Academy of Management Executive, 1999, Vol. 13, No. 4

Building better bureaucracies

Paul S. Adler

Executive Overview

Colloquially speaking, bureaucracy means red tape, over-controlling bosses, and apathetic employees. But large-scale organizations need appropriately designed formalized procedures and hierarchical structure to avoid chaos and assure efficiency, quality, and timeliness. We currently lack theoretical or practical guidelines for building better bureaucracies that can support high levels of both performance and employee involvement. This article combines insights from organization theory and cognitive psychology research on technology to propose a set of organization design guidelines.

The Problem with Bureaucracy

Many executives are struggling to redesign their organizations to deal more effectively with an increasingly complex and demanding business environment. A common objective in these redesign efforts is to set free the creative energy of employees by attacking the bureaucratic features of the organization. As Jack Welch said in General Electric's 1994 Annual Report:

> We've been trumpeting the removal of bureaucracy and the layers at GE for several years now—and we did take out 'sectors,' 'groups,' and other superstructure—but much more remains. Unfortunately, it is still possible to find documents around GE businesses that look like something out of the National Archives, with five, 10, or even more signatures necessary before action can be taken. . . . Layers insulate. They slow things down. They garble. Leaders in highly layered organizations are like people who wear several sweaters outside on a freezing winter day. They remain warm and comfortable but are blissfully ignorant of the realities of their environment.

GE is but one example of a broad bureaucracy busting movement in US corporations. *Fortune* magazine ran a cover story a few years ago under the title "Bureaucracy busters: how they're breaking the corporate chains."[1] The image on the cover shows CEO Paul Allaire "redesigning Xerox to beat the competition." He holds a big paint brush in hand and is painting a huge X through the image of a multilevel, multifunction organization chart.

Evidence is accumulating, however, that this movement is at least in part misguided. In many cases, bureaucracy busting has proven to be counterproductive. One frequently heard recommendation—exemplified by Welch's comments—is to reduce the number of management layers and the number of people staffing these layers. That may be necessary in some cases, but many firms have discovered that these layers of middle management are often the repository of precious skills and experience. Only after they have been cut by downsizing programs is their loss recognized—and sorely regretted.

Similarly, conventional wisdom often asserts that an effective redesign should dump the voluminous procedures manuals found in most organizations, since they amount to so much red tape. A recent article praised the leadership qualities of an executive who, on coming into a corporation as the new CEO, "trashed two fat books of policies and replaced them with just 11 important ones." The executive said "Those rules, aimed at one percent of employees, handcuff the other 99 percent." The article's author concludes: "Get rid of the rules and [employees] can focus on keeping customers happy."[2] In some cases this assessment is surely valid. But in many others, these procedures embody a vast organizational memory of best practices. Having tossed out the manuals, many organizations discover that their employees are frustrated because now they have to improvise without even a common melody line let alone a complete score.

Many executives also believe that a key goal of organizational redesign should be to eliminate bloated corporate staffs, thus reducing overhead

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costs and freeing line groups from the staffs' arrogant control. Some staff groups probably do fit this caricature. But staffs too can be repositories of valuable expertise, and they can serve as an effective channel for diffusing lessons learned in one part of the organization to others. Left to their own devices, the line groups often regret the loss of support that staffs operating in partnership mode can provide.

Yes, in a more dynamic and more complex business environment, we need organizational designs that do more to empower everyone. And yes, in some organizations, empowerment may involve attacking bureaucracy by reducing the number or size of hierarchical layers, the level of detail in prescribed procedures and standards, and the size of staff groups. But empowerment should not be confused with abandonment.

Reducing the number of layers, procedures, and staff may be necessary in some cases, but most managers recognize at the same time that large-scale, complex organizations need some hierarchical structure, some formalized procedures, and some staff expertise. These are essential tools to avoid chaos and to ensure that employees are not continually reinventing the wheel. They are essential for assuring efficiency, conformance quality, and timeliness. That was the thesis advanced by Max Weber when he originally identified bureaucracy as the most rational form of administration, and it remains valid today.[3]

Indeed, alongside the bureaucracy busting ethos, we find a second discourse tugging in the opposite direction. This discourse urges managers to instill greater coherence and discipline in their organizations. Processes should be documented, rationalized, and standardized—rewriting rather than eliminating procedures and standards manuals—and the functioning differentiated layers and subunits should be more carefully orchestrated—integrating rather than eliminating hierarchical layers and specialized staffs. It thus celebrates TQM not only in manufacturing but also in services and healthcare. It encourages pursuit of the Baldrige award, ISO 9000 registration, and certification at higher levels of the Software Engineering Institute's Capability Maturity Model.

The result of these contradictory imperatives is ambivalence. We need bureaucracy for the discipline it affords, but we don't want it because it brings a host of negative consequences. The conventional response to this ambivalence is to counsel balance: Use only the minimum degree of bureaucracy required. But this counsel is of little assistance when managers are being offered such radically contradictory advice by the bureaucracy busters and the discipline builders. To break the impasse expressed in this ambivalence, we need to find a way to supercede rather than simply arbitrate the underlying contradiction in our organizational theories. We therefore need a fundamental reconceptualization of the role of bureaucracy in organizational design.

