TEAM WORK, PIECE WORK, OR BOTH: WORK REFORM AT LEVI STRAUSS

by

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Abstract

The organization of work in garment factories has traditionally prevented employees from exercising discretion. Clothing plants have long featured a rigid division of labor and strict monitoring of individual output. Since the late 1970s, American garment workers have also experienced high rates of displacement, as a result of many manufacturers' decision to use low wage offshore sites for the production and assembly of their goods. In recent years, demands for rapid delivery and timely responses to fashion trends have created a new set of pressures for apparel makers. Select companies have responded by experimenting with non-traditional production techniques, and while these practices are widely believed to improve the treatment of workers, little research has been conducted to verify this assumption.

This thesis examines one manufacturer's attempt to reform work in its sewing factories. Levi Strauss and Company, the world's largest apparel maker, is in the process of replacing its plants' assembly lines with cross-trained teams in an Alternative Manufacturing System (AMS). Under AMS, sewing machine operators rotate jobs, help schedule production, and receive pay according to group output.

In this study I present findings on the effects of these new policies for workers in two Levi plants in El Paso, Texas. A series of interviews with workers and managers allows me to compare the image of the new system presented by the company with the experiences of its employees. I explore the implications of this change for the long-term job security of the workforce, and share workers' insights regarding its impact on their daily work environment.

This investigation suggests that Levi's Alternative Manufacturing System is actually a blend of the old and new. While the individual piece-rate pay incentive has been abolished, the group-based compensation system continues to reward speed and volume, and many workers have experienced a loss of income under AMS.

Levi has given local managers responsibility for tailoring the new system to their plants' needs, but they are still expected to meet the company's demands for fast production of large quantities. Ever aware that their plants may be closed by Levi, these managers often resort to threats of layoff to elicit workers' cooperation with the change.

This negative reinforcement, combined with a drop in income, has convinced many workers that this change is essentially a cost cutting strategy. Employee involvement in decision-making structures and team meetings are treated as ancillary activities that interfere with productivity, and the benefits of task variety have not compensated for the loss of control operators feel they have suffered. Limited by the nature of the technology and the product mix, the content of tasks remains narrowly prescribed, and production has not evolved into a truly collaborative process. These outcomes are not necessarily permanent, but the lessons contained in this study serve as a caution against making assumptions about the benefits of work reform.

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CHAPTER 1: INTRODUCTION

Garment workers in the United States today face a bleak outlook. Their employers are beset by rising sales of imported clothing, fluctuations in consumers' tastes and spending habits, and stringent demands from retail vendors. These challenges have created new strains in an industry already marked by low profit margins and a highly fragmented structure. As a result, domestic employment in apparel has declined by more than 300,000 since 1978 (Rothstein 1993, 70), and the job base is projected to shed at least another 382,000 workers by the year 2005 (Dunlop and Weil 1992, 1).

Whether or not these numbers are cause for alarm, however, is a matter of some debate. Discussions of strategies to revitalize the needle trades in the U.S. have been absent from recent industrial policy debates, and outcry about the plight of the industry has not paralleled that accompanying the decline of other, male-dominated, manufacturing sectors, such as steelmaking and auto production (Rosen 1987, 23). Some observers argue that the labor-intensive nature of garment production make it an archetypical "sunset" industry, ill-suited to the comparative advantages of advanced industrial nations (see, for example, Baumol, Blackman, and Wolff 1989). According to this analysis, any displacement suffered from its departure will be short-term, as workers go through a churning process before settling into other occupations. The long spells of unemployment often experienced by displaced apparel workers cast doubt on this forecast. A Department of Labor study found that almost one-third of a group of garment workers who their jobs between 1983 and 1987 had still not found a job after four years (cited in Rothstein 1993, 70). Currently, unemployment in apparel outpaces that in many other industries; in 1992 it was 12.1% in apparel and 7.4% in all of manufacturing. (U.S. Department of Labor, October 1992)

The loss of a job is often an especially devastating event in the life of a garment worker. Firms are frequently located in small towns that offer little other employment opportunities, and operator have less education than workers in any other sector of manufacturing (Rothstein 1989, 17) For the women who make up 76% of
the workforce (U.S. D.O.L., op. cit.), frequent family obligations leave many apparel workers less mobile than their male counterparts. Immigrant garment workers also have restricted access to other fields due to their limited English proficiency; historically, apparel has been one of the few manufacturing industries that newcomers to the U.S. have been able to gain entry into. And while apparel has never offered the remuneration of the rest of manufacturing, the piece-rate compensation system does lift most workers in above ground operations to wages that are higher than those in many other female and immigrant-dominated occupations, such as cleaning and child care.

According to neoclassical economists, the determination of whether a job is highly skilled or not and how it should be rewarded are believed to be based on purely rational factors, such as the marginal productivity a worker contributes, and their level of "human capital" or job-related learning. However, the disparity between the treatment of apparel workers and those in other sectors with similar educational levels and productivity defies such logic. Although apparel occupations are commonly referred to as low-skill, the dexterity, patience, and hand to eye coordination required for sewing suggests that succeeding as a seamstress requires considerable talent (Rosen 1987, 56). Garment assembly, in fact, entails more concentration and craftwork than many other blue collar occupations, such as trucking, which are compensated at two to three times the rate of apparel work.

A discussion of the plight of garment workers must address those qualities that distinguish apparel from other goods-producing sectors. The garment industry has resisted vertical integration, leaving contractors and manufacturers to divide production into discrete stages. The benefits of this system for the large manufacturer are clear: they retain control over the design process as well as over the selection of materials that will be used in their goods, while entertaining bids from contract shops who must vie for their business. For workers, however, this fragmentation means they are vulnerable to sudden lay-offs and required to work for employers guided by the need to minimize costs. Since garment making ceased being treated as a craftwork in the 1920s, assembly lines of compartmentalized work stations have been the industry’s
method of organizing production. Although firms producing standardized clothing
have been able to automate some of the production process, most sewing tasks remain
labor-intensive, with 84% of the workforce engaged in direct production activities
(compared to 68% for manufacturing overall) (Bailey 1989, 5).

The composition of the labor force also distinguishes the needle trades from
other manufacturing sectors. Apparel is the largest industrial employer of women and
minorities, with more than twice as many women workers as the rest of
manufacturing, and continues its long history of employing many recent immigrants to
the U.S. The two major garment workers unions, while unable to attain high earnings
for their members or slow the growth of offshore sourcing, have been successful in
capturing a large portion of the above ground workforce. However, in the American
tradition of business unionism, they have long accepted the terms of employment set
by management, including the narrow division of labor and the piece-rate
compensation system. The Amalgamated Clothing and Textile Workers’ Union
(ActWU) and the International Ladies Garment Workers Union (ILGWU) did wage
an unsuccessful battle to abolish the piece-rate system in the 1920s, but subsequently
joined with owners in a united front against non-union shops. They felt it was
necessary to cooperate with management’s cost minimization strategies to prevent the
unorganized sector from gaining a competitive advantage in the industry. During this
period, the unions also began to assign their own industrial engineers to conduct time
and motion studies in effort to speed up and streamline operations. Then, as now
wages in apparel were lower than in the rest of manufacturing; in 1991, the average
weekly earnings for an apparel worker were $249, while they were $455 for other

Recent turbulence in clothing markets has heightened the competitive pressures
on apparel producers, both large and small. While the ability to meet shifting
preferences has long been important for the women’s garment trade, it has only
recently become necessary for men’s apparel makers. These producers previously
relied on economies of scale to create large volumes of standardized goods, without
regard to fashion or niche markets. In the last ten years, growing demand for small,
customized orders, fast delivery, and up-to-the-minute fashion has led producers to question the limits of the current system. In the assembly line, the extreme compartmentalization of sewing tasks creates accumulations of in-progress goods between work stations, necessitating long lead times to fill orders. Mass manufacturers are also restricted in their product mix; they are unable to introduce a new style without overhauling an entire factory full of equipment and re-skilling operators trained who have been as narrow specialists.

In their attempts to cope with new market pressures, apparel firms have pursued a number of strategies. These have ranged from locating in low-wage regions, both in the rural south and border areas in the U.S. and in developing countries, to adopting new manufacturing techniques. The growing use of offshore assembly and production facilities and the need to respond to fashion trends are phenomena which generate pressure for domestic firms, yet which are of their own creation. Levi Strauss and Company, for example, sees its decision to source 50% of its production offshore as a choice that is conditioned by the terms of competition in the industry rather than one that is solely the prerogative of the firm. In the same vein, they view the need to become more customer service oriented and better able to change styles quickly as a response to market forces. Their stance typifies the paradox Ian Taplin identifies: "Although...actively engaged in the generation of new demands, from the standpoint of one firm, fashion changes are more or less exogenous." (1992, 26)

These changes have coincided with the growth of a body of literature, centered in American business schools, which focuses on the need to remake traditional firms into what are alternatively referred to as transformed, high performance, or flexible work organizations. The advocates of these models generally prescribe a series of steps that firms should take to become more responsive. These include improving relations with suppliers and clients, becoming more customer-focused and overcoming rigid hierarchies. Firms that are considered especially likely candidates for such reforms are those that are able to use product (or service) differentiation as a strategy for competing in a crowded field. At the center of many of these proposals is the role
of human resources in determining firm performance. In recognition of the valuable potential and insight stored in many workers, many new practices expand their duties and increase employee participation in decision-making.

While those industries and firms that have pursued the "high performance" strategy described above have attempted, for the most part, to recoup their investments in training and plant re-design by designing upscale products, such as the Saturn cars, or Xerox copy machines, the clothing trade has not demonstrated this pattern. High end or fashion-sensitive items have never been amenable to mass manufacturing techniques, and this sector of the clothing industry has instead long-relied on the use of small contract shops to meet their fluctuating needs. Those producers who have more frequently heeded the call to reform their traditional approach to production are the large manufacturers of basic goods like sweatshirts, underwear, and blue jeans (Bailey 1989). These firms have investments in fixed capital in large domestic factories, and they have minimized the usually high labor costs by introducing extensive automation. However, now faced with the demand for prompt delivery and rapid shifts in styles, they are slowly joining the ranks of other American manufacturers in exploring alternatives - or modifications - to the mass production paradigm.

In this thesis I examine one major clothing manufacturer's effort to reform the traditional organization of work in its plants. Levi Strauss and Company, the world's largest apparel maker (hereafter referred to as Levi), is in the process of converting all of its domestic sewing facilities to team-based production, called the Alternative Manufacturing System (AMS). The adoption of AMS is Levi’s attempt to address a number of barriers that have impeded innovation and efficiency in their domestic plants, and the company has placed human resource utilization at the center of their new strategy. Levi representatives present this decision as part of the manufacturer’s current customer service focus, which has made it more conscious of the advantages of producing close to markets. While the company has been in the habit of using offshore sites to produce most of its fashion-sensitive clothing, the need to speed delivery time has made Levi re-consider its sourcing strategy.
The company’s objectives in the new customer service credo are to fill orders more quickly by reducing average through-put or production time, and, although the company has a defect rate that is lower than most other American producers, they seek improvements in quality. Levi representatives also explain that fatigue and overexertion have led to frequent repetitive motion injuries in its plants, which in turn are blamed for absenteeism as well as high workers’ compensation costs. Finally, introducing new styles and producing small quantities has been difficult in the plants’ assembly line structure. Employees are trained as narrow task specialists, and the equipment is arranged for long runs of standardized goods.

In order to accomplish its goals of flexibility, timeliness, quality and safety, Levi has introduced a number of organizational changes. The new production system embodies aspects of several existing models of work organization, including Japanese lean production and the Swedish sociotechnical approach, and in the U.S., Levi studied the Saturn plant and the GM-Toyota joint venture, NUMMI. The company stresses, however, that this change was internally driven, by its plants’ experimentation with non-traditional manufacturing techniques. All of Levi’s factories are in the process of replacing their 100 person assembly lines with work teams of varying size, which practice job rotation, and base the pay of their members on group output rather than on individuals’ contributions. Levi plants have reduced direct supervision on the shop floor and instituted a system of peer monitoring, with team and cell leadership among employees. Workers receive training in multiple sewing tasks as well as in "soft" skills like communication and conflict resolution, and are expected to solve problems ranging from production bottlenecks to absenteeism. Each team is accountable to plant management to schedule the flow of its work to meet output and quality goals. Every plant has also created off-line employee involvement structures that address issues such as disciplinary measures and parking policy.

AMS involves a substantial commitment of Levi’s resources and could signal a major departure from the traditional organization of work in garment factories. It also offers a possible strategy for building on the geographic advantages of domestic plants, whose employees and surrounding community members have long felt helpless in
stemming the flow of production jobs offshore. For these reasons, its implementation is being closely watched. For many of Levi's competitors, the central measures of this new system’s success are its ability to cut through-put time, improve quality, overcome rigidity, and lower costs, especially workers’ compensation expenses.

Public officials, in particular those located in areas with high concentrations of apparel firms, are anxious to see companies like Levi maintain their strength as an employer. Labor advocates are likely to focus on the way change effects workers, both in terms of their long-term employment prospects and their day-to-day working conditions. In addition, since approximately half of Levi factories are unionized, the role played by organized labor in participatory work arrangements comes into focus in this case.

In this study I assess the early stages of work reform in two Levi plants in El Paso, Texas. I address the significance of the new production system by making inquiries in two areas. The first is an assessment of the potential this change has to contribute to a revitalization of the domestic garment manufacturing. The second subject I analyze is the impact of the change on the work environment for operators and managers in the two plants.

I pursue the first question by identifying the reasons Levi chose to reorganize work in its plants, to determine whether this decision reflects a fundamental shift in company philosophy and practice. Given the sizable wage differential between foreign and U.S. plants, and the possible improvements in shipping time from offshore locations, the company’s domestic workers face an ambiguous future if the logic of the new system is guided primarily by cost containment and timeliness. Much of the literature on high performance or flexible specialization assumes that companies following this strategy will focus on quality and innovation rather than cost minimization. However, it is possible that companies will adopt innovative techniques, such as those that enable them to improve quality and timeliness, while retaining the treatment of labor that characterizes mass production (Bailey 1993, 34). Employers may, for example, combine these approaches by shifting formerly managerial responsibilities to line workers without raising their pay or extending decision-making power; or introducing flexible technology but keeping the content of
tasks narrowly prescribed (Appelbaum and Batt 1993, 17-18).

Many scholars who study work reform use economic competitiveness as the criteria for judging the success of alternative arrangements, and interpret improvements in productivity as evidence of workers' successful adjustment to new practices. While the prosperity of an enterprise has great consequence for individual workers, this emphasis tends to reduce the effects of work reform to quantifiable firm performance indicators. Analysts often fail to investigate the day to day changes in employees lives that are wrought by new work rules, despite the fact that their insights may shed light on problems in their implementation, and may indicate their long-term viability.

Literature on work reform also relies heavily on employer surveys and interviews with firm owners and managers to document trends, and to draw connections between practices and outcomes. While data gathered from surveys are useful in providing a general overview of trends, they may be misleading, since the design of programs like teams or the effects of a group pay scheme may vary widely in different settings (Osterman 1993). It is also difficult to gain an understanding of how individual practices fit together without using concrete cases as illustrations. The other major shortcoming in many empirical analyses is their overreliance on the testimony of human resource managers and executives, to the neglect of front line workers. The danger in this tendency is that employees, who are often those most familiar with the practices that are in place, are ignored. The survey responses may instead be from individuals who have a vested interest in the success of new systems, and who have an unrealistic perspective on the extent of innovation taking place in their firm.

