

The period of consolidation: 1890s to 1920s

The economic crisis of the 1880s and 1890s required institutional resolution. In particular, it had become more and more apparent that early employer explorations of labor homogenization had been sufficient neither to restore profitability nor to curb workers' unrest. The new stage of capitalism that took shape in the United States after the mid-1890s both depended upon and helped foster the consolidation of labor homogenization. Whereas continuing class conflict slowed the implementation of many other institutional features of the new social structure of accumulation, the transformation of the labor process and of labor markets proceeded almost immediately.

We argue in this section that the consolidation of homogenization, taking deeper and deeper root from the 1890s through the 1920s, helped restore stability to the production process and foster renewed control by the employer over production workers. We develop this argument in three parts. First, we provide evidence of continuing and accelerated homogenization from the turn of the century through the 1920s. Second, we review the wide variety of new and innovative corporate policies implemented after the turn of the century which helped facilitate the consolidation of homogenization and the greater control over workers upon which that consolidation rested. Third, we summarize evidence on the general impact of the processes of homogenization during this period.

The principal dimension of homogenization. Given the new scale of corporate operations and finance after 1898–1902, many large corporations were able to pursue homogenization with growing vigor. During the first three decades of the twentieth century, the corporate push toward homogenization compressed more and more production jobs into relatively homogeneous, more or less semiskilled operative work. Many contemporary observers called the new system that this homogenization produced the *drive system* (see, for example, Slichter, 1919). The drive system involved three principal dimensions: (1) a reorganization of work, facilitated by both mechanization and job restructuring, which produced increasingly homogeneous employment for production workers; (2) a rapid increase in plant size, particularly among the larger corporations, which reinforced the spreading impersonality of wage labor; and (3) a continuing expansion of the foreman's role, which added an insistent supervisory impetus to the new system of employer control. A wide variety of evidence supports our hypothesis that all three of these principal dimensions of homogenization dominated the labor process and labor markets from 1900 to 1930 (see also Edwards, 1979, ch. 4). We review each of these three dimensions in turn.

1. Mechanization and task-compression proceeded as interdependent dynamics. Technical innovation supported new systems of labor management by helping embody machine control in production and by reducing employers' reliance on craft workers. Job compression helped facilitate the diffusion of new machines. Taken together, mechanization and job compression jointly reinforced the disciplinary effectiveness of the reserve army of labor, making it more and more possible to replace employees who refused to submit to the growing power of capital.

Specific industry studies provide ample evidence of this continuing trend toward homogenization in the production process. In steel (Brody, 1960; Stone, 1975), the electrical industry (Passer, 1952), food processing (Giedion, 1948), printing, glass, and stonecutting (Barnett, 1926), and automobiles (Reitel, 1964; Maltese, 1975; Russell, 1978) homogenizing mechanization took place from 1900 to 1930 with clear skill-reducing effects. Clark's discursive summary (1929, vol. 3) provides numerous concrete examples of this kind of mechanization. Jerome's classic study (1934) provides the most detailed and comprehensive review of the process of mechanization from the turn of the century, summarizing aggregate tendencies and reviewing specific details for nineteen separate leading manufacturing industries (pp. 55-119). Based on his careful analysis of the combined effects of these tendencies toward mechanization, Jerome concludes (p. 401) that the "aggregate effect may be

accurately described as a leveling process producing fewer highly skilled jobs but also few really unskilled jobs.”

Quantitative evidence on technical change in manufacturing further supports our hypothesis that mechanization from 1900 to 1929 followed the trajectory of change first charted after the Civil War. Table 4.4 summarizes the relevant quantitative indices for manufacturing from 1879 through 1929, providing estimates of trends in value added, capital stock, total production employment, horsepower per production worker, value added per worker, capital per worker, and the capital/output ratio. The data in the table indicate that the growth of manufacturing and the spread of mechanization continued fairly steadily throughout the period represented in the table. While the rate of decennial increase of several of the indices slows through the successive decades represented in the table, undoubtedly reflecting the low base of mechanization in the 1870s and 1880s, only one of the series (production employment in the 1920s) shows a decisive shift or point of inflection during the decades from 1899 to 1929.¹⁶ The tremendous leap in mechanization during the 1920s reflects the culmination of this process. Capital per worker jumped by 36 percent over the period 1919 to 1929, while real value added per worker soared by nearly 75 percent.

