WORK ORGANIZATION:

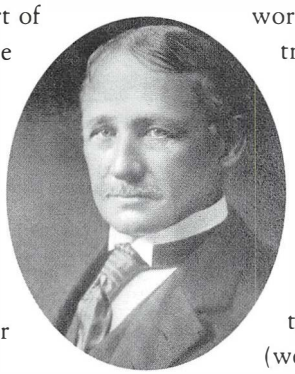
From Taylorism to Teamwork

PAUL S. ADLER

Work organization—who does what tasks—is the foundation upon which the formal structures of industrial relations are built. The shape of work organization gives workers more or less organizing potential, bargaining clout, and legitimacy in their claims for higher wages. So it is natural that people in the industrial relations field should have a strong interest in how work organization has changed over time and how we should expect it to change in the future.

If we look back in time, we should be able to identify the forces that will shape the future. Looking back over the 50 years since the time of the IRRA's founding, what do we know about these trends in work organizations? The degree of controversy over this question is astounding. Some observers look back and see a more or less continuous path of progress towards better jobs and working conditions. Others look at this same history and see the progressive deskilling of jobs, degradation of labor, and alienation of workers. In what follows, I will give a personal view of the issue. I hope that it will help put these controversies in useful perspective, and allow us to see a little further into the future.

The controversy over the past is in large part due to different views on the nature of forces that shape work organization. Some observers see work organization as an essentially technical system, and from this point of view work organization is shaped primarily by technology and efficiency considerations, even if it has important social and psychological consequences. Other observers interpret work organization as part of the social authority structure of the firm. As part of this structure, work organization is both the site and the object of often-conflicting interests between workers and managers, and these commentators see its evolution as shaped by struggles for control and power.[1]



Frederick Taylor

As I see it, work organization is at the intersection of these two clusters of forces. Its evolution therefore reflects *both* technical exigencies and opportunities for improved efficiency *and* the social imperatives associated with the prevailing capitalist patterns of ownership and control. Each of these sets of forces imparts distinct and often contradictory tendencies to the evolution of work organization, and the trends we actually observe reflect the relative strength and interacting effects of these tendencies.

Definition of Work Organization

In order to describe these trends with any precision, we need to define more specifically what we mean by work organization. Work organization has four main components or dimensions. The first dimension is the skills required of workers in their jobs. The other three dimensions fall under the general heading of work relations—the nature of the work unit; the horizontal relations that link this unit to other work units; and the vertical relations by which these units' work is coordinated and controlled.[2]

The Impact of Technical Forces

Let's take first the technical forces acting on work organization and identify some of the tendencies and trends that can be attributed to them (we will return later to the impact of the social forces). Mobilizing science and technology, modern industry has progressively transformed all four dimensions of work organization. Even though the rate of change varies greatly across firms and industries, I think we can advance some fairly robust generalizations concerning the overall direction of these transformations. In a nutshell, these technical forces have pushed in the direction of a progressive upgrading of skill requirements and an increasing interdependence of tasks in all three dimensions of work relations.

Skill Requirements

The impact of technical forces on skill requirements has led to a gradual shift upwards in the level of skill and training required in most jobs. Technological change has led to a shift of jobs out of manual occupations and into occupations that on average have higher skill requirements, most notably professional

PHOTO: SANFORD E. THOMPSON PAPERS. KHEEL CENTER FOR LABOR-MANAGEMENT DOCUMENTATION AND ARCHIVES, CORNELL UNIVERSITY.

and technical occupations. Within the great majority of occupational categories, (in both manual and non-manual occupations) skill requirements have increased over the decades. Both fueling and driven by this shift, educational levels skill requirements have gradually risen. Notwithstanding the recent disturbing trend towards a polarization of incomes and wealth, the skill requirements of jobs themselves have not been polarizing, but have been gradually increasing across the board. There are some exceptions to this generalization, and there remain lots of very low-skill jobs in the U.S., but as the exhibit shows, these are proportionately far fewer today than 50 years ago.

