence of interest in the labor process. Drawing on Frederick Winslow Taylor as the apostle of managerial control, Braverman elevates what Warner and Low call the "break in the skill hierarchy" to a defining developmental law of the labor process under monopoly capitalism. Unaware of the work of Warner and Low, Braverman refers to the process of deskilling as the separation of manual and mental labor or, more usually, of conception and execution. However, his argument is overly deterministic and functional in that what he describes as the separation of conception and

execution is explained in terms of its necessity for the survival of capitalism. He does not examine why the process of deskilling proceeds unevenly, transforming sectors of the economy in different countries at different times and leaving some industries altogether untouched. Warner and Low at least suggest definite conditions for the development of the "break in the skill hierarchy," and therefore provide the basis for examining the generality of Braverman's tendential law.

What significance can we attach to the absence of a permanently organized union in Yankee City? What role does unionization play in labor's ability to resist the expropriation of skill and loss of control over the labor process? Certainly nineteenth-century craft unions provided a powerful bulwark against managerial encroachments on the craft workers' autonomy. In a survey of the United States during the second half of the last century, Montgomery (84) delineates three stages in the struggle for the retention, and in some instances expansion, of worker control over production: the functional autonomy of the craft worker, the use of union work rules, and the mutual support of diverse trades in rule enforcement and sympathetic strikes. However, at the beginning of the twentieth century many craft unions buckled in the face of the onslaught of scientific management and the open shop drive (11, 18, 19, 112). Hobsbawm (57, Chap. 9), in an analysis of British gas workers at the end of the nineteenth century, shows how unionization led to the expropriation of skill. Since the gas industry was a monopoly, changing patterns of competition were not the factor instigating the transformation of the labor process. Similar events in California agribusiness suggest that mechanization of picking has been a response to the growing strength of labor and the organization of the United Farm Workers. The technology for mechanized picking had been available to growers for some time, but they only introduced machines into the tomato and lettuce fields when they were faced with unionization and new labor legislation (44, 45).

In addition to class struggle, changing patterns of competition often provide the impetus for the destruction of crafts. In her study of glass workers at Carmaux in southwest France, Scott offers a detailed analysis of how just such a process of deskilling was spurred by domestic and British competition (102). Efficiency rather than struggle was the force behind technological change which undermined craft control over the labor process. Unionization was the consequence rather than the cause of these changes, and it failed to reverse the trend toward the separation of conception and execution. In other situations, rather than fighting such changes, unions become the vehicle for bargaining away labor's rights of directing the labor process in return for certain material benefits (83). More generally, the productivity deal has become the typical instrument through which

labor is forced to give up what little control of production it still has (29). In short, the link between unionization and the uneven degradation of work is a complicated one which would bear careful study.

Rather than focus on the organization of labor, it might be as fruitful to examine the conditions which circumscribe the power of capital. In the study of Yankee City one of the major factors in favor of the manufacturers was the threat to move. What happens when capital is rooted to a given place, as in extractive industries like mining? A series of studies of the British coal-mining industry begin to respond to this question. In Britain the Tavistock Institute has taken the Mayo school of human relations one step forward in its pioneering of the sociotechnical systems perspective. These investigations go beyond the Hawthorne experiments in that they advocate broader changes in the organization of social relations in production. Technology, they argue, does not uniquely determine these relations and, moreover, technology itself should be treated as a variable. By shaping the social and technical organization of work in accordance with the social-psychological needs of workers, management can promote the effectiveness of the system as a whole. In their interpretation of a series of controlled experiments, Trist et al (117) claim that mechanization of mining, which involves the fragmentation of work and the break-up of the self-regulating, self-selecting work group, leads to higher levels of stress, higher rates of absenteeism, and lower levels of productivity than a system which involves the mutual adaptation of men and machines in the retention of the relatively autonomous work group of the single-place tradition. Thus, whereas management naturally chose to use mechanization to appropriate control from the colliers—conventional long-wall mining—Trist and company suggest that the transition to a “composite work organization” in which miners collectively decide how and when to use machines would be more effective.

As in the Western Electric studies, little attention is directed to changes in the environment during the period of observation. Their claim is a general one, that machines should not be designed or used to fragment work or appropriate control but rather should be used to consolidate the responsible autonomy of the primary work group. Although this has been the philosophy behind many so-called job enrichment schemes, one wonders why it has not been adopted more widely if it is so beneficial for all. The answer may be sought in the particular conditions under which such a strategy is most successful. When workers are organized in a tightly knit trade union with a strong community base and management is rooted in a particular geographical area and is unable to draw upon an alternate labor supply, a coercive regime of control may meet with too much resistance to be effective. In other words, the success of particular managerial strategies for organizing work is critically dependent on the level of class struggle.

There is yet another reason why breaking the skill hierarchy is likely to be ineffective in mining. Given the hazards and uncertainty of the physical environment underground, the routinization of coal mining could only be accomplished with a degree of coercion that would arouse so much opposition, at least in Britain, as to make it infeasible. However, as I shall suggest later, where such a regime of coercion can be enforced, mining may be organized along militaristic lines of discipline.

The more restricted the movement of capital and the labor supply upon which it may draw and the more uncertain the conditions of production, the more likely labor will be able to resist the expropriation of skill. This conclusion is well illustrated by the organization of construction work. Attempts to introduce a centralized managerial authority and eliminate subcontracting are known to be "inefficient" [Stinchcombe (110)]. In part this is because the administration of construction has to be limited to a given geographical region, which reduces the power of management while increasing the variability of volume and product mix. Indeed, it is fluctuations in output according to season and consumer demand that account for labor's capacity to make craft administration more "efficient" than bureaucratic administration. Stinchcombe, however, downplays the importance of the organization of labor, seeing this more as a consequence than a cause of the particular form of labor process. In practice it is both, but more important the very notion of "efficiency" has to be understood as relative to the level of struggle between capital and labor. Comparisons with the organization of building industries in other countries where labor is not organized into a craft union might suggest alternative patterns. The International Typographers Union is another instance of a craft union resisting deskilling for a long time because of the late development of a technology that might preempt the powerful resistance of labor, which is tightly organized into relatively autonomous and democratic locals (69).

In summary, we have seen how competition among employers and struggle between classes can be both cause and consequence of the destruction of skill and how this process is influenced by the organization of labor and mobility of capital, as well as by market and other uncertainties.

FROM COMPETITIVE TO MONOPOLY CAPITALISM

So far we have examined some of the factors which account for the uneven development of the degradation of work. We now have to account for its reconstitution—the form of controls that emerge to take the place of craft administration. In giving scant attention to the ways management elicits consent and organizes work once skill is appropriated, Braverman recognizes the fact but not the significance of the uneven progress of the separa-

tion of conception and execution. The historical timing of the separation of conception and execution determines the new relationship between the two, the manner in which conception dictates to execution.

A wide range of historically specific conditions shapes the particular form of labor process which replaces craft organization. Moreover, as both Blauner (14) and Stinchcombe (111) point out, an organizational structure tends to persist in its original form despite changes in its "environment." The vesting of interests, sunk costs, and monopoly markets are among the factors that might make its transformation unlikely. Thus Stinchcombe shows how the level of bureaucratization, as measured by the relative proportion of administrative staff in an industry, is correlated with the age of its organizational form. Blauner explores the development of four different industries—printing, textiles, automobiles, and chemical—established at different periods and shows how they continue to possess features associated with the technology current at the time of their formation. Although these analyses do not give sufficient attention to the dynamics of the labor process and the way this shapes the impact of change external to the firm, the essential point remains: the character of labor processes can be traced to their points of origin, and there is no necessary convergence to a common form.

Change in the labor process then cannot be understood outside of the technological, economic, and political context of the formation of the labor process as well as of its development. How should this context and its change be examined? One could simply take external factors as given and describe how their variation affects the labor process, as Stinchcombe and Blauner tend to do. However, in order to develop an understanding of the historical tendencies of the labor process, it would also be necessary to place the changes of the context within a theory of the development of capitalism. Here I propose a scheme that distinguishes between competitive and monopoly capitalism, based first and foremost on the changes in relations among capitalists. Between 1890 and 1920 the United States and, to a less clear extent, other advanced capitalist societies went through the transition from competitive to monopoly capitalism.