Did mechanization proceed more rapidly in the newly consolidated corporate giants than in smaller firms with a more traditional entrepreneurial structure? Relevant data are not available for individual firms, but one can easily compare industries. For the purpose of this and later comparisons, we have defined a category of “consolidated” industries — industries in which the largest firms controlled 25 percent or more of total assets. Firm data provided by Edwards (1975a) permit the classification of two-digit industries in both 1903 and 1919 as either “consolidated” or “nonconsolidated.”¹⁷

One would expect mechanization to have proceeded more rapidly in consolidated industries, other things being equal, because the new consolidations created by the merger movement had access to much larger pools of liquid capital for the purposes of investment. (Further, if rates of return were higher in consolidated industries, for reasons we shall discuss throughout this section, these initial advantages would be multiplied.) Available data on horsepower per worker confirm these expectations. The growth in horsepower per worker between 1899 and 1919 was 56 percent more rapid in consolidated industries than in nonconsolidated industries (calculations based on data reported in National Industrial Conference Board, 1923, p.145).

Since the development of the automobile assembly line represents such an important example of mechanization during this period, it is especially useful to consider its relationship to our general argument. Many tend to view the assembly line as a new departure in American industry, considering what some call Fordism as a decisive turning point in the development of modern technology (for example, Aglietta, 1979). Without depreciating the importance of Ford’s innovations, we would suggest nonetheless that the purely technical dimensions of the assembly line did not represent major advances over earlier systems. On the contrary, the assembly line seems to represent a culmination of the successive movements toward homogenizing mechanization that had spread since the Civil War. The major difference between the assembly line completed in 1913 and the earlier systems used by Ford himself involved the extension of material handling methods from moveable gravity slides to continuous line operations. As such, the assembly line simply completed a logical development in the organization of technology that had begun with interchangeable parts and continued through the primitive moving hooks of the slaughterhouses in the 1870s and 1880s

It seems equally important to emphasize that the automobile assembly line, like the earlier efforts toward mechanization, arose at least partly as a result of corporate efforts to gain greater control over production. Ford himself acknowledged that growing employer concern over labor unrest helped spark the sequence of innovation that led to “mass production” (Ford, 1929, pp. 38—39; *italics in original*):

The early factory system was uneconomical . . . Mere massing of men and tools was not enough; the profit motive, which dominated enterprise, was not enough. There remained the scientific motive, which grew eventually into what is called mass production.

The advent and progress of financial control of industry were marked by two developments, the corporation and the labor revolt. Artificial combination of industrial plants into vast corporations for financial purposes was the first movement toward *mass* in industry. It proceeded on the theory that complete financial control would automatically bring complete profit advantage. The theory ignored many vital principles of business and its fallacy became apparent, but not before serious social hostility had been incurred . . . it was out of the social strife thus engendered that the idea began to emerge that possibly the difficulty lay in the neglect of scientific manufacturing principles.

Ford knew his own history. Evidence suggests that the urgency of Ford's experimental leading to the assembly line can be at least partly attributed to growing labor unrest in Detroit from 1909 to 1912, which prompted more intensive efforts to reduce skilled workers' control over production and to eliminate social contact among semiskilled operatives (see Maltese, 1975, Meyer, 1979, pp. 107–116; and Russell, 1978, for a summary of some of this evidence).

In this respect, Ford's innovations in mass production are particularly representative of the more general tendency toward homogenization. Mechanization was always most effective if it proceeded within the context of fundamental changes in the more "social" aspects of production — changes, for example, in labor-management practice (see Edwards, 1979). This was evident at the Ford Motor Company, where both the owner and his planners were consistently disappointed with the productivity dividends reaped from purely physical and technical changes in the production process. John R. Lee, Ford's first personnel manager, expressed this disappointment in 1916: "We confess that up to this time [of the final completion of the assembly line at Highland Park in 1913] we believed that mechanism and material were of larger importance [than the human element] and that somehow or other. . . our men were taken care of automatically and needed little or no consideration" (quoted in Meyer, 1977, p. 89). Company data on productivity help confirm the need for a change of view: The increases in average worker productivity resulting from the first major personnel policy innovations in 1914 were nearly five times greater than the average annual increase in worker productivity resulting from the previous four years of primarily technical innovation between 1909 and 1913 (based on data reported in Meyer 1977, pp. 88, 306).

