Structure in Fives

DESIGNING EFFECTIVE ORGANIZATIONS

HENRY MINTZBERG

Henry Mintzberg

McGill University

Structure in Fives

DESIGNING EFFECTIVE ORGANIZATIONS

To Tutyi
   . . . beyond Adhocracy
(but still in the studio)

Printed in the United States of America

10 9 8 7 6 5 4 3

A NOTE TO THE READER

What could be more important to the effective functioning of our organiza-tions—from repair shops to automobile companies, police forces to na-tional governments—than the design of their structures? Yet what do we really know about such design?

Ironically, we know a great deal, but not in a form accessible to those people who must create such designs—managers, staff specialists, and consultants. The vast literature on organizational structuring, much of it based on systematic empirical research, has largely escaped the practi-tioner, for two reasons. First, it is mostly contained in articles and books written in an academic style, for other researchers. Those practitioners willing to work through the jargon found that the orientation of such writings was more on what is than what should be; in other words, on what takes place in organizations rather than on how to design an effective organization. Second, despite the vastness of the literature and its many available insights, what it lacked was synthesis. The practioner could find these insights in no one place; he or she virtually had to wade through the entire range of literature to find out what it had to say. And even then, the synthesis was left to the reader. Contradictions abound in the research findings, with little real reconciliation even attempted. So whoever had the patience to go through all this literature was apt to emerge more confused than before he or she began.

In the mid-1970s, I set out to try to order this literature, to extract its key messages and—above all—to synthesize them into an integrated pic-ture of the structuring of organizations. The result of almost three full years of effort was a book by that title, published by Prentice-Hall in 1979. That book containted 512 pages of very small type, but it satisfied my intentions: to synthesize the research literature on organizational structuring (it was subtitled, "A Synthesis of the Research") and to address the issues of what makes an organizational design effective. Since I had in mind as readers not only students and practitioners but also my academic colleagues, the

book contained a thorough referencing of the evidence for each of the findings, sprinkled generously with quotations from the literature. The arguments were, in other words, supported as much as possible, so that the reader could also use the book as a reference text. Hence the 512 pages. Despite that length, the book has had a good deal of success, both from critics and in the marketplace, especially in university course adoptions.

In 1981, Ted Jursek of Prentice-Hall's Professional Book Program suggested that I redo the book to make it more convenient for practitioners. Essentially, this meant reducing its length considerably by removing most of the references and quotations while maintaining the basic line of argument, and tilting its orientation more toward the issue of designing an effective organization. This suggestion I took up enthusiastically, because I felt that the time I invested in the original book would be in good part wasted if the messages did not get directly to practitioners on a large scale. I was further encouraged by the reactions I had received from those practitioners who did read through the 512 pages, and by comments I received on my *Harvard Business Review* article, "Organization Design: Fashion or Fit?" a summary of the main points of the book, which appeared in the January–February 1981 issue. Clearly, if the full message was to get through to many busy practitioners, then something was needed between a 14-page summary article and a 512-page fully referenced book.

Hence *Structure in Fives: Designing Effective Organizations*. I trust that I have accomplished the objective: to present and, more important, to synthesize the messages from the research on what it takes to design an effective organization, presented in a form that will be read by managers, staff specialists, and consultants who are concerned with the structuring of organizations. The one thing I had to sacrifice was the referencing that supports each of the arguments. But the reader who requires this information, or who wishes to probe into the research that underlies any of the arguments, can easily find what he needs in *The Structuring of Organizations: A Synthesis of the Research* (Prentice-Hall, 1979). The general outline of that book (if not the specific chapters) follows this one, and it contains a very thorough index as well as a bibliography that numbers over 300 entries. That volume can be considered a companion to this one by those readers who wish to probe more deeply. (The only important addition to this book is some material at the end of the last chapter, on pages 294–96.)

In terms of how this book should be read, I like to think of it as a kind of banquet. I do not mean to comment on the quality of its offerings, only on the manner and order in which they must be taken. They cannot be consumed on the run, as a snack, nor can they be sampled at random, as at a buffet table. They are meant to be taken in the specific order presented.

