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Organizational Strategy, Structure, and Process[1]

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Organizational adaptation is a topic that has received only limited and fragmented theoretical treatment. Any attempt to examine organizational adaptation is difficult, since the process is highly complex and changeable. The proposed theoretical framework deals with alternative ways in which organizations define their product-market domains (strategy) and construct mechanisms (structures and processes) to pursue these strategies. The framework is based on interpretation of existing literature and continuing studies in four industries (college textbook publishing, electronics, food processing, and health care).

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An organization is both an articulated purpose and an established mechanism for achieving it. Most organizations engage in an ongoing process of evaluating their purposes—questioning, verifying, and redefining the manner of interaction with their environments. Effective organizations carve out and maintain a viable market for their goods or services. Ineffective organizations fail this market — alignment task. Organizations also constantly modify and refine the mechanism by which they achieve their purposes—rearranging their structure of roles and relationships and their managerial processes. Efficient organizations establish mechanisms that complement their market strategy, but inefficient organizations struggle with these structural and process mechanisms.

For most organizations, the dynamic process of adjusting to environmental change and uncertainty—*of maintaining an effective alignment with the environment while managing internal interdependencies*—is enormously complex, encompassing myriad decisions and behaviors at several organization levels. But the complexity of the adjustment process can be penetrated: by searching for patterns in the behavior of organizations, one can describe and even predict the process of organizational adaptation. This article presents a theoretical framework that managers and students of management can use to analyze an organization as an integrated and dynamic whole—a model that takes into account the interrelationships among strategy, structure, and process. (For a complete discussion of the theoretical framework and research studies, see (15)). Specifically, the framework has two major elements: (a) a general model of the process of adaptation which specifies the major decisions needed by the organization to maintain an effective alignment with its environment, and (b) an organizational typology which portrays different patterns of adaptive behavior used by organizations within a given industry or other grouping. But as several theorists have pointed out, organizations are limited in their choices of adaptive behavior to those which top management believes will allow the effective direction and control of human resources (4, 5, 6). Thus the theoretical framework to prevailing theories of management is also related. An increased understanding of the adaptive process, of how organizations move through it, and of the managerial requirements of different adjustment patterns can facilitate the difficult process of achieving an effective organization-environment equilibrium.

In the following sections, a typical example of organizational adaptation drawn from one of our empirical research studies is first presented. Second, a model of the adaptive process that arose from this research is described and discussed. In the third section, four alternative forms of adaptation exhibited by the organizations in our studies are described. Finally, the relationship between the organizational forms and currently available theories of management is discussed.

An Example of Organizational Adaptation

As an example of the problems associated with the adaptive process, consider the experience of a subsidiary of one of the companies in our studies.

Porter Pump and Valve (PPV) is a semi-autonomous division of a medium-sized equipment-manufacturing firm, which is in turn part of a large, highly diversified conglomerate. PPV manufactures a line of heavy-duty pumps and components for fluid-movement systems. The company does most of its own castings, makes many of its own parts, and maintains a complete stock of replacement parts. PPV also does special-order foundry work for other firms as its production schedule allows.

Until recently, Porter Pump and Valve had defined its business as providing quality products and service to a limited set of reliable customers. PPV's general manager, a first-rate engineer who spent much of his time in the machine shop and foundry, personified the company's image of

quality and cost efficiency. In the mid-seventies corporate management became concerned about both the speed and direction of PPV's growth. The management and staff at corporate headquarters began considering two new product and market opportunities, both in the energy field. Fluid-movement systems required for nuclear power generation provided one of these opportunities, and the development of novel techniques for petroleum exploration, well recovery, and fluid delivery provided the second. PPV had supplied some components to these markets in the past, but it was now clear that opportunities for the sale of entire systems or large-scale subsystems were growing rapidly.