If we take Ford's mass production techniques as exemplary of the broader movement toward homogenization, do we find evidence at Ford of the touchstone of the homogenization process, of the reduction of jobs to a common, semiskilled denominator? Meyer (1977) has carefully tabulated available data on the occupational composition of production workers at Ford and in the Detroit metal industries from which bicycle and then auto manufacturing initially evolved. Table 4.5 summarizes these data on a comparable basis for the Detroit metal industries in 1891, long before homogenization had eroded the craft structure in the metal trades; and then for samples of Ford workers in 1910, near the beginning of the rapid movement toward mass production; in August 1913, reflecting the final installation of the assembly line; and in 1917, after mass production had been in effect long enough to have acquired its characteristic shape. However approximate, the figures in the table provide dramatic confirmation of the occupational impact of homogenization in this relatively prototypical case: In 1910, the job structure at Ford still closely resembled the earlier structure of craft production in the metal industries. In particular, in 1910 the semiskilled job category had the lowest representation among the three skill levels, being considerably outnumbered by both skilled and unskilled occupations. By 1913, this pattern had been dramatically reversed. By 1917, semiskilled operatives had grown to more than three-fifths of total production worker employment. Within just seven years, the occupational structure had been compressed and effectively transformed. A new class of homogeneous, semiskilled jobs now dominated employment in this classic case of mass production. (Elbaum, 1982, provides parallel results for steel.)

Table 4.5. *Job homogenization at Ford Motor Company 1910 —1917*

	Total production worker employment (%)			
	Detroit metal industries 1891	Ford Motor Co., 1910	Ford Motor Co., 1913	Ford Motor Co., 1917
Skilled workers	39.8	31.8	28	21.6
Semiskilled operatives (a)	30.6	29.5	51	62.0
Unskilled laborers	29.6	38.6	21	16.4

a. the jobs represented in this category had various names during this period. Meyer has inspected production operations with sufficient care to feel comfortable designating this band of jobs with the general "semiskilled" label.

Source: Meyer, 1977, tables 1—4.

2. The continuing trend toward mechanization also produced continuing increases in plant size. In addition, the rapid growth of the largest firms after the 1898-1902 merger wave permitted a dramatic increase in the size of the largest factories during the first two decades of the twentieth century. This widening of the tail of the distribution of plant size had a moderate and significant effect on the rate of increase in plant size over the full period from 1870 to 1920.

The evidence concerning the size of the largest factories seems clear. Nelson (1975, pp. 6-9) shows that these factories increased from roughly 1,500 workers per establishment in 1880 to a range of 20,000 to 60,000 during the 1920s. This expansion took place disproportionately among the largest firms in recently consolidated industries, reflecting the increasing capacity of those firms to finance and manage large factories. Nelson tabulates (pp. 7—8) the seventy factories with 2,000 or more workers in 1900. Of those seventy factories, 81.4 percent were owned by firms in consolidated industries; consolidated industries accounted for only 48.4 percent of total manufacturing capital in 1899. Perhaps more revealing, our own calculations show that the average number of workers per establishment in consolidated industries averaged more than twice that in nonconsolidated industries in 1900; and average plant size in consolidated industries grew by nearly 100 percent from 1899 to 1919, whereas average plant size in nonconsolidated industries remained virtually constant.

Although it is difficult to compare data on plant size in the aggregate before and after 1900, this rapid increase in the size of the largest factories after 1900 appears to have had an accelerating impact on the aggregate rate of increase in plant size. Census data on manufacturing establishments do not separate "hand and neighborhood" establishments from factories before 1899, so that perfectly consistent comparisons of the rate of growth in factory size from 1870 to 1920 are not possible. Consistent time series for seven important (roughly two-digit) manufacturing industries are available, however. Table 4.6 compares the aggregate indices for factory wage earners per establishment with the weighted average indices for these seven disaggregated industries. Both series dramatize the continuing increase in factory size throughout the period. As column 4 shows, the annual increase in wage earners per establishment rose significantly from its rate of increase in the pre-1900 years to the two decades after 1900.

3. In order to achieve greater control over the labor process, corporations made heavier and heavier use of foremen and superintendents. As skills were reduced and craft workers were replaced in many industries, foremen substituted their own authority for the coordinative and managerial activities that craft workers had formerly provided. The first three decades after 1900 culminated in what Nelson calls (1975, ch. 3) the "foreman's empire" (see also Edwards, 1979, ch. 2; Jacoby, 1981, ch. 2). The

growth in the supervisors' power lent a further commonality to the working conditions of semiskilled operatives, for all workers were equally vulnerable to the power and caprice of the bosses' representatives.

This increasing reliance on foremen and supervisors is clearly revealed in the data. The number of foremen in manufacturing increased from 90,000 in 1900 to 296,000 in 1920, an increase of more than 300 percent, whereas total manufacturing employment increased by only 96 percent over the same years (*Historical Statistics*, 1975, series D-393, D-130). This growth contributed to the rapid expansion of the salaried occupations in the manufacturing sector. According to the Fabricant-Kuznets data compiled by Delehanty (1968, table A-i), the ratio of salaried employees to wage earners rose steadily, from 8.76 per 100 wage earners in 1899 to 16.32 in 1919, nearly doubling in twenty years.⁹ And this relative growth in the salariat is not solely attributable to increases in nonsupervisory white collar occupations. According to disaggregated census data for the decade from 1909 to 1919, the increase in the relative share of "superintendents and managers" (not including "salaried officers of corporations") was double the growth in the relative share of "subordinate salaried employees" (National Industrial Conference Board, 1923, table 13).

