STRUCTURE IN 5'S: A SYNTHESIS OF THE RESEARCH ON ORGANIZATION DESIGN*

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The elements of organizational structuring—which show a curious tendency to appear in five's—suggest a typology of five basic configurations: Simple Structure, Machine Bureaucracy, Professional Bureaucracy, Divisionalized Form, and Adhocracy.

The elements include (1) five basic parts of the organization—the operating core, strategic apex, middle line, technostructure, and support staff; (2) five basic mechanisms of coordination—mutual adjustment, direct supervision, and the standardization of work processes, outputs, and skills; (3) the design parameters—job specialization, behavior formalization, training and indoctrination, unit grouping, unit size, action planning and performance control systems, liaison devices (such as integrating managers, teams, task forces, and matrix structure), vertical decentralization (delegation to line managers), and horizontal decentralization (power sharing by nonmanagers); and (4) the contingency factors—age and size, technical system, environment, and power.

Each of the five configurations relies on one of the five coordinating mechanism and tends to favor one of the five parts. In Simple Structure, the key part is the strategic apex, which coordinates by direct supervision; the structure is minimally elaborated and highly centralized; it is associated with simple, dynamic environments and strong leaders, and tends to be found in smaller, younger organizations or those facing severe crises. The Machine Bureaucracy coordinates primarily by the imposition of work standards from the technostructure; jobs are highly specialized and formalized, units functional and very large (at the operating level), power centralized vertically at the strategic apex with limited horizontal decentralization to the technostructure; this structure tends to be found in simple, stable environments, and is often associated with older, larger organizations, sometimes externally controlled, and mass production technical systems. The Professional Bureaucracy relies on the standardization of skills in its operating core for coordination; jobs are highly specialized but minimally formalized, training is extensive and grouping is on a concurrent functional and market basis, with large sized operating units, and decentralization is extensive in both the vertical and horizontal dimensions; this structure is typically found in complex but stable environments, with technical systems that are simple and non-regulating. In the Divisionalized Form, a good deal of power is delegated to market-based units in the middle line (limited vertical decentralization), whose efforts are coordinated by the standardization of outputs, through the extensive use of performance control systems; such structures are typically found in very large, mature organizations, above all operating in diversified markets. Adhocracy coordinates primarily by mutual adjustment among all of its parts, calling especially for the collaboration of its support staff; jobs are specialized, involving extensive training but little formalization, units are small and combine functional and market bases in matrix structures, liaison devices are used extensively, and the structure is decentralized selectively in both the vertical and horizontal dimensions; these structures are found in complex, dynamic environments, and are often associated with highly sophisticated and automated technical systems.

In conclusion, it is claimed that the effective Organization will favor some sort of configuration—some type of a logically consistent clustering of its elements—as it searches for harmony in its internal processes and consonance with its environment. But some organizations will inevitably be driven to hybrid structures as they react to contradictory pressures or while they effect a transition from one configuration to another, and here too it is believed that the typology of five can serve as a diagnostic tool in organizational design.
(ORGANIZATION DESIGN; ORGANIZATION STRUCTURES)

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1. Introduction

Five is no ordinary digit. "It is the sign of union, the nuptial number according to the Pythagoreans; also the number of the center, of harmony and of equilibrium." The *Dictionnaire des Symboles* goes on to tell us that five is the "symbol of man . . . likewise of the universe . . . the symbol of divine will that seeks only order and perfection." To the ancient Chinese, five was the essence of the universal laws, there being "five colors, five flavors, five tones, five metals, five viscera, five planets, five orients, five regions of space, of course five senses," not to mention "the five colors of the rainbow."[1]

In an attempt to make some sense out of the large and varied research literature on organizational structuring, that number five kept coming up. First it seemed most logical to isolate five basic parts of the organization, second to distinguish five basic mechanisms of coordination in the organization, and third to identify five fundamental types of decentralization. When the literature pointed strongly to five basic ' 'configurations" of structure—five pure or "ideal" types—and when a logical correspondence between all of these quintets was found, the historic harmony of the "fives" seemed to be confirmed.

This paper begins with a description of the elements found in the literature which appear to be most important in understanding the structuring of organizations. The tendency in the literature has been to deal with these elements analytically rather than in terms of synthesis, typically to study the relationships between pairs of them in cross-sectional studies. The premise that underlies this paper is that organizational structuring can better be understood through the combination of groups of elements into ideal or pure types, which we call *configurations*. This paper presents a typology of five basic configurations suggested in the research on organizational structuring.

2. The Elements of Structure

To understand structure, it seems useful to delineate first the basic parts of organizations and the basic mechanisms organizations use to coordinate their work. In the context of these, it is then appropriate to turn to the means organizations have at their command to design structures—what we call the *design parameters*. And these can then be analyzed in terms of the *contingency factors* that influence their choice.

The Basic Parts of the Organization

As shown in Figure 1, the organization can be described in terms of five basic parts:
* The *operating core* includes all those employees who themselves produce the basic products and services of the organization, or directly support their production.
* The *strategic apex* consists of the top general managers of the organization, and their personal staff.
* The *middle line* comprises those managers who sit in a direct line of formal authority between the people of the strategic apex and of the operating core.
* The *technostructure* consists of those analysts, out of the formal "line" structure, who apply analytic techniques to the design and maintenance of the structure and to the adaptation of the organization to its environment (e.g., accountants, work schedulers, long-range planners).

[1] Quotes from *Dictionnaire des Symboles*, sous la direction de Jean Chevalier avec la collaboration de Alain Gheerbrant (Editions Robert Laffont, 1969), p. 208; author's translation from the French.

