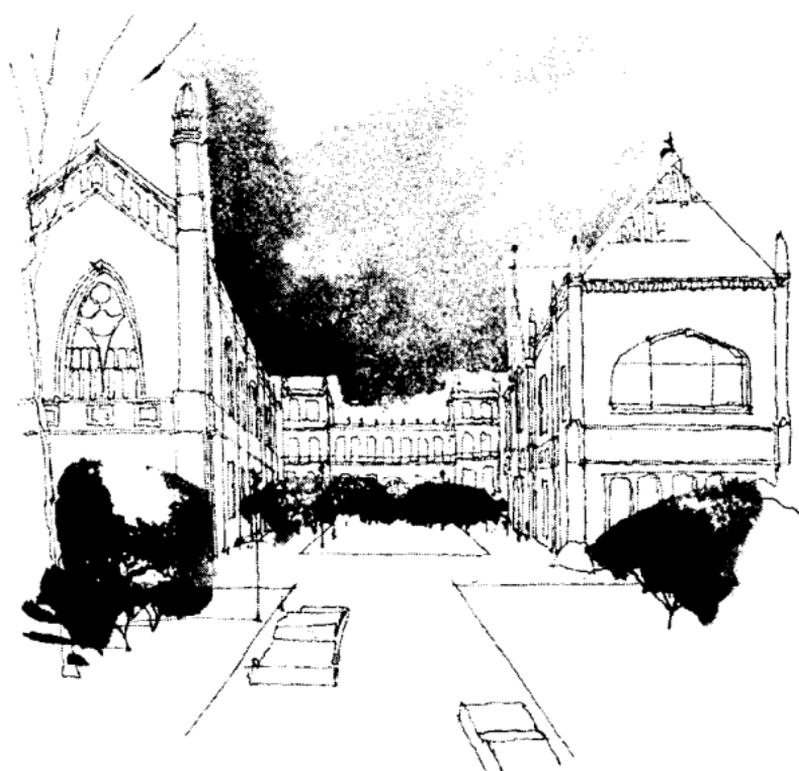


Selected Papers No. 9

Executives and Their Jobs -the Changing Organizational Structure

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Executives and Their Jobs- The Changing Organizational Structure

DURING THE LAST twenty-five years, the executive and his job have become the objects of intensive study. Executive-watchers are all over the place. Like bird-watching and girl-watching, executive-watching is part of contemporary American life, perhaps falling somewhere between the other two in popularity.

This new game (if it is that) has been popularized by social scientists who, I am sure, spend more man-hours at it than the entire Internal Revenue Service. Even so, probably too little time is spent by most social scientists in watching, relative to the time they spend in describing, analyzing, and, often, moralizing.

I come before you today as another executive-watcher from the social science crowd, with my own observations and conjectures, having done a more adequate job of observing in some areas than I have in others. But, true to the traditions of the fraternity, I do not let my shortcomings as an observer hobble my enthusiasm as an analyst or my imagination as a forecaster. Executive-watchers, like girl-watchers, tend to be long on imagination.

The Forces of Change

I shall review certain developments in the executive's environment which I believe are changing or will change the organization within which he operates as well as the nature of his job. I want also to point out a few characteristics of the environment which strike **me** as likely to accentuate or, in some cases, to damp the forces of change.

I must admit to a bias. I believe that the genius of the effective executive really lies al-

most entirely in his ability to adapt cleverly. It seems to me that, if you would watch and study him, you will learn more by assuming that the state of the world shapes his efforts rather than the opposite. He succeeds because of his superior diagnosis (of the forces in the world around him) and his superior prescription (of appropriate changes in the organization's activities, structure, and personnel). Hence my basic interest in enumerating environmental influences on the executive and his organization.

For convenience I group these influences into three categories: (1) new discoveries; (2) social attitudes and behavior; and (3) political trends.

New Discoveries

Of these three, probably the most interesting and influential today is the area of new discoveries—changes in the state of human knowledge which result in new technologies and new ways of doing things in management.

