Charles Perrow

From the beginning, the forces of light and the forces of darkness have polarized the field of organizational analysis, and the struggle has been protracted and inconclusive. The forces of darkness have been represented by the mechanical school of organizational theory—those who treat the organization as a machine. This school characterizes organizations in terms of such things as:

- centralized authority
- clear lines of authority
- specialization and expertise
- marked division of labor
- rules and regulations
- clear separation of staff and line

The forces of light, which by mid-twentieth century came to be characterized as the human relations school, emphasizes people rather than machines, accommodations rather than machine-like precision, and draws its inspiration from biological systems rather than engineering systems. It has emphasized such things as:

- delegation of authority
- employee autonomy
- trust and openness
- concerns with the "whole person"
- interpersonal dynamics

The Rise and Fall of Scientific Management

The forces of darkness formulated their position first, starting in the early part of this century. They have been characterized as the scientific management or classical management school. This school started by parading simple-minded injunctions to plan ahead, keep records, write down policies, specialize, be decisive, and keep your span of control to about six people. These injunctions were needed as firms grew in size and complexity, since there were few models around beyond the railroads, the military, and the Catholic Church to guide organizations. And their injunctions worked. Executives began to delegate, reduce their span of control, keep records, and specialize. Planning ahead still is difficult, it seems, and the modern equivalent is Management by Objectives.

But many things intruded to make these simple-minded injunctions less relevant:

1. Labor became a more critical factor in the firm. As the technology increased in

sophistication it took longer to train people, and more varied and specialized skills were needed. Thus, labor turnover cost more and recruitment became more selective. As a consequence, labor's power increased. Unions and strikes appeared. Management adjusted by beginning to speak of a cooperative system of capital, management, and labor. The machine model began to lose its relevancy.

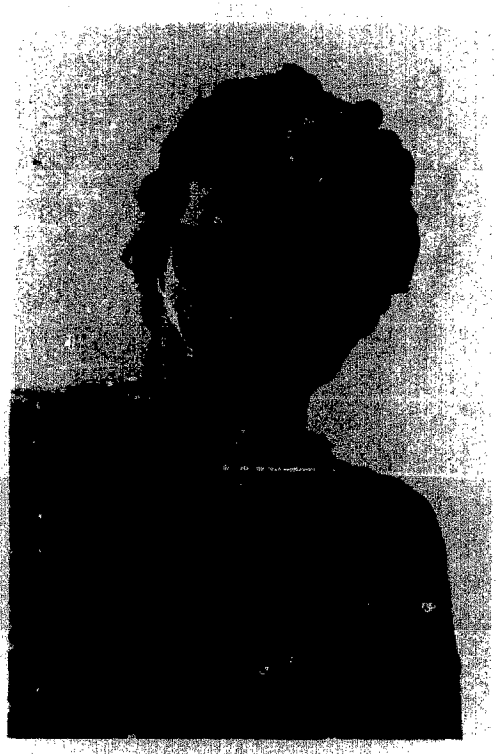
2. The increasing complexity of markets, variability of products, increasing number of branch plants, and changes in technology all required more adaptive organization. The scientific management school was ill-equipped to deal with rapid change. It had presumed that once the proper structure was achieved the firm could run forever without much tampering. By the late 1930s, people began writing about adaptation and change in industry from an organizational point of view and had to abandon some of the principles of scientific management.

3. Political, social, and cultural changes meant new expectations regarding the proper way to treat people. The dark, satanic mills needed at the least a white-washing. Child labor and the brutality of supervision in many enterprises became no longer permissible. Even managers could not be expected to accept the authoritarian patterns of leadership that prevailed in the small firm run by the founding father.

4. As mergers and growth proceeded apace and the firm could no longer be viewed as the shadow of one man (the founding entrepreneur), a search for methods of selecting good leadership became a preoccupation. A good, clear, mechanical structure would no longer suffice. Instead, firms had to search for the qualities of leadership that could fill the large footsteps of the entrepreneur. They tacitly had to admit that something other than either "sound principles" or "dynamic leadership" was needed. The search for leadership traits implied that leaders were made, not just born, that the matter was complex, and that several skills were involved.