As a result of their subordination to the "anarchy" of the market, individual capitalists under competitive capitalism had no alternative but to innovate and change with their competitors if they were to survive. The search for profit also intensified the struggle between capital and labor. Except for those who could cling to some monopoly or craft, anarchy in the market meant despotism in the factory. As Schumpeter (101) and Polanyi (90) have both argued, either capitalism would destroy itself or it would have to be converted into a form which restricted competition among capitalists and organized struggles between capital and labor in ways which did not

threaten the economic order. Precisely how this took place is not my concern here; suffice it to say that in each case the transition had two aspects. First, the vertical and horizontal integration of firms led to the emergence of the large corporation which dominated supply and labor markets. The large corporation was also able to mobilize its resources to regulate struggles between capital and labor initially, in many companies, through some form of welfare capitalism and, after this collapsed in the depression, through unionization. The second feature of the transition from competitive capitalism was the active involvement of the state in regulating relations among capitalists and between capital and labor. This section will be devoted to examining the impact of both sets of factors on the labor process.

Competitive and Monopoly Firms

The rise of the large corporation in the monopoly sector² by no means spelled the downfall of the small firm in the competitive sector. On the one hand, in many branches of industrial production the competitive structure persisted relatively unchanged into the period of monopoly capitalism. We have already seen this in the uneven destruction of skill in such craft-dominated industries as printing and construction. On the other hand, monopoly capital also *generates*, as a condition of its own existence, a corresponding competitive sector. What the large corporation can't produce in a capital-intensive fashion it frequently contracts out to one of a number of small competitive firms. In this way it gains flexibility in adapting to fluctuations in demand without laying off so many of its own workers, and also takes advantage of the lower wages in the nonunionized or weakly unionized competitive sector. In other words, the small firm which makes car locks, for example, absorbs uncertainties and in effect transfers surplus to the automobile assembly company upon which it depends for survival (46).

How does the competitive structure of an industry affect its characteristic labor process? Lupton (71) worked in two different firms in Manchester, England. At Wye Garment Company he made waterproof clothing and at Jay's Electrical Components he made transformers. Briefly, he discovered that at Wye workers did not exercise much control over productive activities or the system of piece rates whereas at Jay's workers were able to manipulate the productive process and the incentive scheme, thus exercising both individual and collective control over output and earnings. Lupton first tries to explain this discrepancy by reference to factors "internal" to

²Following conventional usage, the monopoly sector refers to industries in which a few large companies dominate the product market. These are, of course, not actually monopolies but oligopolies.

the workshops, namely the different methods of wage payment, the productive system as measured by the degree of fragmentation of tasks, the nature of sociable groupings and their relation to production groupings, the gender of the workers, and the structure of management/worker relations. However, rather than treating these factors as explanations in themselves, he proceeds to treat them as phenomena to be explained by a series of "external factors": the stability, size, and content of the product market; the competitive structure of the industry; the scale and location of the industry; union organization; and the proportion of total costs going to labor. At Jay's a strong union with low labor costs and high profit margins, plus a large and stable market for capital goods with collusive price agreements among a few large firms, shaped an organization of work in which workers were able to exercise control over output and earnings. At Wye, a weak union with relatively high labor costs and low profit margins, subject to a small seasonally variable market for consumer goods in a competitive industry of many small firms concentrated in a small region, led to a rigid organization of work in which workers had little room for maneuver without putting the company out of business. Lupton suggests that the two clusters of internal variables correspond to the two clusters of "external" variables, although he is not prepared to nominate any one factor to causal primacy.

What aspects of the labor processes at Wye and Jay's are characteristic of the competitive and monopoly sectors of an advanced capitalist economy? Where an industry is dominated by a few large firms, it is likely that formal or informal price fixing will occur. Increases in labor costs can be pushed onto the purchaser, while trade unionism organized on an industry-wide basis can be both strong and a stabilizing factor in management-worker relations. Furthermore, those uncertainties that cannot be absorbed or contained by the large firm can be externalized to smaller firms in the competitive sector. In such "monopoly" corporations unionization usually guarantees an "acceptable" minimum wage which allows workers a certain room for maneuver and bargaining power on the shop floor. As we shall see, when reward is no longer directly dependent on effort, new methods of ensuring the cooperation of workers must be invoked.

In the competitive sector, subordination to the market and the inability to manipulate product prices leads to low profit margins with labor costs assuming a high proportion of total costs. Here we find weak unions and a direct link between reward and effort, engineered either through a piece rate system without minimum wage guarantees or the threat of dismissal when output falls short of acceptable quotas. The economic compulsion of a wage system shapes a coercive regulation of work.

However, the distinction between competitive and monopoly sectors can explain only so much of the variation in the labor process. Differences within each sector are probably as great if not greater than differences

between sectors. How can we characterize variation within sectors? Fox (41) uses "discretion" inherent in jobs or the amount of "trust" management is compelled to place in its workers, while Crozier (31) takes "uncertainty" and the derivative "power" it offers workers to be a key factor in shaping the labor process. For Friedman (46) this dimension of "uncertainty" and "trust" leads to two distinct managerial strategies: "direct control" and "responsible autonomy." Within the same firm we may encounter the deployment of both strategies, and the predominance of one or the other will vary from industry to industry. Apart from the competitive structure of the firm, what shapes these variations in the organization of work?

The Structure of the Product Market

Baran & Sweezy (8) have persuasively argued that the transition to monopoly capitalism has meant that firms compete less over their ability to increase profit through mechanization and intensification of labor and more over the slice of the market they can capture. The problem of overproduction becomes increasingly important, as witnessed by the growing energies devoted to sales and marketing as well as research and development of new products. Earlier we remarked that one of the precipitating factors in the 1933 strike at Yankee City was the inability of operatives to make their regular earnings as a result of changes in shoe styles. In order to boost sales, retailers were orchestrating changes in fashion, a strategy that has become part and parcel of contemporary capitalism. As far as the labor process is concerned, this makes standardization and therefore mechanization more difficult.

The garment industry faces a similar problem. In drawing the contrast between Wye and Jay's, I stressed the competitive structure of the garment and electrical components industries rather than the structure of the product market. As compared to other companies in the garment industry, Wye's relatively large size and ability to attract government contracts made it somewhat unusual. Although subject to seasonal fluctuations, business cycles, and the demand for a variety of garments, Wye's market was nevertheless relatively stable. This was reflected in the production process which involved an advanced separation of conception and execution with each operator working on only a small fraction of the garment. The organization of production had been carefully planned out by management according to the latest "scientific" techniques of time and motion study to allow workers to make a reasonable wage without interrupting a smooth flow of production. In practice there was an endemic conflict due to the clash between a system of piece rates based on individual output and a system of production based on interdependence and cooperation (74).

Cunnison's study (32) of Dee, another Manchester factory producing waterproof clothing, portrays the more conventional make-through method of production. Here maker and machinist work together to produce the entire garment. Workers exercise both skill and discretion in the manufacture of garments to a much greater degree than at Wye. They depend less on the completion of work by other makers or machinists. At the same time, although the workers at Dee exercised more individual control over the labor process, their earnings were much more erratic than those at Wye. At Dee the manager used his personal discretion in deciding who should receive "good" and "bad" work (reflected in the looseness of piece rates), cheap and quality work, and who should be laid off or face a reduced work load when there was a shortage of orders. The particularism inscribed in the distribution of work created much hostility and jealousy among the operatives, but they were powerless to resist as this would jeopardize the very existence of the firm as well as their own livelihood.³

Just as Wye was not typical of the competitive sector, so Jay's was not typical of the monopoly sector. Variability in the product market affects the labor process no less in the monopoly sector than in the competitive sector. Jay's manufactured capital goods, but there are "monopoly" corporations which engage in mass production of consumer items such as the electronic and automobile industries. Where the product—television or car—can be marketed on a mass scale and more or less standardized, some more technically complex labor process such as the assembly line can be introduced. Many changes in style and design can be accommodated within an unchanged organization of work; those which cannot are contracted out to smaller firms.

In a more general scheme that cuts across the distinction between competitive and monopoly industries, Woodward (127) argues that the volume and variety of market demand shapes the potential for control and prediction in the production process, that is, what she calls the level of technical complexity. She discovers that industries in each of her three basic types

³A comparison of Dee and Jay's brings out more clearly the implications of being in a competitive rather than monopoly firm. At Dee prices for piece work were decided at the industry level outside the firm, although some managers might make additional concessions. At Jay's operators, supported by the shop steward, would battle with the time-study man on the shop floor over piece rates. At Dee the manager would try and guarantee his workers a certain minimal wage each week by paying them for work they had not yet completed. This system, known as the dead horse, is frequently found in the garment industry and is associated with the make-through process of production. Entering into a debtor's relationship with one's employer only enhances the employer's power to forestall any resistance. Interestingly, at Jay's the opposite system operated: workers banked unpaid work which they could release when and how they liked. This was used to strengthen their bargaining position with management, particularly when they were handed "bad" work.