Within the last decade we have seen three particularly important new developments in knowledge related to management. One is the knowledge of how to utilize electronic computers in solving operating problems in business. The second is the development and application of management science or operations research—a series of practical applications of mathematical and statistical techniques. The third—and one that is just getting on its feet—is the development of real insight into the nature and operation of organizations—“organization theory,” as it is called.

The computer and operations research applications will, many of us believe, bring about big changes in the structure of the organization. Better understanding of organization theory may aid the manager in effectively adapting his organization to these technological impacts.

While factory automation has already generated some large-scale problems of change, we have not really begun to feel the full impact of the new discoveries in computer technology and management science. The problems coming up will be concentrated at the managerial level. They will affect you and others like you. They will evolve from changes induced in the organization by the combination of computers and management science-by information technology. They are the problems of the 1960's and the 1970's.

For the past five years several of us at the Graduate School of Business have been watching and studying organizations that have been learning how to adapt to this new technology. The purpose of this watching has been to look for evidence that organizations and executives really do change and in what ways. The watch is not over. The case is still open.

But some armchair predictions about the nature of management in the 1980's are already in the public domain and have been rather widely discussed. Let us look today at how they are standing up as more and more evidence comes in.

The Flattening Organization

Prediction number one was that information technology will have the effect of flattening the organization structure. Evidence that we have gathered seems to support this. The most spectacular examples lie in the military, where cost considerations are secondary to national security.

A clear case is NORAD-the North American Defense Command-set up to protect this continent from outside attack. Introduction into NORAD of the SAGE system-an elaborate control system incorporating radar, radio, and (most important) batteries of computers-has changed the management organization structure, eliminating one level. Pre-SAGE

there were five levels; post-SAGE there are four. In effect, one of the middle levels was eliminated.

We have found the same shrinkage effect in two business organizations on a less heroic, more cautious, scale. In one case the number of managerial positions was reduced by more than 30 per cent over a two-year period in those areas where computer systems were applied.

This flattening of the structure inevitably is accompanied by recombination of parts of former positions into new bundles of responsibility-new positions. It is not really the case that a layer of management is removed whole and intact. Rather, the computer takes over some parts of various positions. Subsequent consolidation produces new ones.

In one company, as a consequence of this process, credit management, warehouse management, and sales responsibilities have been combined under a number of distribution managers. In another, the result was the consolidation of two vice-presidential jobs—the vice-president of production and the vice-president of merchandising. The SAGE reorganization actually eliminated only about 50 per cent of the headquarters groups at the level affected. The others were recombined with still different groups.

As you might expect, when the smoke of these reorganizations cleared away, the managers who survived and thrived were those who early saw the advantages of the new systems and new organizations. Ask not for whom the bell tolled.

Recentralized Control

Another prediction, made five years ago, was that information technology would recentralize control in organizations. That contention has provoked strong reaction—some very respectable management consultants arguing that the prediction was exactly backward: that

further decentralization will result from computer applications. But, in the company that experienced the 30 per cent shrinkage in managerial positions, production planning, accounting, and purchasing are now accomplished centrally for three scattered facilities, each of which formerly was its own boss.

And NORAD again furnishes clear-cut evidence. At the same time that the command structure shrank from five to four levels, the tactical decision-making level for control of interceptor weapons moved from the lowest level to what formerly was the third level from the bottom.

We have found other examples: consolidation of grain-buying in large milling firms, of space-selling in computerized airline reservations systems, and of the total supply and inventory function in the Defense Department. And surely everyone is aware of the spectacular increase in power that the new technology has given to the Secretary of Defense.

The available evidence on the centralization issue is not overwhelming, but, on the other hand, it all seems to point in the same direction-toward greater centralization. The basic problem in resolving such an issue is to find a satisfactory measure of centralization. A large part of our research effort has been directed toward developing such a measure. I am hopeful that a solution is at hand.

Man-Machine System

Observed changes, then, support the predictions of the flatter organization and the recentralization of control. But on a third prediction I now have some doubts. The prediction was that information technology will routinize many of the middle-management positions in the reorganized structure. There are two reasons to be uneasy about this prediction. In the first place, it is too soon in most organizations to focus the picture properly. How

can you tell if jobs will be routine if people are still cutting, fitting, and trying to get the "new" jobs effectively designed?