In this case study, I provide a textured view of the effects of work reorganization, focusing on the employees' perspective. I assess whether Levi's new system lives up to the company's promise of job enrichment and worker empowerment. By presenting the insight of individuals who have experienced both traditional and alternative work rules, I contribute a more nuanced analysis than is often found in the highly stylized discussions about work reform.
Methodology

I chose to conduct an in-depth case study in order to examine many of the issues involved in human resource innovation. While the results using this method may have limited applicability to other settings, I felt the benefits of providing a fine-grained discussion of an example of the effects of new work arrangements outweighed the disadvantages. To this end, I conducted open-ended interviews with a total of nine operators, five supervisors, and five managers from two plants in El Paso, Texas. These sites were selected after I made the request of a company executive to visit both a union and non-union plant. Before meeting with the Levi representative I contacted an ACTWU representative, to ask for their help in arranging a visit to a union site, but they were unable to meet this request. I then decided to ask the company for permission to conduct research in both a union and non-union plant, since Levi’s sewing facilities are approximately 50% unionized, and I believed this selection would present a rare opportunity to compare the implementation of a change in both types of settings. The company granted my request, and I arranged to visit two factories in El Paso, Texas.

I asked several of the same questions in each of the interviews, but also allowed individuals’ replies to serve as a guide in pursuing further issues that seemed particularly important to them. The interviews were conducted in a private office and all were assured that names would not be used in the thesis, in hopes that they would feel that they could speak with candor. (Unfortunately, workers were chosen to participate in the study by supervisors rather than randomly selected, although the range of responses they provided leads me to believe that my data does not reflect a bias towards positive perspectives on the change.) I also spent several hours on the shop floor at each site, and attended one team meeting, and one employee awards ceremony. These latter activities allowed me to gain a feel for the work environment in each plant, supplementing the information I gathered from interviews. Finally, at each of the sites I also gathered data regarding wage levels and performance measures such as through-put time and defect rates from before and after the change, and collected materials used in for training for the new system.
At Levi headquarters, I interviewed the President of Global Sourcing, who is a member of the company’s six person executive management committee. This interview gave me valuable insight into the company’s motives in undertaking this change, and allowed me to compare the images presented by a company spokesman to that which I observed in the plants. I also interviewed the company’s historian, who provided me with materials about the company’s background.

From the Amalgamated Clothing and Textile Workers Union, I interviewed the national level staff person in charge of the Levi plants. I also interviewed one shop steward. Unfortunately, I was unable to arrange a meeting with the local business agent, and was required to conduct a brief telephone interview. For this reason, I do not attempt to make conclusive statements about the role of ACTWU in the union plant’s conversion to team work, although I indicate the areas in which it appears the union’s involvement has been decisive for workers.

Chapter Outline

This thesis is divided into six sections. Following this introduction, I use the second chapter to explain the origins of American mass production techniques, focusing on scientific management and the Fordist assembly line. I also briefly describe two frequently cited alternatives to traditional American practices, the Japanese lean production model and Swedish sociotechnical approach. The last part of this chapter locates Levi’s practices in the recent literature on workplace innovation, which includes both case studies and surveys which document the existence of different practices across firms.

In the third chapter I describe Levi, and attempt to explain the company’s motives in undertaking this change. I present the goals in the decision to adopt team work, as expressed by individuals who represent different levels of the company. I supplement their testimony with secondary sources of information about the company, to place this change in the context of Levi’s other activities. I also analyze the relationship between the parent company and the production sites, and examine the reasons Levi’s allocation of production has changed over time.

I describe the plants’ in chapter four, including their conversion to teams, and
the new features of the shop floor. The fifth chapter further describes the features of the team system, including new human resource policy, training and job rotation, plant performance and employee involvement. Both chapters four and five explore workers’ and managers’ perspectives on their new work environment.

The final section provides my conclusions regarding the implications of this change for workers. I attempt to answer the question of whether the team system appears to be a successful plan for the revitalization of this sector, and whether, as implemented, it represents an improvement in working conditions for plant employees.
CHAPTER 2: WORK SYSTEMS COMPARED

Many of the practices that typify mass production, such as piece-rate pay incentives and assembly lines, are widely considered dehumanizing towards workers, yet little is known about the effects of the alternative structures adopted by American companies in recent years. Levi, like many American manufacturers, has followed a path that began with disenchantment with mass production methods, followed by a period of exploration and experimentation. This process involved a limited amount of investigation into the practices of other sites of work reform, such as the Saturn and NUMMI plants. Yet in spite of the company's claims to have rejected the logic of the mass production paradigm, Levi's team system retains traces of Frederick Taylor's scientific management and Fordism. As a result, workers continue to feel pressured to perform at a rapid pace and the content of tasks remains narrowly defined. In order to better understand the hold these traditions seem to have on the company, I use the first part of this chapter to outline the origins and main tenets of Taylorism and the Fordist assembly line. In the second section, I describe two much-celebrated foreign systems, Japanese lean production and the Swedish sociotechnical approach. Aspects of these systems have been reproduced by many American producers, including Levi, although the learning process is often indirect. Regardless of whether individual firms consciously emulate foreign models, the influence of particular systems is acknowledged by both actors within firms such as Levi, and by policy makers and academics, who often exhort American industry to apply the techniques that have brought their international competitors success.

The final section of this chapter analyzes the scope of American firms' attempts to break with mass production techniques. I discuss the literature which analyzes the effects of different practices, calling attention to those that have the most sustained effects on employee participation. I also briefly discuss some of the features and the debate regarding joint labor-management work reform efforts. This background helps provide a framework for interpreting the later description of the Levi case.
Taylorism

Scientific management techniques have been applied to garment making perhaps more than any other manufacturing activity. The labor intensive nature of sewing and the relatively low level of technology in the industry leaves much power in the hands of workers, who could potentially exercise control and skill in the tradition of craftsmanship.

Frederick Taylor understood the risk involved with allowing workers to use their discretion to decide on their own how to perform their jobs, and thus created methods designed to separate the conception of tasks from their execution. Taylor, a one-time machinist turned management expert, believed that "scientific" management relieved workers of the need to think about their jobs. This was achieved by first breaking tasks into many small steps, and second, by establishing "one best way" for every task to be performed. Taylor felt that the customs and relationships that characterized craftwork were inefficient, because human judgement was bound to be less sound than the application of engineering principles to job design. Accordingly, he devised time and motion studies as a tool to enable managers to define the content and duration of tasks. Taylor maintained that the narrow division of labor not only used manpower efficiently, but that the "task idea" motivated workers to perform better than they would if given an open-ended assignment (Adler 1992, 65).

Taylor also formulated an individual-based compensation and goal system that encouraged workers to concentrate solely on their own output. The piece-rate pay system was designed to take precedence over any other measure of determining a worker's worth to their employer, and to make the use of overt coercion unnecessary. It designates an hourly base rate and a minimum level of output that they must reach, which differed according to the value imputed to the task. After workers begin to produce beyond the threshold amount, they receive a fee for each unit or, in apparel, for each bundle they complete, giving individuals a direct stake in maximizing their speed. Since the base wage workers receive is usually low, they are motivated to work quickly.
Developments surrounding Taylor's work help explain why scientific management philosophy elicited such a range of responses. By the 1920s, craft unions such as those in the building trades had spent several decades building strength based on their claim to skill and expertise. The industrial unions that evolved in the 1930s pursued a different avenue to power; they organized the range of workers found in a sector like steelmaking, attempting to establish uniform wages across companies within a given industry (Piore and Sabel 1984, 97). Both of these approaches ran counter to Taylor's philosophy that the management of each enterprise should rely solely on technology and engineering to determine pay rates and work rules.

Unions did seek, in some cases, to erect barriers to entry around occupations, and to strictly delineate the duties of each position. These tactics were intended to ward off the use of non-union labor, by enforcing standards for training and skill, and were also an effort to ensure that objective measures like seniority were used for promotion and deployment decisions. In these cases, unions complied with - and even promoted - narrow job definitions, which may appear anti-worker in the strict limits they place on the individual's role. However, given the encroachments they faced from unorganized workers, as well as the threat recrimination and favoritism posed to their advancement, workers' felt the benefits of enforcing "job control" outweighed its problems.

Taylor called for collaboration between workers and managers. He maintained that rather than dispute over how to divide the wealth, all of the parties should concentrate on increasing the firm's overall wealth (Perrow 1986, 57). All of the members of the firm shared in the goals of increasing productivity and efficiency, he contended, and should therefore abide by the judgement of impartial engineers. Taylor's work thus provided a powerful ideological tool for owners and managers to use to suppress the role of labor in setting work rules and pay rates.

The presumed objectivity of scientific management did find support among some labor and even socialist leaders, because of the potential they felt Taylorism offered for minimizing the role of managerial discretion in work assignments. For labor organizers like the president of the Amalgamated Textile Workers, Sidney
Hillman, the opportunity to enhance the ability of their workplaces to compete against
the non-union sector was eagerly embraced. While Taylor did not intend that his
methods be used to entrench the role of organized labor, narrow job descriptions and
piece-rate pay structure leave unions with a well-defined set of issues to negotiate.
Socialists like V.I. Lenin who led states attempting to establish an industrial base
found the efficiency of scientific management appealing, as long as control over task
assignment and compensation was kept in the hands of the working class.

Taylor felt his model of labor management relations were well-suited to the
times, for a number of reasons. He identified three distinct groups within industrial
relations - owners, managers and workers. The growth of the managerial class was a
relatively new development when Taylor wrote, and his work was part of a growing
body of literature in the U.K. and in the U.S. that attempted to develop a science of
management. The analysis of work methods did not originate with scientific
management, however; craftsmen had regularly studied their practices in effort to
improve their skills. Braverman argues that Taylor’s philosophy differed from earlier
approaches because it was not only "the 'best way' to do work that he was seeking,
but an answer to the specific problem of how to control alienated labor - that is to say,
labor that is bought and sold" (1974, 90).

Workers’ idiosyncratic ways of performing their job was not seen by Taylor to
offer any value to the company. He cited two tendencies that characterized workers,
which his methods sought to contain. The first is a general laziness, which leads
workers to contribute less than their potential will allow. The second is a more
calculated effort, undertaken by groups of workers, to under-produce, in order to avoid
having their piece-rate lowered. They learned that if they consistently improved their
performance, higher levels of output would not continue to bring them rewards, but
would instead prompt management to lower pay levels.

Taylor’s work also coincided with the spread of the large, bureaucratic firm,
whose size made direct oversight difficult for executives and owners (Perrow 1986,
57). Scientific management techniques provided uniform procedures that fit well with
the impersonal nature of these organizations. Again, the danger of leaving matters to
human discretion was thought to lie not only with workers, but with administrators and supervisors, who had their own impulses, ambitions, and preferences. Taylor realized that left to their own devices, managers might indulge in favoritism or other human behavior counter to the best interests of the firm. The very aspects of Taylorism that some labor advocates found attractive provoked a defensive response from some managers. They felt, not surprisingly, that their authority was being undermined by the use of outside experts for task assignment, and Congress held hearings in the 1920s to discuss the implications of adopting scientific management techniques (history of Taylorism drawn from Perrow 1986, 56-58; Adler 1992; and Braverman 1974).

**Mass Production**

The logic of Taylorism was integral to the spread of mass production. This system exploits economies of scale to create large quantities of standardized goods, by establishing fixed steps and keeping the product mix constant. This allows for steady increases in the rate of output, and reductions in producer’s cost per unit.

Between 1945 and 1970, this system was effective for American producers for a number of reasons. It was integrally linked with mechanisms in both the public and private spheres that ensured high demand for goods. The passage of the National Labor Relations Act in 1935 and the Wagner Act in 1937 reflected the growing power of the union movement and the appeal that Keynesianism held for policy makers. The government institutionalized collective bargaining, in part, in order to distribute the gains of industrial growth. The logic of this system was based on the links between demand and supply; producers relied on American consumers to purchase their goods (Piore and Sabel 1984).

While they granted unions a legitimate role in industrial relations out of acknowledgement of their need for a customer base, most traditional U.S. manufacturers made little attempt to develop the capacity of their workforce. Their investments in dedicated machinery gives them a strong incentive to maximize equipment use and limit the time spent on training or experimentation. Jobs - and often pay incentives - are designed so that workers will concentrate on speed, rather
than contemplate ways to change the process, expand their job, or improve upon the design of goods.

Taylor's notion of task specialization has also been faithfully applied by most American manufacturers, who routinely create separate departments for each stage in the production and sales of their goods. Such a fragmented operation offers little opportunity for cross-fertilization or information sharing. Those who design the products typically has little interaction with those who sell the good, and often the area most isolated is the shop floor. However, since for many years firms enjoyed steady growth while they employed these methods, they felt little impetus to adopt a less rigid division of labor.

**Fordism**

Mass production techniques would perhaps not have become as widespread if their credibility was not been established by the success enjoyed by its early proponents. One such advocate was Henry Ford. The Ford Motor Company is widely credited for the invention of the assembly line, first used in Model T auto plants in 1914. When Ford's factory opened in 1903, the final assembly jobs were filled by skilled mechanics, whose work required them to be mobile, and the process was laborious and expensive by modern standards. Slowly, the tasks became more rationalized, and workers' movements were reduced by assigning them to fewer tasks, concentrated in one area of the car. When demand for the Model T began to exceed productive capacity, Ford decided to reconfigure operations in his factories, and his engineers devised the "endless chain conveyer." This allowed the worker to remain stationary while the partially assembled cars were moved along a belt, restricting workers' duties to a single, standardized step in the assembly process.

The assembly line succeeded in allowing the Ford Company to produce cars in a fraction of the time the old system took, but the new working conditions met resistance from workers. By 1913, turnover was so high that the company had to hire 963 workers to fill 100 positions. Nevertheless, assembly lines took hold in factories across the U.S., because they offered the best method to date of strengthening
managerial control over workers' pace and output (history of Fordism drawn from Braverman 1974, 146-150).

**The Human Relations Movement**

Beginning in the 1930s, professionals in industrial psychology and sociology began to study some of the effects scientific management had on workers. The early members of the "Human Relations" movement such as Elton Mayo, F.J. Roethlisberger, and W.J. Dickson investigated changes in working conditions, most notably in the Hawthorne experiments of the 1920s. While this research showed that workers responded more to receiving special treatment from management than they did to the actual changes in their environment (the lighting was dimmed and raised for treatment and control groups, to test whether productivity would differ), the initial results lead to further research. Human relations scholars examined both group dynamics and workers' needs, as individuals, to feel their efforts were appreciated. These studies and the personnel programs that followed acknowledged that workers established their own rituals, often in attempt to exercise control over their environment and preserve social ties. Once the Human Relations researchers realized that some of workers' behavior ran counter to the goals of the firm, they began to advise companies to invest in services like counseling, and sponsor social events to help workers resolve distracting personal problems and to develop a sense of loyalty to their employer. The paternalistic firm and its personnel department heeded these lessons and developed programs to promote stability (history of the human relations movement drawn from Perrow 1986, 79-92).

**Alternative Work Systems**

In the following section, I briefly describe some of the main features of two celebrated work systems. The first, the Swedish sociotechnical approach, is closely aligned with the vision of many American labor leaders. The second, the Japanese lean production model is perhaps more appealing to managers and owners. Both contain elements that bear on my discussion of the blend of practices embodied by Levi's *Alternative Manufacturing System*. 
The Sociotechnical Approach

The modern origins of teams in the workplace can be traced to research conducted in the 1950s by the Tavistock Institute in England. The most famous study monitored coal miners, comparing the performance of those who worked independently, scattered along a wall, to small groups of miners who worked together on one area of the wall (long wall units vs. the short wall method). When the performance of the short wall method was judged superior, the team structure was credited. Further research explored ways of combining workers’ social needs with the technical demands of production work.

The sociotechnical system became attractive to Swedish firms after a coal miners’ strike in 1969 as well as ongoing problems with turnover and absenteeism convinced them of the need to improve labor relations and increase quality and profits. The first well-documented implementation of the sociotechnical approach came in 1970s, when Volvo applied many of its features. The Volvo plants were largely successful in achieving these goals through their use of self-directed teams, gain-sharing financial incentives, and a no-layoff pledge. Spurred to develop strategies to attract workers during a labor shortage, other Swedish companies began to apply the lessons learned in the coal miners study.

As Sweden’s union density suggests (75% in white collar, and 95% in blue collar occupations) (Levine and Tyson 1990, 230) any new work system must include a role for organized labor if it is to be implemented widely. The passage of codetermination laws in the 1980s codified the rights and responsibilities of workers and management in the Sociotechnical workplace, and gave the system the legitimacy it needed to be adopted on a broad scale.