Corporate policies to reinforce homogenization. We noted in our discussion of the exploration of homogenization that all three principal dimensions of homogenization had already begun to emerge in U.S. industry by the 1880s. We also hypothesized that this early exploration of homogenization contributed to spreading worker unrest through the turn of the century. We have now traced the trends toward mechanization and job compression, larger plants, and the "foreman's empire" through the 1920s. If these trends had continued unaccompanied, our analysis of the exploration period would lead us to expect further intensification of worker militance and rebellion after 1900. And yet, in our general discussion of this stage of capitalism, we have argued that corporations consolidated a new system of control over the labor process and restored their power to forestall worker unrest. How did this happen?

We argue in this section that the final consolidation of homogenization was accompanied by, and partly depended upon, a variety of direct and increasingly self-conscious corporate policies to reinforce the homogenization of labor. Employers began pursuing these strategies almost exactly around 1900. "They became aware of the deeply-seated nature of labor's discontent," Slichter concluded (1919, p. 414), and they sought ways of reducing the disruptiveness of that discontent. Their efforts were not coordinated, and they did not apply a master boardroom strategy. The kinds of strategies they pursued, as a result, were varied and scattered.

Despite the disparate character of these policy innovations, however, almost all of them shared a common thread dictated by the corporate effort to consolidate the homogenization of labor. Corporations had learned that they could potentially increase both their profits and their control over workers by restructuring the labor process. This restructuring established more and more common working conditions among many production workers. In order to curtail the spreading worker unrest that these commonalities were apparently helping to foster, corporations recognized that they needed both to increase the disciplinary effectiveness of the reserve pool of labor and to dissolve the emergent unity that homogenization seemed to forge. All of the most important corporate policy innovations after 1900 were conceived and implemented, at least partly, we argue, either to improve the effective credibility of the reserve army as a threat to currently employed production workers or to divide and fragment working-class solidarity on the job. We trace the several most important examples of these new policy directions in the following paragraphs.

Many corporations began almost immediately after the merger movement to install centralized personnel offices. As one consequence, they gained greater flexibility in the containment of labor problems. Through the end of the nineteenth century, the foreman in each shop had held virtually unlimited discretionary authority to hire, fire, and promote workers. While this authority often helped

foremen maintain discipline in the shops, it sometimes also led to a kind of clannishness from department to department, with foremen hiring workers of their own ethnic background and maintaining cozy relationships on that basis. These "old-fashioned hiring methods," as Slichter called them (1919, p. 247), frequently undermined efficiency. Foremen were likely, according to Jones (1925, p. 392), "to hire the friends of the employees of his department on the basis of friendship rather than fitness" and to "sell jobs" or "hold his favorites in soft assignments."

Many large firms sought to remedy these problems by establishing central "employment managers" (see summary and conclusions in Slichter, 1919, pp. 282 ff.). Nelson reports (1974, p. 176) that National Cash Register established the "first modern personnel department" in 1901 after a crippling strike. Slichter concludes that many large firms quickly followed. The primary function of these new offices, according to Jones's summary (1926, p. 390), was to supervise hiring and transfer. From the National Cash Register model through the 1920s, one of the major priorities in hiring and transfer decisions was to break down worker solidarity and weed out troublemakers. At National Cash Register, for example, the Labor Department kept a list of workers "whose records were at all objectionable and... tried to weed them out, including socialists." The office involved a "new, less formidable role for foremen and no role at all for independent labor organizations" (Nelson, 1974, p. 177). In general, Slichter reports (1919, p. 298), personnel departments applied a clear principle: As soon as workers "began to show a clannish spirit, it was necessary to separate them... Many firms prefer to put the source of difficulty in another department. Although this new effort undercut the foreman's authority over hiring and firing, it was not intended to and apparently did not undermine the foreman's discipline in the shop itself. As Cyrus McCormick, Jr., concluded about this period: "Several years ago the average employer in big factories took away from the individual foremen the right of hiring and firing, and gave it to the employment manager. At that time it was said that that would ruin the foreman's ability to discipline his men. It didn't" (quoted in Jones, 1926, p. 421).