Enter Human Relations

From the beginning, individual voices were raised against the implications of the scientific management school. "Bureaucracy" had always been a dirty word, and the job design efforts of Frederick Taylor were even the subject of a congressional investigation. But no effective counterforce developed until 1938, when a business executive with academic talents named Chester Barnard proposed the first new theory of organizations: Organizations are cooperative systems, not the products of mechanical engineering. He stressed natural groups within the organization, upward communication, authority from below rather than from above, and leaders who functioned as a cohesive force. With the spectre of labor unrest and the Great Depression upon him, Barnard's emphasis on the cooperative nature of organizations was well-timed. The year following the publication of his *Functions of the Executive* (1938) saw the publication of F. J. Roethlisberger and William Dickson's *Management and the Worker,* reporting on the first large-scale empirical investigation of productivity and social relations. The research, most of it conducted in the Hawthorne plant of the Western Electric Company during a period in which the workforce was reduced, highlighted the role of informal groups, work restriction norms, the value of decent, humane leadership, and the role of psychological manipulation of employees through the counseling system. World War II intervened, but after the war the human relations movement, building on the insights of Barnard and the Hawthorne studies, came into its own.



While **Charles Perrow's** *primary affiliation has been with sociology departments in a variety of universities (Michigan, Pittsburgh, Wisconsin, and now, the State University of New York at Stony Brook), he has tempered his theorizing by also teaching in professional schools at these universities. "Business students want to know what difference theory makes, and it is a salutory discipline for the sociologists," he notes. This resulted in a book for business managers,* Organizational Analysis: A Sociological View, *in 1970. He has published three other books dealing with organizations, as well as more than 20 scholarly articles. The present article has grown out of his recent volume,* Complex Organizations: A Critical Essay *(1972).*

He has consulted with business, government and voluntary agencies (but very modestly), spent a year at the Industrial Relations Institute in Berkeley and the Business School there, in the year of the People's Park and the Cleaver demonstrations. Currently he is spending this year at the London Business School and is running two-day training sessions on the structural analysis of organizations for managers. He is also working with some groups on the social responsibilities of business. Professor Perrow is on the editorial board of Administrative Science Quarterly *and the* American Sociological Review. *His other books are* The Radical Attack on Business, *1972, and* Organization for Treatment, *1966, with D. Street and R. Vinter.*

The first step was a search for the traits of good leadership. It went on furiously at university centers but at first failed to produce more than a list of Boy Scout maxims: A good leader was kind, courteous, loyal, courageous, etc. We suspected as much. However, the studies did turn up a distinction between "consideration," or employee-centered aspects of leadership, and job-centered, technical aspects labled "initiating structure." Both were important, but the former received most of the attention and the latter went undeveloped. The former led directly to an examination of group processes, an investigation that has culminated in T-group programs and is moving forward still with encounter groups. Meanwhile, in England, the Tavistock Institute sensed the importance of the influence of the kind of task a group had to perform on the social relations within the group. The first important study, conducted among coal miners, showed that job simplification and specialization did not work under conditions of uncertainty and nonroutine tasks.

As this work flourished and spread, more adventurous theorists began to extend it beyond work groups to organizations as a whole. We now knew that there were a number of things that were bad for the morale and loyalty of groups—routine tasks, submission to authority, specialization of task, segregation of task sequence, ignorance of the goals of the firm, centralized decision making, and so on. If these were bad for groups, they were likely to be bad for groups of groups—i.e., for organizations. So people like Warren Bennis began talking about innovative, rapidly changing organizations that were made up of temporary groups, temporary authority systems, temporary leadership and role assignments, and democratic access to the goals of the firm. If rapidly changing technologies and unstable, turbulent environments were to characterize industry, then the structure of

firms should be temporary and decentralized. The forces of light, of freedom, autonomy, change, humanity, creativity, and democracy were winning. Scientific management survived only in outdated text books. If the evangelizing of some of the human relations school theorists was excessive, and if Likert's System 4 or MacGregor's Theory Y or Blake's 9 x 9 evaded us, at least there was a rationale for confusion, disorganization, scrambling, and stress: Systems should be temporary.