The Evolution of the Occupational Structure of the U.S. Economy over the Last 50 Years

	Structure of Civilian Labor Force (%)		Median Years of Schooling	
Occupations	1950	1994	1952	1982
Managerial and Professional	17.2	27.5	14.2	15.1
Technical, sales and administrative	21.9	30.3	12.6	13.2
Services occupations	11.2	13.7	8.9	12.4
Precision production, craft and repair	15.1	11.0	10.1	12.5
Operators, fabricators and laborers	21.3	14.5	9.1	12.2
Farming, forestry, and fishing	13.1	2.9	8.1	12.2

Labor force structure data are from Statistical Abstract of the United States, National Data Bank, 115 Edition. Education data for 1952 are from U.S. Bureau of Census, Current Population Reports, Labor Force series P-50, October 1953, No. 49, Table 4. 1982 was the last year in which medium years of schooling is available: "Educational Attainment of Workers, March 1982-83," U.S. Department of Labor, Bureau of Labor Statistics, April 1984, Special Labor Force Report, Bulletin 2191, Table B-9..

Work Relations

The impact of technical change on all three dimensions of work relations can, I believe, be summarized as the continuation of a longer-term shift away from independence and autonomy and towards greater interdependence and teamwork. If we go back 150 or 200 years, a large proportion of workers were independent producers, either on farms or in very small, artisan's shops. At the turn of the century, most people were no longer economically independent; nevertheless, in their day-to-day work they often made their own decisions about what to do, when, and how. Over the subsequent 50 years, the great "scientific management" revolution inaugurated by Frederick Taylor swept through most of U.S. industry, with the result that decisions about work were no longer made by workers themselves but by a whole network of specialists and managers. This trend toward growing interdependence has continued over the last 50 years, with interdependence overtaking autonomy in all three work relations dimensions: the individual work unit, the horizontal interdependence of work units, and the vertical interdependence within and across work units.

Let's look more closely at trends over the last 50 years in each of these dimensions in turn. We will see that technical forces encouraged a trend towards increasing specialization and objective (that is technical) interdependence, and that industry's efforts to manage this interdependence created progressively more complex forms of teamwork—which is the subjective (that is conscious) form of interdependence.

Work Teams

Work teams have been progressively replacing the individual as the basic unit of work organization. Indeed, the speed of diffusion of the team form of work organization in the U.S. economy in recent years has been astonishing. Surveys of the *Fortune 1000* largest U.S. firms found that in 1987 28 percent of employees were in firms that used "self-managed workteams" for at least some employees; by 1995 that 28 percent ratio had grown to 68 percent. In 1978, only 6 percent of employees were in firms that used such teams for between 20 percent and 40 percent of their employees; by 1995 that 6 percent ratio had grown to 15 percent. Broader surveys confirm the general trend: one such recent survey found that 32 percent of manufacturing plants use teams for over 50 percent of their core workforce (that is the largest group of nonmanagerial employees involved in producing the establishment's main products).[3]

Technical forces have been the primary factor driving this shift from the individual to the work team. In places like banks, insurance companies, manufacturing plants, and chemical refineries, automation has eliminated many stand-alone manual tasks, leaving workers with the new role of overseeing large-scale automated systems, and in many cases this system-controller role is more effectively played as a team. In many more industries an increasingly volatile and demanding competitive environment means that tasks change so rapidly that it becomes technically more efficient to give groups of workers primary responsibility for working out how they will adjust to these changes, rather than forcing them to wait for a staff specialist to come along and reorganize tasks for them.

Intergrating Specialized Units

The second dimension of work relations is the "horizontal" relationship between specialized units. The trend over the last 50 years and more is towards ever-greater interdependence in these relation-