My research suggests that the negative consequences of bureaucracy—rigidity, alienation, and low commitment—may be widespread, but they are not inherent in bureaucracy. They are the result of poor choices in the specific form given to bureaucracy in too many organizations.

Distinguishing Technical and Social Structures

The first dimension of organizational design choice is well-known and codified as part of established theory.[4] If they are well-designed, organizations whose main tasks are routine and whose primary goal is therefore efficiency should have relatively high levels of bureaucracy—that is, substantial procedures and standards manuals, hierarchies, and staffs. And organizations performing mainly nonroutine tasks whose primary goal is innovation should be relatively less bureaucratic. For a given degree of task routineness, there is an optimum degree of bureaucratization. Below that optimal level, further bureaucratization is beneficial; above it, further bureaucratization would be counterproductive.

But established organizational theory leaves us with two, symmetrical dilemmas. First, most organizations whose primary task is innovation—for example, R&D units, consulting and other professional service firms—are under great pressure to improve simultaneously their innovation *and* their efficiency, timeliness and conformance quality. But the conventional view tells us that the organization must make a choice: If it needs creative people who are motivated to meet the innovation challenge, it must forgo the bureaucratic features of organization that could ensure efficiency and

timeliness. More bureaucracy, we are told, means less motivating work characteristics and thus less innovation.

Second, and conversely, many organizations whose primary tasks are essentially repetitive—such as mass production assembly, clerical processing, and routine service operations—are under great pressure to find ways to mobilize their employees to contribute to the continuous improvement of cost, quality and timeliness. The conventional view tells us that here too the organization must make a choice: Efficiency in the performance of highly repetitive tasks requires a bureaucratic organizational form, but with it will come high levels of employee alienation, which make impossible the high levels of employee involvement required to support such continuous improvement efforts. The conventional view suggests that in order to mitigate bureaucracy's downsides—unmotivating job characteristics and work organization—the organization should recruit people with low expectations of work; but such employees can hardly be expected to provide the high levels of involvement required in today's competitive environment.[5]

There are some dissenting voices to this conventional wisdom. Some social psychologists, for example, have shown that the increased formalization of work roles tends to clarify job requirements and this tends to increase satisfaction and commitment.[6] And some organizational sociologists have argued that the absence of bureaucratic rationality is more often a license for abuses of power than an opportunity for empowerment.[7] But these ideas have not been integrated into our thinking on organization design, with the result that organizational design is condemned to arbitrating a dismal compromise between controlling chaos and undermining motivation.

The dominant theoretical model is helpful in understanding one dimension of organizational design, but it ignores a second. While the higher or lower degree of bureaucratization—the focus of traditional theory—characterizes the technical structure of the organization, we also need to characterize its social structure by distinguishing enabling and coercive social structures.[8]

The essential idea is that bureaucratic hierarchies, procedures, and staffs can function in two very different ways with very different effects on the organization and the people working in it:

- The first type of bureaucracy is the more familiar one: It serves the purposes of **coercion and compliance**. The role of the authority hierarchy, procedures manuals, and staffs is to assure that potentially recalcitrant, incompetent, or irresponsible employees do the right thing. If bureaucracy always served this purpose, then indeed efficiency would inevitably trade off against creativity and motivation.
- The second type of bureaucracy serves the purpose of **enablement**. Bureaucratic structures and systems function to support the work of the doers rather than to bolster the authority of the higher-ups. The hierarchy is one of expertise rather than positional power and the different levels in that hierarchy collaborate. The procedures are designed with the participation of the users in order to identify best practices and to identify opportunities for improvement. And staffs function as partners with line groups. When bureaucracy takes this form rather than the more traditional, coercive form, even a highly bureaucratic structure will be experienced by employees as a tool with which they can better perform their tasks, rather than a weapon used by their superiors against them.

Moreover, even in very unbureaucratic organizations, social structures can be coercive or enabling. The organic form of organization is justifiably celebrated for its enabling effects in R&D organizations and in small companies where tasks are mainly nonroutine. But it has an ugly twin in the stifling, oppressive atmosphere found in some smaller, autocratic workshops, offices, and stores.

I should note that adopting an enabling structure does not imply that management abdicates its leadership responsibilities. Enabling organizations sometimes need strong, directive leadership. But in an enabling organization, this leadership is ultimately accountable to the front-line "doers" for its decisions. Here, power is endorsed from below rather than authorized from above.[9]

Instead of the traditional contrast of low versus high degrees of bureaucracy, this view gives us two dimensions of organizational design represented in Figure 1.