More important, the prediction was based upon an analysis of the managerial job which may not have been too well thought out. It seems to me, at this point at least, that the important effect of the new technology is to make a man-machine system out of what was formerly an all-human system—the managerial group. Much of the manager's job today is what might be called computation-evaluating information, weighing alternatives, making choices. Much of his job is simply communication with customers, fellow managers, subordinates, and (now) the computer. The computer's comparative advantage lies in computation. The communication part of the manager's job thus should become proportionately more important, but it does not seem to me that this in any way means that the job will become more routine.

Just what the job does become or will become is not clear. One manager in the new computerized distribution system that I mentioned earlier said that his job had changed from one of meeting crises day after day ("putting out fires," as it is called) to one in which he had opportunity for the first time to know his customers and their needs and opportunity to give adequate attention to selection and development of staff.

On the other hand, consider this comment by an Air Force officer on the effects of the SAGE application:

One of the queerest observations that I have made concerns this mass of engineers, technicians, machine operators, and operations people milling around and working almost unaware that anyone else exists. That is to say there doesn't seem to be any interaction between the individuals. All of the interaction seems to be with the electronic system. This is quite a change from the old squadron where communication and interaction be-

tween individuals were **a must to accomplish the mission**. In addition, it carried over **into the social environment** and it developed friendships, cliques, and competitions. This leads to a question about the importance of tradition, regulations, lines of authority, and morale. These have always been an integral part of military organizations, but, in this instance, they seem to be relatively unimportant. I believe that the computer is the cohesive element in these up and coming systems, and they simply set the pace and individuals blindly follow. It's like a fire into which everyone is throwing everything he owns for fear that, should it go out, they will all die of the cold.

Problems of Transition

So much for the 1980's revisited. At least so much for certain predictions of how the manager's world-your world-will have been affected by technological change by that time. Some difficult and fascinating problems of transition face management between now and then. Let me list some of the more important ones:

1. Managers will be displaced and will need retraining and relocation.
2. Organization structures must be disassembled and rearranged into forms not yet obvious to anyone.
3. An appropriate home in the organization for the new technology and technologists must be found. Meanwhile power struggles in the executive suite will be frequent.
4. Some kind of practical economic guide lines must be evolved to tell us where the new technology should be applied and how far to go with it. Elementary economics tells us, of course, that, as computers get cheaper and more sophisticated relative to managers, we begin to substitute the one for the other. But where to substitute and how much are the big questions.
5. The top executive in every organization must develop an awareness of the full impact of this new technology and of the important role he must play in its introduction-an awareness sadly lacking today.
6. All members of the organization must adapt to a new technique and rhythm of planning.

Time does not permit examining each of these problems in detail. Some, like the displacement matter, are not new to us except that managers instead of factory hands are now the D.P.'s. But some problems are new. Let me comment briefly on the last two I mentioned.

The Top Man's Job

At the present time many chief executives tend to apply the familiar rule of delegation to the introduction of the computer. They approve its purchase and delegate responsibility for its effective application to some subordinate. Often this subordinate is the controller, the organization's number man, who is usually Johnny-on-the-spot with the new number machine.

Regardless of who the subordinate is, when he discovers the really important things that can be done with the computer, and then does them, he begins to tinker with the organization structure, managerial jobs, and fundamental organization processes. At this point fearful crises can develop (and we have watched some). These crises rage until the top executive grasps the true nature of this new technology and assumes his unavoidable responsibility for its introduction and application.

On the last point, planning rhythm changes two ways. The computer permits much more frequent and accurate planning of a tactical sort—the kind where, for example, unanticipated changes in sales require reprogramming of production, purchasing, and labor-force management. Planning periods can be and are shortened, with the computer rapidly computing proper adaptations to new conditions. In one very large corporation this sort of planning was done quarterly before the computer; biweekly, after.

