

# **LABOR AND TECHNOLOGY:**

Union Response to Changing Environments

Edited by

Donald Kennedy  
Charles Craypo  
Mary Lehman

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Department of Labor Studies  
The Pennsylvania State University

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## Preface

The major purpose of this publication is to contribute to the body of knowledge which is coming to be known as Labor Studies. A corollary outcome is the promise of enriched instructional materials for use in Labor Education. University labor educators have an important stake in seeing both these purposes through.

According to some, university labor educators inhabit a marginal occupation at best. They package and survey information for their union clients with a high degree of skill and versatility, but they really are "generalists" and command no specific knowledge base.

There are those university labor educators who sensed the need for such a base before this charge was made. They knew that the most readily available materials which they were adapting for labor education programs were originally conceived in a non-labor context: answers to problems posed by management, labor economists, and industrial relations specialists. And it is not necessarily impugning anyone's scholarship to say that when a specialist investigates a problem that occurs to a manager, the outcome, by the very nature of the motivating perspective, will be a management solution, however scientific the examination.

This publication represents a step toward intellectual autonomy. University labor educators, together with their counterparts in union education and research are now determined to define their own problems and to seek the answers to their own questions in as objective a fashion as their joint resources permit. It is in this spirit that this publication addresses the impact of new technology and changing corporate structure and provides an increment to both Labor Studies and Labor Education.

HELMUT GOLATZ, *Head*  
*Department of Labor Studies*  
*Penn State University*  
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## INTRODUCTION

In 1980 General Electric employed approximately 37,000 assembly line workers. By 1990 nearly one-half of those workers may be replaced by industrial robots, according to company estimates. If large computer manufacturers enter the market as expected, the number of robots introduced yearly in U.S. industry will reach approximately 200,000 by 1990. Some industry analysts estimate that 65 to 75 percent of today's factory jobs could be done by robots in 1990. In addition to the robotics revolution, other new technologies are restructuring nearly every workplace. Researchers estimate that new technology will affect as many as 45 million jobs — about half of which are currently held by union workers. Of this number, approximately 25 million workers will be affected in the most drastic way — their jobs will be eliminated.<sup>1</sup>

Yet technology is not a natural immutable force with its own inner dynamic. There is no "correct" way to automate or mechanize any industry. Instead there is a range of options from which to choose. The form, rate and direction of industrial innovation result from calculated decisions made in the privacy of corporate offices which are far removed from the actual scene of the change. Because businessmen select new technologies, their values are expressed in the choices — productivity, profitability, and control of the workplace. But the social costs of unemployment and the erosion of industry-based communities are not found in profit and loss statements and therefore not taken into account in bottom-line calculations.

Unrestrained technology is neither neutral nor random. It is not neutral because its introduction benefits and damages some of us more than others; it is not random because individuals consciously determine the pace and extent of innovation. Nor has government policy in the matter been neutral. There are few public constraints regarding

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1. "Robots Join the Labor Force," *Business Week*, June 9, 1980, pp. 62-76.

## 2 Introduction

industrial decisions on technology. Absence of regulation in effect, then, is support for the decision-makers instead of protection for those adversely affected by the decisions. A lack of federal commitment to full employment, for example, or a policy preference to combat inflation with recession-level interest rates, means that job-displacing innovation normally occurs in the face of moderate to high levels of joblessness in the economy.

### *Historical Development*

Discretionary control of technology, unaccountable corporate structures and a "hands-off" public policy are issues of commanding importance for workers and unions today. Historically, however, workers have faced similar challenges. In his important study of Lynn, Massachusetts shoe workers, Alan Dawley analyzes the origin of industrial factories. Production of shoes under the pre-factory system was limited by the availability of journeymen stitchers in the city and semi-skilled binders who finished pre-stitched shoes in their rural households. This fragmentation minimized employer control over labor and hampered product standardization, resulting in undisciplined, uneven production flows.