Conventional organization theory sees only the top-left (quadrant 1) to bottom-right (4) diagonal of this matrix and has presented it in many different forms: organic versus mechanistic, Theory Y versus Theory X, commitment versus control, high-involvement versus production-line, and innovative versus bureaucratic. This truncated view of organization design alternatives misses the other two possibilities discussed above: Organizations with low levels of bureaucracy that are autocratic (2), and highly bureaucratic organizations that are experienced as truly empowering (3). It is this truncated view that creates the contradiction I dis-

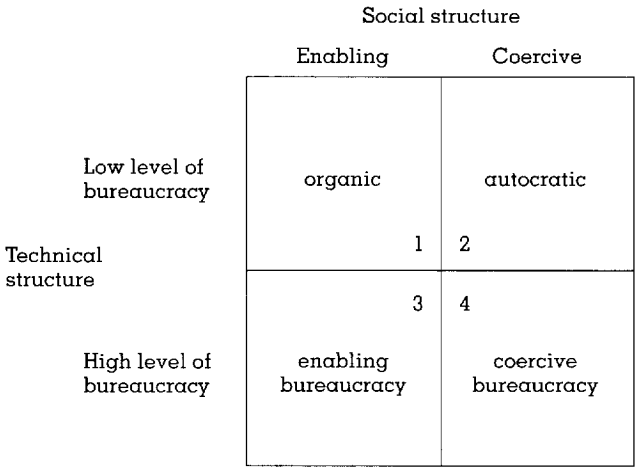

FIGURE 1
A Typology of Organizational Designs

cussed in the opening section of this article. It leaves managers with an impossible dilemma: Since the motivational presuppositions and management behavior demanded of the two columns are so different—like oil and water—organizations must either adopt an organic form and forgo efficiency, timeliness, and conformance-type quality, or adopt a mechanistic and coercive bureaucratic form and forgo employee motivation and commitment and the associated innovation capacity.

On this expanded view, organizations still differ, of course. Some organizations must devote more of their resources to routine tasks like mass production, tasks that demand, above all, a high level of control. Other organizations devote more of their resources to nonroutine tasks like product innovation, tasks that are oriented above all to learning. Depending on the organization, the relative importance of the two types of tasks will vary. However, both types of tasks can be managed in either coercive or enabling ways. Control can be coercive—top-down, providing control over—or enabling—collaborative, providing control with. Organizational learning too can be coercive—driven by arrogant staff specialists who force changes upon line employees—or enabling—pursued jointly by line employees, managers, and staff specialists.[10]

Using the Framework

This perspective provides a powerful lens for the redesign of both routine and nonroutine types of tasks—and for avoiding the disabling effects of misguided bureaucracy busting.

When tasks are routine

A generous reading of the bureaucracy-busting conventional wisdom would see it as arguing that the rate of change in the competitive and technological environment has greatly accelerated, to the point where the need for old-fashioned efficiency has become far less important than the need for innovation and flexibility. Thus, the argument goes, most organizations should be radically debureaucratized.

There is little doubt that the rate of change confronting business has accelerated in many sectors, and that therefore the relative balance of routine to nonroutine tasks is shifting in favor of the latter. However, it is not true that this acceleration has been, or will be any time soon, so great as to eliminate the vast number of repetitive tasks that need to be performed in our modern economy and in most of its constituent organizations. By contrast, it is true that intensified global competition is pushing many firms to get far better at these routine tasks. The distinction between coercive and enabling forms of bureaucracy can help us conceptualize the alternative possible responses to this challenge.

Take ISO 9000, for example. Recognition of the need for discipline in routine operations has motivated many firms to invest in ISO 9000 international quality assurance certification.[11] But if managers assume that their only alternatives lie on the line running between enabling-organic and coercive-bureaucratic, ISO 9000 will not yield much performance benefit. In one organization I have studied, proud of its recent ISO 9000 certification, engineers write procedures, then hand them to employees, who must sign them as if they constituted a contract. The rationale offered by management is that this ensures an audit trail in case of quality problems. From the employees' point of view, the arrangement is experienced as a way for the higher-ups to cover themselves. The procedure is neither designed nor implemented as an aid for the user; in the words of one worker: "Sure the engineers discuss the procedure with us. But it's not like we get to discuss it with them." As a result, covert and inefficient workarounds abound. The performance gains to ISO 9000 certification are far greater in firms where workers are active participants in developing the documented procedures, and where they are encouraged to recommend changes to those procedures when they see a better way of doing things.

One example of a company that has found a better way to develop and use very detailed, standardized procedures is NUMMI, a Californian joint

venture between Toyota and GM that operates under the day-to-day control of Toyota. As implemented at NUMMI, Toyota's standardized work process brings workers and supervisors together to define cooperatively and to document in great detail the most effective work methods.[12] Instead of methods engineers covertly timing workers or defining methods using data from handbooks, workers time themselves and conduct their own analysis of the real work process. Strong incentives—symbolic more than material ones—encourage workers to identify and propose improvements in methods. Deviations from the detailed, prescribed methods signal either the need for further worker training or the need to revise inadequate methods. In this context, the TQM dictum that you can't improve a process that hasn't been standardized becomes a philosophy of collaborative learning, stimulating continuous improvement in efficiency and quality that have already reached world-class levels.[13]

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The future of nonroutine work

A second key advantage of the expanded typology I have proposed is that it helps respond to the challenge of designing organizations whose primary tasks are nonroutine innovation, but which are simultaneously under pressure to improve efficiency and timeliness.

The conventional view of organization design leads to an impasse in the design of nonroutine work under such combined pressures. Most professional, knowledge-work jobs involve a mix of routine and nonroutine tasks. The conventional organization design theory suggests that such mixed situations create an oil-and-water organization design dilemma. The routine parts cannot be managed in a mechanistic, coercive, and bureaucratic way at the same time and for the same employees as the nonroutine parts are managed in an organic and empowering way.