PPV's initial moves toward these new opportunities were tentative. The general manager discovered that contract sales required extensive planning, field-contact work, and careful negotiations—activities not within his primary area of interest or experience. Finally, in an effort to foster more rapid movement into these new markets, executives in the parent organization transferred the general manager to a head-office position and moved into the top spot at PPV a manager with an extensive background in both sales and engineering and who was adept at large-scale contract negotiations.

Within a year of the changeover in general managers, PPV landed several lucrative contracts, and more appeared to be in the offing. The new business created by these contracts, however, placed heavy coordination demands on company management, and while the organization's technology (production and distribution system) has not been drastically revised over the past two years, workflow processes and the operational responsibilities of several managers have changed markedly. Materials control and scheduling, routine tasks in the past, are now complex activities, and managers of these operations meet regularly with the executive planning committee. Moreover, a rudimentary matrix structure has emerged in which various line managers undertake specific project responsibilities in addition to their regular duties. Key personnel additions have been made to the marketing department and more are planned, with particular emphasis on individuals who are capable of performing field planning and supervising and who can quickly bring new fluid systems to full operation. Budgets of some of the older departments are being cut back, and these funds are being diverted to the new areas of activity.

As illustrated, Porter Pump and Value experienced changes in its products and markets, in the technological processes needed to make new products and serve new markets, and in the administrative structure and processes required to plan, coordinate, and control the company's new operations. None of the usual perspectives which might be used to analyze such organizational changes — for example, economics, industrial engineering, marketing, or policy — appears to address all of the problems experienced by Porter Pump and Valve. Therefore, how can the adaptive process which occurred at PPV be described in its entirety?

The Adaptive Cycle

We have developed a general model of the adaptive process which we call the *adaptive cycle*. Consistent with the strategic-choice approach to the study of organizations, the model parallels and expands ideas formulated by theorists such as Chandler (9), Child (10), Cyert and March (11), Drucker (12, 13), Thompson (18), and Weick (19, 20). Essentially, proponents of the strategic-choice perspective argue thar organizational behavior is only partially preordained by environmental conditions and that the choices which top managers make are the critical determinants of organizational structure and process. Although these choices are numerous and complex, they can be viewed as three broad "problems" of organizational adaptation: the *entrepreneurial problem,* the *engineering problem,* and the *administrative problem*. In mature organizations, management must solve each of

these problems simultaneously, but for explanatory purposes, these adaptive problems can be discussed as if they occurred sequentially.

The Entrepreneurial Problem

The adaptive cycle, though evident in all organizations, is perhaps most visible in new or rapidly growing organizations (and in organizations which recently have survived a major crisis). In a new organization, an entrepreneurial insight, perhaps only vaguely defined at first, must be developed into a concrete *definition of an organizational domain: a specific good or service and a target market or market segment.* In an ongoing organization, the entrepreneurial problem has an added dimension. Because the organization has already obtained a set of "solutions" to its engineering and administrative problems, its next attempt at an entrepreneurial "thrust" may be difficult. In the example of Porter Pump and Valve, the company's attempt to modify its products and markets was constrained by its present production process and by the fact that the general manager and his staff did not possess the needed marketing orientation.

In either a new or ongoing organization, the solution to the entrepreneurial problem is marked by management's acceptance of a particular product-market domain, and this acceptance becomes evident when management decides to commit resources to achieve objectives relative to the domain. In many organizations, external and internal commitment to the entrepreneurial solution is sought through the development and projection of an organizational "image" which defines both the organization's market and its orientation toward it (e.g., an emphasis on size, efficiency, or innovation).

Although we are suggesting that the engineering phase begins at this point, the need for further entrepreneurial activities clearly does not disappear. The entrepreneurial function remains a top-management responsibility, although as Bower (7) has described, the identification of a new opportunity and the initial impetus for movement toward it may originate at lower managerial levels.