Bureaucracy's Comeback

Meanwhile, in another part of the management forest, the mechanistic school was gathering its forces and preparing to outflank the forces of light. First came the numbers men—the linear programmers, the budget experts, and the financial analysts—with their PERT systems and cost-benefit analyses. From another world, unburdened by most of the scientific management ideology and untouched by the human relations school, they began to parcel things out and give some meaning to those truisms, "plan ahead" and "keep records." Armed with emerging systems concepts, they carried the "mechanistic" analogy to its fullest—and it was very productive. Their work still goes on, largely untroubled by organizational theory; the theory, it seems clear, will have to adjust to them, rather than the other way around.

Then the works of Max Weber, first translated from the German in the 1940s—he wrote around 1910, incredibly—began to find their way into social science thought. At first, with his celebration of the efficiency of bureaucracy, he was received with only reluctant respect, and even with hostility. All writers were against bureaucracy. But it turned out, surprisingly, that managers were not. When asked, they acknowledged that they preferred clear lines of communication, clear specifications of authority and responsibility, and clear knowledge of whom they were responsible to. They were as wont to say "there ought to be a rule about this," as to say "there are too many rules around here," as wont to say "next week we've got to get organized," as to say "there is too much red tape." Gradually, studies began to show that bureaucratic organizations could change faster than nonbureaucratic ones, and that morale could be higher where there was clear evidence of bureaucracy.

What was this thing, then? Weber had showed us, for example, that bureaucracy was the most effective way of ridding organizations of favoritism, arbitrary authority, discrimination, payola and kick-backs, and yes, even incompetence. His model stressed expertise, and the favorite or the boss' nephew or the guy who burned up resources to make his performance look good was *not* the one with expertise. Rules could be changed; they could be dropped in exceptional circum-

stances; job security promoted more innovation. The sins of bureaucracy began to look like the sins of failing to follow its principles.

Enter Power, Conflict, and Decisions

But another discipline began to intrude upon the confident work and increasingly elaborate models of the human relations theorists (largely social psychologists) and the uneasy toying with bureaucracy of the "structionalists" (largely sociologists). Both tended to study economic organizations. A few, like Philip Selznick, were noting conflict and differences in goals (perhaps because he was studying a public agency, the Tennessee Valley Authority), but most ignored conflict or treated it as a pathological manifestation of breakdowns in communication or the ego trips of unreconstructed managers.

But in the world of political parties, pressure groups, and legislative bodies, conflict was not only rampant, but to be expected —it was even functional. This was the domain of the political scientists. They kept talking about power, making it a legitimate concern for analysis. There was an open acknowledgement of "manipulation." These were political scientists who were "behaviorally" inclined—studying and recording behavior rather than constitutions and formal systems of government—and they came to a much more complex view of organized activity. It spilled over into the area of economic organizations, with the help of some economists like R. A. Gordon and some sociologists who were studying conflicting goals of treatment and custody in prisons and mental hospitals.

The presence of legitimately conflicting goals and techniques of preserving and using power did not, of course, sit well with a cooperative systems view of organizations. But it also puzzled the bureaucratic school (and what was left of the old scientific management school), for the impressive Weberian principles were designed to settle questions of power through organizational design and to keep conflict out through reliance on rational-legal authority and systems of careers, expertise, and hierarchy. But power was being overtly contested and exercised in covert ways, and conflict was bursting out all over, and even being creative.

Gradually, in the second half of the 1950s and in the next decade, the political science view infiltrated both schools. Conflict could be healthy, even in a cooperative system, said the human relationists; it was the mode of resolution that counted, rather than prevention. Power became reconceptualized as "influence," and the distribution was less important, said Arnold Tannenbaum, than the total amount. For the bureaucratic school —never a clearly defined group of people, and largely without any clear ideology—it was easier to just absorb the new data and theories as something else to be thrown into the pot. That is to say, they floundered, writing books that went from topic to topic, without a clear view of organizations, or better yet, producing "readers" and leaving students to sort it all out.

Buried in the political science viewpoint was a sleeper that only gradually began to undermine the dominant views. This was the idea, largely found in the work of Herbert Simon and James March, that because man was so limited—in intelligence, reasoning powers, information at his disposal, time available, and means of ordering his preferences clearly—he generally seized on the first acceptable alternative when deciding, rather than looking for the best; that he rarely changed things unless they really got bad, and even then he continued to try what had worked before; that he limited his search for solutions to well-worn paths and traditional

sources of information and established ideas; that he was wont to remain preoccupied with routine, thus preventing innovation. They called these characteristics "cognitive limits on rationality" and spoke of "satisficing" rather than maximizing or optimizing. It is now called the "decision making" school, and is concerned with the basic question of how people make decisions.