—unit and small-batch production, large-batch production, and process production—share certain organizational characteristics such as levels of authority, ratio of salaried administrative and clerical workers to hourly paid employees, specialization of managerial functions, and the degree of separation of administration from production. She also suggests that the form of technology defines the character of “human relations” and, like Blauner (14), argues that relations between workers and managers “deteriorate” as one moves from unit and small-batch production to large-batch and mass production, but then “improve” in the shift to process production. This curvilinear relationship between the development of technology and the level of alienation experienced by wage labor has been vigorously contested by Nichols & Beynon (86). According to their study of a large chemical plant in southern England, continuous flow technology in no way reduces boredom, oppressive working conditions, or coercive routines.

In approaching a technological determinism, both Blauner and Woodward present an important corrective to the human relations approach but at the same time ignore what we emphasized earlier—the level of concentration of firms in the same industry. In addition, they present the development and adoption of technology as unproblematic. Yet this depends on the harnessing of science and industry and is therefore usually restricted to the monopoly sector.

Corporate Management and the Application of Science

The emergence of complex systems of corporate management is our third feature of the development of monopoly capitalism. So far we have merely pointed to the logic behind the links between the organization of the labor process and certain situational factors such as markets. We must now briefly pose the problem of how such external factors become translated into managerial strategies for the organization of work.

Chandler’s history of the transformation of the organizational structure of major United States corporations (27) examines the influence of changing conditions under monopoly capitalism. He argues that successful enterprises adapted to changes in technology, markets, and supply factors by shifting from a structure of centralized, functionally departmentalized divisions to decentralized multifunctional divisions. Those who made the transition early gained considerable competitive advantage over those who made it later, and he describes the trials and errors experienced by some of the largest corporations in the process. Lawrence & Lorsch (67) study the adaptations of firms to “environmental” change in three industries—plastics, containers, and food. Focusing primarily on the fluctuating markets, production organization, and scientific development as the source of “contingencies,” they try to demonstrate the necessity of departments hav-

ing sufficient autonomy to adapt to their respective "environments." This leads to functional "differentiation" of departments and the problem of their "integration" and the "resolution of conflict" among them. They examine how this is accomplished through "integrators" whose function is to coordinate the operations of differentiated departments.

Burns & Stalker's study of the electronics industry in Scotland and England (23) relies less on formal questionnaires as the source of information and more on nonparticipant observation and in-depth interviews. They set out to investigate why some companies proved more able to take advantage of governmentally subsidized research in the burgeoning field of electronics after World War II. Their findings indicate that those organizations which developed what they call an "organic" management structure were more likely to succeed in conditions of continual change and innovation such as is found in many branches of the electronics industry, whereas the adoption of what they call a "mechanistic" structure was better suited to stable conditions. Within a mechanistic organization roles are well defined and arranged in a permanent hierarchy of authority, with those at the top monopolizing the power of decision-making. An organic system, by contrast, is distinguished by its flexibility. Roles and responsibilities are continually being redefined. Communication is not something that always flows in a vertical direction but rather tends to take the form of lateral consultation. Authority is decentralized and the head of the concern is no longer the omniscient presence which he is under more rigid structures.

But Burns and Stalker are not content to advertise their prescription for managerial effectiveness. They attempt to establish a framework for understanding why some firms follow the prescription and some do not. They start from the assumption that the firm must be conceived of as the intersection of a number of social systems with goals and values that may not be in accord with those of the organization. Here Burns and Stalker begin to make a major advance on the notion of informal organization conjured up by the human relations school as a residual category for all that was not explicitly acknowledged by management as an essential feature of the firm (10, 33, 94). In drawing attention to the realms of political struggles and status striving, they are able to explain why managerial systems differ in their responses to similar environments. However, it still is important to develop an understanding of how the political and status orders interrelate with the prerequisites of organizational survival.

Much work has yet to be undertaken in this area. By abandoning the concern for prescription, by substituting participant observation for surveys and interviews, and by developing new frameworks which incorporate as central features the political and ideological dimensions of industrial concerns, the mists of managerial rationalization and organization theory will

be more easily distinguished from the realities of corporate life. Departments do have their particularistic interests to pursue, and they do couch and defend those interests in the name of the interest of the firm as a whole. How do different fractions of management form coalitions? Which fractions constitute the dominant power bloc and direct the firm in their particular interest? Under what conditions do coalitions among departments break down and crises emerge? What forces are brought to bear to contain conflict within limits defined by the survival of the enterprise? Above all, how do the coalitions, alliances, and blocs among different fractions and strata of management shape the struggles between management and workers? And how, in turn, do these struggles shape the organization of management? These are issues that lurk behind the "integrators" who "resolve conflicts" between "differentiated" departments.

In the examination of the "environment" and the development of a "contingency theory of organization" (67, 116) based on "uncertainty" outside the enterprise, we have come a long way from the Western Electric Studies. For Mayo and his colleagues management presented itself as a single monolith which had to be persuaded to treat its workers as human beings. The problems that concerned Mayo were those of conflict between management and worker. In the organization theory which has supplanted the human relations approach, either the worker no longer exists or everyone is a worker. In either case the problem of eliciting the cooperation of those who only receive instructions and have no recognizable say in the organization of work has disappeared. Apparently Mayo's wildest hopes—the restoration of humanity's capacity for spontaneous cooperation (94, p. xiv)—have been realized.

This shift in the focus of the literature toward problems of conflict within managerial hierarchies does perhaps express, albeit in a concealed form, some very real trends in the postwar United States: the incorporation of wage-laborers in large firms of the monopoly sector. And it is this fact that now presents itself in the guise of disunity within the ranks of management. Ironically, it may be the very solution of the problem that defined the human relations approach that now generates the new problem of managerial divisiveness. Rather than attribute such conflict within management to the growing turbulence of the "environment," for which there is not much evidence, one might explain it in terms of declining threats to corporate survival, in particular the successful containment of capital/labor struggles. If this is true, then it is not something to be ignored but something to be explained. How have workers been persuaded to subordinate themselves to the direction of management? What has happened to all the conflict that Mayo bewailed—the struggle for union recognition in the 1930s?

Part of the answer must lie precisely in the application of science to the labor process (87). "The skill once 'owned' by the worker and sold as a service is now possessed by the manager in the form of the machine" (121, p. 190). But what is it about the machine that fosters the subordination of workers and their cooperation in the pursuit of profit? What determines the design of the machine? What function is it supposed to perform? Warner and Low pose a provocative answer:

Since the shoe-factory workers holding high-skilled jobs are a potential threat to management's control of shoe operatives, inventors apparently are encouraged to break down complex jobs into series of simple, easily standardized operations. An important result of their work, therefore, is to eliminate more and more of the skilled jobs from shoemaking, tending to accelerate the leveling of technological jobs in the shoe factory to a common low order of skill. To a lesser extent, research departments in other industries (chemistry is a case in point) also reduce the number of high-skilled jobs in the shoe factories by developing new substances which simplify shoemaking. Designing departments and the skilled jobs in connection with them have been almost eliminated from modern shoe factories (121, pp. 81-82).

If control is one factor, efficiency is clearly another, since breaking down a craft into unskilled or semiskilled jobs increases the labor supply and can bring about a decline in wages and, with mechanization, an increase in output. What motivates management in the development and adoption of machines: efficiency, control, or both? Or are they indistinguishable? One answer is to be found in Noble's study of automation in the metal-working industry (88). Manufacturers of machine tools faced a choice between two technologies: "record play-back" which could be adopted by smaller machine shops, and "numerical control" which was more complex, more expensive, and beyond the means of most buyers. Whereas "record play-back" retained a central role for the skilled machinist, numerical-control systems involved the elimination of any machinist skill and its replacement by trained computer programmers. Noble shows how, and suggests why, the users of the new technology, in particular the Air Force, opted for the more expensive and comprehensive numerically controlled machinery that removed any control over the labor process from the shop floor.