The Engineering Problem

The engineering problem involves the creation of a system which *operationalizes management's solution to the entrepreneurial problem.* Such a system requires management to select an appropriate technology (input-transformation-output process) for producing and distributing chosen products or services and to form new information, communication, and control linkages (or modify existing linkages) to ensure proper operation of the technology.

As solutions to these problems are reached, initial implementation of the administrative system takes place. There is no assurance that the configuration of the organization, as it begins to emerge during this phase, will remain the same when the engineering problem finally has been solved. The actual form of the organization's structure will be determined during the administrative phase as management solidifies relations with the environment and establishes processes for coordinating and controlling internal operations. Referring again to Porter Pump and Valve, the company's redefinition of its domain required concomitant changes in its technology — from a pure mass-production technology to more of a unit or small-batch technology (21).

The Administrative Problem

The administrative problem, as described by most theories of management, is primarily that of reducing uncertainty within the organizational system, or, in terms of the present model, of rationalizing and stabilizing those activities which successfully solved problems faced by the organization during the entrepreneurial and engineering phases. Solving the administrative problem involves more than simply rationalizing the system already developed (uncertainty reduction); it also involves formulating and implementing those processes which will enable the organization to continue to evolve (innovation).

This conception of the administrative problem, as a pivotal factor in the cycle of adaptation, deserves further elaboration.

Rationalization and Articulation — In the ideal organization, management would be equally adept at performing two somewhat conflicting functions: it would be able to create an administrative system (structure and processes) that could smoothly direct and monitor the organization's current activities without, at the same time, allowing the system to become so ingrained that future innovation activities are jeopardized. Such a perspective requires the administrative system to be viewed as both a *lagging* and *leading* variable in the process of adaptation. As a lagging variable, it must rationalize, through the development of appropriate structures and processes, strategic decisions made at previous points in the adjustment process. As a leading variable, the administrative system must facilitate the organization's future capacity to adapt by articulating and reinforcing the paths along which innovative activity can proceed. At Porter Pump and Valve, management modified its planning, coordination, and control processes substantially in order to pursue the company's newly chosen areas of business (the "lagging" aspect of administration). At the same time, key personnel were added to the marketing department; their duties included product development, market research, and technical consulting. These activities were designed to keep PPV at the forefront of new product and market opportunities (the "leading" aspect of administration).

The Strategic Typology

If one accepts the adaptive cycle as valid, the question becomes: How do organizations move through the cycle? That is, using the language of our model, what strategies do organizations employ in solving their entrepreneurial, engineering, and administrative problems? Our research and interpretation of the literature show that there are essentially three *strategic types* of organizations: Defenders, Analyzers, and Prospectors. Each type has its own unique strategy for relating to its chosen market(s), and each has a particular configuration of technology, structure, and process that is consistent with its market strategy. A fourth type of organization encountered in our studies is called the Reactor. The Reactor is a form of strategic "failure" in that inconsistencies exist among its strategy, technology, structure, and process.

Although similar typologies of various aspects of organizational behavior are available (1, 2, 3, 15, 16, 17), our formulation specifies relationships among strategy, technology, structure, and process to the point where entire organizations can be viewed as integrated wholes in dynamic interaction with their environments. Any typology is unlikely to encompass every form of organizational behavior — the world of organizations is much too changeable and complex to permit such a claim. Nevertheless, every organization that we have observed appears, when compared to other organizations in its industry, to fit predominantly into one of the four categories, and its behavior is generally predictable given its typological classification. The "pure" form of each of these organization types is described below.

Defenders

The Defender (i.e., its top management) deliberately enacts and maintains an environment for which a stable form of organization is appropriate. Stability is chiefly achieved by the Defender's definition of, and solution to, its entrepreneurial problem. Defenders define their *entrepreneurial* problem as *how to seal off a portion of the total market in order to create a stable domain,* and they do so by producing only a limited set of products directed at a narrow segment of the total potential market. Within this limited domain, the Defender strives aggressively to prevent competitors from entering its "turf". Such behaviors include standard economic actions like competitive pricing or high-quality products, but Defenders also tend to ig-

nore developments and trends outside of their domains, choosing instead to grow through market penetration and perhaps some limited product development. Over time, a true Defender is able to carve out and maintain a small niche within the industry which is difficult for competitors to penetrate.