This view had some rather unusual implications. It suggested that if managers were so limited, then they could be easily controlled. What was necessary was not to give direct orders (on the assumption that subordinates were idiots without expertise) or to leave them to their own devices (on the assumption that they were supermen who would somehow know what was best for the organization, how to coordinate with all the other supermen, how to anticipate market changes, etc.). It was necessary to control only the *premises* of their decisions. Left to themselves, with those premises set, they could be predicted to rely on precedent, keep things stable and smooth, and respond to signals that reinforce the behavior desired of them.

To control the premises of decision making, March and Simon outline a variety of devices, all of which are familiar to you, but some of which you may not have seen before in quite this light. For example, organizations develop vocabularies, and this means that certain kinds of information are highlighted, and others are screened out—just as Eskimos (and skiers) distinguish many varieties of snow, while Londoners see only one. This is a form of attention directing. Another is the reward system. Change the bonus for salesmen and you can shift them from volume selling to steady-account selling, or to selling quality products or new products. If you want to channel good people into a different function (because, for example, sales should no longer be the critical function as the market changes, but engineering applications should), you may have to promote mediocre people in the unrewarded function in order to signal to the good people in the rewarded one that the game has changed. You cannot expect most people to make such decision on their own because of the cognitive limits on their rationality, nor will you succeed by giving direct orders, because you yourself probably do not know whom to order where. You presume that once the signals are clear and the new sets of alternatives are manifest, they have enough ability to make the decision but you have had to change the premises for their decisions about their career lines.

It would take too long to go through the dozen or so devices, covering a range of decision areas (March and Simon are not that clear or systematic about them, themselves, so I have summarized them in my own book), but I think the message is clear.

It was becoming clear to the human relations school, and to the bureaucratic school. The human relationists had begun to speak of changing stimuli rather than changing personality. They had begun to see that the rewards that can change behavior can well be prestige, money, comfort, etc., rather than trust, openness, self-insight, and so on. The alternative to supportive relations need not be punishment, since behavior can best be changed by rewarding approved behavior rather than by punishing disapproved behavior. They were finding that although leadership may be centralized, it can function best through indirect and unobtrusive means such as changing the premises on which decisions are made, thus giving the impression that the subordinate is actually making a decision when he has only been switched to a different set of alternatives. The implications of this work were also beginning to filter into the human relations school through an emphasis on behavioral psychology (the modern

version of the much maligned stimulus-response school) that was supplanting personality theory (Freudian in its roots, and drawing heavily, in the human relations school, on Maslow).

For the bureaucratic school, this new line of thought reduced the heavy weight placed upon the bony structure of bureaucracy by highlighting the muscle and flesh that make these bones move. A single chain of command, precise division of labor, and clear lines of communication are simply not enough in themselves. Control can be achieved by using alternative communication channels, depending on the situation; by increasing or decreasing the static or "noise" in the system; by creating organizational myths and organizational vocabularies that allow only selective bits of information to enter the system; and through monitoring performance through indirect means rather than direct surveillance. Weber was all right for a starter, but organizations had changed vastly, and the leaders needed many more means of control and more subtle means of manipulation than they did at the turn of the century.

The Technological Qualification

By now the forces of darkness and forces of light had moved respectively from midnight and noon to about 4 A.M. and 8 A.M. But any convergence or resolution would have to be on yet new terms, for soon after the political science tradition had begun to infiltrate the established schools, another blow struck both of the major positions. Working quite independently of the Tavistock Group, with its emphasis on sociotechnical systems, and before the work of Burns and Stalker on mechanistic and organic firms, Joan Woodward was trying to see whether the classical scientific principles of organization made any sense in her survey of 100 firms in South Essex. She tripped and stumbled over a piece of gold in the process. She picked up the gold, labeled it "technology," and made sense out of her otherwise hopeless data. Job-shop firms, mass-production firms, and continuous-process firms all had quite different structures because the type of tasks, or the "technology," was different. Somewhat later, researchers in America were coming to very similar conclusions based on studies of hospitals, juvenile correctional institutions, and industrial firms. Bureaucracy appeared to be the best form of organization for routine operations; temporary work groups, decentralization, and emphasis on interpersonal processes appeared to work best for nonroutine operations. A raft of studies appeared and are still appearing, all trying to show how the nature of the task affects the structure of the organization.