The sociotechnical system has been guided by the features of Swedish corporatism as well as by many firms’ market strategy. Employers are constrained by

\[1\text{In the U.S., aside from a General Foods plant in Topeka, Kansas that instituted group work in the 1960s, team manufacturing did not appear until the 1980s (Appelbaum and Batt 1993, 100).}\]
the standard and relatively high wages established for each sector in Sweden, and are therefore unlikely to pursue the cost minimization approach demonstrated by most American manufacturers. Unable to undersell goods from competitors operating in countries with lower labor costs, Swedish companies attempt to differentiate their products by their quality and distinctive nature. Thus their decision to organize workers in teams was not purely made to appease labor, but was perceived as consistent with, and even necessary to, their product strategy. Firm managers believed that the degree of customization and quality they sought could only be achieved if they allowed workers to engage in continuous improvement with minimal managerial interference.

Analysts attribute the success of sociotechnical workplaces to both the autonomy granted to individual workers, and to the holistic approach towards job design. Rather than maintain a static sequence of steps, the sociotechnical model allows workers to use their judgement and their cross-training to vary their operations. Further, as mentioned, the unemployment rate (under 5% for most of the 1980s) has forced employers to craft policies that will attract and retain their workforce.

Sociotechnical teams function semi-autonomously, and often each team is responsible for the assembly of an entire good. They maintain a distinct role for management, but much of the planning and control is devolved to the work group level. Cross-training allows workers to vary their role within the team, and the goods represent a collective process, rather than an amalgamation of discrete steps. The training is designed to make workers cross-functional; it imparts both production and related skills, such as staff scheduling, parts ordering, and machine repair. Within the direct production sphere, workers’ expertise grows, and the impact of absenteeism is mitigated as a consequence. In fact, some Swedish firms suffer from absenteeism as high as 20% on an regular basis, which is blamed by some of its critics on the sanctions that make it very difficult for employers to fire employees. This has stimulated some firms to provide interesting work as well as to make sure employees are versatile enough to fill in for one another.
The Lean Production Model

In Japan, as in Sweden, the dominate method of work organization reflects the national environment that industry operates within. The availability of "patient capital" from banks allows firms to pursue activities like training that may not yield immediate results. The enterprise-based union system fits with the dominant culture’s ideology of identification with one’s employer. And, like in Sweden, many of the human resource practices adopted by large firms have been described as a response to the tight labor market.

As in the sociotechnical approach, Japanese firms’ team members communicate with engineers, designers, marketing staff, and other departments as needed, to eliminate wasteful steps and identify ways to improve the production process. They offer suggestions when they participate in quality circles and through use of the ringi-sho system, which entails sending ideas in an upward spiral, gaining approval at each managerial level before they reach the final decision making authority. The ringi-sho practice recognizes that workers often have valuable insight, but it uses a formal procedure to achieve consensus on specific proposals, rather than allow individuals to act independently on their ideas. As a result, workers are not as autonomous as they are in the sociotechnical system, and the chain of command is diffuse, but still intact.

The compensation system in large Japanese firms is designed to develop identification with the employers’ goals. Workers are paid yearly bonuses based on firm profits, but these are often broken down by work group contribution. The dispersion of wages between the blue collar workers and managers and executives is also narrow relative to the typical American company, and this is believed to foster commitment² (Levine and Tyson 1990, 225).

The production process both within and outside of the plant is streamlined in the Japanese model. In their external relations, Japanese firms try to buy parts from

²In the U.S., while many employers have recognized the benefits of removing "in your face" status markers such as separate parking lots and cafeterias, the distribution of pay remains skewed (Blinder and Krueger 1990).
sources nearby, developing regional production networks, instead of utilizing suppliers located throughout the world. Inside the plant, eliminating excess inventory is the purpose of the just-in-time or kanban system. The sparse factory floor is believed to make problem areas more easy to spot, and to compel workers to address them.

While the mass production assembly line typically uses buffers of partially complete units to allow workers to function independently of one another, lean production maintains a smooth and as-needed flow of goods through the manufacturing process. In contrast, the mass production model finds excess inventory instrumental, for it ensures that workers will always have a surplus of goods awaiting their task. In lean production, each worker's effectiveness hinges on the efforts of others, and mistakes and changes in pace have far-reaching effects, leading to its designation as a "fragile" system (MacDuffie and Krafcik 1992).

Japanese workers' high commitment and motivation is attributed, in part, to employers' tradition of guaranteeing job security. Japanese workers are free from the worry that the ideas they contribute towards making their workplace more efficient will result in job loss. In the case that firms face a decline in business, they use the time to train, or may transfer employees to other sites.

Cross-training and job rotation in Japanese teams occurs less extensively than in the Sociotechnical system. Teams function with their own productivity quotas, and they must make do when members are missing. As a result of this interdependence, absences can disrupt the flow of work, causing delays, and effecting pay if it is based on output. Thus group peer pressure is one of the keys to assuring workers' attendance.

**Total Quality Management**

Ironically, two Americans are among those credited with contributing to the development of the Japanese lean production system. In the 1980s, Deming and Juran both wrote books advocating the use of customer-oriented managerial techniques focused quality and efficiency. Japanese firms embraced their message by combining statistical quality control methods with the just-in-time inventory system, to assure a smooth flow of parts through production.
Total Quality Management (or TQM) addresses managers’ inability to take advantage of the wealth of knowledge stored in workers. This approach does not, however, call into question the hierarchical division of labor, and while workers’ responsibilities grow, their autonomy does not. Their suggestions are solicited informally and in problem-solving groups, which often bring together staff from various departments. In American firms that use TQM, competition among workers for the best workers ideas are often held, with rewards given to the worker who proposes the best idea (Appelbaum and Batt 1993, 104-107).

Training for TQM emphasizes, not surprisingly, skills related to quality and efficiency. The rote nature of jobs is identified as an obstacle to continuous improvement, since it inhibits the range of contributions workers can make. As a result, production duties grow to include inspecting goods that are in progress and reporting bottlenecks. Like the lean production system, most companies using TQM still employ foremen or supervisors who direct the flow of work and communicate employees’ ideas to higher levels in the hierarchy.

Innovations in the United States

In the U.S., the recent decades have witnessed many efforts to overcome the legacy of scientific management. The end of the post-war economic growth in 1970, and the not unrelated onslaught of international competition have led many employers to experiment with alternatives to mass production. The 1980s have been described as a decade of turbulence and innovation in the workplace (Kochan, Cutcher-Gershenfeld, and Verma, 1991). These innovations have ranged from the "quality circles" first established in the 1970s, to joint union-management reorganization schemes in the 1980s to recent calls for enterprise-based forms of non-union employee representation. Many scholars have conducted research to identify the most effective practices within the broad realm of work reform. (Effectiveness is usually assessed by testing the correlation between various programs and improvements in firm performance.) This literature consists of both in-depth case studies and meta-analyses of employer surveys.
A few caveats are necessary before I present some of the highlights of this research. First, since the many studies on work reform may each define structures like teams differently, it is sometimes difficult to draw conclusions about common findings (Osterman 1993). A second problem is that most of these surveys are sent to human resource managers and executives rather than front line workers. The danger from relying on their responses is that employees, who are often those most familiar with the practices that are in place, are ignored. The survey responses may instead be from individuals who have a vested interest in the success of new systems, and who have an unrealistic perspective on the depth and breadth of innovative activity in their firm. And third, since most studies are before and after comparisons of firm performance, it is likely that at times, an observed impact stems from the effects of other, simultaneous changes, such as the introduction of new technology or leadership.

Finally, some critics are skeptical about assumptions they feel proponents of the "high performance" model make about what workers respond to. They argue that the link between satisfaction and performance has never been conclusively proven. Charles Perrow cites a 1968 review of a group of workplace studies, which concluded that "what causes job satisfaction for one person need not cause it for another. Job satisfaction is relative to a large number of alternatives available to the individual and affected by job level, age, sex, education, culture, job cycle time, and the respondent’s standing in his or her group" (1986, 91).

Contrary to many scholars and policy makers inclinations, some research also challenges the notion that workers always prefer variety to routine. During the 1970s and 1980s neo-Marxists like Michael Burawoy and Louise Lamphere conducted ethnographic research to learn more about shop floor dynamics. Many of these "labor process" studies found that retaining control over one’s work - rather than the precise content of tasks - takes on primary importance for many factory workers. After working in a brewery and observing that many workers resisted taking multifaceted task assignments, Clark Molstad discovered that, "workers often seek routine jobs as a method of avoiding more complex situations in which responsibility exceeds control" (1976, 60).
Notwithstanding the limits of the literature on work reform, it yields many notable findings. It offers insight into the type of non-traditional policies being implemented within firms, and frequently identifies relationships among practices. In one recent survey, Paul Osterman (1993) used Dun and Bradstreet files to conduct a survey of 694 private sector establishments with 50 or more employees. He found that 32% of manufacturing establishments were using teams with at least 50% of their workforce. Osterman also discovered that firms which compete on an international basis were much more likely to innovate, but found no relationship between the presence of a union and the extent of innovative practices. Eaton and Voos (1992) analyzed survey responses from a 1987 Government Accounting Office database, and, contrary to Osterman's findings, claim that union firms are much more likely to adopt and sustain employee participation plans. In an extensive examination of existing survey results, Appelbaum and Baum estimate that one-fourth to one-third of all firms have made significant changes in how workers are organized, and about one-third of all firms have some kind of quality programs in place (1993).

These statistics, however, tell us little about the reasons some work reform efforts fail while others succeed. In attempt to develop theories and models that shed light on this area, analysts use several criteria to judge the effectiveness of employee participation plans. These consist of the incentives employer's offer to workers, financial or otherwise; the type and amount of skill instruction they provide; and the structures that facilitate employee involvement in decision-making, problem solving and job design.

**Incentives**

Conventional means of eliciting effort from employees rely on financial incentives (usually based on individual output), close monitoring of workers' progress, the possibility of promotion, and coercion (Bailey 1992). In recent years, while examples of innovative pay schemes are widely reported, Appelbaum and Baum find that in many cases, changes in firms' compensation systems have not accompanied the introduction of other new practices. While significant experimentation in alternative pay schemes has taken place in the last decade, they also report that many companies
are using re-organizing or "re-engineering" as an opportunity to cut labor costs. This may entail the creation of more part-time and temporary positions, the introduction of a two-tier wage system, or the use of a pay for skill plan (1993, 93).

The evidence from those firms that have instituted non-traditional pay structures leads scholars to make several general conclusions. First, employees may grow resentful if they expend effort learning new skills and adapting to flexible work rules but are not allowed to reap any of the benefits that accrue to their employer. Gain-sharing is cited by some analysts as the optimal variable bonus system (Levine and Tyson 1990, Eaton and Voos 1992), while others caution that it raises "a host of potentially contentious issues," such as opposition from middle management (Kochan, Cutcher-Gershenfeld, and Verma 1991). While profit-sharing is also considered an innovative bonus system, many scholars argue that a firm’s profit may be determined by events beyond the control of individual workers, and thus the profit-based bonus is ineffectual as an incentive.

Appelbaum and Batt (1993) point out that changes in pay can either induce employee participation and commitment, or result in demoralization and embitterment. They explain that if workers feel that the new method of compensation in their workplace is unfair, they will be less likely to embrace organizational reforms. For example, large pay discrepancies between different jobs and goals that are set too high both dampen workers’ motivation. In the case of group-based pay, Appelbaum and Batt argue that "targets that are constantly moved upwards are intended to induce "continuous improvement" but workers may perceive management as manipulative of the system" (1993, 94).

Skills

Structures such as quality circles and work teams often demand a range of competencies from workers, as well as from managers. Skills that are considered instrumental for new work arrangements include broad technical expertise and related duties, such as repair and inspection; problem solving and communication skills; and the ability to make administrative and financial plans.
The absence of a career ladder or monetary reward for becoming more skilled in many production jobs is blamed for some workers' apathy towards training. Employees may resist learning if they fear their knowledge will not be applicable in their next worksite. The lack of job security many workers experience thus helps set a low skill equilibrium in place; workers hesitate to invest energy in acquiring firm-specific skills while their employers are reluctant to spend money on training workers who may walk away with their investment. This has lead to proposals ranging from state subsidies for firms that engage in significant amounts of training to the adoption of an apprenticeship system to education reform (Osterman and Batt 1992).

The current void in company-provided training has left many employees underprepared for new work arrangements. Workers are then unlikely to fulfill the mandate of these structures, and are weakly attached to their survival.

**Structures for Involvement**

**Quality Circles/Quality of Work Life Committees**

Both quality circles and quality of work life committees were, in part, a response to the perception that workers were alienated and suffering from the "blue collar blues." Quality Circles (QCs) and Quality of Work Life committees (QWLs), first implemented in the 1970s, are designed to tap into workers’ store of knowledge, particularly about the production process.

Many labor advocates have been suspicious of QCs and QWL groups, which were often begun by companies in plants in "greenfield" or non-union areas, perhaps in hopes that initiating their own employee organization would forestall union organizing efforts. Skeptics’ misgivings about QCs and QWLs are often confirmed by their limited scope. As Appelbaum and Batt note, the issues they address generally "focus on workers’ local concerns - on the work environment, including health, safety, and "cosmetics," not on the way the work is done" (1993, 110). Since many are influenced by the Japanese approach to employee involvement, they frequently leave the power to make decisions vested in managers and foremen. Some observers, have, however, noted that despite a narrow focus at their outset, QCs and QWLs have sometimes opened the way to more expansive forms of employee involvement.
As a result, in more recent years, unions have begun to accept and participate in QWL groups, sometimes even initiating them.

**Strategic Decision-Making**

Participation in strategic decision-making offers workers the opportunity to have a voice in discussions on matters such as the choice of technology, plant location, the use of sub-contracting, and product design. Levine and Tyson (1990) differentiate between consultative, substantive and representative roles for labor in decision-making; Eaton and Voos (1992) use high, medium, and low levels of worker involvement to classify participatory programs. The consultative or low level of involvement consists of informing staff of plans and goals, without extending to workers a means of affecting outcomes. Companies that create a substantive or medium role for workers confer with them as their managers and owners weigh the firm's options. A high level or representative form of participation gives workers a formal role in decision making, often through the election of a union member to joint boards, or through collaborating on a change from its early stages, as in the case of the GM-Saturn and Corning plants.

Much as companies need to offer adequate levels of training, they must provide access to information and the time for workers to evaluate firm data to make employee participation meaningful. When it has been extensive, information sharing and participation in decision-making have both been linked to increasing employees' trust and commitment to organizations. Accordingly, in some cases they have been found to make employees more likely to accept concessions in wages and changes in work rules. Conversely, workers who are summarily told that their employer has decided to eliminate jobs or lower pay are likely to become cynical about the benefits of participation (Bailey 1992). These effects have lead analysts to hypothesize that employers benefit from employee involvement plans because they increase workers' identification with firm goals (Kochan, Cutcher-Gershenfeld, and Verma, 1991).
Joint Labor-Management Efforts

Some scholars as well as many labor leaders argue that union presence provides an autonomous structure for employees, giving workers formal protection and voice, and aiding in establishing industrial democracy. Unions are also posited as a means of making a business more efficient. This is explained by Wolfgang Streeck as a function of the diverse perspective that workers are able to provide, and he compares the behavior of the unfettered manager or owner to "a king who needs to be constrained by a powerful citizenry in order to be able to accomplish what he would like to accomplish" (1993, 172).

While scholars have recently advanced proposals for non-union employee organizations, others fear that such structures are susceptible to management domination. Recent supreme court decisions have left the future of employee involvement in policy-making unclear, as they have reinforced the notion of mutually exclusive roles for labor and management (Stone 1988).

Despite their uncertain legal status, many labor-management cooperation efforts are currently underway. In Negotiating the Future: A Labor Perspective on American Business, Irving and Barry Bluestone (1992) call for an "enterprise compact" between labor and management, designed to take advantage of each groups' strengths. Workers, according to the Bluestones, have relatively long time horizons, and they can offer valuable insight into ways to improve the production process. Managers, on the other hand, have a more sophisticated grasp of the competitive conditions surrounding the firm, but often demonstrate a short-term perspective. The Bluestones urge employees to identify more closely with the fate of their workplace, by adopting practices such as making quality a strikable issue.