Although recent historical research on these developments has not yet adequately followed up the clear suggestions in contemporary accounts such as those by Slichter and Jones - see the notable exception of Jacoby (1981) — there is sufficient evidence available to point toward two main hypotheses. First, centralized personnel departments emerged immediately after 1900 and became a crucial method for bringing the disciplining effect of the reserve pool of labor to bear upon an increasingly homogenized and substitutable work force. Second, only firms with sufficiently large operations to warrant such departments could afford to install them. By 1928, according to a study by the National Industrial Conference Board (1929), only 12 percent of all firms had personnel departments, but 34 percent of firms with more than 250 employees had organized central personnel offices (see also Slichter, 1919, pp. 282 ff.; Riegel, 1942, pp. 28 ff.; and Jacoby, 1981, ch. 6). In his influential critique of this system in the 1920s, Feldman (1925, p. 341) referred to this method "as a system of labor clearances based on the possibilities of moving workers about like armies."²⁰

Many employers also began to reduce workers' unity by creating artificial divisions and distinctions among jobs. While the homogenization of the labor process was itself reducing labor tasks to increasingly similar kinds of work activity, employers were seeking to create differentiation among employees through the definition of varied job titles and the creation of new job ladders. Stone (1975, pp. 45—59) traces the development of these kinds of job ladders in the steel industry, dating them from the period between 1900 and 1920. Both Slichter (1919, pp. 290 ff.) and Bloomfield (1921, pp. 295 ff.) confirm that such artificial job ladders became increasingly common through World War I. Slichter (1919, p. 290; *italics added*) emphasizes, indeed, that the "positions are divided into several grades and promotions made *regardless of the specific operation*" which those workers performed. Looking back at these new methods, Smith (1939, p. 31) confirmed that "such uneven assignments. . . prevented the formation of worker teams whose members would have common problems and a sense of group morale. But above all they aggravated the dependence of the workers upon management by making any common action impossible."

Large corporations also appear to have filtered planning decisions about plant location through a kind of divide-and-conquer calculus (see Gordon, 1978b, pp. 47—51, for further details). After several decades of concentrating factories in central-city factory districts, employers began, during the later 1890s, to move their factories out to what were then called “industrial satellite suburbs” (see Taylor, 1915: 15).

Gary, Indiana, is the best known of such examples. This decentralization of manufacturing employment continued at a rapid pace through World War I and paved the way for the accelerated development of motor transportation after the war.

Location theorists have traditionally explained the decentralization of factories by citing the development of the truck and the rapid diffusion of land-intensive automated processing technologies. It is difficult, however, to explain the inauguration of factory decentralization by either factor (Gordon, 1978b). Trucks did not develop as an adequate substitute for rail freight transport until the 1920s. And, as we have already argued in our discussion of the consolidation of homogenization, there were few significant qualitative changes in the character of processing technology between the last half of the nineteenth century and the first two decades of the twentieth.

The concern of employers with labor discipline seems a more plausible explanation of the first stages of decentralization. Factory owners, who had become increasingly aware of the strikes and demonstrations that surrounded and infected their downtown factory workers, thought that moving to the suburbs would isolate their respective factory workers from “dangerous” influences and help forestall the threat of unionization. Only the larger (and mostly consolidated) firms could afford such a move, with its heavy infrastructural investment costs. Once installed at a sufficient distance from the center of labor agitation, these firms achieved a measure of insulation from the epidemics of central-city strike activity to which they had previously been vulnerable. In moving to the suburbs, corporations sought to isolate their work forces from central-city unrest; insofar as the evidence can provide such indications, they at least partially succeeded.²¹

More or less simultaneously, large corporations also changed plant design significantly. As plants grew larger, firms gradually abandoned the classic nineteenth-century model of the single open shed. A number of important technical innovations, such as reinforced concrete for construction and electrical power for traveling cranes, railroads, and other handling equipment permitted more flexible plant design. After 1895-1900, as Nelson concludes (1975, p. 23), most modern factories “consisted of a series of interrelated buildings rather than a single large structure.” For example, foundries were located in separate structures, isolated from the main assembly areas. Even within the general flow of assembly production, plant activities were fragmented among disparate shops and structures.

This increasing fragmentation of plant design might simply have involved a technical accommodation to the difficulties of larger factory size and an adaptation of some technical innovations. It becomes important for our story, however, because departmental separation began to require more centralized personnel administration within the firm and because the physical fragmentation of factory design was consistent with the new centralized personnel policies of “labor clearances.” Although we have no evidence that architects were “ordered” by their employers to fragment plant design for explicit purposes of labor control, it would not be implausible, given the timing and context of these design innovations, to propose such a speculative hypothesis as a guide to further research.²² In any case, the departmentalization of factory design, itself an outgrowth of larger factory size and technical improvements in plant construction, helped facilitate the general transfer of employees among departments.