"The alternative to supportive relations need not be punishment, since behavior can best be changed by rewarding approved behavior rather than by punishing disapproved behavior."

This severely complicated things for the human relations school, since it suggested that openness and trust, while good things in themselves, did not have much impact, or perhaps were not even possible in some kinds of work situations. The prescriptions that were being handed out would have to be drastically qualified. What might work for nonroutine, high-status, interesting, and challenging jobs performed by highly educated people might not be relevant or even beneficial for the vast majority of jobs and people.

It also forced the upholders of the revised bureaucratic theory to qualify their recommendations, since research and development units should obviously be run differently from mass-production units, and the difference between both of these and highly programmed and highly sophisticated continuous-process firms was obscure in terms of bureaucratic theory. But the bureaucratic school perhaps came out on top, because the forces of evil—authority, structure, division of labor, etc.—no longer looked evil, even if they were not applicable to a minority of industrial units.

The emphasis on technology raised other questions, however. A can company might be quite routine, and a plastics division nonroutine, but there were both routine and nonroutine units within each. How should they be integrated if the prescription were followed that, say, production should be bureaucratized and R&D not? James Thompson began spelling out different forms of interdependence among units in organizations, and Paul Lawrence and Jay Lorsch looked closely at the nature of integrating mechanisms. Lawrence and Lorsch found that firms performed best when the differences between units were *maximized* (in contrast to both the human relations and the bureaucratic school), as long as the integrating mechanisms stood half-way between the two—being neither strongly bureaucratic nor nonroutine. They also noted that attempts at participative management in routine situations were counterproductive, that the environments of some kinds of organizations were far from turbulent and customers did not want innovations and changes, that cost reduction, price, and efficiency were trivial considerations in some firms, and so on. The technological insight was demolishing our comfortable truths right and left. They were also being questioned from another quarter.

Enter Goals, Environments, and Systems

The final seam was being mined by the sociologists while all this went on. This was the concern with organizational goals and the environment. Borrowing from the political scientists to some extent, but pushing ahead on their own, this "institutional school" came to see that goals were not fixed; conflicting

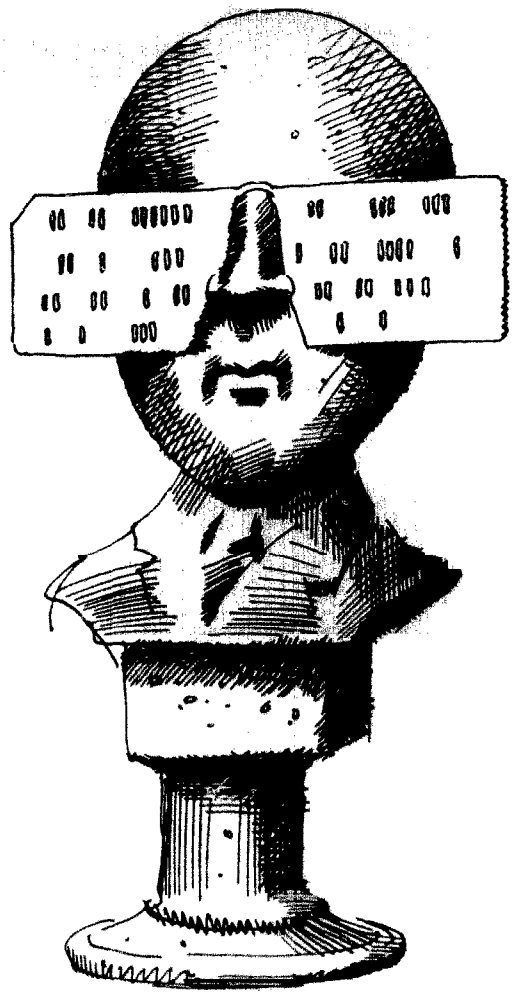
goals could be pursued simultaneously, if there were enough slack resources, or sequentially (growth for the next four years, then cost-cutting and profit-taking for the next four); that goals were up for grabs in organizations, and units fought over them. Goals were, of course, not what they seemed to be, the important ones were quite unofficial; history played a big role; and assuming profit as the pre-eminent goal explained almost nothing about a firm's behavior.