Management's solution was the factory system. Huge regimental structures were built to house the steam-driven machines operated by large numbers of semi-skilled workers. This deliberate technological adaptation gave employers the industrial control they sought.

The factory system resolved the contradictions and conflicts of the household era in favor of the manufacturers. It gave them the means to make the employees act in the employer's interest. Under the new industrial discipline, workers pursued their own momentary enjoyments at the risk of a head-on collision with the boss or his foreman and the loss of a job. Order, therefore, rested on the power of the manufacturers and harmony in the beehives of industry was founded in economic compulsion, rather than on some instinctive dronish desire on the part of wage earners to cooperate among themselves for the owner's benefit. The manufacturers were eager to take charge of the new industrial army, and, like other men on horseback, they were confident of their right to command and convinced they were astride the forces of progress.<sup>2</sup>

Technological innovation in this instance was an automatic stitcher which enabled the operator to sew 80 pairs of shoes in the time a journeyman could do the seams on one pair. The machine benefited employers in two ways. It reduced labor costs per unit of product and it increased managerial dominance over the workplace. Technology was power and therefore control over the pace and form of technology was a source of power.

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2. Alan Dawley. *Class and Community: The Industrial Revolution in Lynn*. (Cambridge, MA.: Harvard University Press, 1976), p. 92.

The president of Western Union knew this in 1918 when he admonished his managers to introduce automatic teletype machines in place of Morse hand telegraphers so that the skilled workers "should not be the important factor in the transactions of the telegraph business."<sup>3</sup> Not only did the machines substitute semi-skilled, low-wage typists for craftsmen, they also monitored the work pace. An automatic lever attached to each machine notified supervisors when an operator slipped below the prescribed rate of transmission. The same pervasive supervision exists today in telecommunications and, as before, it is accomplished through design choices in new technology.

Historically, workers formed unions to match the power of management. They tried to protect previous gains, preserve whatever status they had achieved and insulate their power at the workplace from erosion by threatening industrial and economic environments. Once again, labor faces rapid and fundamental change and a collective and coordinated worker response seems necessary in order to protect hard-won standards.

#### *The 1981 Technology Conference*

The articles in this paper were presented as working papers at a Conference on Labor and Technology held at The Pennsylvania State University in November, 1981. The Conference brought together staff members of union research departments, university educators from various disciplines, trade union members and officers, and labor studies students. It was motivated by a belief that the problems confronting labor in the 1980s are not specific to particular industries but are similar in all sectors, and that the strategies and solutions developed by one union can inspire others.<sup>4</sup>

Unionists cannot be concerned only with events in their own industry, nor can labor educators communicate only with other labor educators. If they do, labor's progressive voice becomes fragmented and ineffective. These papers are published, therefore, in order to share the events, apprehensions and responses discussed at the conference and to stimulate further discussion and sharing of ideas and experiences. Exploring a common predicament enables us to comprehend more fully the impact of change and respond effectively to it.

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3. *Labor Studies Journal*, "Special Issue: The Impact on Labor of Changing Corporate Structure and Technology," 3(Winter, 1979) p. 295.

4: A working bibliography of selected books and articles which explore changing environments and labor's responses is appended to this volume.

### *Forces of Change*

The articles in this book present various aspects of labor response to the current environment. At issue are the inevitability of technological change, the accelerated pace of technology as a result of changes in corporate structure, the impact of new technology on workers and organized labor, and labor's responses to employer initiated shifts in production processes and business structures.

From Dawley's shoeworkers to the present, technology has had a momentum that appears unstoppable. But the underlying forces of change are more complex today than in the past. Technological innovation historically was fueled by employer desire to control the work process, the competitive need to lower production costs, and the desire — with or without competitive pressures — to widen profit margins. In those industries dominated by one or a few firms — where price competitive product markets were absent — the desire for worker control may have been the stronger motive; in those industries characterized by large numbers of price competitive firms, the need to reduce costs would have been paramount. In either case, there were strong and direct incentives for employers to adopt labor-saving technology.