Chapter 1 is designed to whet the reader's appetite, and also to prepare the palate for the offerings that follow—a kind of hors d'oeuvre, if you like. Two important concepts are introduced in Chapter 1 that serve as the foundation for all that follows.

In Chapters 2, 3, 4, and 5, the reader is given a taste of the main flavors of organization design, what we call the design parameters. This part of the book is largely in the form of analysis, not synthesis; that is, we are concerned here with delineating the basic elements of structural design, not with combining them. But by the end of Chapter 5, the reader should find these flavors beginning to blend. Chapter 6 also represents analysis, putting these design parameters into the context of various situational factors. In effect, a different set of flavors is introduced in this chapter, flavors that themselves will be seen to blend with the others.

Chapters 7–12 are the pièces de résistance of this banquet. Here, all the flavors of the earlier chapters are fully blended into five main dishes, called configurations, forming our synthesis. They are labeled Simple Structure, Machine Bureaucracy, Professional Bureaucracy, Divisionalized Form, and Adhocracy. In a sense, the first six chapters prepare the palate for the next six, which are the real reasons for this banquet. Chapter 7 introduces our configurations, each of which is then discussed in one of the subsequent chapters. A final chapter, entitled "Beyond Five"—a kind of *digestif*—considers some important relationships among our five configurations and looks beyond them.

Note that the main points of the book have been highlighted in boldface type (like this); taken together, these serve to summarize the central line of argument. This has not been done to encourage scanning—the meat between these bones is required for a full appreciation of these offerings—but simply to emphasize and summarize the key conclusions for the reader.

So there you have it. Bon appètit!

Henry Mintzberg

CONTENTS

1

FOUNDATIONS OF ORGANIZATION DESIGN

Ms. Raku made pottery in her basement. That involved a number of distinct tasks—wedging clay, forming pots, tooling them when semidry, preparing and then applying the glazes, and firing the pots in the kiln. But the coordination of all these tasks presented no problem; she did them all herself.

The problem was her ambition and the attractiveness of her pots: the orders exceeded her production capacity. So she hired Miss Bisque, who was eager to learn pottery making. But this meant Ms. Raku had to divide up the work. Since the craft shops wanted pottery made by Ms. Raku, it was decided that Miss Bisque would wedge the clay and prepare the glazes, and Ms. Raku would do the rest. And this required coordination of the work—a small problem, in fact, with two people in a pottery studio: they simply communicated informally.

The arrangement worked well, so well that before long, Ms. Raku was again swamped with orders. More assistants were needed. But this time, foreseeing the day when they would be forming pots themselves, Ms. Raku decided to hire them right out of the local pottery school. So whereas it had taken some time to train Miss Bisque, the three new assistants knew exactly what to do at the outset and blended right in; even with five people, coordination presented no problem.

As two more assistants were added, however, coordination problems did arise. One day Miss Bisque tripped over a pail of glaze and broke five pots; another day, Ms. Raku opened the kiln to find that the hanging planters had all been glazed fuchsia by mistake. At this point, she realized that seven people in a small pottery studio could not coordinate all their work through the simple mechanism of informal communication. Making matters worse was the fact that Ms. Raku, now calling herself president of Ceramics Inc., was forced to spend more and more time with customers; indeed, these days she was more apt to be found in a Marimekko dress than a pair of jeans. So she named Miss Bisque studio manager; she was to

occupy herself full-time with supervising and coordinating the work of the five producers of the pottery.

The firm continued to grow. Major changes again took place when a work-study analyst was hired. He recommended changes whereby each person performed only one task for one of the product lines (pots, ashtrays, hanging planters, and ceramic animals)—the first wedged, the second formed, the third tooled, and so on. Thus, production took the form of four assembly lines. Each person followed a set of standard instructions, worked out in advance to ensure the coordination of all their work. Of course, Ceramics Inc. no longer sold to craft shops; Ms. Raku would only accept orders by the gross, most of which came from chains of discount stores.