* The *support staff* includes those groups that provide indirect support to the rest of the organization (e.g., in the typical manufacturing firm, legal counsel, public relations, payroll, cafeteria).
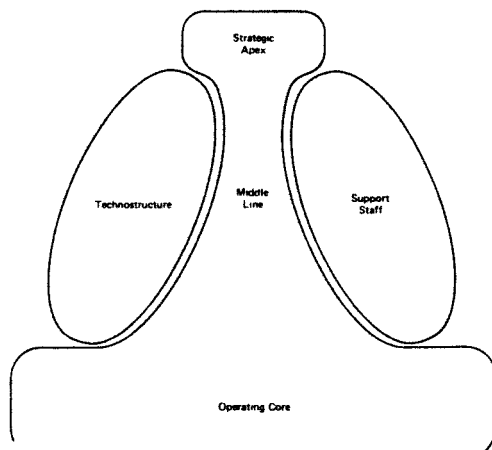

FIGURE 1.   The Five Basic Parts of the Organization.

Two points should be noted about this view of the organization. First, a distinction is maintained between "line" and "staff". This is not meant to ignore the criticisms of this classical notion, but simply to allow for the validity of the distinction in certain kinds of structures. And second, two kinds of staff are in fact distinguished, only one of which—the techno-structure—"advises" in the usual sense identified with staff. The support staff may advise, but its prime role is to provide special services to the organization. This part is seldom distinguished in the literature, despite the fact that a glance at the "organigram" (organizational chart) of most large organizations shows it to be an important component in sheer numbers alone.

The Coordinating Mechanisms

Organizational structuring, of course, focuses on the division of labor of an organizational mission into a number of distinct tasks, and then the coordination of all of these tasks to accomplish that mission in a unified way. The literature suggests that this coordination can be effected in at least five basic ways:

* In *direct supervision*, one individual (typically a manager) gives specific orders to others and thereby coordinates their work.

* In the *standardization of work processes*, the work is coordinated by the imposition (typically by analysts of the technostructure) of standards to guide the doing of the work itself—work orders, rules and regulations, etc.

* In the *standardization of outputs*, the work is coordinated by the imposition (again, often by the analysts of the technostructure) of standard performance measures or specifications concerning the outputs of the work.

* In the *standardization of skills*, the work is coordinated by the internalization by individuals of standard skills and knowledge, usually before they begin to do the work.

* And in *mutual adjustment*, individuals coordinate their own work, by communicating informally with each other.

The Design Parameters

The literature on organizational structuring focuses on a number of mechanisms organizations are able to use to design their structures—in effect, the levers they can turn to effect the division of labor and coordination. Among the most commonly researched are the nine discussed below.

* *Job specialization*, the chief parameter for determining the division of labor, concerns the number of tasks and the breadth of each in a given position (horizontal job specialization) and the incumbent's control over these tasks (vertical job specialization). Highly specialized jobs in both horizontal and vertical senses usually fall into the category called *unskilled*, those specialized horizontally but "enlarged" vertically are usually referred to as *professional*.

* *Behavior formalization* is the design parameter by which work processes are standardized, through rules, procedures, policy manuals, job descriptions, work instructions, and so on. Hickson [29] has pointed out that this one parameter of organizational design has dominated the writings on management throughout this century. It is typically the unskilled jobs that are the most highly formalized. Structures that rely on standardization for coordination (whether of work process or otherwise) are generally referred to as *bureaucratic*; those that rely on direct supervision or mutual adjustment, as *organic*.

* *Training and indoctrination* is the design parameter by which skills and knowledge are standardized, through extensive educational programs, usually outside the organization and before the individual begins his job (particularly in the case of training). This is a key design parameter in all work that is professional.

Two design parameters are associated with the design of the superstructure:

* *Unit grouping*, the design parameter by which direct supervision is most importantly effected (and one used also to influence mutual adjustment), deals with the bases by which positions are clustered into units and units into ever more comprehensive units, until all are clustered together under the strategic apex. The various possible bases for grouping—by skill, knowledge, work process, business function, product, service client, place—can be consolidated into two basic ones: by *function*, that is, by the means the organization uses to produce its products and services, and by *market*, that is, by ends, by the characteristics of the ultimate markets the organization serves.

* *Unit size* (usually called span of control) deals with the number of positions, or subunits, that are grouped into a single unit. The literature suggests that the greater the reliance on standardization for coordination (whether by work process, output, or skill), the larger the size of the unit, simply because there is less need for direct supervision, so more positions or units can be grouped under a single manager; it also suggests that a reliance on mutual adjustment keeps unit size small, because informal communication requires a small work group (Ouchi and Dowling [42]; Filley et al., [20, pp. 417–418]).

Two design parameters are associated with the design of lateral linkages to flesh out the superstructure:

* *Planning and control systems* constitute the design parameter by which outputs are standardized in the organization. These systems may be considered to be two types. *Action planning* focuses on the predetermination of the outputs of specific decisions or actions, for example, that holes be drilled with two centimeter diameters or that new products be introduced in September. *Performance control* focusses on the after-the-
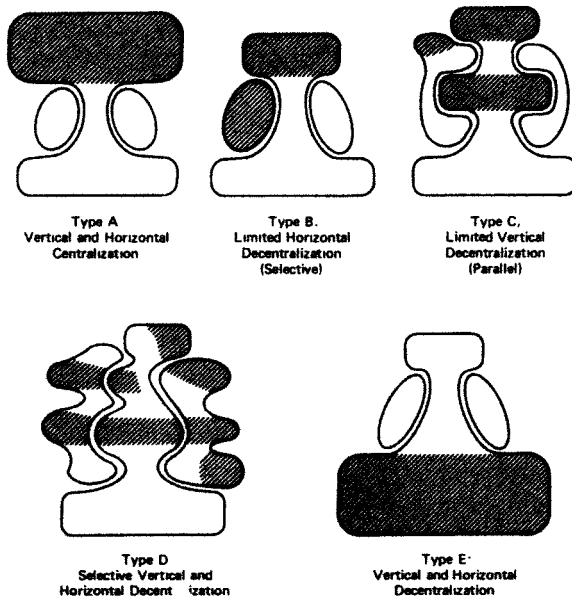
fact measurement of performance of all the decisions or actions of a given position or unit over a given period of time, for example, of the sales growth of a division in the first quarter of the year.