This approach has been criticized, however, for leading workers away from collectivity and towards a more narrow focus on the market position of the individual firm. This is a dangerous trend, according to Jack Metzgar (1993) and others, because it obscures workers' understanding of their vulnerable position in a purely market-driven system. The solidarity based on the shared interests among workers across
firms (and across borders) may be weakened by enterprise compacts and non-union forms of employee representation, these critics argue.

Many joint labor-management reorganization efforts have been undertaken in the U.S. in recent years. The GM-UAW Saturn plant presents perhaps one of the most thorough examples of worker involvement in the design and implementation of a non-traditional, team-based production system. The participation of workers has been institutionalized in processes ranging from the hiring of line workers to the selection of parts suppliers. Communication between divisions is also integral to Saturn’s overall competitive strategy, as product design, marketing and sales and manufacturing divisions share information regularly in attempt to respond to changes in demand and problems in the production flow.

Another project with both the participation of the UAW and GM is the NUMMI plant in Fremont, California. This joint venture between Toyota and General Motors began in 1982, with significantly less union involvement in the planning stage than the Saturn case. The factory that formerly occupied the NUMMI location was notorious for a history conflictual relations between workers and managers, and had an absentee rate of 20-25%. The new plant, in contrast, has adopted measures intended to foster cohesion and since Toyota was responsible for the design of the production process, it resembles the Japanese model described earlier. NUMMI has work teams; however, workers still answer to a foreman, and the content of tasks is standardized. Paul Adler (1992) argues that because workers help set task requirements and are allowed to revise them, they feel less oppressed by their standardized nature.

NUMMI has not received such favorable reviews from all observers, however. Mike Parker and Jane Slaughter (1988) contend that the plant’s teams are used to create "management by stress," displacing some of the "hassles" of being a supervisor onto line workers, while maintaining managerial prerogative (16). Such views and those that have been described earlier in this section demonstrate the complexity of the current debate regarding work reform.
The preceding chapter has provided both a historical and comparative context for analyzing the Levi case. The remainder of this thesis will focus on the specific details of the two plants and their conversion to team manufacturing.
CHAPTER THREE: LEVI STRAUSS AND COMPANY

To the outside observer, Levi Strauss and Company appears to have little incentive to spend millions of dollars overhauling its manufacturing system. The world's largest apparel maker, Levi enjoyed record sales of $5.5 billion in 1992\(^1\), and its products are available in over 75 countries. The company's size has allowed it to require six month advance commitments from retail accounts, and it has encouraged overcapacity among its suppliers. The recognition of the Levi brand name makes the company the envy of many of its competitors, and its jeans have inspired widespread imitation, including an active trade in counterfeit Levis. The fact that Levi's most popular items are those whose style has changed the least in 20 years has given the company little impetus to adopt manufacturing techniques designed for shifting trends.

Given this record, what explains Levi's decision to adopt an "Alternative Manufacturing System?" To understand the company's strategy, I conducted interviews with one executive manager, one regional manager, and two plant managers as well as at least two other members of management staff from both sites. The analysis in this section also reflects less formal conversations with several other Levi staff, including the company's historian and a controller. I place the statements of company officials in the context of Levi's history and their current standing in the industry. This background helps draw attention to features of the company that may distinguish it from others in the field, and identifies some of the options and barriers that condition its behavior.

This examination of Levi managers' views also reveals the range of interests and pressures that led to this change in the production system. While the company presents a coherent set of goals guiding its actions, the picture that emerged from my discussions with these managers was more complicated. The relative importance individuals in the company assign to different aspects of the new system and to the reasons for its adoption also may

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\(^1\) Net earnings in 1992 were 337.3 million dollars.
reflect their stake in its success. As Paul Adler has observed, organizations are “complex realities whose dynamics are overdetermined and not typically amenable to a mono-causal explanation.” (1992, 74). The multiple goals and interests embedded in the decision to implement team manufacturing defies notions of monolithic managerial strategy, and demonstrates the importance of exploring the black box of the firm.

Background: Levi Strauss and Company

The history of Levi Strauss and Company is the story of a business that has grown steadily, from a regionally based outfitter to an international corporation. Along the way, Levi has adapted its product mix and manufacturing process to meet changes in the market place and to better compete in the industry. This pattern is evident in its adoption of a Henry Ford-inspired assembly line in 1926; in the transfer of 50% of its manufacturing offshore; and in the current application of teamwork in the domestic Levi factories. This section outlines the evolution of Levi, corresponding to two divisions in the company, the parent company or the merchandiser, and the manufacturing department (the plants).

The Parent Corporation

Founded in 1847 as a dry goods wholesale business, Levi began to manufacture work pants for Western miners soon after. The major growth in the company’s domestic sales began in the 1930s, and demand was piqued by the scarcity of Levi’s jeans during the second world war, when their products were declared essential commodities by the U.S. government, and sales were limited to defense workers. The company ceased selling dry goods in 1948, and opened over 30 sewing plants in the South and Southwest during the 1950s and 1960s. In 1968, Levi began to produce women’s clothing, and also began aggressive sales efforts in Europe and Asia. To their delight, Levi’s brand blue jeans became indispensable to teenagers throughout the world; the company attributes the popularity of Western movies as well as idols Marlon Brando and James Dean for giving denim its new appeal in the 1950s. Levi now produces for three markets, men’s,
women's, and youth; within these, they sell jeans as well as other garments. They acquired the Britannia line of jeans in 1986, which they sell to the mass market retail chains like Wal-Mart and K-Mart. Their “Dockers” line of lightweight cotton slacks and coordinates, introduced in 1986, has been a huge success for the company.

Relatives of founder Levi Strauss have run the company throughout its existence, with the exception of CEO Robert Grohman (from 1981 to 1984). Levi has also been owned by family members for most of its history; it was a publicly-traded corporation from 1971 until 1985. During this period, the company attempted to increase market shares by expanding its product mix to include ski clothes, shoes, and men's suits. This diversified approach proved unsuccessful, and when Robert Haas became CEO in 1984, the company returned to its staples of jeans and other casual items. Haas, great-great grand nephew of company founder Levi Strauss, also helped organize the largest leveraged buyout in the history of the apparel industry in 1985, returning the company to family ownership.

Haas' leadership has proven quite lucrative for the company. Between 1985 and 1989, sales increased 31%, and profits rose fivefold. Among other accomplishments, Haas reduced the workforce by one-third, presided over the development of an electronic order system, and instituted training in areas like ethics and diversity for managers. Foreign sales have risen from 5% in 1966 to 40% in 1992, and now account for 60% of the company's profits. Levi currently employ over 24,000 workers in the U.S., who are divided among the home office in San Francisco (c. 2000), the sewing plants in the South and Southwest (c. 17,000), and the distribution and other ancillary facilities scattered across the U.S. (c. 5,000).

The company also cultivates an image as a leader in corporate social responsibility. Haas unveiled an “Aspirations and Values Statement” in 1987, after a group of minority and women employees approached the CEO to discuss their frustration with an ongoing pattern of discrimination they felt interfered with their success. The statement declares the

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2 The company is currently being reorganized into a jeans, Dockers, and children's division.
corporation’s commitment to “teamwork, honesty, diversity, ethical behavior, communication, and empowerment.” Managers receive a week-long training to make sure they understand the ramifications of working for an “aspirational company.” Haas has been lauded for leadership in AIDS awareness, and the company has adopted policies such as domestic partners benefits for spouses of unmarried employees and child care vouchers. The atmosphere in the corporate offices in San Francisco is relaxed, and the company eschews obvious signs of status among its employees.

**Relationship Between the Parent Company and the Plants**

There is, however, a marked contrast between Levi’s treatment of home office and factory employees. In the 1993 edition of *The 100 Best Companies to Work For in America*, authors Robert Levering and Milton Moskowitz point out that many of the benefits that earn the company praise are not extended to the 80% of their staff who work outside of corporate headquarters. The views held by plant managers also make clear that the association between the factories (“sourcing sites”) and the parent company is less familial than the Levi image suggests. Levi owns and operates 27 sewing plants in the U.S. (and uses several independent contractors, mainly for overflow orders), but considers itself a “marketer” rather than a manufacturer, according to CEO Haas. This helps explain why the plants have been treated as if they were “captive contractors,” in the terms of the industry, rather than integral parts of a whole. The plants are held accountable to meeting strict budgets and order deadlines, and the possibility of being closed or losing orders to another site is never far from managers’ thoughts. Interaction between these divisions has thus exhibited the arms-length distance that has traditionally characterized relationships in the needle trades.

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3 In an epilogue to the 1993 edition of their book, Levering and Moskowitz explain that they removed Levi from their list of “best” employers after they judged that the company maintained two classes of workers. They argue that the low pay, disparate vacation policies, and Taylorist job design in the plants contradict the Levi ethos.
Levi's enlightened philosophy also failed to prevent the company from closing over 50 facilities in the 1980s, consequently displacing over 10,000 workers (Levering and Moscowitz 1993). Company officials hold that they weigh each closing decision by projecting its impact on the surrounding community and assessing its cost-effectiveness. The company also feels compelled to take advantage of the low wages its third world sites offer, in part because so many of their competitors are doing so. Although U.S. apparel workers are able to produce more quickly (Richard Rothstein estimates that they are 26-44% more efficient than their third world counterparts) (1989, 16), the wage differential is so great that Levi CEO Haas' words seem indisputable: "If only judged on economic cost, U.S. plants are dead" (quoted in Levering and Moscowitz 1993).

While Levi closed facilities steadily throughout the 1980s, the 1990 closing of a Dockers plant in San Antonio, Texas, brought the gap between the company's "Aspirations" and its practice under scrutiny. Anger to this closing community was exacerbated when workers and area residents learned that the Levi enjoyed record profits in the previous year. The company explained that the plant was not an efficient producer for them, and that they had over-capacity, but they elicited further criticism when they simultaneously established manufacturing of Dockers in Costa Rica, where workers receive $1.08 per day. The San Antonio closing is described as a "painful experience" for the company, and one that had a "devastating effect" on workers. The company nonetheless defends its decision on business grounds, and in such cases, Haas feels that the company is not betraying its values, but rather practicing them by being honest with employees, and by providing extra notice and severance pay. Levi officials regret only that they had underestimated the educational deficits of their workforce, which left displaced workers ill-prepared for the job market. The prolonged (and well-publicized) spells of unemployment many operators experienced following made the company appear even more callous, and may have helped convince Levi of the need to establish the current basic skills classes in plants.
Regardless of the justification, plant closures, and the attendant shift of production offshore, illuminate the tenuous nature of the bond between the parent corporation and the production sites. They also serve as an effective - if indirect - means of eliciting cooperation with corporate mandates, and have driven plants to constant struggle to prove themselves as efficient producers.

Location Decisions

The company’s location or sourcing strategy has changed dramatically over time. Although Levi began manufacturing in Hong Kong in 1968, as recently as five years ago, only 10% of their goods were made outside of the U.S. Today, 50% of Levi’s production is offshore, most in independent contract shops. The company’s domestic factories concentrate on producing the company’s most basic goods: 95% of their jeans are made in the U.S. Demand for Levi jeans continues apace, but it is the growing sales of the company’s price and fashion sensitive goods that has according to one executive, “driven the company to utilize contractors who could deliver at the lowest cost.” Consequently, all of Levi shirts are now made offshore, as are most of their women’s and children’s clothing as well as 90% of the Dockers. Erratic demand for many of these products apparently requires a workforce that will expand and contract to meet the company’s needs, which, as one Levi manager commented, isn’t possible “when your name’s on the door.”

Growing awareness in the U.S. of the inferior treatment of workers in many third world countries used for assembly lead the company to adopt loosely defined set of criteria for selecting production sites. In what the company believes is another indication of their commitment to ethical behavior, Levi introduced "Terms of Engagement" in 1990, ostensibly to help them make location or sourcing decisions. These terms center on environmental practices, the use of child labor and overall working conditions, as well as the less easily assessed “effect on brand image and corporate reputation.” Similar logic is found in the company’s recently created “Global Sourcing Guidelines,” which try to combine cost containment goals with concern for maintaining the company’s good name.
Levi generally pays better than most other American apparel makers who use offshore labor, and has withdrawn their business from several plants in protest of human rights abuses. Even with the most repressive sites removed from consideration, Levi still has many offshore sourcing options available, and has not directed more manufacturing onshore as a result of these guidelines. According to one executive, the central question these guidelines provoke is: "how can the higher cost domestic plants add value?" In other words, given the availability of low-wage offshore manufacturing, what is the rationale for continuing to use more expensive factories in the U.S.?

**Domestic Production Sites**

Levi's practice of outsourcing assembly of and fashion-sensitive goods to offshore sites has left the domestic plants with the most automated segment of the company's goods, blue jeans. "501's," Levi's best-selling item yield the highest profit margin of any of the company's products, and labor expenses have been winnowed down to 15% of the total cost of producing a pair of jeans (the average in the men's clothing industry is to spend 25% on labor).

As operated since their inception, Levi's domestic factories have been poorly suited for flexibility. The automation and the fast pace needed to carry out the 40 steps of constructing a pair of 501s are the result of extensive time-and-motion studies, conducted by company engineers in the 1970s. The corporation's various divisions have emphasized high volume, low cost, and standardized procedures. Research and development department has, for example, concentrated on reducing the labor content in assembly, by dividing the process into many minute, discrete steps. The function of the union in this context has largely been to negotiate piece-rate quotas for specific jobs, in compliance with the fragmented and rigid deployment of labor. Levi's prized "blue books," kept under lock and key by plant managers, detail the correct steps operators are to use for every sewing task. The company also attached computers to sewing machine operators' work stations
several years ago, to further monitor output, in another application of scientific management principles.

**Rationale for the Change**

**The Parent Company: Market-Based Goals**

Executives argue that in recent years, external changes as well as developments inside of Levi have lead the company to the question long-held assumptions. The company now holds that even leading clothing producers can no longer count on traditional means of achieving success. These traditions include large production runs of undifferentiated goods, and long lead times to accommodate the build-up of in-process inventory along the assembly line. While Levi’s status suggests that it may play a role in creating standards in the industry, comments from company representatives indicate that it feels its choices are defined by forces beyond the control of one company. These developments can be described as follows.

- **Increasing concentration of the retail customer base.** The company has gone from selling to over 18,000 outlets of every size to making most of their sales to their top 50 accounts. The balance of power has thus shifted, and the large chains in the retail sector are well positioned to set the terms of the business. These terms include more stringent demands for delivery “just-in-time” and so that stores can avoid both mark-downs and sell-outs.
- **Changes in consumers’ taste and habits,** including heightened interest in fashion, quality, and price, and erratic spending patterns (which tend to follow cycles in the economy)
- **Industry-wide use of low cost, offshore production sites,** and subsequent disinvestment in domestic manufacturing. While major entities like Levi have helped set this trend, they feel that, like catering to shifts in taste, minimizing costs has become an objective requirement of competition.

Taken together, the company maintains, these trends undermine the logic of the traditional Levi approach to everything from production to sales. In response, Levi executives formed a customer service committee in 1991 which has focused on “responsiveness.” The company defines this as the capacity to fill orders quickly and meet demands for high quality and stylish clothing. It has set a goal of guaranteeing delivery within two days, and the company is also trying to increase its ability to fill small,
specialized orders. This entails re-organizing its network of production and distribution facilities into regional clusters; retraining all employees in less standardized practices; and making sure Levi’s marketing division promotes the use of these services to the company’s accounts.

Meeting these goals would be difficult, however, within the limits of the company’s current production network. As mentioned, the production of the company’s goods has been sharply divided, with domestic plants used primarily to make blue jeans, and almost all of the company’s basic goods imported after assembly offshore. The rigid nature of the assembly line requires domestic plants to undertake extensive training and re-engineering if they introduce new techniques and products. However, since shipments from the closest offshore sites takes 30 - 60 days, the appeal of domestic factories location has grown since the company’s responsiveness campaign began.