Ms. Raku's ambition was limitless, and when the chance came to diversify, she did. First ceramic tiles, then bathroom fixtures, finally clay bricks. The firm was subsequently partitioned into three divisions—consumer products, building products, and industrial products. From her office on the fifty-fifth story of the Pottery Tower, she coordinated the activities of the divisions by reviewing their performance each quarter of the year and taking personal action when their profit and growth figures dipped below those budgeted. It was while sitting at her desk one day going over these budgets that Ms. Raku gazed out at the surrounding skyscrapers and decided to rename her company "Ceramico."

Every organized human activity—from the making of pots to the placing of a man on the moon—gives rise to two fundamental and opposing requirements: the *division of labor* into various tasks to be performed, and the *coordination* of these tasks to accomplish the activity. **The structure of an organization can be defined simply as the sum total of the ways in which its labor is divided into distinct tasks and then its coordination is achieved among these tasks.**

How should that structure be designed? Is there one best way to design it? Or should its various elements—the several means to divide its labor and coordinate its tasks—be picked and chosen independently, the way a shopper selects vegetables at the market or a diner dishes at a buffet table?

For years the literature of management favored an affirmative answer to the first question. A good structure was one based on rules and a rigid hierarchy of authority with spans of control no greater than six. More recently, that literature has implicitly come to favor an affirmative answer to the second question. The organization designer has been expected to mix good doses of long-range planning, job enrichment, and matrix structure, among many other things.

This book rejects both these approaches in favor of a third. **The ele-**

ments of structure should be selected to achieve an internal consistency or harmony, as well as a basic consistency with the organization's situation—its size, its age, the kind of environment in which it functions, the technical systems it uses, and so on. Indeed, these situational factors are often "chosen" no less than are the elements of structure themselves. The organization's niche in its environment, how large it grows, the methods it uses to produce its products or services—all these are selected too. This leads us to the conclusion that both the design parameters and the situational factors should be clustered to create what we shall call *configurations*.

Depending on how the various choices are made, different configurations can, of course, be designed—in principle, a great number of them. But in practice, as we shall see, the number of them that are effective for most organizations may be far smaller. **The central theme of this book is that a limited number of these configurations explain most of the tendencies that drive effective organizations to structure themselves as they do. In other words, the design of an effective organizational structure—in fact, even the diagnosis of problems in many ineffective ones—seems to involve the consideration of only a few basic configurations.**

This is a book in fives. In this first chapter, we introduce a set of basic mechanisms used to achieve coordination among divided tasks. They number five. Later in this chapter, we develop a visual representation of the organization to help guide us through the book. This has five parts. As we move into the body of the book, we describe the various parameters of structural design. Among the most important of these is decentralization. We shall see that this can take five basic forms. Then, after discussing the situational factors, we introduce our basic configurations of structure and situation. These too number five. In fact, we shall discover that all these fives are not independent at all. They exist in fundamental interrelationships. Specifically, each of the configurations favors one of the forms of decentralization, and in each, one of the coordinating mechanisms and one of the parts of the organization tend to dominate. Does that mean that five is the magic number in the design of effective organizations?