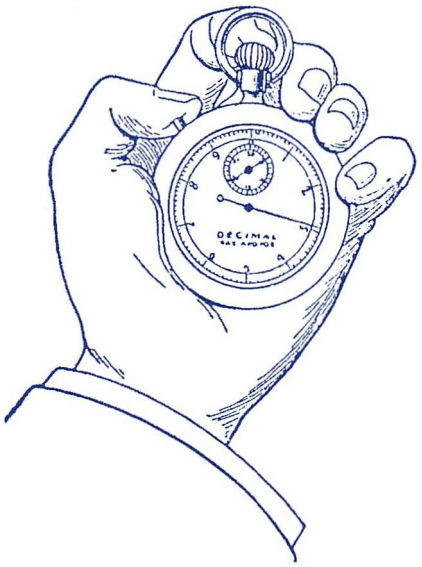
ships as each unit becomes increasingly specialized and therefore dependent on a larger number and a longer chain of suppliers. The natural result is increasingly energetic efforts to create teamwork between these units to ensure their integration. Here too technical factors are the drivers: as knowledge accumulates, its progress naturally creates new specializations, and the effective use of this new knowledge requires new integration efforts. We see this process played out in four domains: within firms, between firms, between industry and universities, and between countries.

- Within firms there is a growing number of specialized skills needed to cope with an increasingly complex world: new job titles proliferate, new functional departments are created. Sometimes the best way to ensure teamwork between these specialized skills is to group them in the one work unit; often, it is more sensible to organize them into specialized staff units and establish appropriate liaison links. Cross-functional teams therefore proliferate.[4]

- Firms are increasingly dependent on suppliers for specialized inputs of machinery, components, and services. The recent trend towards "outsourcing" is only partly fad; for another part, it is the continuation of a long-term trend towards the increasing specialization of industries. Indeed, much of the growth of the service sector has resulted from firms deciding to outsource tasks to more knowledgeable and efficient specialist service firms. To ensure integration with such specialized supplier firms, it is increasingly common for client-firms to establish close, partnership-style relationships with their suppliers. Workers increasingly find themselves interacting directly with suppliers and customers.

- Firms, particularly those in high-technology industries, are increasingly dependent on non-corporate suppliers, most notably universities, for access to scientific and technological information, so new linkages between the corporate sector and universities have proliferated. As one manifestation of this trend, workers are increasingly likely to find themselves enrolled in community college courses to learn the latest production techniques and technologies.

- We see growing interdependence across national boundaries. The international division of labor has become more fine-grained. International trade and ownership links have grown more numerous. Not surprisingly, international trade issues and adjudicating bodies appear more frequently on the front pages of our newspapers. And workers are increasingly likely to find themselves talking to a visitor from an overseas sister plant, supplier, or customer.



"If the men observed are to be ultimately affected by the results of these observations, it is generally best to come out openly, and let them know that they are being timed, and what the object of the timing is. There are many cases, however, in which telling the workman that he was being timed in a minute way would only result in a row, or in defeating the whole object of the timing."
From Frederick Winslow Taylor, Scientific Management, *New York: Harper & Row, 1947, page 153.*

Vertical Structure

The third dimension of work relations is the vertical structure of coordination and control. Here too, technical forces encourage progressive specialization and closer integration. As the knowledge embedded in specialized economic units accumulates, hierarchies of expertise naturally form. In consulting, accounting, and law firms, for example, junior associates report to and rely on guidance from senior associates, who in turn have a similar relationship to junior partners, who in turn have a similar relationship to senior partners. Even on the factory shopfloor, "skill-based pay" systems have become more common as firms realize that they need to actively structure the hierarchy of shopfloor expertise. Not only technical expertise, but also properly managerial expertise has grown in importance, and the complexity of business management techniques has grown enormously. Moreover, to the extent that the firm incorporates a growing number of specialized units within itself, it needs more specialized staff—middle managers—to coordinate between the units. (If the firm chooses to outsource some of this specialized knowledge, it needs to establish close relations with these suppliers, as pointed out earlier.)

The Impact of Social Forces

So far, I have argued that technical forces shaping the evolution of work organization have pushed in the direction of skill upgrading and broader interdependence in work relations. But what about the other set of forces shaping work organization—the social structure of ownership and authority? The basic social structure of our modern, capitalist society can be summarized under two broad headings: competition between firms, and a wage-based employment relationship within firms. What do we know about the nature and impact of the forces engendered by these structures?

Competition between firms forces

them constantly to develop new products and to improve their delivery. Firms in a capitalist economy are therefore far more aggressive than those in enterprises in pre-capitalist societies in using, developing, and encouraging science and technology. So all the trends we attributed to technical forces in the discussion above are considerably strengthened by the pressure created by competition.