Take the example of engineering work in product development. Under pressure to maintain some discipline in this process, many organizations have engineering procedures manuals that define in detail the specific sequence of steps to be followed. These procedures specify a set of documents that have to be submitted before work can proceed to the next phase, and instruct the employee to ask for the superior's approval for skipping steps unnecessary for the specific project at hand. The assumption is that the manual prescribes, the employee implements, and only the supervisor can authorize a deviation. When organizations operate under such procedures, the results are rarely impressive in their creativity. Not surprisingly, managers and engineers under pressure to come up with innovative solutions often collude in ignoring the formal procedures. It is thus common in engineering organizations to hear people say, "Thank goodness no one pays any attention to the procedures—otherwise nothing would get done!"

By contrast, if we adopt the expanded view, it becomes obvious that both routine and nonroutine tasks can be managed in an enabling way: It is perfectly possible to combine enabling standardization of routine tasks with enabling autonomy in nonroutine tasks. The innovation goals of the organization are supported by its enabling-organic features while its efficiency and control requirements are supported by the collaborative, shared control afforded by its enabling-bureaucratic features.

In another company I've studied, the product development procedure manual provides copies not only of the blank forms for required documents but also the best example to date from the organization's prior projects. As a result, the manual has become a working tool, a resource that is open permanently on the engineer's desk, rather than a set of hurdles that are covertly circumvented. There is now a friendly rivalry among design teams, each vying for the honor of getting their team's documents into the next revision of the manual as best-to-date templates.

Other examples can be found. At Toshiba's Fuchu Works software development organization, development methodologies are extensively formalized and standardized, and projects are tracked daily for performance with respect to targets of cost, output, and software reuse ratios. Software development has been turned into a factory-like process—without alienating the software developers.[14] This is not a uniquely Japanese phenomenon: Several of the most successful U.S. electronics firms make extensive use of highly systematic procedures and detailed formalized disciplines in their strategic management process and product

development process. Texas Instruments derived great benefit for many years from its very rigorously formalized OST (Objectives-Strategies-Tactics) planning process. OST enabled managers at lower levels of the firm to balance shorter- and longer-term objectives, and to articulate, share, and contribute to their visions of the future. In the early 1980s, the OST procedures took a coercive turn and as a result became alienating and counter-productive. In the words of one TI executive; "We made them bureaucratic. We used the systems as a control tool rather than a facilitating tool."[15] That there is nothing inevitable about such a turn is shown by other firms such as Motorola that have used equally bureaucratic mechanisms to provide a common direction and to capture best practices in ways that supported high levels of commitment and innovation.[16]

If the expanded view of organization design I have proposed is valid, then there are many opportunities for organizations to greatly improve their efficiency, timeliness, and conformance quality without impairing—and indeed perhaps increasing—their innovativeness and creativity. The Software Engineering Institute's Capability Maturity Model (CMM) provides a vehicle for exploiting these opportunities in the software domain.[17] SEI has found that over 85 percent of software development projects are managed in an entirely ad hoc manner. SEI has articulated four alternatives to the ad hoc model, each successively more disciplined. At the "repeatable" level, the management of individual projects displays discipline in project planning and control. At the "defined" level, a standard development process is defined for all projects. At the "managed" level, the organization tracks and analyzes the flow of projects through this defined process. And at the "optimizing" level, there is a defined process for preventing defects and for changing the development process itself.

Not surprisingly, many managers and software developers—under the influence of the conventional theory of organization design—doubt the wisdom of moving up the CMM discipline levels. Many express concern that the higher CMM levels will create software factories that are as regimented and alienating as many industrial factories. In reality, however, all five SEI CMM levels—just like real factories—come in both coercive and enabling forms. The enabling form provides exciting improvement opportunities.

Motorola's Indian subsidiary, Motorola India Electronics Ltd., or MIEL, provides a compelling example.[18] Founded in 1991, it achieved CMM Level 5 in 1993—one of only two such organizations in the world. The resulting quality levels were superlative. By 1997, MIEL was close to Motorola's target of six-sigma quality, which means about three defects per million lines of program code, a level of quality almost unheard of in the world of software engineering.

Further Clarifying the Framework

To clarify and make more operational this enabling-coercive distinction, we can use recent cognitive psychology research on technology, notably, but not exclusively, on the design of computer systems and interfaces. The components of the technical structure of the organization—procedures, standards, structural configurations—are organizational technologies. They meet the key defining criteria of technologies: They objectify know-how and exist independently of the particular user. The distinction I propose to make between enabling and coercive designs of organizational systems parallels the distinction between equipment designed for usability and to enhance users' capabilities, and equipment designed to foolproof the process and to minimize reliance on users' skills.[19]