Let us set aside the most interesting questions and get on with the more pragmatic ones. To set the underlying framework for this book, we need to introduce two concepts in this chapter. The first describes the basic mechanisms by which organizations achieve coordination. The second describes the organization itself, in terms of a set of interrelated parts.
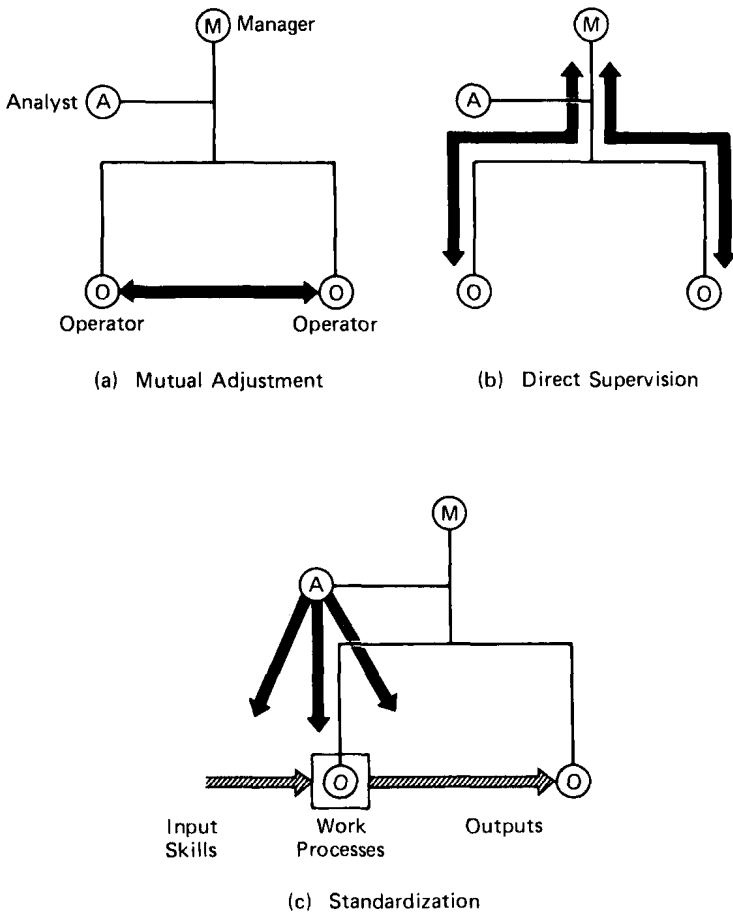
Coordination in Fives

Recall that structure involves two fundamental requirements—the division of labor into distinct tasks, and the achievement of coordination among these tasks. In Ms. Raku's Ceramico, the division of labor—wedging, form-

ing, tooling, glazing, firing—was dictated largely by the job to be done and the technical system available to do it. Coordination, however, proved to be a more complicated affair, involving various means. These can be referred to as *coordinating mechanisms,* although it should be noted that they are as much concerned with control and communication as with coordination.

Five coordinating mechanisms seem to explain the fundamental ways in which organizations coordinate their work: mutual adjustment, direct supervision, standardization of work processes, standardization of work outputs, and standardization of worker skills. These should be considered the most basic elements of structure, the glue that holds organizations together. Let us look at each of them briefly.

■   *Mutual adjustment* **achieves the coordination of work by the simple process of informal communication.** Under mutual adjustment, control of the work rests in the hands of the doers, as shown in Figure 1–1(a). Because it is such a simple coordinating mechanism, mutual adjustment is naturally used in the very simplest of organizations—for example, by two people in a canoe or a few in a pottery studio. Paradoxically, it is also used in the most complicated. Consider the organization charged with putting a man on the moon for the first time. Such an activity requires an incredibly elaborate division of labor, with thousands of specialists doing all kinds of specific jobs. But at the outset, no one can be sure exactly what needs to be done. That knowledge develops as the work unfolds. So in the final analysis, despite the use of other coordinating mechanisms, the success of the undertaking depends primarily on the ability of the specialists to adapt to each other along their uncharted route, not altogether unlike the two people in the canoe.

■   As an organization outgrows its simplest state—more than five or six people at work in a pottery studio, fifteen people paddling a war canoe—it tends to turn to a second coordinating mechanism. *Direct supervision* **achieves coordination by having one person take responsibility for the work of others, issuing instructions to them and monitoring their actions,** as indicated in Figure 1–1(b). In effect, one brain coordinates several hands, as in the case of the supervisor of the pottery studio or the caller of the stroke in the war canoe. Consider the structure of an American football team. Here the division of labor is quite sharp: eleven players are distinguished by the work they do, its location on the field, and even its physical requirements. The slim halfback stands behind the line of scrimmage and carries the ball; the squat tackle stands on the line and blocks. Mutual adjustments do not suffice to coordinate their work, so a field leader, called the quarterback, is named, and he coordinates their work by calling the plays.