Having chosen a narrow product-market domain, the Defender invests a great deal of resources in solving its *engineering* problem: *how to produce and distribute goods or services as efficiently as possible*. Typically, the Defender does so by developing a single core technology that is highly cost-efficient. Technological efficiency is central to the Defender's success since its domain has been deliberately created to absorb outputs on a predictable, continuous basis. Some Defenders extend technological efficiency to its limits through a process of vertical integration — incorporating each stage of production from raw materials supply to distribution of final output into the same organizational system.

Finally, the Defender's solution to its administrative problem is closely aligned with its solutions to the entrepreneurial and engineering problems. The Defender's *administrative* problem — *how to achieve strict control of the organization in order to ensure efficiency* — is solved through a combination of structural and process mechanisms that can be generally described as "mechanistic" (8). These mechanisms include a top-management group heavily dominated by production and cost-control specialists, little or no scanning of the environment for new areas of opportunity, intensive planning oriented toward cost and other efficiency issues, functional structures characterized by extensive division of labor, centralized control, communications through formal hierarchical channels, and so on. Such an administrative system is ideally suited for generating and maintaining efficiency, and the key characteristic of stability is as apparent here as in the solution to the other two adaptive problems.

Pursued vigorously, the Defender strategy can be viable in most industries, although stable industries lend themselves to this type of organization more than turbulent industries (e.g., the relative lack of technological change in the food-processing industry generally favors the Defender strategy compared with the situation in the electronics industry). This particular form of organization is not without its potential risks. The Defender's *primary risk* is that of *ineffectiveness* — being unable to respond to a major shift in its market environment. The Defender relies on the continued viability of its single, narrow domain, and it receives a return on its large technological investment only if the major problems facing the organization continue to be of an engineering nature. If the Defender's market shifts dramatically, this type of organization has little capacity for locating and exploiting new areas of opportunity. In short, the Defender is perfectly capable of responding to today's world. To the extent that tomorrow's world is similar to today's, the Defender is ideally suited for its environment. Table 1 summarizes the Defender's salient characteristics and the major strengths and weaknesses inherent in this pattern of adaptation.

Prospectors

In many ways, Prospectors respond to their chosen environments in a manner that is almost the opposite of the Defender. In one sense, the Prospector is exactly like the Defender: there is a high degree of consistency among its solutions to the three problems of adaptation.

Generally speaking, the Prospector enacts an environment that is more dynamic than those of other types of organizations within the same industry. Unlike the Defender, whose success comes primarily from efficiently serving a stable domain, the Prospector's prime capability is that of finding and exploiting new product and market opportunities. For a Prospector, maintaining a reputation as an innovator in product and market development may be as important as, perhaps even more important, than high profitability. In fact, because of the inevitable "failure rate" associated with sustained product and market innovation, Prospectors may find it difficult