Although it is not clear whether Noble's study is exceptional, it does seem to uphold the observations of Warner and Low concerning the purpose of mechanization. But what neither analysis examines is the response of the now unskilled workers. How do they "adapt" or "resist" the introduction of machines? Their services are still required and their cooperation is still essential. One approach has been developed by Baldamus (6), who examines the deprivation inherent in work, what he calls effort. There are three sources of effort: physical conditions which lead to "impairment," repeti-

tiveness which leads to "tedium," and coercive routines which lead to "weariness." To the extent that workers regard these forms of effort as unavoidable, they attempt to achieve corresponding relative satisfactions by becoming accustomed to physical conditions (inurement), generating a feeling of being pulled along by work (traction), and being in the mood for work (contentment). But these satisfactions are always relative to the more fundamental and inescapable deprivation.

Baldamus does not examine the equally important response to the strictures of work noted by many others (12, 13, 31, 34, 58, 94, 96-99, 114, 126), namely the constitution of "games," whose objectives usually involve regaining a certain marginal control over the labor process. Such reunification of conception and execution is frequently regarded as disruptive by higher management, but in practice can often turn out to be critical for effective cooperation. Indeed, where the reunification of conception and execution is impossible, as is the case for numerically controlled machine tools, the labor process frequently breaks down. It would seem that every labor process depends on a certain spontaneous collaboration of the worker.

There is a further assumption behind the postulates of Noble, Warner, and Low concerning machine design, which also threads through the technological determinism of writers such as Blauner (14) and Woodward (127), namely that technology to a lesser or greater extent shapes the form of the labor process. There are undoubtedly technical imperatives that are rooted in the particular machinery adopted, what I shall call the technical relations in production. But as the work of Rice (91), Trist et al (117), and others of the Tavistock Institute have demonstrated, there are also aspects of the labor process that are not determined by technology, which I shall call the social relations in production. We have discussed some of the issues in the determination of machinery and thus of the technical relations in production, but what determines the social relations in production? In the case of mining, I earlier suggested that these may be the outcome of struggles, and I shall offer some further answers to this question in the last section. First I want to pose the question in an alternative way: in the absence of machines what forces shape the labor process once deskilling has occurred?

The Penetration of Bureaucratic Patterns

If administrative apparatuses have grown within industry, their proliferation outside industry is even more pronounced. The expansion of the state and service sectors of the economy has entailed the spreading and at the same time deskilling of office work (17, 70, 82). How is skill first appropriated from white collar workers and then restored as an alien power over them? What comes to replace their lost skill? The answer lies in part in the

“rule” which assumes the same role in the office that the machine plays in the factory. Like the machine, the rule is as much an instrument of exercising control as it is of increasing efficiency. However, it is the latter feature which has captured the imagination of Merton (79) and his students such as Blau (13), Selznick (104), and to a lesser extent, Gouldner (52). As their point of departure they take Weber’s appraisal of bureaucracy as the most efficient form of organization [(122) particularly Vol. I] and demonstrate how and why it fails to live up to expectations. Thus Selznick shows how a government agency—TVA—cannot achieve its stated goal because of concessions it has to make to various external interest groups. Just as factory workers turn production into “games” with, against, and around machines, office workers do the same with rules by ritualizing responses (78, Chap. 8), manipulating them in their own interests (13), or using them to protect themselves from face-to-face interaction with supervisors (31). In each case adaptation to rules leads to “goal displacement” or “inefficiency,” so that for Crozier the defining characteristic of the bureaucracy is its inability to correct its own errors.

In concentrating on the inefficiency of bureaucracy, these studies underplay the other theme in Weber’s discussion, that of domination. Somewhat exceptional, therefore, are Gouldner’s discussion of the way that rules obscure and reduce conflict while facilitating the exercise of control (52) and Etzioni’s discussion of the different forms of compliance in organizations (40). A second problem in much of Merton’s work and that of his followers is the presumption that inefficiency and goal displacement are some *unintended* consequence. In practice bureaucracies may deliberately foster “inefficiency” through the proliferation of rules. Thus Piven & Cloward (89) demonstrate that the dominant objective of the welfare agency is to instill the work ethic rather than distribute assistance. The addition of another rule to regulate relations either between the agency and its clients or within the agency itself may have the *intended* effect of reducing the number of welfare recipients. Were the welfare agency more eager to distribute assistance it would, following Burns & Stalker (23), assume a much less rigid structure so as to be responsive to the unpredictable and insecure lives of the unemployed and underemployed people seeking welfare (113).

The welfare agency is merely a single illustration of a general principle that Weber understood only too well, namely the manner in which formal rationality (the use of rules to regulate behavior) comes to dominate substantive rationality (the rational goals of human endeavor). Formal rationality becomes substantive irrationality (54, Chap. 6; 58; 73, Chap. 8). In the name of efficiency or science, rules serve to hide the true objectives of the bureaucratic organization. As with machines, efficiency becomes domi-

nation. Just as in the conventional literature on technology, it is the fact of mechanization rather than the specific form of machines that is usually discussed; in the literature on bureaucracy it is the proliferation of rules rather than their content that receives attention. But who decides what those rules shall be and with what ends in mind? Is the content of rules shaped in struggle or is it designed to preempt struggle? Do rules and machines have to be associated with debilitating restrictions? Or are there particular incarnations which liberate rather than fetter human creativity?

Rules, of course, are often used as an adjunct to machines. Where Blau (13) examines the administration and enforcement of rules through the rule-bound organizations of two government agencies, Gouldner (52) investigates the administration of production through rules in a gypsum plant. He identifies three patterns of industrial bureaucracy: the mock bureaucracy in which there are few rules and little conflict between management and workers; the representative bureaucracy in which rules are legitimated by both management and workers; and finally the punishment-centered bureaucracy in which rules are enforced by management against an unwilling and resistant labor force through the application of disciplinary sanctions. Gouldner describes a transition from the indulgency pattern of the mock bureaucracy to the more coercive pattern of the punishment-centered bureaucracy in terms of the social and political processes of managerial succession from the "local" Old Doug to the "cosmopolitan" Peele. Toward the end of the field research, 2 years after the succession, there was a wildcat strike (53).

The significance of Gouldner's study can be most easily appreciated through a comparison with Warner and Low's treatment of the shoe strike in Yankee City 17 years before. There the major underlying cause of the strike was not so much the destruction of the shoemakers' craft but their loss of control over management as it became increasingly responsive to the needs of New York bankers and national markets. The community had lost its influence over the owners of the company, who threatened to move the company to a more convenient place. This was not a possibility at Gouldner's gypsum plant which was rooted in a particular geographical location. Here a major underlying cause was the workers' loss of control over the labor process, occasioned by the enforcement of restrictive rules. In both instances the strike was seen as a reactive protest against a defeat which workers had already sustained. But where Warner and Low do not see any way of resolving such protest, except possibly by creating new channels of mobility through education (see also 28), Gouldner's analysis suggests that the rise of a punishment-centered bureaucracy may also be a solution to the conflict it instigates and to the reduction of the working class to homogeneous unskilled laborers hostile to capital. The punishment-centered bu-

reacruacy becomes a way of organizing conflict in ways that do not threaten the survival of the firm.

However, Gouldner does not adequately appreciate the historical specificity of the emergence of his patterns of industrial administration. His punishment-centered bureaucracy arose during World War II and was consolidated after the war. With the assistance of industrial trade unions, management was now able to return to its earlier interest in welfare capitalism. Although it occasionally breaks out in wildcat strikes, conflict on the shop floor is normally either transferred to the bargaining table where contracts are renegotiated or channelled into a grievance procedure. Collective bargaining confines conflict within limits defined not only by the survival of the firm but also by its expansion, which guarantees *future* increases in wages and benefits. The grievance procedure turns struggles between classes into struggles between the individual and the company. The system of day-to-day factory administration represents workers as industrial citizens—individuals with rights and obligations (105). The possessive individualism created by the “external” labor market is reconstituted within the firm through the organization of job mobility. The bidding system allows workers to compete for vacancies in the plant or department largely on the basis of seniority. Seniority also governs the length of vacations, pay, supplementary unemployment benefits, and other fringe benefits. Thus the consequences of seniority clauses combine with those of collective bargaining to attach individual workers to the present and future interests of the company rather than to the interests they share with other workers, particularly workers in other firms.

This interpretation of Gouldner’s study complements and adds a new dimension to the findings of Lupton (71) and Cunnison (32), for the reconstitution of welfare capitalism presumes a capacity to extend benefits and administer relations between workers and management through rules. It presumes definite restrictions on managerial discretion which may be incompatible with the conditions of uncertainty in the competitive sector. In a company such as Dee there can be little incentive for management to stabilize industrial relations through collective bargaining, grievance procedures, or bidding systems so long as the product market is unpredictable. On the other hand, the erection of such administrative structures in the monopoly sector, inasmuch as the firm can externalize increased labor costs through increased prices, is not only possible but desirable. The advantages of containing one source of uncertainty, such as the product market, can only be fully realized when all other sources of uncertainty, such as labor market and management/worker relations, are also contained.