Long-range strategic planning, on the other hand, can be extended further into the future

through use of appropriate simulation techniques-and the computer. The "corporate laboratory," as one company calls it, permits testing of the probable effects of major decisions over long periods of time under a variety of assumed conditions.

Creative Questioning

In both kinds of planning, managers become more the question-askers; computers, the question-answerers. The planning technique becomes that of creative interrogation.

A subtle but extremely important point must be made about all the problems of transition. As Dean George Shultz has pointed out elsewhere, information technology, like technological change in the factory, has important effects upon people. But for the first time-in industrial history at least-those who will be most affected by the change are also those who are responsible for initiating it and planning it.

Managers, seeking to make use of this new and powerful technology, must be able in an objective and deliberate fashion to consider the impact upon themselves and to reorganize themselves as necessary.

Understandably, those who see their own positions being threatened by a change will be reluctant to adopt it. Resistance to change in the factory or office is so well known that we assume that it is peculiar to workmen and clerks. My observation is that this resistance is characteristic of all men, or at least that portion of mankind which includes both executives and professors-for information technology is changing our business-school organization quite as drastically as it is changing the organization of business firms, military units, and other bodies.

I am an optimist. I believe that, as social scientists learn more and more about the structure and functioning of organizations, this

knowledge will be communicated to and discussed by managers and that we will find problems of reorganization in the business firm, the hospital, and the government agency being discussed with less panic and confusion and being handled with more sophistication than at present.

Social Factors

The new discoveries—the technological changes—dominate our interest and attention today. But other important forces are also at work shaping the executive role.

In my judgment three characteristics of American society are significant here. Two of them are simply long-term characteristics with cumulative effects, the third a more recent development.

One factor is the pervasive long-time belief in the importance of education. Starting over a century ago with the introduction of free public education, Americans have always spent a substantial portion of the national income on educating their children and themselves.

Critics of the educational system—and the woods are full of them—usually argue that too little education is given or that it is given to too few or that it is of the wrong kind. So far as I know, no one, except for a few real primitives, stands up today to urge that America is threatened with overeducation.

The nineteenth-century immigrant dreamed of sending his children to high school and even to college so that they might rise above his lot. Today's college-trained father or mother aspires to sending the children **at least** to college, even being willing to fork over the money for graduate education (especially in the professional schools) if it seems at all warranted.

Our Restless People

A second long-term characteristic of American society that seems important to me in the

context of this discussion is the mobility and restlessness of our citizens. The American speaks nostalgically of the old family homestead but apparently has little intention of turning his own house into one. He picks up and leaves constantly. It is not only the young corporation trainee but others—tradesmen, blue-collar workers, clerical workers, school-teachers, and the rest—who move from house to house and from region to region. For most of us home is where you hang your hat, and we change hangers frequently.

A third, and clearly newer, characteristic of our society is the belief in the value of research and in the value of science. The prestige of the scientist has never been higher. The amount of money currently being poured into research and development by private industry and by government is enormous. It is sanctioned by our society and encouraged, whether the goal be to devise more efficient ways of killing people, or more efficient ways of saving their lives, or just to learn more about everything.

Growth of Professionalism

In terms of the impact on tomorrow's management, these three characteristics of our society seem to me to presage several things. One is that the organization of the future will have more and more individuals with training of a professional level—simply because more of our labor force will have such training.

Some evidence of this development has already shown itself. Between 1950 and 1960, professional and technical workers in the labor force increased by 47 per cent, the greatest growth of any group. Those employed as proprietors and managers increased by 7 per cent, only about half the increase for occupations as a whole.

This rapid growth in the number of professionals should influence the nature of the organization of the future. Professional people

are mobile. They are accustomed to dealing with a rich variety of problems and developing their individual approaches to them. They tend to be independent in attitude and outlook.

As increasing numbers of such people move into the management group, we must expect a change in the concept of effective organization. We can anticipate less emphasis on loyalty to the organization, since the professional career tends to thread through a number of organizations as a matter of course. Risking oversimplification, we can say that the professional is primarily interested in a constellation of professional problems and only secondarily in the survival and growth of a particular organization. The organization must develop ways of capturing this professional's contribution without capturing him personally. The obvious way to do this is through providing him with challenging problems and freedom to solve them. But we do not yet know how to do this.