They also did case studies that linked the organization to the web of influence of the environment; that showed how unique organizations were in many respects (so that, once again, there was no one best way to do things for all organizations); how organizations were embedded in their own history, making change difficult. Most striking of all, perhaps, the case studies revealed that the stated goals usually were not the real ones; the official leaders usually were not the powerful ones; claims of effectiveness and efficiency were deceptive or even untrue; the public interest was not being served; political influences were pervasive; favoritism, discrimination, and sheer corruption were commonplace. The accumulation of these studies presented quite a pill for either the forces of light or darkness to swallow, since it was hard to see how training sessions or interpersonal skills were relevant to these problems, and it was also clear that the vaunted efficiency of bureaucracy was hardly in evidence. What could they make of this wad of case studies?

We are still sorting it out. In one sense, the Weberian model is upheld because organizations are not, *by nature,* cooperative systems; top managers must exercise a great deal of effort to control them. But if organizations are tools in the hands of leaders, they may be very recalcitrant ones. Like the broom in the story of the sorcerer's apprentice, they occasionally get out of hand. If conflicting goals, bargaining, and unofficial leadership exists, where is the structure of Weberian bones and Simonian muscle? To what extent are organizations tools, and to what extent are they products of the varied interests and group strivings of their members? Does it vary by organization, in terms of some typological alchemy we have not discovered? We don't know. But at any rate, the bureaucratic model suffers again; it simply has not reckoned on the role of the environment. There are enormous sources of variations that the neat, though by now quite complex, neo-Weberian model could not account for.

The human relations model has also been badly shaken by the findings of the institutional school, for it was wont to assume that goals were given and unproblematical, and that anything that promoted harmony and efficiency for an organization also was good for society. Human relationists assumed that the problems created by organizations were largely limited to the psychological consequences of poor interpersonal relations within them, rather than their impact on the environment. Could the organization really promote the psychological health of its members when by necessity it had to define psychological health in terms of the goals of the organization itself? The neo-Weberian model at least called manipulation "manipulation" and was skeptical of claims about autonomy and self-realization.

But on one thing all the varied schools of organizational analysis now seemed to be agreed: organizations are systems—indeed, they are open systems. As the growth of the field has forced ever more variables into our consciousness, flat claims of predictive power are beginning to decrease and research has become bewilderingly complex. Even consulting groups need more than one or two tools in their kit-bag as the software multiplies.



The systems view is intuitively simple. Everything is related to everything else, though in uneven degrees of tension and reciprocity. Every unit, organization, department, or work group takes in resources, transforms them, and sends them out, and thus interacts with the larger system. The psychological, sociological, and cultural aspects of units interact. The systems view was explicit in the institutional work, since they tried to study whole organizations; it became explicit in the human relations school, because they were so concerned with the interactions of people. The political science and technology viewpoints also had to come to this realization, since they dealt with parts affecting each other (sales affecting production; technology affecting structure).

But as intuitively simple as it is, the systems view has been difficult to put into practical use. We still find ourselves ignoring the tenets of the open systems view, possibly because of the cognitive limits on our rationality. General systems theory itself has not lived up to its heady predictions; it remains rather nebulous. But at least there is a model for calling us to account and for stretching our minds, our research tools, and our troubled nostrums.

Some Conclusions

Where does all this leave us? We might summarize the prescriptions and proscriptions for management very roughly as follows:

1. A great deal of the "variance" in a firm's behavior depends on the environment. We have become more realistic about the limited range of change that can be induced through internal efforts. The goals of organizations, including those of profit and efficiency, vary greatly among industries and vary systematically by industries. This suggests that the impact of better management by itself will be limited, since so much will depend on market forces, competition, legislation, nature of the work force, available technologies and innovations, and so on. Another source of variation is, obviously, the history of the firm and its industry and its traditions.