The foolproofing approach has traditionally dominated engineering practice and theory. In this approach, performance improvement comes through direct labor reduction, whereas in the usability approach performance improvement is achieved through a mix of direct labor reduction, and quality and timeliness increases. In the former approach, labor is a risk factor and the designer's goal is to get the operator out of the control loop,[20] while in the latter approach, equipment is assumed to have its own limitations and risks and designers plan on employee intervention to correct machine errors. So instead of machines monitoring users, the usability approach has users monitoring machines. Where the traditional approach assumed that only engineers could effect process improvements and therefore centralized the control of process settings, the usability approach sees process control as being better assured by a short feedback/adjustment loop, which requires decision making, knowledge and information at the lowest possible levels of the organization.[21]

If bureaucracy as an organizational technology is going to be truly enabling, it needs to be designed for usability. This metaphor suggests several distinctive characteristics of enabling bureaucracies. First, we know some things about the **design processes** that lead to greater equipment usability:

- Active user involvement in equipment design process helps ensure users' psychological buy-in. Correspondingly, in the design of enabling organizational systems, the doers are involved in the design process.
- User participation also helps identify usability issues that may not be visible to the engineering experts, particularly if the users involved in the design effort are given the appropriate resources, training, and encouragement. Similarly, to ensure the enabling quality of organizational systems, the doers are given the opportunity and resources to participate in their design working with managers and staff specialists.
- A focus on usability issues has to be built into the equipment design process, by setting usability goals up front and by testing successive prototypes and final designs in appropriately realistic settings. Similarly, teams designing new organizational systems should establish appropriate enablement goals and test their proposed system designs in the user organization to ensure that these goals have been met. The team should usually plan on testing one or more prototypes before the new system is released for general use.
- Equipment usability is not attained once and for all, and so the organization should plan to tap users' ideas on how to improve the equipment as these ideas emerge over extended periods of use. Correspondingly, organizational systems should be refined in a structured process of continuous improvement through ongoing input from the doers.

These ideas on the design process are not foreign to organizational design thinking, where they appear under the general heading of participation. Well-managed participation can improve not only the organization's fabric of informal relations but also the quality of the resulting technical solutions. Motorola's MIEL group, for example, derived great benefit from its enabling approach to the development of its software process. While a team of Motorola's North American software engineers drafted a set of development procedures for the new organization, MIEL's first recruits were first given three months of intensive training on various aspects of software engineering and quality management, and were then given this draft and told, "OK, now this is what we think it. Why don't you collectively pull it apart, make it yours, and put it back together again."[22]

Table 1 summarizes some of the contrasts between coercive and enabling approaches to the management of the process by which organizational systems are designed.

The parallel between organizational systems and equipment affords perhaps even greater opportunity for novel insights when we translate into organizational design what we know about the features of more usable equipment designs:

- Usable equipment designs help users form a mental model of their internal workings so users can deal more effectively with unanticipated tasks and breakdowns. They afford users glass box visibility into the internal structure of the equipment, without burdening the user with information that is unnecessary for the task at hand.[23] The organizational analog to this feature is that enabling organizational systems make intelligible the overall structure

Table 1
Coercive Versus Enabling Approaches to the Design Process

Coercive	Enabling
• Organizational systems should be designed by experts to avoid politics.	• Involve employees in organizational systems to encourage buy-in.
• Organizational systems should be designed by experts because they know best.	• Involve employees in designing organizational systems to ensure that they support the real work tasks.
• Broad participation in design is too expensive.	• Poor design is too expensive: Broaden participation by investing resources, providing training, and eliminating disincentives.
• The design team's goals should focus on technical features; enablement is a matter of implementation.	• The design team's enablement goals should be planned for.
• Clear up-front goals should enable experts to deliver a clean final system design.	• Test successive prototypes of the new organizational system with employees.
• A well-designed system should need no revisions after implementation.	• The system design should encourage improvement suggestions by members at every level.

of the system and the rationale behind its design.

- Highly usable equipment such as advanced computer interfaces doesn't just tell people what they need to do; it also explains how they can best do it and makes that explanation intuitively meaningful. Similarly, an enabling organization's policies and procedures manual looks like a well-designed users' manual that invites rather than repels users by offering them ideas on how to do their jobs more effectively.
- Too often equipment is too rigid and contingencies force users to resort to covert and risky workarounds. The usability of equipment depends on whether it allows users to deal with the contingencies that inevitably arise in the real world of work. Similarly, enabling organizational systems help employees deal flexibly with unforeseen contingencies rather than imposing artificially rigid constraints. Moreover, enabling systems help enrich the organization's capabilities by identifying these adaptations so as to reveal opportunities for improvement.

One example of these principles at work is NUMMI's suggestion system. Many U.S. companies have suggestion systems, but in most cases what the employees see is simply a form on which they are supposed to describe their suggestion and a box in which to put it. If they are lucky, they might hear some months later that their suggestion has been accepted and they might get a reward. By contrast, the suggestion form at NUMMI makes very explicit the criteria by which the suggestion is going to be evaluated and encourages workers to evaluate their suggestions themselves using these criteria. Engineering assistance is available to workers for that purpose. The review process too is explained, so if the review feedback is tardy, the worker knows where in the system it is being held up. But in most cases the review is rapid—turnaround times are tracked and posted. Moreover, reviews are almost a formality since the worker has been encouraged to try out and thoroughly evaluate the suggestion before submitting it. As one former GM worker described it:

> In the old system, if you tried to make a suggestion, it was just a brick wall. Now the system is really a support system, instead of an authority system. You make a suggestion and the next day the engineer is down there working with you on how to implement it.