* The *liaison devices* are the means by which the organization encourages mutual adjustment across units. As Galbraith [23] has shown, these can be placed along a rough continuum of increasing elaboration and formality, from liaison positions and then task forces and standing committees, which establish informational connections across units, through integrating managers who are given some (limited) measure of formal authority over the decisions of the units they connect, to fully developed matrix structures which sacrifice the classical principle of unity of command in favor of the joint responsibility of two or more managers or units over the making of certain decisions.

Finally, there are the parameters associated with the design of the decision making system, generally referred to as ones of *decentralization* (which we define as the extent to which power over decision making in the organization is dispersed among its members). We find it convenient to divide these into two groups:

* *Vertical decentralization* refers to the extent to which formal decision making power is "delegated" down to the chain of line authority.

* *Horizontal decentralization* refers to the extent to which power flows informally outside this chain of line authority (that is, to analysts, support staffers, and operators in the operating core).[2] Combining these two design parameters with two other types

Type A
Vertical and Horizontal
Centralization

Type B.
Limited Horizontal
Decentralization
(Selective)

Type C,
Limited Vertical
Decentralization
(Parallel)

Type D
Selective Vertical and
Horizontal Decentr ization

Type E·
Vertical and Horizontal
Decentralization

*The inflated size of the shaded parts indicates their special power in decision making, not their size.

FIGURE 2.   The Five Types of Decentralization.

[2] A third use of the term decentralization relates to the physical dispersal of services. Since this has nothing to do with the dispersal of decision making power per se, it is not considered here to be a type of decentralization. The term "concentration" is used instead, and is associated with unit grouping (i.e., the determination of where the support units are grouped).

of decentralization—*selective*, in which power is dispersed to different places for different decision processes, and *parallel*, in which power over various decisions is dispersed to the same place—yields five different kinds of decentralization, shown symbolically on Figure 2. In *vertical and horizontal centralization*, formal and informal power remains primarily at the strategic apex. In *limited horizontal decentralization*, informal power flows selectively to the analysts of the technostructure who play major roles in standardizing everyone else's work, while formal power remains at the strategic apex. In *limited vertical decentralization*, much formal power is delegated in parallel to the managers of market-based line units, usually called "divisions". (As shown in Figure 2, some horizontal decentralization takes place here as well, to the analysts who design the performance control systems used to monitor the results of these divisions.) In *horizontal and vertical decentralization*, power flows, largely in parallel, all the way down the line of authority and then out at the bottom to the operators of the operating core. And in *selective decentralization* (horizontal and vertical), decision making power is diffused widely in the organization, to "work constellations" at various levels and containing various mixtures of line managers and staff and operating specialists.

The Contingency Factors

The thrust of research on organizational structuring in the last twenty years has been toward assessing the effects of various so-called *contingency factors* on these design parameters. This research has been based on what might be called the *congruence* hypothesis, that effective structuring requires a close fit between contingency factor and design parameter, more specifically, that structure must reflect situation. Four sets of contingency factors have received the most attention.

 * *Age and Size* have both been shown in the research to have important effects on structure. In particular, the older and/or the larger an organization, the more formalized its behavior (Inkson et al. [34]; Samuel and Mannheim [54]; Pugh et al. [48]; Udy [64]). Moreover it has been found that the larger the organization, the larger the size of its average unit (Dale [14]; Blau and Schoenherr [2]) and the more elaborate its structure, that is, the more specialized its tasks, the more differentiated its units, and the more developed its administrative component of middle line and technostructure (Blau et al. [3]; Reimann [51]; Pugh et al. [48]). Finally, Stinchcombe [60] has shown that the structure of an organization often reflects the age of founding of its industry.

 * *Technical System* has also been found to affect certain design parameters significantly. For one thing, the more regulating the technical system—in other words, the more it controls the work of the operators—the more formalized is their work and the more bureaucratic is the structure of the operating core (Woodward [67]; Pugh et al. [48]; Hickson et al. [30]; Inkson et al. [34]; Child and Mansfield [11]). And the more sophisticated the technical system—that is, the more difficult it is to understand—the more elaborate the administrative structure, specifically, the larger and more professional the support staff, the greater the selective decentralization (of technical decisions to that staff), and the greater the use of liaison devices (to coordinate the work of that staff) (Woodward [67]; Khandwalla [37]; Udy [63]; Hunt [33]; Hickson et al. [30]). Finally Woodward [67] has shown how the automation of the work of the operating core tends to transform a bureaucratic administrative structure into an organic one.

 * *Environment* is another major contingency factor discussed in the literature. Dynamic environments have been identified with organic structures (Duncan [17];

Burns and Stalker [5]; Burns [4]; Harvey [27]; Lawrence and Lorsch [41]), and complex environments with decentralized ones (Hage and Aiken [25]; Pennings [43][3]). However, laboratory evidence suggests that hostile environments might lead organizations to centralize their structures temporarily (Hamblin [26]). And disparaties in the environment appear to encourage selective decentralization to differentiated work constellations (Hlavacek and Thompson [31]; Khandwalla [36]; Lawrence and Lorsch [41]). Finally, there is a good deal of evidence that diversification of the organization's markets encourage the use of market bases for grouping at high levels, assuming favorable economies of scale (Chandler [6]; Wrigley [68]; Rumelt [53]; Channon [8]; Dyas and Thanheiser [18]).

* *Power* factors have also been shown to have selective effects on structure. Most importantly, external control of organizations appears to increase formalization and centralization (Samuel and Mannheim [54]; Heydebrand [28]; Holdaway et al. [32]; Pugh et al. [50]; Reimann [51]; Pondy [47]). The need for power of the various members can influence the distribution of decision making authority, especially in the case of a chief executive whose strong need for power tends to increase centralization (Dill [16]). And fashion has been shown to have an influence on structure, sometimes driving organizations to favor inappropriate though fashionable structures (Woodward [67]; Lawrence and Lorsch [41]; Rumelt [53]; Franko [22]; Child and Keiser [10]; Azuni and McMillan [1]).