2. A fair amount of variation in both firms and industries is due to the type of work done in the organization—the technology. We are now fairly confident in recommending that if work is predictable and routine, the necessary arrangement for getting the work done can be highly structured, and one can use a good deal of bureaucratic theory in accomplishing this. If it is not predictable, if it is nonroutine and there is a good deal of uncertainty as to how to do a job, then one had better utilize the theories that emphasize autonomy, temporary groups, multiple lines of authority and communications, and so on. We also know that this distinction is important when organizing different parts of an organization.

We are also getting a grasp on the question of what is the most critical function in different types of organizations. For some organizations it is production; for others, marketing; for still others, development. Furthermore, firms go through phases whereby the initial development of a market or a product or manufacturing process or accounting scheme may require a non-bureaucratic structure, but once it comes on stream, the structure should change to reflect the changed character of the work.

3. In keeping with this, management should be advised that the attempt to produce change in an organization through managerial grids, sensitivity training, and even job enrichment and job enlargement is likely to be fairly ineffective for all but a few organizations. The critical reviews of research in all these fields show that there is no scientific evidence to support the claims of the proponents of these various methods; that research has told us a great deal about social psychology, but little about how to apply the highly complex findings to actual situations. The key word is *selectivity:* We have no broad-spectrum antibiotics for interpersonal relations. Of course, managers should be sensitive, decent, kind, courteous, and courageous, but we have known that for some time now, and beyond a minimal threshold level, the payoff is hard to measure. The various attempts to make work and interpersonal relations more humane and stimulating should be applauded, but we should not confuse this with solving problems of structure, or as the equivalent of decentralization or participatory democracy.

4. The burning cry in all organizations is for "good leadership," but we have learned that beyond a threshold level of adequacy it is extremely difficult to know what good leadership is. The hundreds of scientific studies of this phenomenon come to one general conclusion: Leadership is highly variable or "contingent" upon a large variety of important variables such as nature of task, size of the group, length of time the group has existed, type of personnel within the group and their relationships with each other, and amount of pressure the group is under. It does not seem likely that we'll be able to devise a way to select the best leader for a particular situation. Even if we could, that situation would probably change in a short time and thus would require a somewhat different type of leader.

Furthermore, we are beginning to realize that leadership involves more than

---

"The burning cry in all organizations is for 'good leadership,' but we have learned that beyond a threshold level of adequacy it is extremely difficult to know what good leadership is."

smoothing the paths of human interaction. What has rarely been studied in this area is the wisdom or even the technical adequacy of a leader's decision. A leader does more than lead people; he also makes decisions about the allocation of resources, type of technology to be used, the nature of the market, and so on. This aspect of leadership remains very obscure, but it is obviously crucial.

5. If we cannot solve our problems through good human relations or through good leadership, what are we then left with? The literature suggests that changing the structures of organizations might be the most effective and certainly the quickest and cheapest method. However, we are now sophisticated enough to know that changing the formal structure by itself is not likely to produce the desired changes. In addition, one must be aware of a large range of subtle, unobtrusive, and even covert processes and change devices that exist. If inspection procedures are not working, we are now unlikely to rush in with sensitivity training, nor would we send down authoritative communications telling people to do a better job. We are more likely to find out where the authority really lies, whether the degree of specialization is adequate, what the rules and regulations are, and so on, but even this very likely will not be enough.

According to the neo-Weberian bureaucratic model, as it has been influenced by work on decision making and behavioral psychology, we should find out how to manipulate the reward structure, change the premises of the decision-makers through finer controls on the information received and the expectations generated, search for interdepartmental conflicts that prevent better inspection procedures from being followed, and after manipulating these variables, sit back and wait for two or three months for them to take hold. This is complicated and hardly as dramatic as many of the solutions currently being peddled, but I think the weight of organizational theory is in its favor.

We have probably learned more, over several decades of research and theory, about the things that do *not* work (even though some of them obviously *should* have worked), than we have about things that do work. On balance, this is an important gain and should not discourage us. As you know, organizations are extremely complicated. To have as much knowledge as we do have in a fledgling discipline that has had to borrow from the diverse tools and concepts of psychology, sociology, economics, engineering, biology, history, and even anthropology is not really so bad.

Selected Bibliography

This paper is an adaptation of the discussion to be found in Charles Perrow, *Complex Organizations: A Critical Essay*, Scott, Foresman & Co., Glenville, Illinois, 1972. All the points made in this paper are discussed thoroughly in that volume.