Large employers also began to experiment with wage incentive schemes that created differential rewards among employees and helped create competition among them. Before the 1890s, most em-

employers relied on simple day rates in paying their wage earners. Nelson (1975, p. 53) and Clawson (1980, pp. 168 ff.) date the introduction of simple piecework and more sophisticated incentive plans from the mid-1890s. When companies installed piece-rate systems, they would almost always "adjust piece prices to a level that allowed workers to earn somewhat more than their day wage — so they would continue to have a material interest in high output - but only about one-third more, no matter how great the increase in output" (Clawson, 1980, pp. 169–170). Workers increasingly resented these adjustments. As an industrial engineer noted as early as 1899 (quoted in Clawson, 1980, p. 170), "the result is frequently not peace, but soreness. This reaction led many personnel experts to propose more complicated incentive schemes. Ford Motor Company introduced one of the most systematic wage systems, dividing production workers into six pay groups with three pay grades within each group (Slichter, 1919, p. 360). Stone reports (1975, pp. 44-45) that "between 1900 and World War I, piecework and premium plans became more and more prevalent in the steel industry." Many other industries also experimented with similar plans (see Jones, 1925, ch. 2).

Two characteristics of these incentive schemes seem particularly noteworthy for our analysis. First, the systems could not be implemented in isolation; they depended on the establishment of personnel offices, on greater supervisory authority, and on the standardization of labor activities which homogenization provided. As Jenks concluded (1960, p. 436), "Nearly all [wage systems] called for changes in shop organization; standardization of shop practice, equipment, and routine procedures; a realignment of tasks; and some augmentation of supervision and clerical personnel" (see also Kor

man, 1967 pp. 65 ff, and Clawson, 1980, pp. 182 ff.). Second, the wage systems were not designed solely to influence individual workers' output through graduated piece-rate incentives. Equally or more important, the systems were aimed at dividing workers and minimizing collective worker action. "Piecework was not merely 'payment by results,'" Mark Perlman concludes (1961, p. 28); "it was predominantly a new concept of the job." As one manufacturer explained his introduction of the schemes (in National Industrial Conference

'Board, 1929, p. 25), "When each worker is paid according to his record there is not the same community of interest... There are not likely to be union strikes where there is no union of interest."²³

Employers in this period also experimented with "welfare" plans, seeking to increase worker motivation by tying them to pension and benefit schemes (see, for example, Korman, 1967, ch. 4; Brody, 1968; and Nelson, 1975, ch. 6). These plans also frequently supported the divide-and-conquer strategies. Some employers explicitly sought to limit the applicability of the welfare benefits to a small group of workers so that workers would compete among themselves for access to the plans and would be divided into those who shared their benefits and those who did not. (See Maltese, 1975, and Meyer, 1977, for a summary of the intentions and impact of welfare schemes at Ford.)

Another dimension of corporate policies toward labor during this period involved employers' manipulation of racial and ethnic differences among their workers (see, for example, Brody, 1960; Brecher, 1972; and Gutman, 1976). Several features of this general approach deserve special emphasis.

First, corporate manipulation of ethnic and racial differences was not limited solely to initial hiring practices. Employers did prefer to rotate hiring among different ethnic groups in order to create competition among workers of different nationalities.²⁴ But insufficient emphasis has been placed on the allocation of workers within the plant once they were hired. It appears that many corporations began during this period to maintain explicit occupational segregation by ethnicity among departments and job categories; such ethnic differentiation was intended to reinforce the division that artificial job differentiation was also intended to create. Summarizing their detailed studies of immigration, the U.S. Immigration Commission concluded (1911a p.531) that "in many cases the conscious policy of the

employers [is] mixing the races in certain departments and divisions.., preventing concert of action on the part of the employees." Immigrants were not only separated from native workers, they added (p. 538), but also "subdivided into smaller groups.., in order to insure more ease in handling." The commission concluded (p. 540) that there had been "a sharp segregation.., into distinct occupations" within a very short space of time.

Second, differentiable groups of workers were subject to these policies on a relatively common basis; employers do not appear to have made distinctions, for example, between racial and ethnic differences. When blacks were first introduced into Northern factories, their assignments among jobs paralleled the allocation of Southern and Eastern European immigrants. In deed, some evidence for this period suggests that within certain manufacturing industries blacks were located not at the bottom of the occupational ladder but above several Eastern European ethnic groups (see Hessen, 1974; Bodnar, 1976; and Klaczyńska, 1976).