The presence or absence of a rule-bound administration of work becomes critical in shaping the impact of external roles on industrial behavior. The

attempt by Goldthorpe and company (51) to stress the importance of “external orientations” to work misses this point. Thus at Dee sex, religion, and age had important effects on workshop activities. The competitive sector firm often approximates an open system of overlapping and competing roles, whereas in the monopoly sector firm the administrative structures create a more closed system in which “extrinsic” attributes are of less significance in the organization of production and in molding productive activities. Thus Kornblum (65) suggests that race and ethnicity have diminishing impact on patterns of behavior in the steel mills as seniority systems become entrenched. However, if race, sex, and ethnicity have declining significance inside the factory, that is not to say they are no longer significant there nor that they do not have increasing significance outside the factory as, for example, in shaping access to different labor markets (15, 36, 56, 80). (Even here affirmative action may have had some influence on the recruitment policies of corporations which are dependent on government contracts.)

In summary, the proliferation of bureaucratic patterns is rooted in the growth of government and service sectors on the one hand and in the changes in the organization and administration of the labor process on the other (109). However, the shift from the decline in welfare capitalism, epitomized by Warner and Low’s study, to its reconstruction, expressed in Gouldner’s study, is also a geographically specific trajectory. As Lupton’s description of Jay’s suggests, British monopoly industry has not trodden the same path of bureaucratization. To understand this and the corresponding particularity of much of United States’ industrial anthropology we must briefly consider international variations in the labor process and its administration.

UNEVEN DEVELOPMENT OF THE LABOR PROCESS ON A WORLD SCALE

Not too long ago, the secret of economic development was seen to reside in replicating the material and ideological conditions of the first capitalist nations. Capital importation, the adoption of democratic institutions, and the penetration of “modern” values were seen as essential ingredients of Third World development in the twentieth century. Baran (7), Emmanuel (38), Frank (42), Amin (2), Wallerstein (120), and many others have now demolished the myths of “modernization” theory. It is one thing to attempt capitalist accumulation when there are no other capitalist countries around; it is quite another to do so in the face of already powerful capitalist nations. The expansion of capitalism in “core” countries becomes the condition for

its underdevelopment or failure to develop in other countries, although, of course, there are exceptions to this rule.

We have already observed how the uneven accumulation of capital within a single nation leads to the uneven development of the labor process. First the structure of the work is critically shaped by technological, economic, and political conditions existing at the time of its formation. Organizational forms tend to bear the marks of their origin. Second, the domination exercised by the monopoly sector over its various markets allows it to absorb increasing labor costs by draining surplus from the competitive sector. As Friedman (46) has noted, a center and periphery emerge within the advanced capitalist economy with "hegemonic" forms of labor process appearing in the former and more "despotic" forms appearing in the latter. Both principles operate in the uneven development of the labor process on a world scale. I shall deal with each in turn as late development and unequal development.

Late Development

Those countries which embark on capitalist accumulation relatively late, although hampered in their progress by advanced capitalist countries, frequently adopt the latter's latest technology, organizational skills, and norms of industrial practice. This is what Gerschenkron (49) has called the late development effect, and it has recently been used by Dore (35) to interpret differences in Japanese and British employment systems. Basing his comparison on a detailed study of two Hitachi and two English Electric factories, Dore claims that the essential characteristics of the Japanese system are "lifetime employment, a seniority-plus-merit wage system, an intra-enterprise career system, enterprise training, enterprise unions, a high level of enterprise welfare, and the careful nurturing of enterprise consciousness." This is in contrast to the British system, which has "considerable mobility of employment, a market-based wage and salary system, self-designed mobile rather than regulated careers, publicly provided training, industrial and craft unions, more state welfare and a greater strength of professional, craft, regional or class consciousness" (35, p. 264).

In explaining the different patterns of industrial relations, Dore compares the conditions under which Japan began its major industrialization in 1900-1920 with conditions during the middle of the nineteenth century when Britain's employment system was established. Thus the distinctive consequences of Japan's late development are the lesser significance of laissez-faire market principles, the rapidity of the transition to capitalism and the absence of intermediary structures such as putting-out systems, the emergence of school systems before the development of a substantial manufac-

turing sector, the technological and organizational leap made possible by adoption from already advanced industrial nations, and the sharper dualism between monopoly and competitive sectors (35, chap. 15). He refuses to single out any of these consequences of late development as being of primary importance; they must be treated together.

An alternative approach, following our earlier discussion of the transition from competitive to monopoly capitalism, would be to examine how late development affects competition among capitalists and struggle between capital and labor, and how in combination these then shape the labor process. In order to be competitive on a world market, Japanese firms had to operate on the same scale and with the same technology as advanced capitalism. With state intervention playing a key role, Japan was able to build a viable monopoly capitalism without the intense class struggles associated with the transition from competitive capitalism and the destruction of crafts. Instead, the monopoly firm secured the support of labor through establishing enterprise trade unions. As in other countries, the monopoly sector created a competitive sector as a condition for its own existence. But labor in the competitive sector was particularly weak in Japan because of the absence of a legacy of organization from an earlier period of capitalism. This led to the accentuation of dualism with sharp disparities between conditions and industrial relations in the two sectors (30).

By contrast, the transition to monopoly capitalism in Britain had to overcome resistance built up under competitive capitalism. Most significant was the strong trade union movement that emerged through the self-organization of the British working class during the nineteenth century. Organizational changes that undermined worker control over the labor process were actively resisted. The heritage of shop floor militancy has continued to pose obstacles to mechanization, bureaucratization, and speed-up. The relative strength of labor in the competitive sector has retarded tendencies toward the dualistic disparities that emerged rapidly in Japan.

The United States holds a position in between Japan and Britain. During the era of competitive capitalism American labor did not develop the same organizational strength as in Britain, in part because working class struggles over political issues were less significant. The bloody massacres of workers that recur throughout United States history are testimony to their courage but also their weakness. During the transition from competitive to monopoly capitalism labor made few if any gains, and the emergence of industrial unionism was further stalled by welfare capitalism. As in Japan, it was only after craft workers had come under major assault and mechanization had revolutionized production that industrial unions were born. Thus, the distinctive character of industrial relations in the monopoly sector firm—the

system of collective bargaining, grievance machinery, and seniority systems controlled by management—are more akin to the Japanese model than to the British pattern in which workers continue to retain greater control over the administration of production. A comparison of anthropological studies of machine shops (22, 35, 71, 95) and of assembly line production in auto companies (5, 12, 30, 119) suggests that the character of shop floor politics in a United States monopoly firm falls between the confrontational pattern with militant shop stewards often found in England and the corporatist pattern based on union management cooperation frequently found in Japan. Dualism in the three countries seems most accentuated in Japan and least in Britain, although such international comparisons have hardly begun.

Unequal Development

More often than not late development means underdevelopment and unequal development. In its simplest form this involves the transfer of surplus from the “backward” country to the “advanced” country, from the periphery to the core, from the colony to the metropolis. The state plays a critical role in facilitating this transfer of surplus but it also plays another role—organizing the conditions for the production of profit. Thus, the imperatives of the colonial state are to allow the repatriation of surplus and its extraction through the most profitable means consistent with the existing political and economic situation. Insofar as a system of wage labor is established in the colony, a distinctive form of the capitalist labor process emerges. In order to highlight its typical features I will contrast it with corresponding labor processes in advanced capitalist nations.

I confine myself here to an examination of a colonial system of mining. In discussing alternative techniques of organizing underground mining, Trist et al write:

Longwall systems, because of their greater degree of differentiation, require much more integration than single place systems; but the conventional pattern of organization has broken up the traditional, self-regulating cycle group into a number of segregated single task groups each bound within its own concerns. These groups depend entirely on external control in order to carry out the indivisible primary task of completing the cycle. The existing pattern of management through the wages system can only partially supply this control. Full control would require either a degree of coercion which would be both impracticable and unacceptable or a degree of self-regulation which implies a different organizational pattern (117, pp. 66–67).

Trist and company suggest that full control can be exercised by reconstructing a self-regulating group around the newly developed machinery. However, the mining of gold and diamonds in South Africa (60; 108, Chap. 2–4), of gold and coal in Southern Rhodesia (118), and of copper in Northern

Rhodesia (now Zambia) (39) were all organized using a degree of coercion “which would be both impracticable and unacceptable” in Britain. How has this been possible?