3. The Configurations of Structure

The congruence hypothesis related organizational effectiveness to the fit between a given design parameter and a given contingency factor. But a second hypothesis is also possible—what can be called the *configuration* hypothesis—that effective structuring requires an internal consistency among the design parameters. In fact, Khandwalla [35] supports this in his research with the finding that while no single structural variable correlated significantly with performance, when he split his sample of firms into high and low performers, eleven relationships between various structural variables held only for the high performers, eight for both groups, and only two for the low performers alone.

In fact, we can combine our two hypotheses to propose a third, combined one, that we can call the *extended configuration* hypothesis: effective structuring requires a consistency among the design parameters and the contingency factors. In other words, we can search for natural clusters or configurations of the design parameters together with the contingency factors. Implicit in this hypothesis is the notion that the two sets of factors merge into interactive systems, that the design parameters "cause" the so-called contingency factors just as much as the contingency factors influence the choice of design parameters. An organization may become more bureaucratic as it grows, but bureaucracies also have a habit of trying to grow larger; dynamic environments may call for organic structures, but organizations with organic structures also seek out dynamic environments, where they can outmaneuver the bureaucracies. Our

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[3] Pennings found few correlations between the environmental variables and the design parameters he measured in his study of stock brokerage offices. One important exception was complexity, which showed some significant correlations with measures that amount to decentralization. But because Pennings made no conceptual distinction between his environmental variables—he viewed them all as "characterized by uncertainty" (p. 394)—instead of concluding support for this hypothesis, he instead rejected the congruency assumption altogether.

sets of elements provide us with enough detail to begin to speculate about what some of those configurations might be.

Let us return to that number five. It must surely be more than coincidental that we have five coordinating mechanisms, five parts of the organization, five kinds of decentralization. In fact, in searching for ways to combine our various elements into configurations, five of these too emerged as most obvious. And this naturally led to a consideration of the correspondences among all these quintets. In fact, these proved to be obvious ones. It turned out that in each configuration a different coordinating mechanism dominated, a different part of the organization was key, and a different one of the five types of decentralization was used.[4] This can be explained by considering the organization as being pulled in five different directions, by each of its parts. Most organizations experience all five of these pulls; however, to the extent that conditions favor one over the others, the organization is drawn to structure itself as one of the configurations.

* The strategic apex exerts a pull for centralization, by which it can retain control over decision making. This it achieves when direct supervision is relied upon for coordination. To the extent that conditions favor this pull, the configuration called *Simple Structure* emerges.

* The technostructure exerts its pull for standardization—notably for that of work processes, the tightest form—because the design of the standards is its raison d'être. This amounts to a pull for limited horizontal decentralization. To the extent that conditions favor this pull, the organization structures itself as a *Machine Bureaucracy*.

* In contrast, the members of the operating core seek to minimize the influence of the administrators—managers as well as analysts—over their work. That is, they promote horizontal and vertical decentralization. When they succeed, they work relatively autonomously, achieving whatever coordination is necessary through the standardization of skills. Thus, the operators exert a pull for professionalism, that is, for a reliance on outside training that enhances their skills. To the extent that conditions favor this pull, the organization structures itself as a *Professional Bureaucracy*.

* The managers of the middle line also seek autonomy but must achieve it in a very different way—by drawing power down from the strategic apex and, if necessary, up from the operating core, to concentrate it in their own units. In effect, they favor limited vertical decentralization. As a result, they exert a pull to Balkanize the structure, to split it into market-based units which can control their own decisions, coordination being restricted to the standardization of their outputs. To the extent that conditions favor this pull, the *Divisionalized Form* results.

* Finally, the support staff gains the most influence in the organization not when it is autonomous but when its collaboration is called for in decision making, owing to its expertise. This happens when the organization is structured into work constellations to which power is decentralized selectively and which are free to coordinate within and between themselves by mutual adjustment. To the extent that conditions favor this pull to collaborate, the organization adopts the *Adhocracy* configuration.

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[4]At the risk of stretching my credibility, I would like to point out that this neat correspondence was not fabricated. Only after deciding on the five structural configurations was I struck by the correspondence with the five coordinating mechanisms and the five organizational parts. Slight modification in the typology of five kinds of decentralization (which rendered it more logical) was, however, suggested by the five configurations.

These five configurations consititute a typology of "ideal" or "pure" types. The central purpose of this article is to present this typology, and in so doing to make the case that it brings together the various elements of structuring discussed in the

TABLE 1

Elements of the Five Structural Configurations

	Simple Structure	Machine Bureaucracy	Professional Bureaucracy	Divisionalized Form	Adhocracy
Key coordinating mechanism:	Direct Supervision	Standardization of work	Standardization of skills	Standardization of outputs	Mutual Adjustment
Design parameters:					
Specialization of jobs:					
–horizontal	low	high	high	some (between HQ	high
–vertical	high	high	low	some and divisions)	low
Training	low	low	high	some (for division	high
Indoctrination	low	low	high (retraining)	some managers)	varies
Formalization of behavior	low	high	low	high (within divisions)	low
Bureaucratic/ organic	organic	bureaucratic	bureaucratic	bureaucratic	organic
Grouping	usually functional	usually functional	functional and market	market	functional and market
Unit Size	large	large (at bottom, narrow elsewhere)	large (at bottom, narrow elsewhere)	large (between HQ and divisions)	small (throughout)
Planning and control systems	little	action planning	little	perf. control	limited action pl. (esp. in Adm. Ad.)
Liaison devices	few	few	some in administration	few	many throughout
Decentralization	centralization	limited horizontal decentralization	horizontal and vertical decentralization	limited vertical decentralization	selective decentralization
Contingency factors:					
Age (typically)	young	old	varies	old	young (Op. Ad.)
Size (typically)	small	large	varies	very large	varies
Technical system					
–regulation	low	high	low	high	low
–complexity	low	low	low	low	low/high (Op./Adm.Ad.)
–automated	no	no	no	no	no/often (Op./Adm.Ad.)
Environment					
–complexity	low	low	high	low	high
–dynamism	high (sometimes hostile)	low	low	low (diversified markets)	high (sometimes disparate)
Power					
–focus	strategic apex	technostructure, often external	professional operators	middle line	experts
–fashionable	no	no	yes	yes	especially

literature and also encompasses many of the major findings of the research.[5] As such, it is hoped that the typology will be viewed as a framework useful for comprehending and analyzing the behavior of organizations. Table 1 shows how the various elements we have been discussing are incorporated into the typology of the five configurations. The remainder of this article is devoted to a description of the five configurations.