Third, this explicit divide-and-conquer strategy was linked to employers' more general efforts to forestall and weaken workers' resistance and unionization. The Immigration Commission concluded (1911, p. 538) that most large corporations "realized that by placing recent immigrants in these positions they would break the strength of unionism for at least a generation . . . [Their policies] made it possible for the employers to carry out their policy of undermining the unions' elements of strength and control in the industry."

Fourth, this explicit divide-and-conquer strategy for manipulating ethnic and racial divisions represented a new strategic innovation, an approach that employers had not systematically applied earlier. The substantial immigration from the 1840s through the 1890s had obviously created a more ethnically differentiated labor force. But the early exploratory phase of homogenization appears to have promoted more rapid occupational assimilation among different immigrant groups, and employers did not actively promote explicit competition among different ethnic and racial groups for the purposes of forestalling worker unrest.

The evidence on occupational assimilation is obviously fragmentary, since few systematic studies of occupational distributions by ethnicity have been conducted for the late nineteenth century. But some evidence supports this conclusion. For the early 1870s, Montgomery concludes (1967, pp. 35—36) that "there was no simple promotional ladder in industry bearing different ethnic groups on successive rungs . . . Most immigrants.., blended into the scenery with amazing rapidity." Hershberg et al. (1981) conclude from their detailed analyses of census records for Philadelphia in 1880 that immigrants were segregated residentially by blocks but that there was a much less systematic pattern of ethnic segregation by plant or by occupation within a plant. Laurie et al. (1977) conclude that Irish and

German immigrants remained in much the same occupations between 1850 and 1880 - during the earlier consolidation of initial proletarianization - but that their native-born son had already begun during those years to move into a distribution of jobs much more closely resembling that of native white males. Ehrlich (1974, pp. 529—530) concludes about the 1870s and 1880s in general that "most immigrants were quickly absorbed into the general labor market, and were therefore subject to the vicissitudes common to all its members."

The evidence on strikebreaking and explicit manipulation of ethnic groups is equally fragmentary. Ehrlich's (1974) detailed survey of the labor press for 1878-1885 indicates that those employers who used immigrant labor to help break strikes, particularly in the mines and along the railroads, were "most often directed at enlarging the labor supply and thus driving wages down and encouraging docility on the part of employees." This contrasts with the increasingly widespread policy after 1900 of using strikebreakers and different ethnic groups explicitly to create divisions among already employed workers and to exacerbate whatever divisions already existed. The earlier policy, in other words, sought

to tap the general reserve army of labor, many of whom were immigrants, for the general purpose of reducing workers' bargaining power. After 1900, by contrast, employers increasingly sought to take advantage of the differentiated character of the reserve army so as to have a much more explicitly divisive effect upon their employees.²⁵

Militant antiunionism provided the final and most sweeping element in the employers' new approach to labor. Particularly after 1902, corporations waged an aggressive "employers' offensive" against trade unions and Socialists, seeking to combat the spreading radicalism of the working-class movement. As Commons et al. notes (1935, vol. 4, p. 129), the employers' "mass offensive" against unions between 1903 and 1908 was motivated more by the general threat to managerial prerogatives than by the nuisance of specific labor demands. The National Civic Federation (NCF) began to emphasize, in particular, the necessity of a general corporate effort to combat militant unionism and the socialist movement (see Green, 1956, and Weinstein, 1968). As the executive secretary of the NCF wrote in 1912 (NCF Archives, Box 49B):

Every man who has a dollar's worth of property in this country is interested from a selfish standpoint alone in the fight against socialism. When a body of men who openly preach confiscation of property and the overturning of all American institutions can quadruple their vote in twelve years — now having over a million — it is time for every man of property to wake up.

In order to further this general effort, many corporations cooperated with the conservative elements of the trade union movement, largely represented by the American Federation of Labor, thereby separating them from industrial unionists and Socialists and weakening the general effectiveness of the working-class movement. In this respect, moderate corporate cooperation with the AFL reflected yet another effort to moderate and limit spreading working-class un26

As should be evident from the preceding pages, large corporations played the pivotal role in forging and applying these strategies. Until the merger movement of 1898-1902, few corporations had either the margin to develop such strategies or the resources with which to implement costly innovations such as centralized personnel departments. After the consolidations, large firms could begin to tackle their labor problems and the contradictions of homogenization with far greater resources and leverage than their smaller counterparts. Although the process of homogenization dominated virtually all U.S. manufacturing, only the larger corporations were able to pursue and apply many of the divisive strategies that reinforced the corporate institution of new systems of labor management. This advantage of the large corporations undoubtedly played an instrumental role in the continuing centralization of capital that has occurred in the twentieth century.