Manager

Analyst (A)

Operator   Operator

(a) Mutual Adjustment

(b) Direct Supervision

Input   Work   Outputs
Skills   Processes

(c) Standardization

Figure 1-1. *The five coordinating mechanisms*

Work can also be coordinated without mutual adjustment or direct supervision. It can be *standardized.* Coordination is achieved on the drawing board, so to speak, before the work is undertaken. The workers on the automobile assembly line and the surgeons in the hospital operating room need not worry about coordinating with their colleagues under ordinary circumstances—they know exactly what to expect of them and proceed accordingly. Figure 1-1(c) shows three basic ways to achieve standardization in organizations. The work processes themselves, the outputs of the work, or the inputs to the work—the skills (and knowledge) of the people who do the work—can be designed to meet predetermined standards.

■   *Work processes* are *standardized* when the contents of the work are specified, or programmed. An example that comes to mind involves the assembly instructions provided with a child's toy. Here, the manufacturer

5

in effect standardizes the work process of the parent. ("Take the two-inch round-head Phillips screw and insert it into hole BX, attaching this to part XB with the lock washer and hexagonal nut, at the same time holding. . . .") Standardization can be carried to great lengths in organizations, as in the four assembly lines in Ceramics Limited, or the pie filler I once observed in a bakery who dipped a ladle into a vat of pie filling literally thousands of times every day—cherry, blueberry, or apple, it made no difference to him—and emptied the contents into a pie crust that came around on a turntable. Coordination of his work was accomplished by whoever designed that turntable. Of course, other work standards leave more room to maneuver: the purchasing agent may be required to get at least three bids on all orders over $10,000 but is otherwise left free to do his work as he sees fit.

■   *Outputs* **are** *standardized* **when the results of the work—for example, the dimensions of the product or the performance—are specified.** Taxi drivers are not told how to drive or what route to take; they are merely informed where to deliver their fares. The wedger is not told how to prepare the clay, only to do so in four-pound lumps; the thrower on the wheel knows that those lumps will produce pots of a certain size (his own output standard). With outputs standardized, the coordination among tasks is predetermined, as in the book bindery that knows that the pages it receives from one place will fit perfectly into the covers it receives from another. Similarly, all the chiefs of the Ceramico divisions coordinated with headquarters in terms of performance standards. They were expected to produce certain profit and growth levels every quarter; how they did this was their own business.

■   Sometimes neither the work nor its outputs can be standardized, yet coordination by standardization may still be required. The solution—used by Ms. Raku to hire assistants in the pottery studio—is to standardize the worker who comes to the work, if not the work itself or its outputs. *Skills (and knowledge)* **are** *standardized* **when the kind of training required to perform the work is specified.** Commonly, the worker is trained even before joining the organization. Ms. Raku hired potters from school, just as hospitals engage doctors. These institutions build right into the workers-to-be the work programs, as well as the bases of coordination. On the job, the workers appear to be acting autonomously, just as the good actor on the stage seems to be speaking extemporaneously. But in fact both have learned their lines well. So standardization of skills achieves indirectly what standardization of work processes or of work outputs does directly: it controls and coordinates the work. When an anesthesiologist and a surgeon meet in the operating room to remove an appendix, they need hardly communicate; by virtue of their training, they know exactly what to expect

of each other. Their standardized skills take care of most of the coordination.[1]

These are our five coordinating mechanisms, and they seem to fall into a rough order. **As organizational work becomes more complicated, the favored means of coordination seems to shift from mutual adjustment to direct supervision to standardization, preferably of work processes, otherwise of outputs, or else of skills, finally reverting back to mutual adjustment.**

A person working alone has no great need for any of the mechanisms—coordination takes place simply, in one brain. Add a second person, however, and the situation changes significantly. Now coordination must be achieved across brains. Generally, people working side by side in small groups adapt to each other informally; mutual adjustment becomes the favored means of coordination. As the group gets larger, however, it becomes less able to coordinate informally. A need for leadership arises. Control of the work of the group passes to a single individual—in effect, back to a single brain that now regulates others; direct supervision becomes the favored coordinating mechanism.