The Simple Structure

As shown in Figure 3, the Simple Structure is characterized, above all, by what it is not—elaborated. Typically it has little or no technostructure, few support staffers, a loose division of labor, minimal differentiation among its units, and a small middle line hierarchy. Little of its behavior is formalized, and it makes minimal use of planning, training, or the liaison devices. It is, above all, organic. Its coordination is effected largely by direct supervision. Specifically, power over all important decisions tends to be centralized in the hands of the chief executive officer. Thus, the strategic apex emerges as the key part of the structure; indeed, the structure often consists of little more than a one-person strategic apex and an organic operating core. Grouping into units—if it exists at all—more often than not is on a loose functional basis. Likewise, communication flows informally in this structure, most of it between the chief executive and everyone else. Likewise, decision making is informal, with the centralization of power allowing for rapid response.

Above all, the environment of the Simple Structure tends to be at one and the same time simple and dynamic. A simple environment can be comprehended by a single individual, and so allows decision making to be controlled by that individual. And a dynamic environment means organic structure: because the future state of the environment cannot be predicted, the organization cannot effect coordination by standardization. Another condition common to Simple Structure is a technical system that is neither sophisticated nor regulating. A sophisticated one would require an elaborate support structure, to which power over technical decisions would have to be delegated, while a regulating one would call for bureaucratization of the operating core. Young
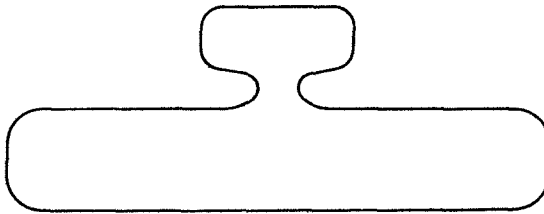

FIGURE 3.   The Simple Structure.

[5] This typology is also consistent with a number of those presented in the literature. For example, Simple Structure followed by Machine Bureaucracy followed by Divisionalized Form corresponds to various "stages of growth" theories (Starbuck [49]; Filley and House [20]; Chandler [6]; Scott [55]; Whyte [66]), while Perrow's [44] four basic types of organizations correspond to our Simple Structure in a simple, dynamic environment, Machine Bureaucracy in a simple, stable one, Professional Bureaucracy in a complex, stable environment, and Adhocracy in a complex, dynamic one. Segal [56] and Van de Ven [65] each present typologies of three structures that correspond to three of ours, as do two of those of Lawrence and Lorsch [41] and Pugh et al. [49].

organizations and small organizations also tend to use the Simple Structure, because they have not yet had the time, or yet reached the scale of operations, required for bureaucratization. Finally extreme hostility in their environments force most organizations to use the Simple Structure, no matter how they are normally organized. To deal with crises, organizations tend to centralize at the top temporarily, and to suspend their standard operating procedures.

The classic case of the Simple Structure is, of course, the entrepreneurial firm. The firm is aggressive and often innovative, continually searching for risky environments where the bureaucracies hesitate to operate. But it is also careful to remain in a market niche that its entrepreneur can fully comprehend. Entrepreneurial firms are usually small, so that they can remain organic and their entrepreneurs can retain tight control. Also they are often young, in part because the attrition rate among entrepreneurial firms is so high, and in part because those that survive tend to make the transition to bureaucracy as they age. Inside the structure, all revolves around the entrepreneur. Its goals are his goals, its strategy his vision of its place in the world. Most entrepreneurs loathe bureaucratic procedures as impositions on their flexibility. Their unpredictable maneuvering keeps their structures lean, flexible, organic.

Khandwalla [38] found this structural form in his research on Canadian companies. Pugh et al. [49] also allude to this form in what they call "implicity structured organizations", while Woodward [67] describes such a structure among the smaller unit production and single purpose process firms.

The Machine Bureaucracy

A second clear configuration of the design parameters has held up consistently in the research: highly specialized, routine operating tasks, very formalized procedures and large-sized units in the operating core, reliance on the functional basis for grouping tasks throughout the structure, little use made of training and of the liaison devices, relatively centralized power for decision making with some use of action planning systems, and an elaborate administrative structure with a sharp distinction between line and staff. This is the structure Woodward [67] found in the mass production firms, Burns and Stalker [5] in the textile industry, Crozier [13] in the tobacco monopoly, Lawrence and Lorsch [41] in the container firm; it is the structure the Aston group (Pugh et al., [49]) referred to as "workflow bureaucracy".

Despite its sharp distinction between line and staff, because the machine bureaucracy depends above all on standardization of work processes for coordination, the technostructure—which houses the many analysts who do the standardizing—emerges as the key part of the structure. Consequently, these analysts develop some informal power, with the result that the organization can be described as having limited horizontal decentralization. The analysts gain their power largely at the expense of the operators, whose work they formalize to a high degree, and of the first-line managers, who would otherwise supervise the operators directly. But the emphasis on standardization extends well above the operating core, and with it follows the analysts' influence. Rules and regulations—an obsession with control—permeate the entire structure; formal communication is favored at all levels; decision making tends to follow the formal chain of authority. Only at the strategic apex are the different functional responsibilities brought together; therefore, only at that level can the major decisions be made, hence the centralization of the structure in the vertical dimension.