The introduction of technology is accelerating today in a business environment that combines industrial concentration and fierce product market competition. In the post-World War II years concentrated industries such as telephone and auto became sluggish and unresponsive to consumer needs. Price and product competition have now been introduced, however, in these and other industries through deregulation, development of new products and services which merge previously discrete industry sectors, and trade incursions by foreign corporations. Many companies are belatedly gearing up to meet the unaccustomed competition by massive investment in technology.

The combatants in these changing markets are industrial heavyweights. The retail food industry, for example, has become a market battleground for both European and domestic corporations. Competition in telecommunications involves some of the nation's biggest firms, including IBM, AT&T, and EXXON; companies which have the resources to technologize more quickly than most others. As one firm adopts technical innovations the others must either follow suit or retire from the battle. The rate of technological change is thus increased. In addition, capital mobility accelerates the pace at which technology engulfs entire industries. Gregory Giebel's description of commercial printing, for example, shows how large national companies have moved into smaller geographical markets, forcing existing firms to match their technology or go out of business.

If there is an ideal business environment for rapid technological advance, it is probably the combination of concentration and competition which exists now. Within this environment, a few pieces of technology have been developed with revolutionary potential in a wide variety of industries. It is possible, therefore, that the widespread automation predicted for decades will now arrive virtually overnight, with both workers and consumers unprepared for the magnitude of the change.

Diffusion of microprocessors — tiny computers etched onto silicon chips — profoundly affects other industries, as George Kohl says in his paper. Changes in telecommunications are at the heart of expanding technological capability in a variety of other sectors. Large communication networks in which a small host computer is linked to several remote terminals are now available to serve industry. In addition to providing the means for decentralizing work, this innovation paves the way for electronic funds transfer in banking, electronic postal services and data systems for home and business. Other changes include the expansion of satellite communications, digital transmission, computerized systems for maintenance and testing, and the automation of switching and billing. Elsewhere, the article by Judith Gregory predicts that the office workplace of the future will include computers, advanced word processors and new equipment and techniques to store, retrieve and transmit data through microfilm and electronic mail networks.

### *The Impact of Technology*

The impact of technology on workers varies depending on the industry, firm, workplace and job. The industries discussed in this volume, however, reveal patterns of general importance for labor such as the wave of job elimination which is likely to accompany new industrial processes. In retail food, William Burns describes how scanners will be programmed with price changes, eradicating the jobs of many clerks. An estimated 10,000 meat processing jobs were lost between 1974-1980 as central cutting plants were either closed or converted to boxed-beef warehouses. In Lydia Fischer's description of the current auto crisis, she mentions that 300,000 auto workers have lost their jobs. The United Automobile Workers (UAW) estimates that because of the introduction of new technology only one-third of these workers may ever be called back to employment in the industry. Telecommunications and printing, two traditional growth industries, may experience job losses for the first time. And, Judith Gregory predicts that the number of jobs in the service industries may not be sufficient to offer employment to workers displaced from other sectors. That new jobs will be created by technology is probably true, but the number and



types of positions and who will be hired remains unclear. The authors in this book suggest that the number of jobs eliminated may be greater than the number created.

Another industrial dynamic is producing job losses in conjunction with new technologies. Plant, store or office closings often occur when a firm is acquired during a period of increasing ownership concentration. This outcome is particularly frequent in retail food, where foreign-owned multinational conglomerates have closed many domestic stores.

For workers who keep their jobs or are displaced by machines but find new work, the impact of technology may well be that their jobs become deskilled, simplified, devalued and less fulfilling — in other words, more machine-like. Popular publicity surrounding the introduction of robots suggests that machines will take over only the dull, routine tasks which workers dislike. However, this is not always the case. As the case studies in this book show, particularly those involving the Machinists' Union as described by Leslie Nulty, dull routine jobs are being created by the new technology as it breaks down and deskills existing jobs. People who did skilled work will now simply feed material into machines or, worse, spend their days watching machines work, ready to step into the production process only in the event of a breakdown.