As the work becomes more involved, another major transition tends to occur—toward standardization. When the tasks are simple and routine, the organization is tempted to rely on the standardization of the work processes themselves. But more complex work may preclude this, forcing the organization to turn to standardization of the outputs—specifying the results of the work but leaving the choice of process to the worker. In very complex work, on the other hand, the outputs often cannot be standardized either, and so the organization must settle for standardizing the skills of the worker, if possible. Should, however, the divided tasks of the organization prove impossible to standardize, it may be forced to return full cycle, to favor the simplest yet most adaptable coordinating mechanism—mutual adjustment. As noted earlier, sophisticated problem solvers facing extremely complicated situations must communicate informally if they are to accomplish their work.

Our discussion up to this point implies that under specific conditions, an organization will favor one coordinating mechanism over the others. It also suggests that the five are somewhat substitutable; the organization can replace one with another. These suggestions should not, however, be taken to mean that any organization can rely on a single coordinating mechanism. Most, in fact, mix all five. At the very least, a certain amount of direct supervision and mutual adjustment is always required, no matter

---

[1]The same can apparently be said about much more complex operations. Observation of one five-hour open-heart surgical procedure indicated that there was almost no informal communication between the cardiovascular surgeons and the anesthesiologist (Gosselin, 1978).

what the reliance on standardization. Contemporary organizations simply cannot exist without leadership and informal communication, even if only to override the rigidities of standardization. In the most automated (that is, fully standardized) factory, machines break down, employees fail to show up for work, schedules must be changed at the last minute. Supervisors must intervene, and workers must be free to deal with unexpected problems.

This favoring and mixing of the coordinating mechanisms is also reflected in the literature of management across this century. The early literature focused on *formal structure*, the documented, official relationship among members of the organization. Two schools of thought dominated the literature until the 1950s, one preoccupied with direct supervision, the other with standardization.

The "principles of management" school, fathered by Henri Fayol, who first recorded his ideas in 1916, and popularized in the English-speaking world by Luther Gulick and Lyndall Urwick, was concerned primarily with formal authority—in effect, with the role of direct supervision in the organization. These writers popularized such terms as *unity of command* (the notion that a "subordinate" should have only a single "superior"), *scalar chain* (the direct line of this command from chief executive through successive superiors and subordinates to the workers), and *span of control* (the number of subordinates reporting to a single superior).

The second school really includes two groups that, from our point of view, promoted the same issue—the standardization of work throughout the organization. Both groups were established at the turn of the century by outstanding researchers, one on either side of the Atlantic Ocean. In America, Frederick Taylor led the "Scientific Management" movement, whose main preoccupation was the programming of the contents of operating work—that of pig-iron handlers, coal shovelers, and the like. In Germany, Max Weber wrote of machinelike, or "bureaucratic" structures where activities were formalized by rules, job descriptions, and training.

And so for about half this century, organization structure meant a set of official, standardized work relationships built around a tight system of formal authority.

With the publication in 1939 of Roethlisberger and Dickson's interpretation of a series of experiments carried out on workers at the Western Electric Hawthorne plant came the realization that other things were going on in organizational structures. Specifically, their observations about the presence of *informal structure*—unofficial relationships within the work group—constituted the simple realization that mutual adjustment serves as an important coordinating mechanism in all organizations. This led to the establishment of a third school of thought in the 1950s and 1960s, originally called "human relations," whose proponents sought to demonstrate by empirical research that reliance on formal structure—specifically,

on the mechanisms of direct supervision and standardization—was at best misguided, at worst dangerous to the psychological health of the worker.