The colonial state creates two labor markets—one organized by taxing Africans and dispossessing them of their land, and one organized by inducing white workers to leave the metropolis for the colony, where they often become settlers. Whereas the colonized populations have to obtain jobs of an unskilled or semiskilled nature, the colonizing populations take up skilled and supervisory positions in the mine. A color bar rigidly separates the jobs allocated to the different populations so that no white worker ever takes orders from a black worker. The labor process is controlled by the white boss who commands untrammelled and arbitrary power over his black subordinates. The company’s administrative apparatus sanctions the coercive regulation of work through the perpetration of physical brutality and the arbitrary firing of African laborers. Its totalitarian rule extends into the life of the mine compound. (118). The powerlessness of Africans to resist ultimately rests on the ability of the colonial state to recognize few if any rights of the colonized. The state’s role is to protect the external conditions of colonial despotism—the regulation of a system of migrant labor that feeds the mines, the construction of economic infrastructure, and so on.

It becomes apparent after political independence that colonial despotism at the point of production depends on the colonial state. Thus, the mining companies in Zambia could no longer uphold the arbitrary dictatorship of the white boss. However, the heritage of colonialism presented serious obstacles to the effective transition to an administrative apparatus similar to ones found in advanced capitalist countries. The new Zambian supervisor could no longer exercise the same arbitrary power of his predecessor, yet this was often the only effective system of control under the prevailing technology and mining excavation which had been established on the basis of cheap colonized labor power (21). In other words, the legacy of a colonial labor process in a postcolonial period created much tension and conflict. Technology and organization shaped in one political context cannot be easily transformed when the context changes.

The colonial state did not intervene directly in the labor process itself. In other countries, however, the state does become directly involved in the administration of industrial work through such organs as the trade union and the political party. The contrast between such systems of “bureaucratic despotism” and the bureaucratic patterns of the United States is highlighted by a comparison of Roy’s study of Geer Company in South Chicago (95) and Haraszti’s study of Red Star Factory in Hungary (55). The machine shops they examine share similar technology and payment systems but differ markedly in other aspects of the organization of work. At Red Star

the union and party were harnessed to and buttressed the arbitrary rule of the foreman, whereas at Geer the union acted as a limited restraint on managerial discretion. At Red Star work was constituted as a piecework "game," but it differed from that described by Roy and also Lupton (71, Chap. 7-12) in several ways. First, the absence of effective minimum wages precluded goldbricking, while arbitrary price cutting undermined the rationale behind quota restriction. Second, economic survival, according to Haraszti, depended on making one's quota and this often involved the remarkable feat of running two machines at once. Third, exceeding the norm (100 percent level) was expected at both Geer and Red Star, but in the latter it was referred to as "looting" (cheating the norm) while in the former it was called "making out." Whereas looting justified arbitrary managerial assaults on piece rates, making out, as long as it was within definite limits, rarely prompted such attacks. Finally, banking work to cover "bad" jobs was possible at Geer but not at Red Star. Indeed, the organization of work at Red Star was more reminiscent of the "market despotism" of early capitalism, but with direct state intervention in the factory rather than of the "hegemonic" systems of late capitalism.

These two examples offer clues as to the role of technology and politics in the formation of the labor process. In the first, technology was itself shaped by the colonial political order, and furthermore, this technology imposed certain constraints on the form of the labor process. By extension, one may speculate on the existence or potential existence of socialist machines whose technical imperatives do not involve the fragmentation of work but allow workers to regain collective, if not individual, control over the labor process. In the second example we demonstrated variations, according to political context, of the organization of work around the same technology and system of payment.

In both examples, as well as in our discussion of late development, the role of the state was critical. It shaped the form of the labor process either directly, through intervening within the factory, or more usually indirectly, by guaranteeing certain external conditions, whether these were relations among capitalists or between capital and labor, or the reproduction of supplies of cheap labor power. In the latter instance I am not only referring to the organization of migrant labor either in the Third World or in Europe (25, 26) and the United States (47, 100), but to a more general creation of reserves of politically weak labor power composed of women, blacks, and other "minorities." What effect, for example, has the availability of female labor had on the form of the labor process? Has it merely delayed mechanization as in the recruitment of migrant workers to the fields of California agribusiness? In what ways has the balkanization of the labor force into weak and strong, organized and unorganized, accentuated its dualistic char-

acter and to what extent does the dualism determine the weakness of women and minority workers? More generally, how does the labor process shape the labor force and, conversely, how does the labor force shape the labor process?

Finally, in highlighting the international variation of the labor process, this last section provides a corrective to the more conventional development literature which on the one hand misses the geographical specificity of the labor process and on the other hand emphasizes attitudes, orientations, commitments, primordial loyalties, and so on as the sources of variations in industrial behavior (11, 63, 85). The alternative approach, long since the cornerstone of the Manchester School's "situational analysis" (39, 50, 61, 106), draws attention to the context of industry itself and not the "belief systems" people carry around in their heads, although these can be crucial in situations of uncertainty or crisis. Nor do we have to resort to elements of cultural reductionism, found for example in Crozier (31) and Abegglen (1), to explain variations in the capitalist labor process. Instead I have pointed to the articulation of competition among capitalists with the struggle between capital and labor as shaped by organs of the state in the context of its historical involvement in a world capitalist order.

CONCLUSION

Out of the variety of theories competing to explain a single labor process I have begun to construct a single theory to explain a variety of labor processes. The essay began with the Hawthorne experiments which Elton Mayo used to project as a global theory what was in fact largely confined to a particular type of company at a particular point in time. Theoretical advances depended on making problematic what Mayo took for granted. First, although it might have been possible to ignore the political and economic context of the Hawthorne plant for some purposes, this possibility must be explained, not assumed. I have tried to examine some of the mechanisms through which the relative insulation of the labor process is preserved and the conditions under which this insulation can break down. Second, variations in the organization of work that emerge through comparative and historical studies can only be explained by stepping outside of the factory and examining its changing context, in particular the patterns of competition among capitalists and struggles between capital and labor as organized by the state. Third, by expanding the context to ever more remote arenas, different forces emerge as fundamental to shaping the labor process. For example, the effect of those factors constant within national boundaries, such as the history of class struggles, may only be readily appreciated when we compare factories adopting a similar technology but situated in different

countries. In the area of national, let alone international, variation the study of the labor process is only just beginning. Fourth, the dynamics of the labor process is a problem I have addressed but inadequately. What are the forces that lead to the destruction of crafts and to the particular reconstitution of the labor process? How do we understand the interaction of external factors on dynamics inscribed in the structure of work so as to explain changes in the labor process over time? And how should we study such changes? Perhaps one way would be to revisit the classical sites of industrial anthropology—Hawthorne, Wye, Geer, Jay's and so on.

In exploring changes in the labor process either over time or between places, we are simply trying to approach the limits of variation of the capitalist labor process, that is, its capitalist essence. And to appreciate the limits of what is possible under capitalism is to begin to grasp the conditions for realizing what is impossible under capitalism.