The Machine Bureaucracy is typically associated with environments that are both simple and stable. The work of complex environments cannot be rationalized into simple operating tasks, while that of dynamic environments cannot be predicted, made repetitive, and so standardized. Thus the Machine Bureaucracy responds to a simple, stable environment, and in turn seeks to insure that its environment remains both simple and stable. In fact, this helps to explain the large size of the support staff in the Machine Bureaucracy, as shown in Figure 4. To ensure stability, the Machine Bureaucracy prefers to make rather than buy—to supply own support services wherever possible so that it can closely control them. In addition, the Machine Bureaucracy is typically found in the mature organization, large enough to have the scale of operations that allows for repetititon and standardization, and old enough to have been able to settle on the standards it wishes to use. Machine Bureaucracies also tend to be identified with regulating technical systems, since these routinize work and so enable that work to be standardized. But it is not typically found with sophisticated or automated technical systems because, as noted earlier, one disperses power to the support staff and the other calls for organic structure in administration, thereby driving the organization to a different configuration. Finally, the Machine Bureaucracy is often associated with external control. As noted earlier, the greater the external control of an organization, the more its structure tends to be centralized and formalized, the two prime design parameters of the Machine Bureaucracy.

Typical examples of organizations drawn to the Machine Bureaucracy configuration are mass production firms, service firms with simple, repetitive work such as insurance and telephone companies, government agencies with similar work such as post offices and tax collection departments, and organizations that have special needs for safety, such as airlines and fire departments.
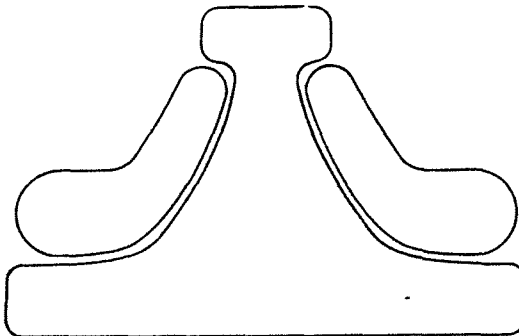

FIGURE 4. The Machine Bureaucracy.

The Professional Bureaucracy

Organizations can be bureaucratic without being centralized, that is their behavior can be standardized by a coordinating mechanism that allows for decentralization. That coordinating mechanism is the standardization of skills, a reliance on which gives rise to the configuration called Professional Bureaucracy, found typically in school systems, social work agencies, accounting firms, and craft manufacturing firms. The organization hires highly trained specialists—called professionals—in its operating core, and then gives them considerable autonomy in their work. In other words, they

work relatively freely not only of the administrative hierarchy but also of their own colleagues. Much of the necessary coordination is achieved by design—by the standard skills that predetermine behavior. And this autonomy in the operating core means that the operating units are typically very large, as shown in Figure 5, and that the structure is decentralized in both the vertical and horizontal dimensions. In other words, much of the formal and informal power of the Professional Bureaucracy rests in its operating core, clearly its key part. Not only do the professionals control their own work, but they also tend to maintain collective control of the administrative apparatus of the organization. Managers of the middle line, in order to have power in the Professional Bureaucracy, must be professionals themselves, and must maintain the support of the professional operators. Moreover, they typically share the administrative tasks with the operating professionals. At the administrative level, however, in contrast with the operating level, tasks require a good deal of mutual adjustment, achieved in large part through standing committees, task forces, and other liaison devices.

The technostructure is minimal in this configuration, because the complex work of the operating professionals cannot easily be formalized, or its outputs standardized by action planning and performance control systems. The support staff is, however, highly elaborated, as shown in Figure 5, but largely to carry out the simpler, more routine work and to back-up the high-priced professionals in general. As a result, the support staff tend to work in a machine bureaucratic pocket off to one side of the Professional Bureaucracy. For the support staff of these organizations, there is no democracy, only the oligarchy of the professionals. Finally, a curious feature of this configuration is that it uses the functional and market bases for grouping concurrently in its operating core. That is, clients are categorized and served in terms of functional specialties—chemistry students by the chemistry department in the university, cardiac patients by the cardiac department in the hospital.[6]

The Professional Bureaucracy typically appears in conjunction with an environment that is both complex and stable. Complexity demands the use of skills and knowledge that can be learned only in extensive training programs, while stability ensures that these skills settle down to become the standard operating procedures of the organization. Age and size are not important factors in this configuration: the organization tends to use the same standard skills no matter how small or young it is because its professionals bring these skills with them when they first join the organization. So unlike the Machine Bureaucracy, which must design its own standards, in the Profes-
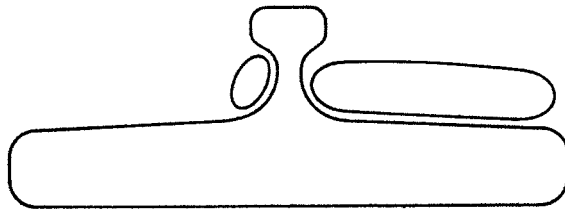

FIGURE 5.   The Professional Bureaucracy.

[6] It is interesting to note that in Simon's [57, p. 30] criticism in *Administrative Behavior* of the ambiguities in the classical distinction between grouping by process and by purpose, all of his examples are drawn from professional work.

sional Bureaucracy no time is lost and no scale of operations is required to establish standards. Technical system is of importance in this configuration only for what it is not—neither regulating, or sophisticated, nor automated. Any one of these characteristics would destroy individual operator autonomy in favor of administrative or peer group influence, and so drive the organization to a different configuration. Finally, fashion is a factor, simply because it has proven to the advantage of all kinds of operator groups to have their work defined as professional; this enables them to demand influence and autonomy in the organization. For this reason, Professional Bureaucracy is a highly fashionable structure today.