There are financial rewards for suggestions at NUMMI, but they are very modest. Whereas eight percent of U.S. employees make any suggestions in the course of a year and on average only 25 percent of these are adopted, 85 percent of NUMMI workers make at least one suggestion annually—on average NUMMI workers make around six per year—and over 90 percent of them are ultimately adopted.[24]

Motorola's MIEL group provides another powerful example. One of the program managers described MIEL's software development procedures in these terms:

> Another thing I like about Motorola is its process orientation. As an engineer, you sometimes feel that that's not right, that it's forcing you to do certain things in a certain way; but once you get into it, you get more mature about that and get to know what it is. It's not forcing really, it's helping you in difficult times. Really, the process helps in difficult times rather than easy times. When everything is fine, you don't need a process, but when you have trouble, the process really helps.[25]

Unfortunately, it is still too common to find formal procedures that get in the way rather than help.

Table 2 summarizes some of the salient contrasts between coercive and enabling features of organizational systems.

Finally, we know quite a lot about the organizational context required for the effective implementation of equipment, which depends not only on the features of the equipment itself, but also the readiness of the organization in terms of employee skills, procedures, organizational structures, strategy and policies, and culture.[26] Both the rollout of new equipment and the more enduring features of the host organization matter.

Rollout of new organizational systems, like that of new equipment, needs to reflect its enabling intent. Training in particular needs close attention. The traditional foolproofing approach assumes that training for the new systems happens primarily in up-front classroom instruction. The usability approach, on the other hand, is based on a more realistic theory of working knowledge and a more contextual theory of learning.[27] It therefore sees the primary goal of training as helping users incorporate and leverage the new system in their daily practice. Supervisors need to be the primary trainers.

The nature of the host organization is critical because even if equipment is designed to support

Table 2
Coercive Versus Enabling Features of Structure

Coercive	Enabling
• Systems focus on performance standards so as to highlight poor performance.	• Focus on best practice methods: information on performance standards is not much use without information on best practices for achieving them.
• Standardize the systems to minimize gameplaying and monitoring costs.	• Systems should allow customization to different levels of skill/experience and should guide flexible improvisation.
• Systems should be designed so as to keep employees out of the control loop.	• Systems should help people control their own work: Help them form mental models of the system by glass box design.
• Systems are instructions to be followed, not challenged.	• Systems are best practice templates to be improved.

usability, it can easily be used by a command-and-control type manager to support a foolproofing ethos. Organizational systems are no different. The design team may have functioned in the optimal manner and incorporated all the desired enabling features into their proposed system, but it is the character of the host organization that will ultimately determine if the system will be used as a tool or a weapon.

Motorola's MIEL group put into place a strong learning culture to ensure against such slippage—but it was not easy. One manager recounted his experience with the implementation of one part of the new procedure, review meetings:

> I remember my first review meeting. There was literally a fight because the project team could not accept the comments given by others. It required a certain degree of openness to accept the different views of your colleagues, many of them junior to you. But we have come a long way from that today.[28]

The quality manager, Sarala Ravishankar, explained:

> We have had several failures. In fact I think that failure is good for the organization because that's the best and fastest way of communicating learning to the organization. If we fail in one project, we look at what the reasons are that really caused that failure. And we have a system in place that analyzes those failures and spreads the learning across the organization.[29]

Table 3 summarizes some of the key contrasts between contexts suited to coercion and to enablement.

When to Use Which Approach

Standard theory provides good guidance on the technical dimension of organizational structure: Whether organizations need more rather than less

Table 3
Coercive Versus Enabling Implementation Contexts

	Coercive	Enabling
Skills	• operational know-how • narrow, specialized • training as expense to be minimized	• problem-solving know-why • both broad and deep • training as investment to be optimized
Procedures	• coercive constraints • provide top-down visibility for supervisors	• enabling disciplines • provide intelligibility for the top down, for the bottom up, and for everyone laterally
Structure	• fiefdoms • positional authority • top-down control	• mutually supportive specializations • hierarchy of expertise • shared control
Strategy	• identifies desired results • focuses at business level • autocratic formulation process	• . . . and required capabilities • . . . and functional levels • participative formulation process
Culture	• command and control • mistakes are costly	• collaborative control and learning • mistakes are learning opportunities

bureaucracy is a function of the degree of routineness of the key tasks of the organization. It is worth noting, however, that even firms facing ostensibly identical tasks assess these tasks' routineness very differently. Take auto assembly for example. The U.S. Big Three companies traditionally interpreted auto assembly line jobs as being so routine that a couple of hours should suffice to train a new worker. By contrast, Toyota derives considerable performance benefits by basing its job design on the assumption that there are important uncertainties in the assembly process, uncertainties that motivate more training, employee involvement, and innovation.

What about the second dimension: Is the enabling social structure always preferable to the coercive? Perhaps not. It is often argued that an enabling approach is less effective in highly competitive mass-production industries where cost is paramount.[30] The enabling approach certainly requires more extensive and costly upfront training and socialization of both employees and managers.