Literature Cited

1. Abegglen, J. C. 1958. *The Japanese Factory*. New York: Free Press
2. Amin, S. 1976. *Unequal Development*. New York: Monthly Rev. Press
3. Arensberg, C., ed. 1957. *Research in Industrial Human Relations*. New York: Harper & Row
4. Argyris, C. 1964. *Integrating the Individual and the Organization*. New York: Wiley
5. Aronowitz, S. 1973. *False Promises: The Shaping of American Working Class Consciousness*. New York: McGraw Hill
6. Baldamus, W. 1961. *Efficiency and Effort*. London: Tavistock Inst. Hum. Relat.
7. Baran, P. 1957. *The Political Economy of Growth*. New York: Monthly Rev. Press
8. Baran, P., Sweezy, P. 1966. *Monopoly Capital*. New York: Monthly Rev. Press
9. Baritz, L. 1965. *The Servants of Power: A History of the Use of Social Science in American Industry*. New York: Wiley
10. Barnard, C. I. 1938. *The Functions of the Executive*. Cambridge, Mass: Harvard Univ. Press
11. Bendix, R. 1956. *Work and Authority in Industry: Ideologies of Management in the Course of Industrialization*. New York: Wiley
12. Beynon, H. 1973. *Working for Ford*. London: Lane
13. Blau, P. 1955. *The Dynamics of Bureaucracy*. Chicago: Univ. Chicago Press
14. Blauner, R. 1964. *Alienation and Freedom*. Chicago: Univ. Chicago Press
15. Blaxall, M., Reagan, G., eds. 1976. *Women and the Workplace*. Chicago: Univ. Chicago Press
16. Brandes, S. 1976. *American Welfare Capitalism 1880-1940*. Chicago: Univ. Chicago Press
17. Braverman, H. 1974. *Labor and Monopoly Capital*. New York: Monthly Rev. Press
18. Brody, D. 1960. *Steelworkers in America: The Nonunion Era*. Cambridge, Mass: Harvard Univ. Press
19. Brody, D. 1965. *Labor in Crisis*. Philadelphia/New York: Lippincott
20. Brody, D. 1968. The rise and decline of welfare capitalism. In *Change and Continuity in Twentieth Century America: The 1920s*, ed. J. Braeman, R. Brenner, D. Brody, pp. 147-78. Columbus: Ohio State Univ. Press
21. Burawoy, M. 1978. *The transition to post-colonial politics of production: The case of the Zambian mining industry*. Presented at SSRC Conf. Politics Common People in Africa, New York
22. Burawoy, M. 1979. *Manufacturing Consent: Changes in the Labor Process under Monopoly Capitalism*. Chicago: Univ. Chicago Press
23. Burns, T., Stalker, G. M. 1961. *The Management of Innovation*. London: Tavistock
24. Carey, A. 1967. The Hawthorne studies: A radical criticism. *Am. Sociol. Rev.* 32:403-16

25. Castells, M. 1975. Immigrant workers and class struggles in advanced capitalism: The Western European experience. *Polit. Soc.* 5:33-66
26. Castles, S., Kosack, G. 1973. *Immigrant Workers and Class Structure in Western Europe*. London: Oxford Univ. Press
27. Chandler, A. 1962. *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*. Cambridge: MIT Press
28. Chinoy, E. 1955. *Automobile Workers and the American Dream*. New York: Doubleday
29. Cliff, T. 1970. *The Employer's Offensive*. London: Pluto
30. Cole, R. E. 1971. *Japanese Blue Collar*. Berkeley/Los Angeles: Univ. California Press
31. Crozier, M. 1964. *The Bureaucratic Phenomenon*. Chicago: Univ. Chicago Press
32. Cunnison, S. 1966. *Wages and Work Allocation*. London: Tavistock
33. Dalton, M. 1966. *Men Who Manage*. New York: Wiley
34. Ditton, J. 1977. Perks, pilferage, and the fiddle. *Theory Soc.* 4:39-71
35. Dore, R. 1973. *British Factory—Japanese Factory*. Berkeley/Los Angeles: Univ. California Press
36. Edwards, R. 1975. The social relations of production in the firm and labor market structures. *Polit. Soc.* 5:83-108
37. Emery, F. E., Trist, E. L. 1963. The casual texture of organization environments. *Hum. Relat.* 18:20-26
38. Emmanuel, A. 1972. *Unequal Exchange*. New York: Monthly Rev. Press
39. Epstein, A. L. 1958. *Politics in an Urban African Community*. Manchester: Manchester Univ. Press
40. Etzioni, A. 1961. *A Comparative Analysis of Complex Organizations*. New York: Free Press
41. Fox, A. 1974. *Beyond Contract: Work, Power and Trust Relations*. London: Faber & Faber
42. Frank, G. 1969. *Latin America: Underdevelopment or Revolution*. New York: Monthly Rev. Press
43. Franke, R. H., Kaul, J. D. 1978. The Hawthorne experiments: First statistical interpretation. *Am. Sociol. Rev.* 43:623-43
44. Friedland, W., Barton, A. 1975. *Destalking the Wily Tomato*. Dep. Appl. Behav. Sci., Coll. Agric. Environ. Sci., Univ. California, Davis
45. Friedland, W., Barton, A., Thomas, R. 1978. *Manufacturing Green Gold: The Conditions and Social Consequences of Lettuce Harvest Mechanization*. Unpublished manuscript, Univ. California, Santa Cruz
46. Friedman, A. L. 1977. *Industry and Labour*. London: MacMillan
47. Galarza, E. 1964. *Merchants of Labor*. Santa Barbara, Calif: McNally & Loftin
48. Gardner, B. B., Moore, D. G. 1950. *Human Relations in Industry*. Chicago: Irwin
49. Gerschenkron, A. 1962. *Economic Backwardness in Historical Perspective*. Cambridge, Mass: Harvard Univ. Press
50. Gluckman, M. 1961. Anthropological problems arising from the African industrial revolution. In *Social Change in Modern Africa*, ed. A. Southall, pp. 67-82. London: Oxford Univ. Press for Intern. Afr. Inst.
51. Goldthorpe, J., Lockwood, D., Bechhofer, F., Platt, J. 1968. *The Affluent Worker: Industrial Attitudes and Behavior*. New York: Cambridge Univ. Press
52. Gouldner, A. W. 1954. *Patterns of Industrial Bureaucracy*. New York: Free Press
53. Gouldner, A. W. 1954. *Wildcat Strike*. Antioch: Antioch Press
54. Habermas, J. 1970. *Toward a Rational Society*. Boston: Beacon
55. Haraszti, M. 1977. *A Worker in a Worker's State*. Harmondsworth, England: Penguin
56. Harrison, B. 1972. Public employment and the theory of the dual economy. In *The Political Economy of Public Service Employment*, ed. H. L. Sheppard, B. Harrison, W. J. Spring, pp. 41-76. Lexington, Mass: Heath-Lexington
57. Hobsbawm, E. 1964. *Labouring Men*. London: Weidenfeld & Nicolson
58. Homans, G. C. 1955. *The Human Group*. New York: Harcourt, Brace
59. Horkheimer, M. 1974. *The Eclipse of Reason*. New York: Seabury
60. Johnstone, F. 1976. *Class, Race and Gold*. London: Routledge & Kegan Paul
61. Kapferer, B. 1972. *Strategy and Trans-action in an African Factory*. Manchester: Manchester Univ. Press
62. Kerr, C. 1964. *Labor and Management in Industrial Society*. New York: Doubleday
63. Kerr, C., Dunlop, J. T., Harrison, F. H., Myers, C. A. 1960. *Industrialism and Industrial Man*. Cambridge, Mass: Harvard Univ. Press
64. Kerr, C., Fisher, L. 1964. Plant sociology: The elite and the Aborigines. See Ref. 62, pp. 43-82