Lowering of required skills logically leads employers to pressure unions and workers to accept lower wage rates. Such downward pressure on wages has already affected meat packing plants and clerical offices and threatens to do the same in other industries experiencing a diffusion of new technologies.

Corporate demands for concessions at the bargaining table not only demonstrate labor's declining power, but ironically, may also speed technological change. For example, auto worker concessions, granted in the midst of a sharp economic slump and increased foreign penetration of domestic markets, may in fact, help subsidize a massive introduction of robots by the Big Three. Therefore, even when recovery does occur, the industry may experience large and permanent job losses; and the union's bargaining power may never be fully restored.

In the midst of this technology-induced challenge to its bargaining power, labor may also have to contend with employers who are more flexible and elusive. Telecommunications and new information processing equipment allows firms to transfer work almost effortlessly from one setting to another in response to union demands. Centralized corporate control of diverse, far-flung, often multinational enterprises presents a strong challenge to labor when it is combined with technological change.

## Union Responses

Technological change is inevitable, as is some subsequent social impact. But the design, implementation and pace of change can be jointly determined by employers, workers and society in order to minimize the socially harmful effects of technological innovation and enable employees to adjust to shifting labor force needs. The cases discussed in this volume represent a variety of union responses to the technology challenge. They demonstrate that bargaining, organizing and political approaches occur, at both the national and local levels, and that they are ongoing rather than conclusive responses because of the evolutionary nature of environmental change. The issues raised are never settled decisively and forever.

### *Collective Bargaining*

Because they have national, company-wide contracts, unions like the UAW and the Communications Workers of America (CWA) respond at that level. The UAW historically has not stood in the way of technological change in the auto industry. Instead it pursues other means of protecting workers against job erosion. At the bargaining table it tries to win assurances that outsourcing will be minimized and domestic plants kept open. As for CWA, it negotiates income maintenance, job rights and anti-subcontracting provisions, on a company-wide basis. Joint union-management committees in each of the various AT&T divisions deal with technology and job issues at that level. The union hopes these committees will evolve into worker participation agents that cut across corporate structure and, in this way, union representatives can have input, influence and even veto power at each stage of decision making involving technology. Historical experiences suggest, however, that considerable union aggressiveness will be needed to realize these hopes in that or any industry. Indeed, without full union representation, such committees may actually hinder the emergence of a collective bargaining solution.

The Graphic Arts International Union (GAIU), the United Food and Commercial Workers (UFCW) and the International Association of Machinists (IAM) all supply their locals and intermediate bodies with model contract language aimed at establishing some control over the introduction of technology that could adversely affect bargaining unit members. In addition, the GAIU, following a tradition in the printing industry, has established funds and programs that enable its members to stay abreast of new equipment and methods.

Four case studies of technological change in IAM plants show the importance of local union awareness, initiative and imagination in meeting the threat, both in local and national contract bargaining settings. They also identify the sources of local union bargaining power

in technology disputes as: (1) workplace information networks; (2) contract language that defines the bargaining unit and describes job classifications; (3) the formal grievance procedure and (4) workers' intrinsic skills and knowledge. Of particular significance in the Machinists' experience is the union goal of redefining the bargaining unit in order to include all of the employees who control a new technological system — e.g., computer programmers.

Another advantage of joint determination may be drawn from the Machinists' experience. If management allowed workers with years of shop-floor experience to participate in the design and implementation of technology, more productive processes would often result. Surely, the workers would gain by using and improving their skills and knowledge, retaining their wage levels and performing more interesting work; but management would gain too by tapping this "human capital" pool in order to design a more productive system. Theoretically, consumers also stand to benefit through more efficiently produced goods and services.

In general, the cases examined here show that workers and unions need greater job security, more advance warning and detailed information about pending technology change; and that they want a stronger voice in the planning and installation stages of new production systems. In addition, there is the question of who will bear the cost of retraining workers for new jobs. All of these are goals which may have been or may be achieved through collective bargaining. However, since existing contract language is usually inadequate to protect workers, unions need to negotiate stronger language in anticipation of the introduction of new technology.