Health and Safety Goals

Ameliorating the health hazards associated with sewing work is also listed as one of the important purposes of adopting teams. The repetition and pace of assembly line tasks leads to high rates of stress and fatigue - related health problems in Levi operators, such as carpal tunnel syndrome. Company officials focus on concerns stemming from two of the by-products of health problems: the “moral implications” of knowingly causing thousands of Levi workers each year to suffer debilitating injuries, and the expenses associated with illness and injury. Workers’ compensation costs in the U.S. have been rising at a rate of 30 - 40% for the last several years for Levi, requiring the company to set aside $1.00 per unit (a pair of 501 jeans costs $3.50 to produce, in labor and materials). In addition, illness and injury are linked to high rates of absenteeism and turnover, reduced productivity, and it is in the company’s financial interest to address this problem at its source. (Whether Levi is motivated more by financial concerns or by their moral commitment to safe working conditions remains unclear; if the result for workers is improved health, the answer seems unimportant.)
Family Ownership

The company’s ownership structure is also credited by its officials for allowing Levi to undertake ambitious and risky ventures such as team manufacturing. The “short time horizons” of the many American companies with publicly traded stock are often cited impediment to investments in projects whose benefits may take time to appear.

Internally Driven Change

Levi recognizes that domestic plants have felt an urgent need to act to prevent further drift of the company’s manufacturing offshore. According to one executive, these factories have felt a “visceral incentive to change; without these changes they know they will slowly and inexorably become extinct.” This threat of extinction led the domestic factories to explore new methods of production in recent years, in search of ways to offset the advantages of offshore production to the company. Representatives of the parent company attribute the creation of the new system to Levi’s manufacturing arm, and the company credits local managers with conducting research and experimentation to devise alternatives to the assembly line.

Discussions with production managers confirmed the company’s assessment of their sense of vulnerability. Domestic factories reached peak levels in their productivity in recent years, and were under intense pressure to keep up with the high volume of orders, yet their managers worried that there was little room for improving their performance within the existing structure. Labor had been reduced to the extent possible, and, measured by “standard allowed hours” (the time it takes to make a garment), the U.S. plants were able to produce jeans more efficiently than the company would be able to match anywhere else in the world. Production managers nonetheless felt they would be shortsighted to assume that maintaining the status quo would assure continued business from Levi.

Plant managers are also acutely aware of the company’s desire to reduce worker’s compensation costs. Until recently, Texas statute placed a greater financial burden on employers than did most other states’ laws, and this issue is still foremost in plant
managers' thoughts. In El Paso, where companies can escape many of the obligations of the U.S. employment contract by moving across the border to Mexico, production managers feel that spending related to illness and injury claims act as a strong deterrent to maintaining manufacturing facilities in the United States.

While standard clothing like underwear and basic jeans has been the last remaining stronghold for the domestic apparel trade, no one associated with the Levi plants is confident that the company will continue to use them as a source indefinitely. Spurred by the fear that dilemmas such as high workers' compensation costs and inflexibility would lead to the demise of their plants, managers started to test alternatives to the assembly line in the late 1980s. They traced many of their problems to the organization of work in their factories, and contemplated ideas that would reduce the repetition that was leading to high injury rates, speed the flow of goods through production, and establish greater flexibility.

In 1990, the Roswell, New Mexico Levi's factory set up modules, or small work teams of 9 - 12 operators. This plant produces women's clothes, "Little Levi's" (for children), and the trendy "Silver Tab" brand, and is somewhat of an anomaly among the domestic plants, in the range and nature of its product mix. Managers of this plant were perhaps even more conscious than their peers of the need to demonstrate they could offer a competitive advantage to Levi, given the company's habit of using offshore producers for most of their non-standardized goods. They developed the team concept to improve on timeliness, versatility and quality, in the hope that having these assets close to the U.S. market would make them more attractive to the parent company.

Despite the infrequent style changes of most of the clothing produced in the domestic Levi plants, managers felt that increasing flexibility and speed would help ensure their survival as well. They all believed that the individual piece-rate system had to be abolished if the plants were to lower injury rates and become more adaptable, in addition to
improving upon quality and timeliness. Managers began to try out different versions of work groups in their plants, and regional managers prepared materials in support of the team concept, to present to the company. They presented the idea for AMS to the company’s Executive Management Committee in the Fall of 1991, who agreed to invest in the new system.

Although he and his colleagues expended great effort in attempt to perfect the new system, at least one production manager I spoke with feels that focusing on its details obscures the greater purpose they had in mind. He explains that the new system is a tool being used to overcome intransigence among operators as well as supervisors and line managers, rather than a goal unto itself. Ideally, convincing employees to accept ongoing change will enable plants to make incremental, team by team modifications. The company will then, in this scenario, take advantage of this capacity by having more of its fashion-sensitive clothing made domestically.

However, the potential for applying team work offshore gives production managers in the U.S. little faith that they have found a panacea for the runaway shop syndrome. One declared, “I’m counting on the guys in the Philippines and Costa Rica to come up with something like this,” and he went on to state his intent to prevent the domestic plants from becoming complacent once they adopt teams. While the majority of offshore plants are not owned by Levi and thus seem unlikely candidates for the company’s investment in a new production system, the company’s plant in Brazil has modular manufacturing. This plant, like the Roswell factory, has small work teams, enabling them to make a variety of goods.

Such cases leave guardians of the domestic plants with little to cling to in their efforts to remain viable. Production managers seem relieved that the company’s new dedication to customer service makes U.S. plants desirable in their ability to get goods onto the shelves of store quickly. Yet while delivery from overseas sites may be unreliable, the

2 However, there is a limit to the efficiency that is desirable from the perspective of the stakeholders of local plants. Only a precise degree of added efficiency will translate into a gain for all concerned. A production manager explained that if each factory becomes three to four percent more efficient, they will have to close one or two of them, due to excess capacity.
prospect of Mexican sites being used more frequently, particularly in the wake of the North American Free Trade Agreement, leaves managers doubtful about their geographic advantage. Indeed, one company executive cautions the plants from focusing too narrowly on their proximity to markets, asserting that “location close to our customers alone has not shown itself to be enough.”

Representatives of both domestic plants and the parent company are aware that manufacturing in the U.S. cannot compete with offshore labor costs. One executive reinforces this message by warning that if the plants’ only strategy is to be “cost competitive with Sri Lanka, then it’s bound to fail.” The presence of offshore production has exerted downward pressure on apparel wages; they have gone from 80% to 64% of other manufacturing pay in the last 20 years. Still, as the comment above indicates, domestic plants have little hope of matching the wages of developing countries, and might interpret such warnings as suggestions that they focus on offering other assets to the merchandiser.

Yet there is a distinct emphasis on cost minimization in discussions of the new system. In addition to allowing the company to fill orders more quickly and to improve quality, AMS is projected to save the company over $.50 per unit in time (after 2-3 years). This savings will be made possible by reducing spending in the following areas:

- indirect labor - the phasing out of supervisors and the elimination of inspectors
- reduced workers’ compensation costs
- likely adoption of a two-tier wage system in many plants, with the low producers compensated at 80% of the regular hourly base rate
- fewer defective units will make it all the way through the assembly process
- increasing throughput time and speeding delivery is expected to reduce stores’ sellouts and markdowns, and increase their sales
- less reliance on overtime pay, due to the increased efficiency of workers’ time during regular hours

In fact, one executive stresses that when the gains of effects like two day delivery capacity and lower labor costs are calculated, they “all translate into lower cost.” This illustrates the endurance of traditional criteria in the company’s decision making. Minimizing cost per
unit - albeit in the long run - can best be achieved, Levi has decided, by re-organizing
work and changing the reward system. Whether this represents a fundamental shift from
traditional operating principles will be explored in the following chapters.
CHAPTER 4: THE SETTING

The choices each Levi plant has made regarding the composition of teams and the configuration of their shop floor have had far-reaching effects on their employees. The company gave its local managers the latitude to determine the form of teams that would best suit their facilities, as well as to establish a timeline for their transition to AMS. As a result, the amount of training provided and the arrangement of teams as well as many other features of the new system are different from site to site. In this chapter, I explain the layout of the two El Paso plants, and describe their transition from assembly lines to teams. The picture of the setting provided in this chapter sets the stage for the later exploration of the impact of the new system on plant workers.

Levi’s 520M plant, or Airways, as its employees refer to it, is a low, beige building, sitting amid a strip of gas stations, mini-markets, and fast food restaurants on El Paso’s Airway Boulevard. By 7:30 a.m. on a typical weekday morning, over 400 operators are busy on the plant floor, constructing Levi’s jeans. Most work at a frenetic pace and appear to be concentrating intently, despite the noise around them. A tinny sound system plays a.m. pop music, adding to the cacophony created by the hundreds of machines.

Across town, the scene at the 524M plant, or Cypress, is similar. The Cypress plant produces the same goods as Airways, and generates close to the same volume. While there are differences between the way the workplaces function, both formally and informally, they do not immediately meet the eye.

The operators at the each of the El Paso factories produce over 1500 pair of Levi’s 501 and 901 jeans on a typical day. Until recently, most of them stayed at one station while they worked, performing the same task over and over on each piece of material in the bundles that were placed next to their machines. This changed, however, by the spring of 1993, when the plants were implementing Levi’s new Alternative Manufacturing System, replacing assembly lines with cross-trained work teams.

Levi’s El Paso collection of five sewing plants, a finishing center, a cutting
facility and a regional office complex makes the company the city's largest private employer, with a combined workforce of over 4400. In the two plants I visited, almost all of the employees are of Mexican descent, and approximately three-fourths are women. The average tenure in one factory was ten years, and in the other employees had worked an average of 20 years for Levi.\(^1\) In recent years, both plants have begun to hire more men for all types of operations than they used to. Managers believe this reflects the lack of alternatives available since widespread disinvestment has shrunk the El Paso job base. Since the 1940s, the area has been a center of low-wage manufacturing jobs, many involving warehouse work and assembly, and attracting migrant laborers from across the border in Mexico. During the last 30 years, in fact, the population has shifted from being predominately Anglo-American to its current majority of Latinos. El Paso has been home to several large manufacturers' production sites, including the VF Corporation's Lee and Wrangler jeans, and until they moved to Mexico a few years ago, the maker of Farah jeans. Indeed, with the Juarez *maquiladoras* (assembly plants) visible from many vantage points in El Paso, residents are acutely aware of the transient potential of their manufacturing base.

The demise of the union representing the workers at one of plants I visited is indicative of the precarious nature of the apparel sector in recent years. The business agent is the lone staff member for the El Paso Amalgamated Clothing and Textile Workers Union (ACTWU) office, down from a crew of ten several years ago. The impact of the region’s many plant closings as well as the more debatable role of the union’s tactics and strategy in response to changing conditions helps explain the union’s current weakened state. 42% of the workers in the Cypress plant belong to the union, not an unusual density for ACTWU Levi’s plants. All of Levi’s domestic plants (with the exception of one in San Francisco, which is kept open largely to show tourists) are located in "right to work" states in the South and Southwest. In these states, unionized employers must maintain open shops. (This policy mandates that

employees in workplaces with a union presence must be allowed to choose whether they will join the union or not, leading to a "free rider" problem for unions, who negotiate benefits for all workers, regardless of their membership status.)

The Conversion Process

The design and formation of teams in both EL Paso plants was management-led, though to varying degrees. ACTWU representatives did participate in the team selection process and in setting output requirements at the Cypress plant, but the union was not part of the company's planning for the system as a whole. The Quality Improvement Team (QIT), composed of managerial staff at each facility, gathered their staff in October of 1991 to announce that the plants would be adopting a new production system. Managers stressed the need to improve quality and ensure the plants' survival. From there, the two plants followed different paths in the conversion to teams.

Airways

The leadership of Airways wanted their plant to be the first to fully convert to AMS (they missed by one; the Levi's plant in Blue Ridge, Georgia has that distinction), so they set up teams in rapid succession, finishing the conversion process by the end of 1992. Modeling the size and design of their teams after those at the Blue Ridge plant, management decided to arrange teams of 34 operators in horseshoe-shaped formations, with 17 workers positioned around the outside, and the other 17 working in lines that connect the sides of the U. They also experimented briefly with a Japanese inspired kanban system in one of the teams, where bundles were broken down, and single units were passed between operators. However, this arrangement did not last, because it was not comfortable for the operators, and, according to one manager, because the advisor working with the team was not committed to developing an innovative - and potentially unsuccessful - process.

The Airways QIT selected five of the plant's most productive operators to organize the first teams. These individuals posted sign up sheets, conducted interviews with workers, and then formed two teams, which began functioning in November of 1991. The rest of the teams were formed in rapid succession, often
through informal coalescing of operators who were friends and wished to work together. As one might expect, this process left a surplus of the less efficient operators who had not been "picked" (or who were not eager to make the change from the assembly line). Thus the last team to form is composed largely of operators with injuries, older workers and new hires, and the training instructor often works with its members to try to increase their productivity.

The Airways plant has hired over 150 new workers, and continues to rely on overtime to help offset the slowdown in productivity they have experienced after beginning to use teams. In the past, the uneven flow of the progressive bundle system made it possible for operators who worked at the plant's back work stations to finish work and leave early on Fridays. Those in the front, meanwhile, were required to wait on goods which were at various stages of assembly, and had to work overtime most Saturdays. The current system still utilizes overtime; however, the criteria for determining which operators will work overtime has changed, and now, it is the four or five most efficient teams that are often asked to work Saturdays. Airways managers plan to keep about half of the new operators they hired after the introduction to AMS (raising the number of operators from 475 to 550), using attrition rather than lay-offs as much as possible to reduce staff. Furthermore, while the short-term training costs and productivity losses have made AMS appear unprofitable for plants, over the long run it is expected to yield savings which could be used for expanding staff. (Levi projects that AMS will save over .50 per unit over time, although it is not clear how this will be divided within the company.) In the immediate period, managers in both plants seem to feel that buffers of workers will help them cope with the loss of control they feel under the new system.

Cypress

The conversion at the Cypress plant has proceeded slowly compared to the pace at Airways. Management decided to set up a new team every two to three months, beginning by choosing potential team members based on seniority, attendance, and productivity records. A union-management steering committee then held interviews and made their selections. They are aware of the danger of concentrating
the plant's most capable operators on the first teams, and, accordingly, they believe they attempted to balance the selections.

Despite these steps, the transition to AMS at Cypress has proven to be more traumatic for some workers than for others. The average tenure among Cypress operators is 20 years, and many of the senior employees are not as fast as their younger counterparts. Levi has a policy of allowing those employees who have been with the company for more than 15 years - and who are over 50 years old - to produce at a rate of 75% of the plant's usual quota, but one manager explained that at Cypress, they are encouraged to produce at 85%. Company policy notwithstanding, in several instances management has also granted teams' requests to remove slow producers and workers with poor attendance. All of these operators were placed back on the remaining assembly line, and their fate remains uncertain. If particular workers continue to be shunned, the plant could be left with a reserve of the least competent operators once all of the teams are formed. One Cypress manager discussed the possibility of eventually placing the low-producing workers in two teams; he later added that supplemental teams might also be formed of operators who currently work the night shift. These operators would be held to lower productivity standards than the rest of the teams, and would likely receive lower compensation; in fact, the union has suggested that since their efficiency would be around 80% of the standard level, their pay should also be 80% of what other operators receive.

The establishment of separate teams for slow workers is being considered at other Levi plants, since resolving the matter of how to utilize low producers without detracting from team performance has been a major challenge for the company. Isolating these individuals in special teams would both relieve the rest of the teams of the burden to work with them, and establish a financial disincentive for other operators who might otherwise be tempted to let their efficiency slide. It is unclear whether this arrangement would increase the demands placed on other teams, or how members would feel about getting rid of low producers if they knew that be doing so, they would be subjecting them to a permanent reduction in wages. This practice could also signal the beginning of a two-tier wage system for operators at Levi plants, and, in
some respects, it resembles the individual output-based nature of the piece-rate system more than it does the new group compensation model.