The wage relationship divides society into employees and owners. Managers therefore owe ultimate allegiance to the firm's owners, and under the pressure of competition, and independent of their personal attitudes and values, are sometimes forced to impose owners' interests against workers'. The vagaries of product and financial markets sometimes encourage or force firms to lay off employees, and the brutal, unforgiving nature of competition forces firms to cut costs wherever possible. In this process, stakeholders other than owners—most notably, workers—often get short-changed.

Problems in the Reorganization of Work

Under the pressure of market competition between firms, and under the structure of managerial authority within firms, each of the largely positive and welcome trends in work organization we have noted so far has been partially undermined and significantly distorted.

Take skill upgrading first. Even though their long-run competitive success requires skill upgrading, firms are often loath to invest in the required training since workers can take the resulting "human capital" out the door to a better-paying job down the street. Moreover, skilled workers typically have more clout than unskilled workers, and so managers' control over the shop- or office-floor is easier to assure when jobs require less skill and employees are therefore more easily replaced. For both reasons, managers are often tempted to "dummy down" equipment and job responsibilities, and thus to de-skill work.

Second, managers under short-term cost reduction pressure often manipulate teamwork to create peer pressure. Peer pressure can temporarily accelerate productivity improvements, even though teams that get caught up in peer pressure are likely to fall apart in the longer term. So short-sighted managers often find the temptation of such manipulation irresistible. When workers accept team responsibility for work outcomes, they often have to negotiate among themselves a new balance of individual autonomy and team authority. The search for that delicate balance can easily be derailed, and the authority of the team is frequently turned into a nasty war of worker against worker.

Third, under the pressure of competition, horizontal specialization can degenerate into adversarial win-lose bargaining. Supplier firms' interests do not always magically align with customers', and when push comes to shove, partnerships easily fragment. Horizontal relationships within the firm are also vulnerable to the pressures of competition—in this case, competition among managers for promotion opportunities. In the right circumstances, horizontal interdependence can appear to workers as mutually beneficial teamwork. But under the wrong circumstances, it turns into a weapon against workers. Outsourcing is often used as a bludgeon, and globalization of production as a threat.

Finally, and most obviously, the new vertical hierarchy of expertise can easily degenerate under pressure into the old "command and control" pattern. In the absence of a profound transformation of society that would permanently elevate workers' and other stakeholders' interests to an importance comparable to that of owners', the broader structure of our capitalist society constantly recreates conditions conducive to a slide toward autocratic forms of hierarchy.

In a nutshell then, work organization is always buffeted between the technical productive advantages of teamwork and the intermittent economic advantages of autocratic domination. A dispassionate assessment of the last 50 years' trends in skill requirements and work relations shows, I believe, that the technically driven tendencies to upgrading skills and broadening interdependence have prevailed in the aggregate and over the longer term. But there is little doubt that the social forces have also left their mark on this evolution, making the progress only halting and reluctant, and leaving numerous small and several huge pockets of backwardness.

Moreover, even the progressive aspects of this evolution are not without their downsides for workers. Upgrading skills and broadening interdependence tend to undermine established communities of solidarity, constantly putting workers and their unions on the defensive. This happens in several ways. Upgrading often replaces old union craftsmen with young nonunion technicians. Teamwork often replaces clearly delineated supervisory accountability with diffuse team accountability. New patterns of horizontal specialization undermine old bargaining units by contracting-out and globalization. New collaborative hierarchies ask unions to become partners, even though the need for tough-minded adversarial bargaining has hardly diminished.

The Future of Work Organization

If we turn forward now to the coming 50 years, what does this perspective on the past suggest about the future of work organization? Absent some radical change or breakdown, the pattern of the past 50 years will, I believe, continue. The skill upgrading and teamwork tendencies will continue to prevail over the counter-tendencies — not because they are intrinsically more desirable, but simply because firms need skills and teamwork to succeed in their struggle for competitive survival. These upgrading

and teamwork trends will be undermined periodically by the reassertion of more traditional, autocratic forms of authority within firms, and by the resurgence of destructive forms of competition between firms.