Other unions are responding to the change in bargaining opponents resulting from increasing corporate concentration in their industries by organizational mergers which strengthen their bargaining position. Examples included in this collection are the Graphic Arts International Union and the United Food and Commercial Workers. Should industrial concentration continue to dominate workplace settings, and new technology threaten to weaken the ability of unions to represent their members, merger talks are likely to be a more prominent part of labor response to the changing environment.

### *Organizing*

In addition to collective bargaining, labor also recognizes that new organizing is a vital response to environmental challenges. Effective technology agreements that protect worker job rights are best negotiated in industries where a high level of unionization gives workers bargaining leverage. Because rapid technological change threatens job losses almost indiscriminately, labor needs to organize in every

workplace. Ironically, technology may be a positive force in this regard, orienting some workers towards unions for the first time. Office automation, as Gregory and Mathews point out, leads to business offices which resemble factories, and the change may well encourage clerical workers to embrace collective bargaining as a remedy.

Other changes coincidental with technology add urgency to the job of union organizing. Deregulation, to cite one example, is moving traditionally stable, unionized industries such as telecommunications into competitive and often non-union surroundings. Kohl shows how this jeopardizes established union wage levels and benefits. Rather than equalizing conditions by lowering union standards, labor's appropriate response is to organize those working in the sub-standard firms. In the unregulated segments of telecommunications, Kohl anticipates more job-displacing and craft-deskilling mechanization and automation as employers try to reduce their operating costs and become less dependent on and accountable to organized labor during a period of great change. This effort may indeed undercut previous CWA gains and undermine its hard-won national bargaining structure in telephone.

A third area of change that prompts increased organizing efforts is industrial relocation. Movements or threats to move to traditionally non-union areas such as the sunbelt can only be countered by organizing workers and raising economic standards in these new locations. A number of unions, recognizing their mutual challenges, have joined together in AFL-CIO coordinated organizing drives in sunbelt locations such as Houston, Texas and Tupelo, Mississippi, cities whose recent industrial growth mirrors the economic decline in northeastern communities.

### *Political Strategies*

U.S. labor can also explore innovative political strategies. In other countries organized labor has gone well beyond economic bargaining when confronting new technologies and changing business structures. As Steven Deutsch explains, some Western European labor movements have won national legislation guaranteeing the rights of advance information on new technical change and of employee participation in planning for such change. These laws enable both workers and industry to adjust to the potential impact of change. In this way European labor mixes legislative initiatives and collective bargaining in its attempt to protect workers and society.

In the first article in this collection, Markley Roberts calls for political action by unions in support of a national plant closing law to protect employees and communities from the devastation of economic dislocation. He also wonders whether a careful examination of U.S. tax policy

would show that business is encouraged to close profitable plants in order to enjoy favorable tax write-offs. This raises the possibility that tax reform could be an important part of labor's political solution to technical and structural change.

The remedy for the well-publicized troubles of the U.S. auto industry may be in part political. As Lydia Fisher's paper shows, other industrialized countries legislate local content requirements or impose tariff and non-tariff restrictions or have export requirements for firms which do business in their economies. The Japanese government, in particular, offers tax and non-tax subsidies to its own auto industry and pursues additional policies to limit foreign producers' sales. By contrast, U.S. policy minimizes such trade barriers and requirements.

There are several political strategies in the United States and other countries from which labor can choose. They range from narrow, self-interested orientations to broad-based labor parties. When all the potentially harmful effects of new technology and corporate change are considered, however, U.S. labor may be drawn into the political arena more fully than it has in the past. This may be necessary in order to make full employment and extensive job retraining and relocation rights national economic priorities. Active organizing efforts, strategic bargaining demands and national full employment are essential ingredients in a labor agenda aimed at protecting workers and communities during the technological revolution of the 1980s.