At the outset of the conversion to AMS, the Cypress plant hired an additional 100 operators for a new evening crew, since, like Airways management, they anticipate a decline in productivity during the transition period. While the plant previously relied extensively on overtime hours from the regular workforce to meet production goals, they are now able to utilize the night shift when the regular staff falls short. The night shift is especially important to Cypress because job rotation entails the use of too many machines during the day to allow the new hires to work alongside the other operators. In fact, plant managers believe that the shortage of equipment will require that they move some of more experienced employees to the night shift as the conversion to teams continues. While the 100 operators hired for the original night shift were only promised temporary jobs at the plant, it is likely that they will be asked to remain, and will form lower paid, surplus teams as described above. Cypress managers explained that these groups would be used more "flexibly" than the regular teams, and that their tasks would include finishing leftover work in the plant.

Technology and Ergonomics

Levi executives describe the new orientation of the company’s research and development department as an important aspect of the change to teamwork, and one that is still evolving. This department has, in the past, emphasized minimizing labor content through automation and the compartmentalization of tasks. As a result, the plants’ equipment is designed for specific sewing tasks, rather than for all-purpose use. The company claims it is now working to develop a philosophy based on the understanding that machines should be viewed as tools to allow people to work safely and flexibly.

The change to teams has required that plants rearrange existing work stations, as well as bring in new machinery to facilitate cross-training and job rotation. In the last two years, the plants have also been purchasing equipment that meets ergonomic standards, in attempt to reduce the frequent work-related illness and injuries.
experienced by sewing machine operators. Briefly, ergonomics involves fitting the task or machine to the person, rather than making workers adjust to equipment. This emphasis on health and safety can be traced to Levi’s Safety and Fit Education ("SAFE") program, initiated in 1991, prior to the introduction of teams, but ergonomics is frequently cited by managers as part of the team concept. SAFE expanded the number of medical staff in plants, who educate operators about prevention and detection of illness and injury. As is often the case, illness rates in many plants rose dramatically in the initial period of the SAFE program, since employees were encouraged to report pains they may have been ignoring. The Airway plant, for example, lost between 50 and 60 operators due to work-related illness and injury during the six week period when SAFE started, and, by the end of the first two months, 80 Airways employees were on medical leaves. While these numbers are the result of Levi’s efforts to reduce health and safety risks, the rise in reporting led the Texas Workers’ Compensation Commission to include Levi in their list of the state’s most hazardous workplaces.

The Airway and Cypress plants have both moved away from the long lines that characterize the traditional garment factory layout. There are 40 steps required to make a pair of jeans, but 100 operators formed the factories’ assembly lines of 100 operators. The plants previously grouped several stations for the same operations together, so that bundles of fabric pieces could be moved through functional areas along the line. This segmentation left operators unable to see how production flowed beyond their section of the plant. While this was not problematic given the narrow deployment of labor and technology in the assembly line, visibility and peer monitoring are essential in team system. Operators who see bundles concentrated somewhere, or notice that a co-worker is about to run out of work are better able to intervene to balance the production line.

At Airways, the horseshoe formation described earlier affords operators a view of more work stations than they could see while working on the assembly line. The Cypress plant, on the other hand, has deployed two different layouts. Of the six teams formed thus far, two use a U-shaped formation like Airways, while the other four
arrange operators in four consecutive rows. These work groups are referred to not as teams, but as "mini-lines." Their four rows have eight operators who assemble adjacent segments of the garment. For example, work on the front of the jeans is done by a mini-line of operators who work next to one another, and this group passes on their bundles to the next mini-line in the sequence. As the term suggests, the mini-line arrangement is another aspect of AMS that preserves some of the feel of the assembly line.

Both plants' management expressed their desire to have new equipment for job rotation, as well as to ensure that operators work on machines that are ergonomically sound. At Airways, they were able to add one million dollars worth of new machines to the floor during the first year of AMS. Rearranging the existing work stations and adding new equipment (as well as the 150 new operators) to the floor has created a crowded floor space; the plant has reduced the square footage per worker from 90 to 75 (Levi's optimal allocation is 100 square feet per worker). Each team has 42 machines for 34 workers, a ratio of 1.2 to one, and management's goal is 1.5 machines for every worker. At Cypress, however, managers explained that they have not had the funds to purchase many new machines, and cite lack of equipment as one of their chief problems in implementing AMS. Nonetheless, this plant is also currently utilizing 90% of their floor space, and some of the operators have experienced new injuries which managers attribute to the decline in the range of motion they are able to exercise when they dispose of (pass along) goods after performing their operation on them.

Although the teams incorporate many of the indirect tasks necessary for production, some of the highly skilled sewing tasks remain external to them. The most complex equipment in the plants are the machines used for the pockets and trim on the backs of the jeans (the "DB I" and "DB II machines;" Design Back I and II). These machines are kept in a separate area, away from the teams, and they are not part of the cross-training scheme. Becoming proficient as a DB I or II operator takes more time than most other sewing jobs, due to the complexity of the machinery. Operators must use manuals written in English, and tend two or three machines at
once, sometimes lifting heavy parts in the course of their work. Employees hired for these positions generally have a high school degree, and are predominately bilingual men, who receive a higher base wage than most operators.

The weight of tradition and the need to restrict changes in work arrangements to those that fit with existing equipment prevents managers from making human resource development central to job design and task assignment. Operators’ deployment is decided still according to machine availability and location, and thus does not feel empowering to workers. At the Airways plant, for example, the operators are to learn the tasks to either side of their original work station. A manager at Cypress also explained that they assign new hires to operations after assessing their physical traits, like arm length and height, rather than consulting with people about their preference and capacity. The division of teams into the eight-person mini-lines was part of both plants’ management effort to cope with the unwieldy size of 35 person groups, and, while this size does seem more conducive to interpersonal communication, it retains some of the compartmentalized nature of the assembly line. Though efficient, these practices continue a pattern of assigning tasks primarily on the basis of technical considerations.
CHAPTER 5: JOB CONTENT AND WORKING CONDITIONS

Direct testimony from workers and managers within the two Levi plants allows us to compare first-hand accounts of how the team structure has changed work to the ideal type presented by the company. The problems employees have encountered demonstrate the difficulty of imposing an adaptable, interdependent system on factories where job design has long been dictated by rigid technology, and where success is measured by the volume of output.

In this chapter I report how the adoption of teams has changed the demands placed on Levi operators and managers, as well as how it has effected plant performance. This section places employees’ statements in the context of other empirical findings on new work arrangements, and draws on theories concerning worker participation and job satisfaction. I analyze the significance of these changes in light of their effects on long-term job security and the daily work environment for plant employees. I consider whether AMS does seem to signal a departure from tradition, and may offer a means of reversing the flow of apparel jobs offshore, or whether it translates into a one-time revision of past practices.

I describe operator and managers’ new job duties and skill requirements in several parts. First, I discuss the expansion of workers’ responsibilities into areas formerly reserved for specialists. This includes inspection and repair tasks, as well as the shifting of supervisory duties to production workers. I discuss the ramifications of self-directed work teams for supervisors, and then consider the changes in plant performance that can be attributed to AMS, examining lead time and attendance. I next cover human resource policy, regarding benefits, hiring practices, and compensation. I then describe the demands for competency in more sewing operations, and the training that has been provided for both new and experienced operators. I analyze some of the reasons managers as well as operators offer for the difficulties they have encountered in converting to teams. Finally, I report on the new forms of employee leadership and involvement that Levi’s team system entails, both on and off the production line.
Parallel Duties: Inspection, Repair, and Supervision

One of the long-term goals for the work teams is a reduction of indirect or "non-value-added" labor, such as inspectors and supervisors. In the following section, I describe the four main non-sewing areas that have been incorporated into operators’ jobs.

Inspection

Shifting inspection duties largely to the operators represents Levi’s intent to build in rather than inspect in quality. The rapid pace and narrow focus that characterizes garment assembly has been modified by linking pay to the quality of goods teams produce. Individuals now have a stake in assuring that the goods they work on are not found to have more than the maximum allowed defects (three per hundred units). Both plants have improved their average ratings in the last year. The rate at the Airway plant has gone from 3.5% to 2.5% and the rate at Cypress has been lowered from 3.9% to 3%. AMS uses a separate auditing rather than inspecting process; every two teams shares an auditor, who checks five units out of every 60 unit bundle they produce.

In the traditional system, plants had one inspector for every 30 operators. Goods were checked for defects at the end of the line, and sent back to the appropriate operator for repair if needed. (Each operator scans a bar code on a ticket that accompanies each bundle she works on, which is how goods are traced back to her work station.) Operators were not encouraged to look for flaws; in fact, the piece-rate pay system gave them a financial incentive to let damaged goods pass through to the next station. While mistakes were eventually traced back to the responsible party, they did not affect an individual’s pay. For the operator who discovered errors in a good she was working on, sending it back for repair would reduce her own piece-rate pay for the day, and the satisfaction from knowing that she had saved the plant time and money would have to serve as her only reward.

Repair

Similarly, under AMS there is one mechanic assigned to every two teams, whose pay is not tied into team output. Management in the Airways plant is
contemplating possibilities for making mechanics’ pay contingent on team performance, as a means of creating more accountability. At the Cypress plant, however, managers believed that the mechanics already feel obligated to their teams, and are accordingly more efficient than they were in the traditional system. Previously, each mechanic was only responsible for fixing one or two types of machines, which contributed to the bottlenecks in the assembly line when the appropriate mechanic was not available to fix a machine.

Managers at the Airway plant would also like to teach operators about basic repair and preventative maintenance, to help reduce the disruption caused by mechanical failures. The Japanese lean production model as well as the Swedish sociotechnical approach considers teaching production workers mechanical skills to be an important aspect of the multi-skilling process. This area of training is designed to take advantage of workers’ knowledge about the idiosyncracies of their machines; to reduce equipment and worker down-time, and to eliminate a layer of indirect labor. At Levi, however, the mechanic position recently was up-skilled by institution of a high school degree requirement, which suggests that they feel the job’s duties will remain off limits to the generally poorly educated production staff.

In the assembly line, operators were allowed to wait 20 minutes for their machines to be fixed, and then to clock out, or to work at a modified pace, if her machine allowed. Managers lament the inefficiency of the old repair system, in which the operator was slowed down or even incapacitated or until her machine was fixed. To make matters worse, according to one executive, operators periodically made false claims that their machines were broken, in a "game" they played to buy relief time. In the current system, they must find another station to work on when their machine breaks, as unproductive time may hinder their teams’ ability to reach quota. One operator explained that she misses the ability to decide when she will slow down, and recalls that requesting a machine repair enabled her to do this: "Before, if your muscles got sore you used to be able to fill out a slip, and get a coupon, and go slower. Now, you have to get other people in your mini-line to help you with your quota."
Supervision

Both plants reduced managerial staff after introducing teams, and plan to make further cuts as the teams become more self-sufficient. At one plant five supervisors and one line manager have left, and at the other, four supervisors and one line managers have left so far. These employees were offered a buy-out package by the company, which the remaining managers believe gave some of those who left an opportunity to pursue schooling or to retire early. It is difficult to surmise how these individuals felt about their decision to leave; given the labor market conditions in El Paso and the financial limits of the buy-out, it seems likely that at least some would have preferred to stay at the plant. In any case, after this attrition, the ratio of operators to supervisors has increased at both plants, from 47:1 to 68:1 at the Airways, and from 55:1 to 70:1 at Cypress. There are currently two teams assigned to each supervisor (called advisors or coaches at the plants). Ultimately, when teams become fully self-managed (in three to five years, in several managers estimates), the remaining supervisors will be required to become operators on a team if they chose to continue working at the plant. Outside of their teams, operators’ performance are still monitored, but without the layer of supervision that traditionally directed shop floor activities. The QIT described earlier will continue to function at both plants, judging the merit of workers’ suggestions and making strategic decisions. While Cypress, the union plant, has a steering committee with worker representation that has a voice in policies affecting the day to day deployment of labor (including pay, quota levels, and team composition), Airways does not have a formal mechanism for including workers in such discussions. Managers from both plants cite plans to involve workers in the hiring of teammates, once the new system is running more smoothly. In neither plants has participation in matters such as investments in new technology been extended to the operator level.

Levi nonetheless felt that supervisors in all of the plants needed to be prepared for self-directed workers. The company required its managers to attend three and one half days of "empowerment training," which addressed the need to break from hierarchical, omniscient styles of management. This training as well as the "Working
in a Changing Environment" sessions, provided for the remaining supervisors, aim to replace the uneasiness some managers may feel about relinquishing control with a recognition of the value in having an "empowered" workforce.

**Management’s Transition to Team Work**

Managerial staff at both plants report difficulty adjusting to the new demands on them. M., an advisor at the Airway plant, spoke of feeling an increase in stress from the ambiguous nature of her new role, as well as from operators’ frequent complaints. She also described problems creating continuity in team or cell leadership, since people didn’t usually last for more than two or three weeks. (Plant management suggests that leaders serve for one to two months.) M. explained that operators don’t want their cell and team leaders to be considered part of the team because they are counted as fully functional members when the group’s quota is set, despite their reduced productivity. Further, her teams treat these leaders as if they are omniscient managers rather than peer coordinators. M. feels, as do most supervisors, that overcoming people’s desire to be told what to do has been the most difficult aspect of the change. She was in the habit of reminding them, on a daily basis, that the plant could close at any time, a warning she feels falls on deaf ears. Finally, M.’s attempts to get operators to serve on task forces have been unsuccessful, and this has also been demoralizing for her.

A line manager (line managers are responsible for overseeing production on the entire plant floor) in one of the plants shares M.’s view of the increased burdens and "headaches" wrought by the change. She said that the demands on her have grown, citing the need to stay late often, to finish work that she is unable to take care of during the day because of frequent meetings.

These comments suggest that Levi managers may be experiencing "labor intensification," a claim made by Ian Taplin in his study of the use of flexible manufacturing techniques in Southern garment factories. Taplin found that stimulating workers to solve problems on their own and become more adaptable - while still meeting order deadlines - had created a new set of pressures for managers (15). While Levi supervisors felt that the traditional system was stressful as well, their role in
assuring that deadlines were met was more clearly defined. The extreme rationalization of steps in the assembly line left individual workers unable to be of much assistance in monitoring the flow of parts, and made managerial coordination of production essential (Bailey 1989, 11). Currently, Levi supervisors feel unable to make a smooth transition to the team environment, and, like the workers, several are fearful that the new system will cause the plant to lose orders or even go out of business.

Managers from both plants, as well as from higher levels in the company, have identified operators' aversion to change as one of the primary obstacles they face in implementing AMS. Some feel this resistance is irrational, and assume that operators cling to tradition out of fear of the unknown. However, several scholars have argued that people who have routine jobs often focus their energy on activities outside of the workplace, and don't necessarily welcome new demands being placed on them at work (Fuchs Epstein 1991). Managers attribute some of the operators' inflexibility to their advanced age and tenure, as well as to human nature, which they believe predisposes people to prefer what is familiar to them. One supervisor believed the solution to this dilemma was to hire younger, less experienced workers, who he could "mold" to his liking. The same advisor commented that the difference in jobs stems from the fact that "the fatigue factor isn't there any more. The stress comes from adjusting to the change."

Performance Outcomes

Lead Time

The long lead times and the undifferentiated nature of the goods produced in most of Levi's U.S. plants has allowed them to concentrate on achieving competitiveness through means other than responsiveness. The conventional strategy for keeping the domestic factories viable - given the offshore options available to their parent company - was to minimize labor content, so that it represented a small fraction of total costs. Labor has been reduced over time to 15% of the cost of producing a pair of Levi's 501 jeans, and the domestic plants are able to make jeans for Levi's more efficiently than workers anywhere else in the world.
Given the company’s current emphasis on timeliness, flexibility, and quality, however, conventionally defined productivity is not sufficient reason to continue using a factory. Levi’s goal is to be able to fill orders within two days, which increases their need for plants that are able to produce a variety of goods for quick delivery. The proximity of domestic factories to the U.S. market is still an asset that cannot be matched by offshore sourcing options; shipping orders from factories in the Caribbean, for example, takes between 30 and 60 days. This suggests that Levi plants in the U.S. are well-advised to attempt to build on their built-in geographic advantage to the company by speeding through-put time.