The Divisionalized Form

The Divisionalized Form is not so much a complete structure as the superimposition of one structure on others. This structure can be described as a market-based one, with a central headquarters overseeing a set of divisions, each charged with serving its own markets. In this way there need be little interdependence between the divisions (beyond that Thompson [62] refers to as the "pooled" type), and little in the way of close coordination. Each division is thus given a good deal of autonomy. The result is the limited, parallel form of vertical decentralization,[7] with the middle line emerging as the key part of the organization. Moreover, without the need for close coordination, a large number of divisions can report up to the one central headquarters. The main concern of that headquarters then becomes to find a mechanism to coordinate the goals of the divisions with its own, without sacrificing divisional autonomy. And that it does by standardizing the outputs of the divisions—specifically, by relying on performance control systems to impose performance standards on the divisions and then monitor their results. Hence Figure 6 shows a small headquarters technostructure, which is charged with designing and operating the performance control system. Also shown is a small headquarters support staff. Included here are those units that serve all of the divisions (e.g., legal counsel), with other support units dispersed to the divisions serve their particular needs (e.g., industrial relations).

Finally there arises the question of what structure is found in the divisions themselves. Although in principle the Divisionalized Form is supposed to work with any kind of structure in the divisions, in fact there is reason to believe, as illustrated in Figure 7, that the divisions are driven to use the Machine Bureaucracy. The Divisionalized Form requires the establishment for each division of clearly defined perfor-
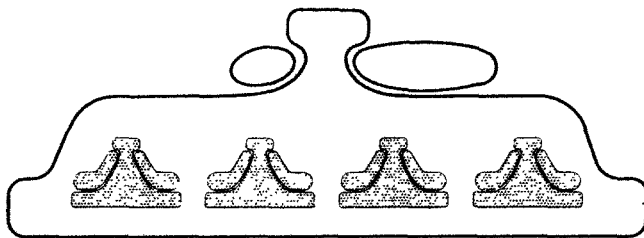

FIGURE 6.   The Divisionalized Form.

[7] "Limited" means that the equating of divisionalization with "decentralization", as is done in so much of the literature, is simply not correct. In fact, as Perrow [45, p. 38] points out, the most famous example of divisionalization—that of General Motors in the 1920s—was clearly one of the relative *centralization* of the structure.

mance standards, the existence of which depend on two major assumptions. First, each division must be treated as a single integrated system with a single, consistent set of goals. In other words, while the divisions may be loosely coupled with each other, the assumption is that each is tightly coupled within. Second, those goals must be operational ones, in other words, lend themselves to quantitative measures of performance control. And these two assumptions hold only in one configuration, the one that is both bureaucratic (i.e., operates in a stable enough environment to be able to establish performance standards) and integrated, in other words, in Machine Bureaucracy. Moreover, as noted earlier, external control drives organizations toward Machine Bureaucracy; here the headquarters constitutes external control of the divisions.
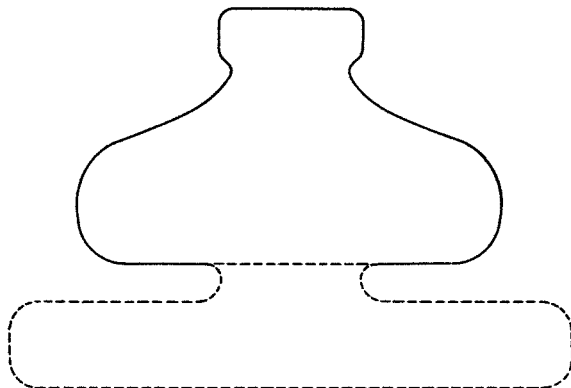

FIGURE 7.   The Adhocracy.

One factor above all encourages the use of the Divisionalized Form—market diversity, specifically, that of products and services. (Diversity only in region or client leads, as Channon [9] has shown, to an incomplete form of divisionalization, with certain "critical" functions concentrated at headquarters, as in the case of purchasing in a regionally diversified retailing chain.) But by the same token, it has also been found that divisionalization encourages further diversification (Rumelt [53, pp. 76–77]; Fouraker and Stopford [21]), headquarters being encouraged to do so by the ease with which it can add divisions and by the pressures from the corps of aggressive general managers trained in the middle lines of such structures. Otherwise, as befits a structure that houses Machine Bureaucracies, the Divisionalized Form shares many of their conditions—an environment that is neither very complex nor very dynamic, and an organization that is typically large and mature. In effect, the Divisionalized Form is the common structural response to an integrated Machine Bureaucracy that has diversified its product or service lines horizontally (i.e., in conglomerate fashion).

The Divisionalized Form is very fashionable in industry, found in pure or partial form among the vast majority of America's largest corporations, the notable exceptions being those with giant economies of scale in their traditional businesses (Wrigley [68]; Rumelt [53]). It is also found outside the sphere of business (in the form of multiverities, conglomerate unions, and government itself), but often in impure form due to the difficulty of developing relevant performance measures.

The Adhocracy

Sophisticated innovation requires a fifth and very different structural configuration, one that is able to fuse experts drawn from different specialties into smoothly

functioning project teams. Adhocracy is such a configuration, consisting of organic structure with little formalization of behavior; extensive horizontal job specialization based on formal training; a tendency to group the professional specialists in functional units for housekeeping purposes but to deploy them in small market-based teams to do their project work; a reliance on the liaison devices to encourage mutual adjustment—the key coordinating mechanism—within and between these teams; and selective decentralization to these teams, which are located at various places in the organization and involve various mixtures of line managers and staff and operating experts. Of all the configurations, Adhocracy shows the least reverance for the classical principles of management. It gives quasi-formal authority to staff personnel, thereby blurring the line-staff distinction, and it relies extensively on matrix structure, combining functional and market bases for grouping concurrently and thereby dispensing with the principle of unity of command.

Adhocracies may be divided into two main types. In the *Operating Adhocracy*, the innovation is carried out directly on behalf of the clients, as in the case of consulting firms, advertising agencies, and film companies. In effect, there corresponds to every Professional Bureaucracy an Operating Adhocracy that does similar work but with a broader orientation. For the consulting firm that seeks to pigeonhole each client problem into the most relevant standard skill within its given repertoire, there exists another that treats that problem as a unique challenge requiring a creative solution. The former, because of its standardization, can allow its professional operators to work on their own; the latter, in order to achieve innovation, must group its professionals in multidisciplinary teams so as to encourage mutual adjustment. In the Operating Adhocracy, the administrative and operating work tend to blend into a single effort. In other words, ad hoc project work does not allow a sharp differentiation of the planning and design of the work from its actual execution.