More recent research has shifted away from these two extreme positions. In the last decade, there has been a tendency to look at structure more comprehensively; to study, for example, the relationships between the formal and informal, between direct supervision and standardization on the one hand and mutual adjustment on the other. These studies have demonstrated that **formal and informal structures are intertwined and often indistinguishable.** Some have shown, for example, how direct supervision and standardization have sometimes been used as *informal* devices to gain power, and conversely, how devices to enhance mutual adjustment have been designed into the *formal* structure. They have also conveyed the important message that formal structure often reflects official recognition of naturally occurring behavior patterns. Formal structures evolve in organizations much as roads do in forests—along well-trodden paths.

The Organization in Five Parts

Organizations are structured to capture and direct systems of flows and to define interrelationships among different parts. These flows and interrelationships are hardly linear in form, with one element following neatly after another. Yet words must take such a linear form. Hence, it sometimes becomes very difficult to describe the structuring of organizations exclusively in words. These must be supplemented with images. Thus we rely heavily on diagrams in this book. In fact, we require a basic diagram to represent the organization itself, a diagram that can be played with in various ways to show the different things that can happen in organizations and the different forms that organizations themselves can take.

We can develop such a diagram by considering the different component parts of the organization and the people contained in each. At the base of the organization can be found its *operators*, those people who perform the basic work of producing the products and rendering the services. They form the *operating core.* As we noted earlier, in the simplest of organizations, the operators are largely self-sufficient, coordinating through mutual adjustment. The organization needs little more than an operating core.

But as the organization grows and adopts a more complex division of labor among its operators, the need for direct supervision increases. It becomes mandatory to have a full-time manager who sits at what we shall call the *strategic apex.* And as the organization is further elaborated, more managers are needed—not only managers of operators but also managers of managers. A *middle line* is created, a hierarchy of authority between operating core and strategic apex. Note that the introduction of managers

gives rise to a new form of division of labor, of the *administrative* type—between those who do the basic work and those who administer it in one form or another.

As the process of elaboration continues, the organization may turn increasingly to standardization as a means of coordinating its work. The responsibility for much of this standardization falls on another group of people, whom we shall call the analysts. They too perform administrative duties, but of a different nature—often called "staff." These analysts form what we shall call the *technostructure*, outside the hierarchy of line authority. Here, then we have a second administrative division of labor—between those who do (or supervise) the work and those who standardize it. In fact, by substituting standardization for direct supervision—a process known as the "institutionalization" of the manager's job—the analysts weaken the control that managers are able to exercise over the operators' work, much as the earlier substitution of direct supervision for mutual adjustment weakened the operators' control over their own work.

Finally, as it grows, the organization tends to add staff units of a different nature, not to effect standardization but to provide indirect services to itself, anything from a cafeteria or mailroom to a legal counsel or public relations department. We call these people and the part of the organization they form the *support staff*.

This gives us five parts of the organization. As shown in Figure 1–2, we have the operating core at the base joined to the strategic apex on top by the middle line, with the technostructure and support staff off to either side. This figure will serve as the theme diagram of this book, its "logo," if you like. We shall use this figure repeatedly to make our points about structure, sometimes overlaying flows on it, sometimes distorting it to show distinctive characteristics of particular kinds of organizations.

Our logo shows a small strategic apex connected by a flaring middle line to a large, flat operating core. These three parts of the organization are shown in one uninterrupted sequence to indicate that they are typically connected through a single line of formal authority. The technostructure and the support staff are shown off to either side to indicate that they are separate from this main line of authority and influence the operating core only indirectly.

It might be useful at this point to relate this scheme to some terms commonly used in organizations. The term *middle management*, although seldom carefully defined, generally seems to include all members of the organization not at the strategic apex or in the operating core. In our scheme, therefore, "middle management" would comprise three distinct groups—the middle-line managers, the analysts, and the support staff. To avoid confusion, however, the term *middle level* will be used here to describe these three groups together, the term *management* being reserved for the managers of the strategic apex and the middle line.