By shrinking the size of the group responsible for getting bundles through the steps of production, and by linking teams’ compensation to the completion of entire units, AMS has been able to reduce the time it takes to process orders. Both El Paso plants have reduced lead time, from nine to five days, and from five to two days at Cypress. (The discrepancy is due to the fact that the Airways plant does not have its own cutting facility, which lengthens the time they take to fill orders.)

**Attendance**

The new system has reduced absenteeism, long one of apparel firms’ most intractable problems. Job rotation is described by some plant managers as a means of combatting the stress, boredom and fatigue associated with sewing tasks, and they assume there is a relationship between the quality of work for operators and absenteeism. Frequent absences, like repetitive motion injuries (and not unrelated) flowed from the organization of piece-rate assembly line work. The narrow design of sewing jobs was the apparel industry’s attempt to minimize the consequences of

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1 Levi is considering the use of alternative accounting measures that assign a value to such factors as lead time, quality, and process innovation. The traditional system of Standard Allowed Hours (SAH) is being revised to reflect the slowing down of work and the importance of quality. However, the company’s Operations Department Controller feels that the uncertainty involved in placing a value on variables such as innovation would create problems for a new accounting system. He advocates using a more qualitative method such as a plant "report card" instead.

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absenteeism by training a number of operators in performing the same task on the assembly line, and by limiting the responsibilities of most workers to one operation. Assembly lines have been called "robust" systems because they can continue unabated, even with many workers missing. With teams, despite the fact that 35 is a large size compared to what is found in most manufacturing work groups, operators may significantly reduce their team’s chances of meeting quota if they are absent often. AMS can thus be said to be "fragile," since, like the Japanese lean production model the term has been applied to (MacDuffie and Krafcik 1991), plant performance is highly sensitive to the precise mix of workers and technology available.

Workers and managers at both plants explain that pressure applied by teams is the primary reason for the decline in absenteeism since the introduction of AMS. Many of the operators expressed a newfound reluctance to miss a day of work because they are aware of the impact it would have on their group, which, unlike Swedish-style teams, lack enough versatile members to fill in for missing workers. One operator looked at me quizzically when I asked how absences were handled under the team system, responding "I don’t think you can be sick now."

The Cypress plant is changing the attendance policy to allow 10 absences per year instead of 15, in a sign that peer pressure is not effective enough in management’s eyes. At the Airways plant, however, managers felt confident that they would continue to reduce absenteeism without resorting to a new attendance policy; absenteeism has gone from an average 2% to 1.5% since the plant was converted to teams, while it remains at 5% at Cypress.

Human Resource Policy

Employee Benefits

Levi’s has long featured paternalistic human resource policies, and the domestic plants have increased the number of programs and services they offer in recent years. A combination of the company’s avowed "aspirations," concern for protecting the Levi’s brand name and corporate image, and a pragmatic assessment of the benefits of fostering commitment all help explain the relatively generous benefits provided by Levi’s plants. These consist of education offerings, counseling, child care vouchers,
more comprehensive health coverage and vacation time than most garment factories offer, on site medical staff and instruction in health and safety. In addition, practices such as the recognition of employees birthdays, the distribution of turkeys at Christmas, plant newsletters, picnics, and softball teams all suggest a workplace that counters the industry’s sweatshop image. In fact, several operators told me that their friends are envious or resentful of them for working at a Levi plant; one woman explained that when she is among new acquaintances, "I don’t like to tell them I work at Levi’s, because they’ll say I think I’m better than they are."

The difficulty displaced operators encountered finding new jobs after the 1990 San Antonio plant closing convinced the company that it had overestimated the employability of their workforce. Plants now offer on-site ESL, citizenship, and GED classes. In addition, they have an Employee Assistance Program to provide counseling one and one half days per week, and since AMS began, more workers have sought counsel in at least one plant.

**Hiring Practices**

While plant managers spoke of their interest in upgrading their current staff with ongoing education and training, they felt that the new demands on operators was changing the criteria they used to select new staff. More education (a high school degree) and the ability to speak English were cited, and they also spoke in more general terms of the need to hire good problem solvers and communicators. At Cypress, one manager believed that in the last two years they had already begun to hire more high school graduates than in earlier years. He contends that "it’s hard to teach someone with a sixth grade education to have a broader perspective; to understand the business; to self-manage." The regional manager, however, cautioned that employment discrimination law prevents plants from requiring operator a high school diploma unless it can be proven that one is vital for performing an operator’s job. If this message is not communicated to plant-level management to another, it could have far reaching implications for the composition of Levi’s plant staff.
Compensation

Regardless of whether they work in a factory like Airways or Cypress, owned and operated by a large manufacturer, or in a small contract shop, garment workers are paid according to their output, in a faithful execution of Frederick Taylor’s scientific management principles. There is little development of the employee-employer relationship beyond the parameters of their financial agreement. As Bailey (1989, 6) has pointed out, sewing machine operators are treated by their employers almost as subcontractors, rather than as members of the firm. The typically low base wage gives workers a strong incentive to produce enough to earn bonus pay, and reinforces their feeling that their worth to their employer is contingent on their contributions to output. This identity can thus be reformed on a day-to-day basis, in response to variations in an operator’s performance. Levi stands out in this respect; its domestic plants, at least, have low turnover by industry standards, and attempt to cultivate a distinct identity in employees as members of the Levi family. However, until the introduction of teams, they relied on the traditional individual-based piece-rate system.

The previous policy in place at the El Paso plants paid operators at Airways a base wage of $4.50 an hour, and the Cypress operators were paid $6.32 an hour. They received additional pay for the units they completed above the baseline level. The piece-rate system enabled some operators to earn between $8 and $10 an hour under the assembly line, according to the piece-rate paid for their operation.

However, the productivity of individual workers was not yielding positive results for the plants as a whole. The fragmentation of steps and individuals’ uneven pace led to accumulations of partially complete garments between work stations, which operators were neither trained nor compensated to help alleviate. Levi operators are now paid an hourly wage, with incremental bonuses for their groups high quality output above the base level. Like the physical layout under AMS, the details of plants’ pay policies were left to plant managers to formulate, with the approval of their regional management. All Levi’s operators, however, benefitted from the buy-out ACTWU negotiated with the company. Levi’s is making payments in three installments which total one year’s worth of the balance between each employees’
average hourly wage under the traditional system, and the new base rate wage. Aside from the buy-out, the two El Paso factories have adopted different pay systems, which reflect both their managers’ prerogative and the role played by other plant actors, particularly the union at the Cypress plant.

Airways’ initial experience with teams convinced plant management that the hourly wage alone did not provide sufficient motivation for operators to produce. Once the piece incentive was taken away, workers had little reason to perform at a fast pace. During the first months after AMS was adopted at the Airways plant, for example, most teams were not yielding the desired output, and the Airways plant was suffering from declining productivity. After Airways had to cede the production of several thousand many units to other Levi’s sourcing sites, management felt it was necessary to strengthen the incentives behind the new pay structure.

The current system at Airways (as well as at Cypress) transfers responsibility for production budgeting to the teams. The budget provided to teams is based on management’s calculations that they can afford to spend $1.17 per unit for direct labor (a figure that is derived from the budget they are allotted by the merchandiser. The team is allocated a budget based on productivity goals, which have been set at 85% of the 142 bundle amount, in attempt to improve quality and reduce repetitive motion injuries. Teams are offered a group piece-rate incentive of .10 for every unit that is produced above the 85% amount (as long as the goods meet the quality requirement of less than 3% DHUs).

Teams in both plants are expected to decide how they can best use the budget to maximize earnings - for example by renting an utility for the day if they are behind; or by paying themselves to work overtime to produce more. This is designed to make operators accountable for the deployment of their team, and gives each member a stake in using team resources efficiently.

Since teams at Airways have been not producing the quota level on a regular basis, operators have been receiving the base pay of $5.50 per hour, rather than the wage of $7.33 per hour, which management has suggested is within reach of the teams. While the $7.33 wage is based on the assumption that teams have 34 workers
who will work 40 hours each week, the teams rarely have perfect attendance in a week; they must cope with absences and other problems that arise, and operators’ re-skilling in different tasks takes time. Individuals on the teams have, in fact, been required to pay for the time required for individuals’ learning curve, which may help explain operators’ reluctance to have team members diverted by activities such as cross-training. The short-term costs the teams associate with having members spend time away from their machines has constrained their ability to become more versatile as a group. The methods used by management to elicit worker’s effort have thus far not been fundamentally altered by AMS; at this stage of the implementation, group peer pressure has been added to the traditional means of pay and threat of layoff.

At the Cypress plant, operators are paid a higher hourly wage than at Airways, ($6.82 vs. $5.50), but, like Airways, they are offered a group bonus if their team produces above the quota level. Thus far, three out of six of the plant’s teams have been consistently producing enough to attain a .25 per hour bonus for each worker, raising their wage to $7.07. The labor costs allotted per unit are slightly higher than Airways ($1.20 per unit) and the quota is lower. However, meeting productivity goals has been difficult for some of the teams, and several operators reported that they were warned by management that there would be layoffs if their performance did not improve.

**Gain-sharing**

In the two years prior to the adoption of AMS, Levi’s implemented gain-sharing in their non-union domestic plants. Gain-sharing has been suspended during the initial period of AMS, but individual plants are formulating revised plans. While gain-sharing is typically a means of encouraging workers to identify with the performance of the establishment where they work, a company executive explains that Levi would like to create a more sophisticated framework in the future. The company envisions using "concurrent circles of compensation," beginning with proceeds from team and plant level performance, and then rewarding employees whose plants devise efficient linkage systems with other divisions of the Levi "manufacturing cluster," and lastly, circle connecting operators to the performance of the company as a whole.
Operators’ Views of the New Compensation System

While the individual piece-rate system is widely criticized for being dehumanizing and promoting unhealthy work habits, the operators I spoke with were largely nostalgic about the old system. It clearly provided a strong financial motivation for those willing and able to work at levels of 120 - 150% of the base level efficiency. These individuals, who earn between two and four dollars per hour less now than they did in the assembly line, feel that they are under as much or more pressure to perform in teams, but are no longer compensated accordingly. The dissatisfaction with the new compensation scheme colors workers’ attitudes about the new system; in most interviews, it was the first issue raised when I asked operators how they felt about working in teams. Operators regret that they have lost both the capacity to determine their own rewards each day and in some cases, experienced pay cuts.

Several operators described pay as the primary way they have always derived satisfaction from their jobs. One operator stated plainly that the pay issue was foremost because "most of us are here because we need the money." D., a 18 year veteran of the Airway plant, said that pay was an even more important stimulus under the team system; she was now aware that if she did not maintain a steady pace all day, her own as well as her team members’ earnings might suffer. As one supervisor recalled, many workers initial reaction to the new system was, "why should I kill myself for $5 or $6 an hour?" As one operator summarized, the change to teams has amounted to "more work for less money" for many of the staff.

Some workers are confident that are doing their share to meet the production goals, but experience stress nonetheless in the team system. The pressure for even highly competent operators stems from their worries that their less able co-workers will make them suffer losses in earnings and, in at least one case, from management threats of layoffs if their team did not begin to produce more quickly. The efficient operators expressed resentment over what they saw as punishment for their competence; they were required to work even harder, sometimes at several different operations, to compensate for the slack created by the slow producers.
This shortcoming is ironic given that Levi's own training curriculum discusses Psychologist Frederick Herzberg's principles of motivation, which include income and job security. These and other ingredients were believed by Herzberg to be necessary to assure workers' motivation; alone, he did not feel that were enough to stimulate workers, but, he argued, their absence "demotivates" (cited in Perrow 1986, 91).

Payment by group piece-rate also continues to offer incentives based on volume, and imposes a price on teams for devoting time to activities that fall outside of the strict parameters of the production process. For example, engaging in extensive cross-training and discussing topics other than immediate problems are both difficult to justify for teams concerned with meeting immediate output requirements. The group piece-rate is effective in helping reduce the build-up of partially completed inventory, as well as in improving quality, yet it retains the logic of the individual-based incentive structure.

**Job Design**

**Training**

The introduction of job rotation has required plants to re-train experienced operators as well as adopt a new method of instruction for recent hires. The goal is for every individual to be able to perform three operations to make possible a flexible deployment of labor. At the Airways plant, for example, remuneration for newly hired employees is attached to their competence in multiple operations. Operators hired since AMS began must attain 100% efficiency on one operation, and 80% on two others to earn team pay. While the plant still employs several instructors who work with new employees, some of the responsibility for training has been transferred to the teams. This has enabled the plant to cut 25% off of the previous period allotted for learning only one operation in the assembly line. In addition, the head instructor at one plant feels that her staff no longer insists that operators learn one "right" way to perform tasks, but instead urges them to find sewing methods that feel comfortable to them. All plants have ceased using Levi's renowned blue books, developed for training by engineering staff.
For experienced operators, the cross-training process is less structured; these workers learn mostly from one another, based on the requirements of their team. If a team needs another inseamer, they must decide who will be trained in that skill, and then agree on a person who will be able to cover that person’s former operation. Thus, once one operator is moved from her station, a chain of cross-training is set in motion. The decision to stop working in order to be trained in a new operation is not made as easily for some workers as it is for others. This is partly because all tasks are not equivalent in their degree of difficulty and the time it takes an operator to become proficient. There is a financial incentive for new hires to learn those operations with the shortest learning curve, so that they will be quickly raised to the team wage. Workers who perform the most challenging operations often have difficulty leaving their work station to be cross-trained, because their team may not have anyone capable of filling in for them, and the group is wary about forsaking short-term output in order to develop its members’ skill base. Any rotation that occurs for several of the inseamers, for example, is to other teams, where they perform the same task, since each team often only has one inseamer, and their production schedule may be easily disrupted by their absence.

**Interdependence**

While the low producing workers are under increased pressure to produce as team members, operators who were enjoying high earnings in the assembly line often feel that their pay should not be contingent on the performance of teammates, whom they have little control over. Several operators at each plant expressed the desire to move to other teams, but were not hopeful of the prospects. There is an official procedure employees can follow if they wish to transfer to a different teams; they sign up, and wait for an opening on one of the teams that they want to work with. The operators I spoke with felt that this option was of limited use, however, since the "good" teams rarely had openings.

The group peer pressure applied in the new system has made individual control more elusive to workers, and lacking the commitment to the purpose of the change to teams, almost all said they find the interdependence stressful. One worker explained
that "I enjoy my work but I don’t like having to worry about what the rest of the team is doing." Workers are also uncomfortable with the pressure to maintain a steady work pace throughout the day. One operator conveyed her unhappiness with this change, explaining that "before, if I wanted to work hard in the morning, but felt tired in the afternoon, I could slow down, and it was nobody’s business. Now, we don’t have any choice." Although workers were aware that they were supervised in the assembly line, they felt they were able to function relatively autonomously. While responsibility for monitoring group output and quality has devolved to workers, they feel more taxed because they believe they have ceded control over their pace and earnings to 34 team members.

One general goal of team systems, particularly as practiced in the Swedish sociotechnical approach, is to make the division of labor less fractured, so that goods and services represent a collective process instead of merely the sum of a series of discrete steps. Levi’s own curriculum used for the plants’ team work training declares the company’s commitment to overcoming "specialized, fractionated, repetitive and routine" task assignments. The "Flying Starship" handbook stresses the need to create "larger, enriched, relatively whole pieces of work" (Lytle and Weisbrod 1989, 18-19). Yet, as practiced, AMS does not encourage individuals to move around and spontaneously collaborate, and, while operators are no longer narrowly trained specialists, the nature of their work remains unchanged. They still perform one, discrete task on every piece in a 60 unit bundle, and then move the batch along to the worker positioned at the next step in the sequence. This model of teamwork corresponds to Charles Perrow’s description of "co-acting," groups which he says foster concurrent - but still individualistic - behavior (1986, 92).