However, these expenditures should more logically been seen as investments—ones that we have good reason to believe typically show high returns even in cases like auto assembly where tasks are very repetitive and strategy is cost-based. And even in the context of machine-dependent processes such as semiconductor fabrication lines—where most innovation is engineering-led—there are considerable performance advantages to a high-involvement form of organization with extensive operator participation.[31]

Prospects

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Surveys have shown that while enabling-related programs like job enrichment, teams, and quality circles have become more common in recent years, they are still found in only a minority of firms, and within those firms these programs are as yet applied to only a minority of employees.[32] Several factors seem to impede the diffusion of the enabling form—although many of them seem to be weakening over time.

First, not all firms are able to make the theoretically rational investment in enablement. Firms and business units are often under budget constraints. Capital markets are far from perfect, and enabling structures are just one of many worthwhile investments that are sometimes sacrificed in the name of short-term financial performance. Moreover, there may be labor market circumstances that make it difficult to recruit employees willing to work under the enabling approach. And recruiting managers willing to adopt an enabling orientation may also prove difficult: A shift from the coercive approach to the enabling one requires managers to give up unilateral control and the material and psychological rewards that go with it.

Second, many firms have other sources of profitability besides their organizational effectiveness. When firms occupy a comfortable niche protected by barriers to entry or when they have special access to low-cost labor or raw materials, there is little competitive pressure forcing them to seek out the most effective organization designs. Even if this special access is just a hope rather than a reality, many firms decide to pursue a race to the bottom—treating employees and organizations as increasingly disposable assets—rather than confront the challenges of enablement. The forces of global competition, new technologies, and deregulation simultaneously encourage and discourage this race-to-the-bottom strategy.

Third, a number of features of the U.S. legal, regulatory, and social environment make enablement more expensive than it should be. A modicum of employment security, for example, is probably an important precondition of enablement. This security would help motivate workers to invest in acquiring skills specific to their firms or to make suggestions to enhance productivity. But as long as other firms don't offer employment security and as long as the legal and regulatory context doesn't actively support it, firms that do offer it suffer extra costs. Security, therefore, is less common than it should be.[33] Notwithstanding this disincentive, we do see firms adopting the enabling structure—and reaping handsome rewards for their efforts in the form of greater employee commitment and loyalty and resulting improvements in performance.

Finally, the diffusion of the enabling approach is hindered by entrenched models of management. The prevailing models are inherited from a historical period in which the interests of workers and managers were often brutally antagonistic. One long-standing model of management thus assumes that workers' and managers' inter-

ests are essentially contradictory. The most common alternative view is that this conflict is the result of a mere misunderstanding. Both views are overly simplistic. As society has evolved, employees and managers alike have become increasingly aware that alongside zones of really conflicting interests there are substantial zones of mutual gains. A large-scale shift in the level of both personal and institutional sophistication is required to learn how to exploit these mutual gains opportunities in the presence of simultaneous conflict in other zones. The firms and the countries that can advance faster along this social learning path stand to gain real performance benefits.[34]

Endnotes

[1] *Fortune*, June 17, 1991.

[2] Stewart, T. A. 1994. "How to Lead," *Fortune*, Nov. 28.

[3] Weber, M., 1978, *Economy and Society*. Berkeley, CA: University of California Press.

[4] See, for example, Mintzberg, H. 1979. *The structuring of organizations*. Englewood Cliffs, NJ: Prentice-Hall.

[5] See Lawler, E. E. 1994. Total quality management and employee involvement: Are they compatible? *The Academy of Management Executive*, 8, 1:68–76.

[6] See Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D. & Rosenthal, R. A. 1964. *Organizational stress*. New York: Wiley; Jackson, S. E. & Schuler, R. S. 1985. A meta-analysis and conceptual critique of research on role ambiguity and role conflict in work settings. *Organizational Behavior and Human Decision Processes*, 36:17–78.

[7] Perrow, C. 1986. *Complex organizations: A critical essay*. 3rd. ed. New York: Random House.

[8] See Adler, P. S. & Borys, B. 1996. Two types of bureaucracy: enabling vs coercive. *Administrative Science Quarterly*, March, pp. 61–89.

[9] Using the distinction drawn by Dornbusch, S. M., and Scott, W. R. 1975. *Evaluation and the exercise of authority*. San Francisco: Jossey-Bass.

[10] Precursors to the idea of an enabling form of bureaucracy can be found in Alvin Gouldner's "representative bureaucracy" pattern (Gouldner, A. W. 1954. *Patterns of industrial bureaucracy*. New York: Free Press), and in Peter Blau's concept of "adjustive development" (Blau, P. M. 1955, *The dynamics of bureaucracy*. Chicago: University of Chicago Press.) They can also be found in Weber's original work, where his analysis can easily be transposed into more contemporary terms:

> "In the natural economies of the ancient world, the Egyptian officials were slaves of the Pharaoh, if not legally, then in fact. The Roman latifundia owners preferred to commission slaves with the direct management of money matters, because of the possibility of subjecting them to torture. In China, similar results have been sought by the prodigious use of the bamboo as a disciplinary measure. The chances, however, for such a direct means of coercion to function with *steadiness* are extremely unfavorable. According to experience, the relative optimum for the success and maintenance of a rigorous mechanization of the bureaucratic apparatus is offered by an assured salary connected with the opportunity of a career that is not dependent upon mere accident and arbitrariness. Taut discipline and control which at the same time have consideration for the official's sense of honor, and the development of prestige sentiments of the status group as well as the possibility of public criticism also work in the same direction. With all this, the bureaucratic apparatus functions more assuredly than does legal enslavement of functionaries." (Weber, M. 1978. *Economy and society*. Berkeley, CA: University of California Press. v. 2, p. 967–8.)