Flexibility and Its Problems

We should anticipate also pressure to decentralize the structure of control within the typical business firm. Professionals prefer to work more or less as equals with one another. In addition, we might expect a trend toward looser definition of jobs and a looser coupling of jobs than is typical today. The advertising agency perhaps is the closest contemporary example of this kind of loose organization. These changes will bring greater flexibility to the organization, but, of course, flexibility brings with it, in turn, some problems. The decentralization and flexibility that the professional brings may well act as a damper on the computer's centralizing effect.

The value attached to research influences countless decisions to put resources into research-research carried out in private organizations and public. Organization structures in-

creasingly reflect this flow of resources into research in two ways. First, many grow new units internally which specialize in research of one kind or another. These units, staffed largely with our friends, the professionals, generate (hopefully) new ideas for products, for operations and methods, and for winning customers. Unfortunately, they also generate problems of co-ordination, co-operation, and understanding within the organization.

Whether it is better to keep the long-haired scientific and professional types in isolation wards or to try to bring them into the executive suite somehow is a problem still unresolved. As research becomes a larger and larger budget item, resolution of the problem becomes critical. Here is a challenge for organization designers.

The great emphasis on research has another sort of impact on organizations. The best illustration of this impact is information technology itself. This technology is the joint product of scholars and researchers in universities, government agencies, and private organizations. Its effects, as we have noted, are profound and pervasive. But it is only one of the major contemporary payoffs of our research efforts. Another is the development of new energy **sources**. And there are still others.

The point is that large diversion of resources into research inevitably results in large changes, technical and social, later on. And, if you hold the input button down long enough, the changes can be formidable. Look at what seventy or eighty years of research have done to the organizational structures of agricultural production units—the farms. And that change has been somewhat painful.

Organizations deliberately designed not only to generate change but to be able to change themselves will be the best bets to survive in a research-directed society.

This design idea—this design requirement—

is so new, so little explored, that no examples outside the laboratory come to mind.

Political *Factors*

When it comes to the last of the three categories—the political factors—my confidence in my ability to interpret the patterns in the crystal ball ebbs low. The daily bombardment from reporters, news analysts, columnists, and eminent political leaders leaves me confused about what is really happening, let alone what it all means.

I can fish out of this whole mess only one trend which seems important in terms of this discussion. This is the on-again-off-again trend toward reduction of politically imposed barriers to trade—barriers in the form of tariffs or in the form of confiscation of assets. Perhaps you might argue that there is no such trend. Maybe we have just substituted voluntary shipments of capital, through our aid programs, for involuntary confiscation by hostile governments. Whatever the forces are, however, there has been a substantial expansion of international trade, with one result being growth in a number of firms and agencies operating internationally.

As American organizations expand overseas, they find sooner or later that environmental variations impose organizational variations. Good old American know-how is tops in good old America, but it can lead to spectacular errors elsewhere if applied routinely.

No Models Handy

The managerial group at the top of an international organization needs greater sophistication in anthropology, economics, and organization design than the counterpart group in domestic organizations. There simply are not a lot of handy, ready-made organization models in the international sphere that one can safely imitate.

Suppose, for example, that your organization were to contemplate setting up an operation in Egypt. Your management would, of course, make the usual preliminary investigations of potential markets, tax policies, and government guarantees of security. But would they be informed enough to realize that the authority structure of the firm would have to be substantially more centralized in Egypt than in the United States?

Would they be aware that the tenets of good supervisory behavior which make a great deal of sense in the United States might be completely out of place in that country? Would they realize that wage structures would be totally different, that fringe benefits have a completely different significance there, and that relations between managers of different firms carry a substantially different set of ground rules concerning protocol, courtesy, and exchange of professional information? Would they understand that technologies and organization structures which make economic sense here, often do not, there?