Those workers who have enjoyed learning and performing other operations attribute this to the reduced monotony and sense they gained that "the day goes faster now." Several operators who felt restricted by the scarcity of others who could perform their job said they would like to learn other operations. These individuals felt that becoming more versatile would allow them to contribute more to their team, and one cited the appeal of greater variety in fighting boredom. There was little
anticipation of job enrichment, however; as mentioned, tasks in the teams are as narrowly prescribed as they were in the assembly line.

The standardized goods produced by the El Paso plants helps explain why their teams are not exhibiting the features described in the company literature. The purpose of cross-training and semi-autonomous teams is to ensure that the domestic plants have the capacity to take on new designs without disrupting the entire flow of production. The steady demand for the basic jeans they produce has given the El Paso plants little need to vary production steps thus far. Since the equipment they use is designed for traditional, "fractionated" tasks, they have not had the opportunity to put their flexibility to the test. The importance of establishing adaptability may therefore be somewhat abstract to workers and managers at this stage, and it remains to be seen how they will fare if their ability to innovate is put to the test.

**Soft Skills**

Levi realizes that individual operators may have work habits or preferences that, left unchecked, would interfere with their group’s success. Accordingly, teams are to engage in ongoing consensus-building, both on and off the plant floor. To help workers make the transition from performing their jobs in isolation to interdependence, each employee is given 40 hours of training in "soft skills." This instruction consists of practicing presentation and communication skills, learning to run meetings, and developing problem solving techniques. Managers hope that this training will equip operators to interact constructively on the plant floor, and to run effective meetings off the floor as well.

At one plant, however, they are having trouble even providing the prescribed training course for all of the teams. In their rush to convert to AMS, they began sending groups of four instead of entire teams through the training at one time, and, postponed the training altogether for the last team. This "team" contains 64 workers, and is the group whose structure most closely resembles a modified assembly line. The team-building aspect of the training seems particularly relevant given the configuration of this group and the others arranged in mini-lines, and the abbreviation of training overall has lead to a predictable lack of cohesion in the teams.
Team Meetings

AMS calls for teams to meet "off line" weekly. However, time pressure as well as the apparently raucous nature of early gatherings has led management at one of the plants to curtail meetings; operators explained that they stopped holding meetings soon after they began working in a team. Many operators from this site agree with the decision to eliminate meetings. They don’t believe that they can afford the time to hold meetings, and explained that when problems arise that can not be resolved on the floor, the parties involved go straight to the plant manager’s office to settle the matter.

Operators Suggest More Training

Most operators believe that the instruction they received in soft skills was worthwhile, but feel more sessions are needed. All cited the difficulty in communicating with co-workers, and some have chosen to confront one another while others repress the urge, and remain silent. Workers’ comments convey their frustration with communication gaps; one operator said that "I used to say something if I saw someone standing around, but I don’t care anymore." She feels she no power to effect others’ behavior, but does state that more training might enable her to better cope with her frustration. Levi workers’ requests correspond with Appelbaum and Batt’s review of evidence from work reform literature, which indicated that, despite many companies’ emphasis on firm-specific, technical training, "employees and managers indicate a much greater demand for training in process and behavioral skills" (99).

Many workers cope with their inability to carry out "self direction" by transferring responsibility for conflict resolution to their supervisors or cell leaders. At one plant, problems are often taken directly to the plant manager for arbitration. One cell leader there told me that he handles conflicts by informing his supervisor, who then speaks with the line manager, who arranges a meeting among the parties in the plant manager’s office.
Employee Involvement

In addition to team meetings, employee involvement is also sought in Levi plants in the form of voluntary participation in task forces. These groups are usually composed of six operators and one or two managers or supervisors, and the matters they address range from the plant parking shortage to disciplinary action for low producers. A recent accomplishment of an Airways task force was the formulation of a policy to address the problem of low producers. This task force was created at the urging of management, after several workers complained about the uneven performance of team members. They proposed a three step process (warning, then monitoring, followed by improvement or dismissal), which was approved and adopted by management. (The use of such a procedure would not be feasible in the union setting, since it encroaches on contractual agreements.)

Task forces seem to be more functional at Airways (perhaps reflecting the role of the union-management steering committee in addressing many of the same issues at the Cypress plant), though managers acknowledged that they had been asking certain individuals to participate rather than relying on the spontaneous formation of task forces. The meetings’ occurrence during work hours has prevented many operators from joining a task force, and many workers from both sites were not aware of what the task forces did, suggesting a need to disseminate information about their activities more widely.

The focus of task forces and team meetings demonstrate a somewhat problem-centered approach towards employee involvement. The solicitation of particular types of operators to participate for task forces may also influence the issues they address and the proposals they generate. One supervisor stated that she asked the "less critical" workers to serve, and others reiterated the difficulty with having operators who perform the critical tasks like inseaming and banding leave their stations for meetings. Appelbaum and Batt argue that such a selective system is "significantly different than one in which all workers are involved in day to day decisions" (1993, 87-88).
Off-line or parallel vehicles for employee participation have been the subject of some controversy among researchers and labor advocates. Part of this debate stems from the range of roles that these structures may offer workers; there is no standard formula for soliciting employee involvement. While the Levi task forces currently preserve managerial perogative, they may open the way for the development of a more expansive role for employees in decision-making over time. Some scholars have cited this potential as sufficient reason for workers to participate in employee involvement schemes, even those that seem to offer workers limited voice or power (Kochan, Cutcher-Gershenfeld and Verma 1991). However, as Kelley and Harrison point out, the unequal distribution of power in worker-management committees may erode employees trust and weaken their commitment to pursuing a greater role (1992, 254).

**Team Leadership**

AMS is designed for operators to coordinate the flow of production Output levels and the group piece-rate are set by the joint labor-management committee in the union plant, and by management, in consultation with an employee task force, in the non-union site. The workers I spoke with from both sites felt as if output goals and pay levels were issued from above, despite the role they are accorded in the planning process. Production planning for most operators, therefore, consists of contributing to their teams efforts to meet quota.

Each team does choose a leader and four cell representatives, who guide the activities of the others. They serve for open-ended periods, and meet with management weekly to assess their group’s progress in meeting quota. Cell representatives also function as trouble shooters on the floor, intervening when there are bottlenecks, speaking to operators about switching jobs, arranging breaks, and, overall, overseeing the smooth flow of parts through their team. In theory, these leaders rotate periodically, and many operators will be able to serve in this role at some point. However, the practice at both plants was somewhat more static. Like the dilemma they face with leaving their station to learn a new operation, those workers who perform operations which few other team members are trained for feel pressure to
remain at their station. For them, becoming a cell representative is seen as an unnecessary diversion, which could interfere with their team’s ability to meet quota.

**Operators’ Interpretation of the Change**

Operators from each of the plants feel the change has not lived up to its initial depiction by management. Several operators from the Cypress plant indicated that they felt let down when they realized that this change was not going to relieve them of the pressure of assembly line work as promised. One worker recalled that management explained that the change was designed to allow operators to better "balance their personal and professional lives." Another said they were told they would simply not have to work as hard under the team system as they had in the assembly line. This latter operator was prompted by this prospect to sign up for one of the early "mini-lines," and her discovery that teamwork was *more* strenuous than being on the assembly line left her embittered. An inseamer who felt mislead by management’s description of AMS wished that they would follow through on their promise to train others in her operation so she could rotate more, because she feels "the day goes faster when you learn more." This operator was anxious to be on one of the early teams to avoid getting "stuck with" the older workers, who she believes, "don’t want to change."

Workers’ interpretations of the change reflect little appreciation for the company’s stated interest in establishing flexibility to allow for rapid production changes. Rather than echoing the company’s dictum about human resources as the new "competitive advantage" for domestic plants, employees seem to feel more interchangeable and less valued for their unique skills. Workers also regard the new system as a cost containment measure, and some remarked that it could ultimately result in downsizing. One operator who told me that she felt "fortunate to be working at a Levi plant, and even more fortunate to be working in a union plant" went on to confide that she has "thought from the beginning that maybe this company does this kind of work to get rid of workers."
Barriers to Successful Team Work

Managers' use of negative reinforcement in their explanations of the need for converting to teams has not made workers feel they are truly "partners" in the change. Their reliance on coercive tactics to convince workers that it is in their interest to cooperate with the changes, manifested in frequent references to the danger of plant closure and layoffs, has served to distance workers from the change. And perhaps because they also remain less than convinced of the benefits of team manufacturing, managers don't always convey to workers a sense of the possibilities AMS is designed to allow. M., a line manager, recalled that during the announcement of AMS, workers were warned that "even this change is not a guarantee that these jobs will be here in the future." Job insecurity is unlikely to motivate high performance in this case, because workers reportedly do not feel that, as individuals, they have any control over the fate of the plant. From their perspective, it is difficult to embrace a scheme that is presented as a last attempt to save precarious jobs. Workers in this situation are likely to cope with the uncomfortable feelings of vulnerability evoked by refusing to become emotionally invested in the change process.

Finally, the lack of meaningful input from operators - both those in and out of the union - in the creation of the new system may detract from their commitment to the change. Although some of the operators at the Airway plant were taken on visits to other Levi plants with teams in place, their involvement in the overall design as well as in their own plant's implementation of AMS was after the point when most major decisions had been made, and was often informal. The union was not invited to participate in the work reorganization, and has struggled to expand their role throughout the conversion process. Both Levi and ACTWU have their own national task forces on AMS; there is not one committee where leadership from both sides come together. And while Levi executives speak optimistically about the potential for a partnership with the union, the collaboration has been largely on the company's terms thus far.
CHAPTER 6: CONCLUSION

Making a final judgement about the impact of Levi’s new system is complex. In part, this complexity stems from the different priorities and interests of divisions within Levi. In the preceding chapters, I have described how the implementation of the team system has brought both benefits and problems for operators and managers in the two El Paso plants I studied. In this last chapter, I address the significance of the change for the Alternative Manufacturing System for these individuals, in terms of their daily work environment as well as their long-term job security. I also assess the performance of the team system from the perspective of the parent company, given its stated goals and its past practices. I then turn to the views of plant employees, first discussing the pressures on managers and supervisors, and then summarizing the effects working in teams has had on operators in the El Paso plants.

In their evaluation of AMS, Levi executives recognize some of the same shortcomings in implementing the new system that have been identified by workers, such as widespread objections to the new pay methods and subsequent demoralization, and uneven amounts of training among its plants. Yet, while it concedes that these problems may interfere with a smooth transition to team work, the company continues to hold its plants responsible for "getting the units out of the door" within strict time limits. This suggests that some of the objectives Levi had at the outset of this project have been met, and that they are not unduly concerned with addressing the plants’ difficulties. In fact, if judged by criteria such as quality, through-put time, and projected labor cost savings, the implementation of AMS appears highly successful. If, however, the goals such as flexibility and capacity to innovate are examined, the achievements of AMS fall short of the company’s stated intent.

The company’s literature declares the importance of recognizing the creative potential stored in workers, and criticizes the tradition of allowing machines to determine the deployment of labor. Yet it will be difficult to foster innovation in the El Paso plants, given their equipment and product mix as well as the minimal levels of training and worker involvement. These factories’ machines are designed for the
performance of minute tasks, and while the factories have rearranged the work stations to accommodate the teams, the new layout does not overcome the rigid nature of the technology. While they are learning to perform three sewing tasks, workers may not be as adaptable or versatile as the company claims it would like them to be, and the new system may not be succeeding in establishing the foundation for further change. The organization of work stations in horseshoe formations and mini-lines is not adequate to develop operators’ ingenuity and willingness to try different techniques. In the event that new styles are introduced into the plants, workers will have little experience in varying their steps.

Imposing a collaborative system on a production process which still utilizes a series of minutely defined steps has presented an enormous challenge to Levi’s plants. As it stands, the teams in the factories I studied have not been able to function as intended. The production sites are understandably concerned with continuing to meet the needs of the parent company, which remain based on high volume and fast turnaround on orders. This has limited their ability to devote time to off-line activities like soft skill training and team meetings, and discourages deviation from established production techniques. Managers and supervisors are understandably reluctant to encourage employees to sacrifice immediate contributions to output in order develop the less tangible capacity to innovate. Since demand for the jeans both plants produce is steady and their managers do not foresee acquiring orders for fashion-sensitive goods in the near future, the need to become more flexible remains somewhat abstract. This has contributed to an emphasis on the mechanics of setting up the teams, to the neglect of building employees’ group process skills and to making their participation in decision-making a priority.

Plant managers are sent somewhat contradictory messages from corporate headquarters. They are to invest time and resources in hard and soft skill-building, but they must not disrupt their production schedule. Local managers may believe that the team system has the potential to increase their long-term viability, but they feel a more urgent need to avoid losing business from the parent company.
A number of consistent themes emerged in my discussions with operators from the two plants. These views held by operators are in stark contrast to the image of AMS presented in company literature, as well as by some plant-level managers, who exhort the benefits of a more relaxed pace and varied jobs for operators. Heightened stress levels and dissatisfaction with the new terms of compensation prevailed in both plants. Workers attribute this to the shift from a system in which they had control over their own output and effectiveness, to one wherein each individual’s workload and compensation hinges on the performance of 34 team members. Workers’ interpretation of the reasons the change was made, as well as their lack of formal involvement in plant re-design, colors their attitudes about its implementation.

Ian Taplin contends that new work arrangements in garment factories often "merely reconfigure" workers’ skills, and that they are designed to achieve wage depression and "productivity increases without overt management supervision." (14, 31) As implemented in the Airways and Cypress plants, team manufacturing has increased the breadth of tasks operators perform, without thoroughly developing their depth of knowledge and power. Not all jobs (particularly those entailing technical expertise) are included in cross-training, perhaps because management feels the investment in providing instruction for them would be prohibitive. And while cooperation is necessary for the Levi teams to function, the content of individual tasks has not changed. The group-based pay incentive has lowered the earnings of many workers, and is widely blamed by operators for creating dissent, and for generating more performance pressure than they felt in the traditional assembly line. Insufficient training in group process skills like problem solving and communication have left teams poorly equipped for self-management and uncomfortable with interdependence. Their members still look to supervisors for leadership, and have become disenchanted with the idea of resolving conflicts on their own.

The ability of operators to contribute to their team is still judged by relatively traditional measures: speed and quantity. This increases the pressure on slow workers, often older women who have over 20 years of experience at the plant, but who are no longer able to match the pace of their younger counterparts. They feel they are now
under scrutiny from their peers, whereas in the assembly line they were only accountable to management - and themselves.

Most operators regard the change as a cost cutting and quality enhancement measure, and modest preparation for new practices such as job rotation and problem solving has perhaps confirmed their doubts about the company's commitment to worker empowerment. The regular incidence of plant flight, both by Levi and other American companies, and managers' frequent reference to closing as a means of gaining workers' cooperation with changes in work rules have also left operators detached and cynical about company-lead changes.

The goals embedded in Levi's new system do not guarantee that domestic plants will be instrumental in its implementation. The company's foremost desire is a production process that will allow it to respond quickly to demand and save money, not preserve manufacturing jobs in the U.S. Aside from their proximity to the U.S. customer base, there is little reason to believe that domestic plants will always be able to meet the responsive criteria more economically than offshore alternatives. Given the indeterminate nature of their future, the best strategy for Levi's domestic factories seems to be to use the new system to enhance their geographic value to the company.

This will require overcoming obstacles to the effectiveness of the Alternative Manufacturing System, beginning with making training and employee participation more integral to its functioning. Even if the company would like to use the domestic plants as a prototype to test the team method, it will need to re-evaluate the short-term time frame it fosters in plant leadership by requiring their adherence to traditional production schedules.

The inability of most operators to make a smooth transition to a collective work process does not mean that the team idea is fundamentally flawed; I have tried to use their testimony to suggest ways that the implementation process could be improved. And despite all of the problems raised in this thesis, the health benefits of job rotation and the potential to effect plant-level policy are two major improvements upon the traditional organization of work for operators. It remains to be seen whether these advances can be starting points for more encompassing changes in the
workplace, or whether they will continue to be the best elements of a system that blends the old with the new.
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