And what do these trends imply for industrial relations over the coming decades? I would venture three conjectures.

First, the trend towards skill upgrading, interdependence, and teamwork all tend to raise workers' level of intellectual sophistication, broaden their world view, and sharpen their expectations of justice in the workplace and in society. It is true that in a capitalist society the form taken by this progress tends to undermine old sources of worker identity and solidarity, but that progress also tends to create among workers even greater potential for more enlightened action on a broader scale.

Second, I expect that workers' experience with skill upgrading and teamwork will tend over time to make them increasingly intolerant of autocratic management in firms. Autocratic authority will appear increasingly unjust and inefficient. Some kind of democratization of the firm's governance structure—remote as this prospect may appear in the current political climate—will become an increasingly popular and compelling idea.

And finally, if the first two trends materialize, they will encourage workers' opposition to the destructive forms of market competition. In firms under autocratic control, it is understandable that many workers attribute their economic insecurity to the greed or errors of their specific firm's managers or owners. But in reality, such greed and errors are merely exacerbating factors. As workers grow more sophisticated, and as management shifts (however hesitatingly) towards a more participative model, it will become increasingly clear that the fundamental sources of workers' economic insecurity lie not in corporate management but in the broader structure of our economy and polity—in volatile markets and unresponsive governments. Workers, I conjecture, are likely to become increasingly hostile to unregulated market competition—competition that forces firms to hire and lay off in unpredictable spurts of growth and retrenchment—particularly when paired with an insufficiently democratic form of government—that ties both parties to corporate rather than popular interests, and so is incapable of sufficiently dampening the impact of market fluctuations on workers' lives.

Political attitudes are, of course, shaped by many forces apart from work organization. And American unions have been in a long, slow decline which has contributed to a growing sense of alienation and resignation. But if my conjectures prove valid, and if unions can find a way to move beyond traditional business unionism to address these broader, structural concerns, unions' decline might well be reversed over the coming decades.

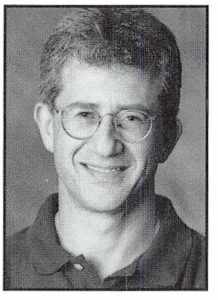
---

1. A variant of this second view grants that work organization is shaped by work technology, but argues that work technology itself is shaped by the broader social structure. This is known as the "social construction of technology" thesis. It is easy to show some social influence in specific equipment design choices, but it is an altogether more difficult task to show that social factors determine the broad contours of technology. I find this latter idea quite implausible, so I will leave it aside in the analysis that follows.

2. We can thus distinguish work organization from work technology—the system of equipment, tools, and facilities used by workers in their tasks. And we can distinguish work organization at the plant level from the broader social organization of industries and societies, just as we can distinguish the work technology of a given plant from the broader universe of technology available in the society as a whole.

3. See Lawler, Edward E., III, Susan A. Mohrman, and Gerald E. Ledford Jr., *Creating High Performance Organizations*, San Francisco: Jossey-Bass, 1995; and Osterman, Paul, "How Common Is Workplace Transformation and How Can We Explain Who Adopts It?" *Industrial and Labor Relations Review*, Jan., 1994: 175-188.

4. Regarding the impact of this globalization on skill requirements, in general, it has been the less-skilled jobs that have gone overseas. This has had terrible effects on the unemployment and wage levels of those less-skilled U.S. workers thrown into competition with workers in low-wage regions. But not all the effects are negative. Notwithstanding some horrific expections, the jobs created overseas are usually more highly skilled and better-paid than the alternatives available for workers in those countries, and while many U.S. workers have thus lost their jobs or suffered wage cuts, our economy is quite advanced enough to create new and better jobs to shift to. If workers aren't getting the help they need to make this shift, it reflects a failure of our government and political process, not the inevitable effects of economic globalization.



Paul S. Adler

Paul S. Adler is an Associate Professor in the Department of Management and Organization, School of Business Administration, University of Southern California. His research and teaching focus on strategic management and organization design of R&D, engineering, and manufacturing operations. A past Chair of the Technology and Innovation Management Division of the Academy of Management, he has published widely in academic and managerial journals both in the U.S. and overseas.