In the *Administrative Adhocracy*, the project work serves the organization itself, as in the case of chemical firms and space agencies. And here the administrative and operating components are sharply differentiated: in fact, the operating core is typically truncated from the rest of the organization—set up as a separate structure, contracted out, or automated—so that the administrative component is free to function as an Adhocracy.

Figure 7 shows both types of Adhocracies, with the blurring of the line-staff distinction in both cases and the truncation of the operating core (indicated by dotted lines), or else, in the case of the Operating Adhocracy, its inclusion in the mass of activities in the administrative center. The figure also shows a partial blurring of the strategic apex with the rest of the structure. This is because in project work, strategy is not imposed from above. Rather, it emerges from the stream of ad hoc decisions made for all the projects. Hence everyone who is involved in the project work—and in the Adhocracy that can mean everyone in the organization—is involved in strategy making. The key role of the support staff should be underlined here, especially in the Administative Adhocracy which houses many of its experts in that staff.

Adhocracy is clearly positioned in environments that are both dynamic and complex. These are the ones that demand sophisticated innovation, the kind of innovation that calls for organic structure with a good deal of decentralization. Disparate forces in the environment, by encouraging selective decentralization to differentiated work constellations, as noted earlier, also encourage use of Adhocracy, notably the Administrative kind. Age—or at least youth—is another condition associated with Adhocracy, because time encourages an organization to bureaucratize, for example, by settling on

the set of skills it performs best and so converting itself from an Operating Adhocracy into a Professional Bureaucracy. Moreover, because Operating Adhocracies in particular are such vulnerable structures—they can never be sure where their next project will come from—they tend to be very young on average: many of them either die early or else shift to bureaucratic configurations to escape the uncertainty.

Adhocracies of the Administrative kind are also associated with technical systems that are sophisticated and automated. Sophistication requires that power over decisions concerning the technical system be given to specialists in the support staff, thereby creating selective decentralization to a work constellation that makes heavy use of the liaison devices. And automation in the operating core transforms a bureacratic administrative structure into an organic one, because it frees the organization of the need to control operators by technocratic standards. The standards are built right into the machines. In effect, the support staff, being charged with the selection and engineering of the automated equipment, takes over the function of designing the work of the operating core. The result is the Adhocracy configuration.

Finally, fashion is an important factor, because every characteristic of Adhocracy is very much in vogue today—emphasis on expertise, organic and matrix structure, teams and task forces, decentralization without power concentration, sophisticated and automated technical systems, youth, and complex, dynamic environments. In fact, perhaps the best support for Stinchcombe's claim, cited earlier, that structure reflects the age of founding of the industry, comes from the observation that while Adhocracy seems to be used in few industries that were fully developed before World War Two, it is found extensively in virtually every one that developed since that time. Thus, it is described by Lawrence and Lorsch [41] in plastics companies, by Chandler and Sayles [7] in NASA, by Woodward [67] in modern process production, and by Galbraith [23] in the Boeing Company. Adhocracy seems clearly to be the structure of *our* age.

4. Beyond Five

Our five configurations have been referred to repeatedly in this article as ideal or pure types. The question then arises as to where—or whether—they can be found. It is clear that each configuration is a simplification, understating the true complexity of all but the simplest organizational structures. In that sense, every sentence in our description of the configurations has been an overstatement (including this one!). And yet our reading of the research literature suggests that in many cases one of the five pulls discussed earlier dominates the other four in an organization, with the result that its structure is drawn toward one of the configurations. It is presumably its search for harmony in structure and situation that causes an organization to favor one of the pure types.

Other structures of course emerge differently. Some appear to be in transition from one pure type to another, in response to a changed situation. Others exhibit structures that can be described as hybrids of the configurations, perhaps because different forces pull them toward different pure types. The symphony orchestra, for example, seems to use a combination of Simple Structure and Professional Bureaucracy: it hires highly trained musicians and relies largely on their standardized skills to produce its music, yet it also requires a strong, sometimes autocratic, leader to weld them into a tightly coordinated unit. Other hybrids seem to be dysfunctional, as in the case of the organization that no sooner gives its middle managers autonomy subject to performance control, as in the Divisionalized Form, than it takes it away by direct

supervision, as in the Simple Structure. School systems, police forces, and the like are often forced to centralize power inappropriately because of the external controls imposed upon them. Would-be Professional Bureaucracies become Machine Bureaucracies, to the regret of operator and client alike.

The point to be emphasized is not that the five configurations represent some hard and fast typology but that together as a set they represent a conceptual framework which can be used to help us comprehend organizational behavior—how structures emerge, how and why they change over time, why certain pathologies plague organizational design.

Finally . . .

Is there a sixth structural configuration? Well, the rainbow still has only five colors.[8] But the planets turned out to number more than five. We even seem to be on the verge of recognizing a sixth sense. So why not a sixth configuration. As long, of course, as it maintains the harmony of the theory: it must have its own unique coordinating mechanism, and a new, sixth part of the organization must dominate it.

We do, in fact, have a candidate for that sixth configuration. It relies for coordination on socialization—in effect, the standardization of norms; it uses indoctrination as its main design parameter; and its dominant part is ideology, a sixth part, in fact, of every organization, representing a pull toward a sense of mission. Perhaps the *Missionary Configuration* will emerge as the fashionable structure of the post-adhocratic age.[9]

[8] In fact, various sources I consulted referred to five, six, and seven colors. I even tried to count, but there was considerable ambiguity in the sample of one I managed to collect. In any event, the rainbow almost certainly has the same number of colors it always did.

[9] This paper draws on *The Structuring of Organizations: A Synthesis of the Research* (Prentice-Hall, 1979). The author wishes to express his appreciation to Andy Van de Ven who commented extensively and very helpfully on an earlier version of this paper, and to Arie Lewin, because hard working editors seldom get the recognition they deserve.

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