[11] See Uzumeri, M. V. 1997. ISO 9000 and other metastandards: Principles for management practice? *The Academy of Management Executive*, 11, 1:21–36.

[12] Adler, P. S. 1993. "The 'learning bureaucracy': New United Motors Manufacturing Incorporated." In Barry M. Staw and Larry L. Cummings (eds.), *Research in Organizational Behavior*. 15:111–194. Greenwich, CT: JAI Press.

[13] Adler, P. S., and Cole, R. E. 1993. Designed for learning: A tale of two auto plants. *Sloan Management Review*, 34(3):85–94.

[14] Cusumano, M. A. 1991. *Japan's software factories*. New York: Oxford University Press.

[15] Jelinek, M. & Schoonhoven, C. B. 1993. *The innovation marathon*. San Francisco: Jossey-Bass. On earlier period, pp. 60–66; on later period, 409–12. Quote from p. 412.

[16] Ibid. pp. 233–4.

[17] See Humphrey, W. 1989. *Managing the software process*. Reading, Mass.: Addison-Wesley, and the publications of the SEI based at Carnegie-Mellon University, available at www.sei.cmu.edu.

[18] See Dutta, S., and Van Wassenhove, L. 1998. Motorola India and software excellence: Life beyond level 5. INSEAD case study.

[19] Zuboff, S. 1988. *In the age of the smart machine*. Cambridge, Mass.: Harvard University Press; Adler, P. S., & Winograd T. W. (eds.) 1992. *Usability: Turning technologies into Tools*. New York: Oxford University.

[20] Perrow, C. 1983. "The organizational context of human factors engineering." *Administrative Science Quarterly*, 28: 521–541.

[21] See Salzman, H. 1992. Skill-based design: Productivity, learning and organizational effectiveness. In Adler & Winograd, op. cit. pp. 66–95.

[22] MIEL manager quoted in Dutta & Van Wassenhove, op. cit., p. 4.

[23] See Brown, J. S., & Duguid, P. 1992. Enacting design for the workplace. In Adler & Winograd, op. cit., pp. 164–198; and Rheinfrank, J. J., Hartman, W. R. and Wasserman, A. Design for usability: Crafting a strategy for the design of a new generation of Xerox copiers, ibid, pp. 15–40.

[24] U.S. data from *Wall Street Journal*, Oct. 19, 1989, "Power of suggestion is stronger in Japan"; NUMMI data from Adler, op. cit., 1993.

[25] MIEL manager quoted in Dutta & Van Wassenhove, op. cit., p. 9.

[26] See surveys in Adler, P. S. (ed.). 1992. *Technology and the future of work*. New York: Oxford University Press.

[27] See for example Nardi, B. A. (ed.) 1996. *Context and consciousness*. Cambridge, Mass.: MIT Press.

[28] Quoted in Dutta & Van Wassenhove, op. cit., p. 9.

[29] Both quoted in ibid, p. 10.

[30] For example, Lawler, op. cit.

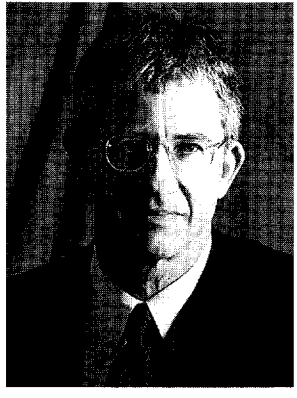
[31] Brown, C. (ed.). 1994. *The competitive semiconductor manufacturing human resources project: First interim report*. Berkeley, CA: Institute of Industrial Relations/Engineering Systems Research Center, U.C. Berkeley.

[32] See Lawler, III, E., Mohrman, S. A. and Ledford, Jr., G. E.

1995. *Creating high performance organizations*, San Francisco: Jossey-Bass; Osterman. P. 1994, "How common is workplace transformation and how can we explain who adopts it?" *Industrial and Labor Relations Review*, Jan.: 175–188.

[33] See Levine, D. 1995. *Reinventing the workplace: How business and employees can both win*. Washington, DC: Brookings Institution.

[34] Future research might profitably explore the dynamics underlying the diffusion of the enabling approach. Such research could take inspiration from prior research in the institutionalization and social networks traditions on the diffusion of managerial and technical innovations.



Paul S. Adler is a professor in the Department of Management and Organization, Marshall School of Business, University of Southern California. His research and teaching focus on strategic management, organization design, and human resource management, with a particular focus on technical, professional, and manufacturing operations. *Contact: padler@usc.edu.*