Overseas Experience

The members of tomorrow's management group will, of course, be aware of such matters. The present policy of rotating members of management through different jobs in domestic locations will likely grow to the point of rotating them through overseas locations in the future. As this happens, the business executive will become more and more sophisticated about intercultural differences and how to adapt to them. Until this experience backlog builds up, however, the most effective developers of overseas operations will be those managers who find out from studying these basic disciplines what is known about intercultural differences and who then make imaginative use of this information.

Perhaps the preceding comments have

seemed to lead off into a number of directions and to make the managerial world of the 1980's sound like an appallingly complex one. There are certainly contradictory forces at work, but I think we can see a few major patterns emerging.

First, we should clearly expect the organization twenty years from now to look less and less like a military hierarchy and more and more like a partnership of professionals. This means that the authority structure of today's organization will tend to become more decentralized in the future. The interim impact of the computer in centralizing control is clear. But the functions of manager and of machine will become increasingly differentiated, permitting, in the long run, decentralization of the creative managerial functions which are retained by men and centralization of the operating functions given to the machine.

Second, the growing number of professional specialists will bring with it changes in managerial attitudes and behavior. We can expect less emphasis on organizational loyalty and greater individual mobility. We can expect demands for greater independence of individual action in the organization and strong individual interest in solving a wide range of problems—pressure for job enlargement at the managerial level. We can expect a less tightly coupled organization structure and the consequent breakdown of some contemporary personnel procedures associated with tight hierarchy. For example, I would anticipate that through the years we will see less concern in organizations for maintenance of a systematic wage structure, with more emphasis upon individual market-determined rates of compensation.

Third, the skill and knowledge needs of managers will grow rapidly, especially in the technology of computers, in the use of mathematics and statistics to solve managerial prob-

lems, in organization theory, in **the economics** of international trade, and in anthropology.

The Multiple-Chief Pattern

Obviously, no one man can know all there is to know today in large organizations. It will be even less possible for him to be competent in the increased range of knowledge used in tomorrow's organization. The breakdown of the traditional hierarchy with a single chief would seem to be inevitable simply because of this growth of knowledge. The use of multiple chiefs, or committee top management, which has already shown up in some of our largest corporations, seems to me to be the first step toward the kind of general partnership arrangement into which management will move in the next few decades.

The tide may already be running strong this way. One Chicago executive, getting his first real exposure to the multiple boss arrangement, said to his secretary as he left for lunch, "If my boss calls, be sure to get his **name**."

I would expect, however, some complications and difficulties to appear as part of the long-run trend toward decentralization. One of the difficult and unfortunate by-products of decentralizing may be the problem of maintaining the entrepreneurial spirit and ability in the organization. On the whole, centralized autocratic organizations seem to have a better record in entrepreneurship-in creating new functions and new organizations-than do the collegial decentralized organizations.

Staving Off Obsolescence

Amid change, one old principle of organization will certainly remain unchanged. This is the principle of increasing specialization of effort. We can expect as a consequence of the rapidly growing accumulation of knowledge that there may be an accelerated rate of growth

of specialization-a growth retarded somewhat, in turn, by application of the computer.

In our Graduate School of Business we are engaged in continual dialogue about the best way to educate young men-and those not so young-in preparing them for management tomorrow. Probably the only thing we completely agree on so far is that, the faster our stock of knowledge grows, the more urgent it is that practicing managers frequently update their knowledge through formal training. We are becoming increasingly convinced that managerial training must continue throughout the career of the executive.

The threat of professional obsolescence is not peculiar to managers, of course. Medicine has the same problem, for example. We can offset the tide of growing knowledge to some extent by specialization of effort, but the growth of specialization in turn imposes severe burdens on the ability of executives to organize the specialists.

The computer has been a vast help and will be an even greater help in the future in dealing with problems of information overload in the individual organization. But this simply frees managers not for more leisure but to be more creative in thinking up new and more difficult tasks for the computer and its crew.

Men are going to have to learn to be managers in a world where the organization will come close to consisting of all chiefs and one Indian. The Indian, of course, is the computer.

It looks as if we will have a chance to play Custer's Last Stand all over again-this time with push buttons.