The best overview and discussion of classical management theory, and its changes over time is by Joseph Massie—"Management Theory" in the *Handbook of Organizations* edited by James March, Rand McNally & Co., Chicago, 1965, pp. 387–422.

The best discussion of the changing justifications for managerial rule and worker obedience as they are related to changes in technology, etc., can be found in Reinhard Bendix's *Work and Authority in Industry*, John Wiley & Sons, Inc., New York, 1956. See especially the chapter on the American experience.

Some of the leading lights of the classi-

cal view—F. W. Taylor, Col. Urwick, and Henry Fayol—are briefly discussed in *Writers on Organizations* by D. S. Pugh, D. J. Hickson and C. R. Hinings, Penguin, 1971. This brief, readable, and useful book also contains selections from many other schools that I discuss, including Weber, Woodward, Cyert and March, Simon, the Hawthorne Investigations, and the Human Relations Movement as represented by Argyris, Herzberg, Likert, McGregor, and Blake and Mouton.

As good a place as any to start examining the human relations tradition is Rensis Likert, *The Human Organization*, McGraw-Hill, New York, 1967. See also his *New Patterns of Management*, McGraw-Hill Book Company, New York, 1961.

The Buck Rogers school of organizational theory is best represented by Warren Bennis. See his *Changing Organizations*, McGraw-Hill Book Company, New York, 1966, and his book with Philip Slater, *The Temporary Society*, Harper & Row, Inc.. New York, 1968. Much of this work is linked into more general studies, e.g., Alvin Toffler's very popular paperback *Future Shock*, Random House, 1970, and Bantam Paperbacks, or Zibigniew Brzezinsky's *Between Two Ages: America's Role in the Technitronic Era*, the Viking Press, New York, 1970. One of the first intimations of the new type of environment and firm and still perhaps the most perceptive is to be found in the volume by Tom Burns and G. Stalker, *The Management of Innovation*, Tavistock, London, 1961, where they distinguished between "organic" and "mechanistic" systems. The introduction, which is not very long, is an excellent and very tight summary of the book.

The political science tradition came in through three important works. First, Herbert Simon's *Administrative Behavior*, The MacMillan Co., New York, 1948, followed by the second half of James March and Herbert Simon's *Organizations*, John Wiley & Sons, Inc., New York, 1958, then Richard M. Cyert and James March's *A Behavioral Theory of the Firm*, Prentice-Hall, Inc. Englewood Cliffs, N.J., 1963. All three of these books are fairly rough going, though chapters 1, 2, 3, and 6 of the last volume are fairly short and accessible. A quite interesting book in this tradition, though somewhat heavy-going, is Michael Crozier's *The Bureaucratic Phenomenon*, University of Chicago, and Tavistock Publications, 1964. This is a striking description of power in organizations, though there is a somewhat dubious attempt to link organization processes in France to the cultural traits of the French people.

The book by Joan Woodward *Industrial Organisation: Theory and Practice*, Oxford University Press, London, 1965, is still very much worth reading. A fairly popular attempt to discuss the implications for this for management can be found in my own book, *Organizational Analysis: A Sociological View*, Tavistock, 1970, Chapters 2 and 3. The impact of technology on structure is still fairly controversial. A number of technical studies have found both support and nonsupport, largely because the concept is defined so differently, but there is general agreement that different structures and leadership techniques are needed for different situations. For studies that support and document this viewpoint see James Thompson, *Organizations in Action*, McGraw-Hill Book Company, New York, 1967, and Paul Lawrence and Jay Lorsch, *Organizations and Environment*, Harvard University Press, Cambridge, Mass., 1967.

The best single work on the relation between the organization and the environment and one of the most readable books in the field is Philip Selznick's short volume *Leadership in Administration*, Row, Peterson, Evanston, Illinois, 1957. But the large number of these studies are scattered about. I have summarized several in my *Complex Organizations: A Critical Essay*.

Lastly, the most elaborate and persuasive argument for a systems view of organizations is found in the first 100 pages of the book by Daniel Katz and Robert Kahn, *The Social Psychology of Organizations*, John Wiley and Co., 1966. It is not easy reading, however.