Yet, large corporations were not solely responsible for these new directions in labor-management strategies; they received very active support and cooperation from important elements of the organized labor movement. As Weinstein (1968) notes, several important AFL leaders, Samuel Gompers and John Mitchell in particular, joined with large corporations in the National Civic Federation, consolidated their opposition to more militant and radical expressions of the working-class movement, and contributed to the nativist hostility toward more recent immigrants from southern and Eastern Europe. As Green (1980, ch. 2) argues in greater detail, union leaders oriented toward "business unionism" gained greater power in, or control over, a number of the most important unions around the turn of the century, notably the United Brotherhood of Carpenters and Joiners, from which the more militant Peter J. McGuire was ousted in 1900; the United Mine Workers, in which Mitchell consolidated his power after 1897; and the Boot and Shoe Workers Union, in which the transition toward business unionism appears to have been completed by 1903. '[t]he developments in the building trades were apparently typical of this increasingly common orientation. Green concludes (p.33):

The building trades sacrificed much of their nineteenth-century militancy, abandoning the sympathy strike — one of their strongest weapons — in order to obtain trade agreements. The new centralized organizations created by the business agents contributed to bureaucratic efficiency, but their growth reduced local autonomy and rank-and-file democracy.

We conclude this discussion of corporate policies with two final comments that will help distinguish our analysis of homogenization from our later analysis of segmentation.

The first involves a clarification of the role of large consolidated companies, or “monopolies,” in establishing the foundations for homogenization. We have argued that initial proletarianization involved untransformed labor and that the subsequent consolidation of homogenization eventually transformed the labor process through the institutionalization of a drive system. It is our hypothesis that this drive system was applied more and more universally in the capitalist sector during the period from 1900 to 1930 — in durables and nondurables, across regions, among both small and large firms. In emphasizing the innovations pursued primarily by larger corporations, we do not mean to suggest that large corporations developed a qualitatively different set of labor-management practices from those pursued by small firms. Rather, we would argue that, in the larger firms, the more effective consolidation of homogenization led to what Edwards (1979, ch. 7) has termed “technical control” — the conscious embedding of the drive system in the technological structure of production. This technical control helped large firms reap profit advantages from the drive system by extending and supplementing it. In contrast, as we argue in the following chapter, segmentation occurred in large part as a result of growing qualitative differences between core and peripheral firms.

The second comment follows from the first. Our analysis of homogenization and the drive system leads to a corollary hypothesis about corporate labor-management policies. Recent attention to “scientific management” and “Fordism” has led many observers to conclude that major qualitative changes in corporate policies occurred from roughly 1900 to 1920. Our own analysis leads us to conclude

that these arguments are historically misleading and that neither scientific management nor Fordism became important as qualitative modifications of the drive system until explorations with new systems of internal control during the late 1920s and early 1930s.

This conclusion seems at odds with much of the recent attention that has been paid to scientific management. Especially since the revival of interest in Frederic Taylor, generated by Braverman (1974) and others, many observers have traced the development of new ideas about scientific management during these two decades, attributing great importance to the implementation of those ideas.

We share Palmer’s skepticism (1975) about the importance of actual experiments in scientific management during this period (see also Edwards, 1979, pp. 97–104). While Taylor, Gantt, the Gilbreths, and others tinkered with new ideas, almost all employers practiced the simpler systems facilitated by homogenization. The evidence supporting this general observation seems persuasive. Thompson (1915, pp. 264–265) reports on his careful contemporary survey of “scientific management” plans in operation by 1914. There were only 140 documented applications of those schemes in operation, involving 120 factories. (There were 268,436 manufacturing establishments in 1914 [*Historical Statistics*, 1975, series P-i].) Those 120 factories represented slightly less than 1 percent of the employees in factories with more than 100 employees in the previous census of manufactures.

Nelson and Campbell (1972) provide details on one interesting case study of efforts by experts to install scientific management techniques in a large factory. After some initial experimentation, the proponents of the scientific management techniques lost out to advocates of a simple reliance on mechanization and wage incentive systems because those simpler techniques still seemed to work. Palmer (1975, pp. 35 ff.) reviews other evidence which also suggests that the impact of operating

scientific management plans before World War I was extremely limited. Scientific management, as we shall see in the next subsection, was an idea whose time had not yet arrived.²⁸

We draw similar conclusions about the spread of Fordism or other policies that lead eventually to the growth of structured internal labor markets. We develop this argument in detail in later sections, on the decay of homogenization and the exploration of segmentation. It is sufficient for our purposes to emphasize here that the drive system constituted the dominant system of labor management in the United States during the first three decades of the twentieth century and that the continuing effectiveness of that system through the 1920s continually pushed back the clock on major reforms of its internal logic.