65. Kornblum, W. 1974. *Blue Collar Community*. Chicago: Univ. Chicago Press
66. Landsberger, H. 1958. *Hawthorne Revisited*. Ithaca: Cornell Univ. Press
67. Lawrence, P., Lorsch, J. 1967. *Organizations and Environment*. Boston: Grad. Sch. Bus. Adm., Harvard Univ. Press
68. Likert, R. 1961. *New Patterns of Management*. New York: McGraw Hill
69. Lipset, S. M., Trow, M., Coleman, J. 1956. *Union Democracy*. Glencoe: Free Press
70. Lockwood, D. 1958. *The Blackcoated Worker: A Study in Class Consciousness*. London: Allen & Unwin
71. Lupton, T. 1963. *On the Shop Floor*. Oxford: Pergamon
72. March, J., Simon, H. 1958. *Organizations*. New York: Wiley
73. Marcuse, H. 1968. *Negations*. Boston: Beacon
74. Martin, R. 1978. *Resistance and control on the shop floor: The dynamics of the labor process in a garment factory*. B. A. honors thesis. Univ. California, Berkeley
75. Mathewson, S. 1931. *Restriction of Output Among Unorganized Workers*. New York: Viking
76. Mayo, E. 1933. *The Human Problems of an Industrial Civilization*. New York: Macmillan
77. Mayo, E. 1945. *The Social Problems of an Industrial Civilization*. Cambridge, Mass: Harvard Univ. Press
78. Merton, R. K. 1968. *Social Theory and Social Structure*. New York: Free Press
79. Merton, R. K., Gray, A. P., Hockey, B., Selvin, H., eds. 1952. *Reader in Bureaucracy*. New York: Free Press
80. Milkman, R. 1976. Women's work and the economic crisis: Some lessons from the Great Depression. *Rev. Radical Polit. Econ.* 8(1):73-97
81. Mills, C. W. 1948. The contributions of sociology to studies of industrial relations. *Proc. First Ann. Meet. Ind. Relat. Res. Assoc.* 1:199-222
82. Mills, C. W. 1956. *White Collar*. New York: Oxford Univ. Press
83. Mills, H. 1977. The San Francisco waterfront: The social consequences of industrial modernization, Pt. 2: "The Modern Longshore Operations." *Urban Life* 6:3-32
84. Montgomery, D. 1976. Workers' control of machine production in the nineteenth century. *Labor Hist.* 17:485-509
85. Moore, W. E., Feldman, A. S. 1960. *Labor Commitment and Social Change in Developing Areas*. New York: Soc. Sci. Res. Council
86. Nichols, T., Beynon, H. 1977. *Living with Capitalism: Class Relations and the Modern Factory*. London: Routledge & Kegan Paul
87. Noble, D. 1977. *America By Design: Science, Technology, and the Rise of Corporate Capitalism*. New York: Knopf
88. Noble, D. 1978. *Before the fact: Social choice in machine design*. Presented at Natl. Conv. Organ. Am. Hist.
89. Piven, F. F., Cloward, R. A. 1971. *Regulating the Poor: The Functions of Public Welfare*. New York: Random House
90. Polanyi, K. 1944. *The Great Transformation*. New York: Reinhart
91. Rice, A. K. 1958. *Productivity and Social Organization: The Ahmedabad Experiment*. London: Tavistock
92. Rice, A. K. 1963. *The Enterprise and its Environment*. London: Tavistock
93. Rockefeller, J. D. 1916. Labor and Capital—Partners. *Atlantic Monthly* Jan.: 12-21
94. Roethlisberger, F. J., Dickson, W. 1939. *Management and the Worker*. Cambridge: Harvard Univ. Press
95. Roy, D. 1952. *Restriction of output in a piecework machine shop*. PhD Thesis. Univ. Chicago, Chicago, Ill.
96. Roy, D. 1952. Quota restriction and goldbricking in a machine shop. *Am. J. Sociol.* 57:427-42
97. Roy, D. 1953. Work satisfaction and social reward in quota achievement. *Am. Sociol. Rev.* 18:507-14
98. Roy, D. 1954. Efficiency and the fix: Informal intergroup relations in a piecework machine shop. *Am. J. Sociol.* 60:255-66
99. Roy, D. 1959. 'Banana Time': Job satisfaction and informal interaction. *Hum. Organ.* 18:158-168
100. Samora, J. 1971. *Los Mojados: The Wetback Story*. Notre Dame, Ind: Univ. Notre Dame Press
101. Schumpeter, J. A. 1950. *Capitalism, Socialism, and Democracy*. New York: Harper
102. Scott, J. 1974. *The Glassworkers of Carmaux*. Cambridge, Mass: Harvard Univ. Press
103. Scott, J. F., Homans, G. C. 1947. Reflections on the wildcat strikes. *Am. Sociol. Rev.* 12:278-87
104. Selznick, P. 1949. *TVA and the Grass Roots*. Berkeley: Univ. California Press
105. Selznick, P. 1969. *Law, Society and Industrial Justice*. New York: Sage

106. Sheth, N. R. 1968. *The Social Framework of an Indian Factory*. Manchester: Manchester Univ. Press
107. Simon, H. A. 1976. *Administrative Behavior*. New York: Free Press
108. Simons, H. J., Simons, R. E. 1969. *Class and Colour in South Africa 1850-1950*. Harmondsworth, England: Penguin
109. Singelmann, J., Wright, E. O. 1978. *Proletarianization in advanced capitalist societies: An empirical intervention into the debate between Marxist and post-industrial theorists over the transformations of the labor process*. Presented at Ann. Meet. Am. Sociol. Assoc., San Francisco
110. Stinchcombe, A. L. 1959. Bureaucratic and craft administration of production: A comparative study. *Adm. Sci. Q.* 4:168-87
111. Stinchcombe, A. L. 1965. Social structure and organizations. In *Handbook of Organizations*, ed. J. March, pp. 142-69. New York: Rand McNally
112. Stone, K. 1974. The origins of job structures in the steel industry. *Rev. Radical Polit. Econ.* 6:113-73
113. Susser, I. 1979. *Poverty and politics in a New York City neighborhood*. PhD thesis. Columbia Univ., New York, NY
114. Swados, H. 1957. *On the Line*. Boston: Little, Brown
115. Taylor, F. W. 1947. *Scientific Management*. New York: Harper
116. Thompson, J. 1967. *Organizations in Action*. New York: McGraw Hill
117. Trist, E. L., Higgin, G. W., Murray, H., Pollack, A. B. 1963. *Organizational Choice*. London: Tavistock
118. Van Onselen, C. 1976. *Chibaro*. London: Pluto
119. Walker, C. R., Guest, R. H. 1957. *The Man on the Assembly Line*. New Haven: Yale Univ. Press
120. Wallerstein, I. 1974. *The Modern World-System*. New York: Academic
121. Warner, W. L., Low, J. 1947. *The Social System of a Modern Factory*. New Haven: Yale Univ. Press
122. Weber, M. 1968. *Economy and Society*. New York: Bedminster. 3 vols.
123. Whitehead, T. N. 1938. *The Industrial Worker*. Cambridge, Mass: Harvard Univ. Press
124. Whyte, W. F. 1948. *Human Relations in the Restaurant Industry*. New York: McGraw Hill
125. Whyte, W. F. 1951. *Pattern for Industrial Peace*. New York: Harper
126. Whyte, W. F. 1955. *Money and Motivation*. New York: Harper
127. Woodward, J. 1958. *Management and Technology*. London: HMSO

CONTENTS

ARCHAEOLOGY AND HUMAN DIVERSITY, <i>Grahame Clark</i>	1
WHAT IS LOWER CENTRAL AMERICAN ARCHAEOLOGY? <i>Olga F. Linares</i>	21
MESOAMERICAN COMMUNITY STUDIES: THE PAST DECADE, <i>Erve J. Chambers and Philip D. Young</i>	45
HOMINID EVOLUTION IN EASTERN AFRICA DURING THE PLIOCENE AND EARLY PLEISTOCENE, <i>Noel T. Boaz</i>	71
POLITICAL SYMBOLISM, <i>Abner Cohen</i>	87
GRAPH THEORY AS A STRUCTURAL MODEL IN CULTURAL ANTHROPOLOGY, <i>Per Hage</i>	115
DEMOGRAPHY AND ARCHAEOLOGY, <i>Fekri A. Hassan</i>	137
FAMILY AND HOUSEHOLD: THE ANALYSIS OF DOMESTIC GROUPS, <i>Sylvia Junko Yanagisako</i>	161
ANTHROPOLOGICAL GENETICS OF SMALL POPULATIONS, <i>Alan G. Fix</i>	207
THE ANTHROPOLOGY OF INDUSTRIAL WORK, <i>Michael Burawoy</i>	231
ETHNOART, <i>Harry R. Silver</i>	267
CROSS-CULTURAL COMPARISONS, <i>Joseph G. Jorgensen</i>	309
RECENT FINDS AND INTERPRETATIONS OF MIOCENE HOMINIDS, <i>David Pilbeam</i>	333
LANGUAGE CHANGE—A LEXICAL PERSPECTIVE, <i>William S-Y. Wang</i>	353
NEUROLINGUISTICS, <i>John T. Lamendella</i>	373
ECONOMY, SOCIETY, AND MYTH IN ABORIGINAL AUSTRALIA, <i>Aram A. Yengoyan</i>	393
PHYSICAL ANTHROPOLOGY IN AUSTRALIA TODAY, <i>Joseph B. Birdsall</i>	417
THE NATURE AND DEVELOPMENT OF AUSTRALIAN LANGUAGES, <i>R. M. W. Dixon</i>	431
THE FIFTH CONTINENT: PROBLEMS CONCERNING THE HUMAN COLONIZATION OF AUSTRALIA, <i>Rhys Jones</i>	445

CONTENTS (*continued*)

RECENT DEVELOPMENTS IN SOUTH ASIAN PREHISTORY AND PROTOHISTORY, <i>Jerome Jacobson</i>	467
STRUCTURALISM, <i>David Kronenfeld and Henry W. Decker</i>	503
LINEAR PROGRAMMING MODELS IN ARCHAEOLOGY, <i>Van A. Reidhead</i>	543
BIOLOGICAL AND CULTURAL DIFFERENCES IN EARLY CHILD DEVELOPMENT, <i>Daniel G. Freedman and Marilyn M. DeBoer</i>	579
INDEXES	
Author Index	601
Subject Index	613
Cumulative Index of Contributing Authors, Volumes 4–8	633
Cumulative Index of Chapter Titles, Volumes 4–8	635