TABLE 1. Characteristics of the Defender

Entrepreneurial Problem	Engineering Problem	Administrative Problem
Problem: How to "seal off' a portion of the total market to create a stable set of products and customers.	*Problem:* How to produce and distribute goods or services as efficiently as possible.	*Problem:* How to maintain strict control of the organization in order to ensure efficiency.
Solutions: 1. Narrow and stable domain. 2. Aggressive maintenance of domain (e.g., competitive pricing and excellent customer service). 3. Tendency to ignore developments outside of domain. 4. Cautious and incremental growth primarily through market penetration. 5. Some product development but closely related to current goods or services.	*Solutions:* 1. Cost-efficient technology. 2. Single core technology. 3. Tendency toward vertical integration. 4. Continuous improvements in technology to maintain efficiency.	*Solutions:* 1. Financial and production experts most powerful members of the dominant coalition; limited environmental scanning. 2. Tenure of dominant coalition is lengthy; promotions from within. 3. Planning is intensive, cost oriented, and completed before action is taken. 4. Tendency toward functional structure with extensive division of labor and high degree of formalization. 5. Centralized control and long-looped vertical information systems. 6. Simple coordination mechanisms and conflict resolved through hierarchical channels. 7. Organizational performance measured against previous years; reward system favors production and finance.
Costs and Benefits: It is difficult for competitors to dislodge the organization from its small niche in the industry, but a major shift in the market could threaten survival.	*Costs and Benefits:* Technological efficiency is central to organizational performance, but heavy investment in this area requires technological problems to remain familiar and predictable for lengthy periods of time.	*Costs and Benefits:* Administrative system is ideally suited to maintain stability and efficiency but it is not well suited to locating and responding to new product or market opportunities.

Source: Raymond E. Miles and Charles C. Snow, *Organizational Strategy, Structure, and Process* (New York: McGraw-Hill, 1978) Table 3-1.

consistently to attain the profit levels of the more efficient Defender.

Defining its *entrepreneurial* problem as *how to locate and develop product and market opportunities*, the Prospector's domain is usually broad and in a continuous state of development. The systematic addition of new products or markets, frequently combined with retrenchment in other parts of the domain, gives the Prospector's products and markets an aura of fluidity uncharacteristic of the Defender. To locate new areas of opportunity, the Prospector must de-

velop and maintain the capacity to survey a wide range of environmental conditions, trends, and events. This type of organization invests heavily in individuals and groups who scan the environment for potential opportunities. Because these scanning activities are not limited to the organization's current domain, Prospectors are frequently the creators of change in their respective industries. Change is one of the major tools used by the Prospector to gain an edge over competitors, so Prospector managers typically perceive more environmental change and uncertainty than managers of the Defender (or the other two organization types).

To serve its changing domain properly, the Prospector requires a good deal of flexibility in its technology and administrative system. Unlike the Defender, the Prospector's choice of products and markets is not limited to those which fall within the range of the organization's present technological capability. The Prospector's technology is contingent upon both the organization's current *and* future product mix: entrepreneurial activities always have primacy, and appropriate technologies are not selected or developed until late in the process of product development. Therefore, the Prospector's overall engineering problem is *how to avoid long-term commitments to a single type of technological process,* and the organization usually does so by creating multiple, prototypical technologies which have a low degree of routinization and mechanization.

Finally, the Prospector's *administrative* problem flows from its changing domain and flexible technologies: *how to facilitate rather than control organizational operations.* That is, the Prospector's administrative system must be able to deploy and coordinate resources among numerous decentralized units and projects rather than to plan and control the operations of the entire organization centrally. To accomplish overall facilitation and coordination, the Prospector's structure-process mechanisms must be "organic" (8). These mechanisms include a top-management group dominated by marketing and research and development experts, planning that is broad rather than intensive and oriented toward results not methods, product or project structures characterized by a low degree of formalization, decentralized control, lateral as well as vertical communications, and so on. In contrast to the Defender, the Prospector's descriptive catchword throughout its administrative as well as entrepreneurial and engineering solutions is "flexibility".

Of course, the Prospector strategy also has it costs. Although the Prospector's continuous exploration of change helps to protect it from a changing environment, this type of organization runs the *primary risk of low profitability and overextension of resources.* While the Prospector's technological flexibility permits a rapid response to a changing domain, complete efficiency cannot be obtained because of the presence of multiple technologies. Finally, the Prospector's administrative system is well suited to maintain flexibility, but it may, at least temporarily, underutilize or even misutilize physical, financial, and human resources. In short, the Prospector is effective — it can respond to the demands of tomorrow's world. To the extent that the world of tomorrow is similar to that of today, the Prospector cannot maximize profitability because of its inherent inefficiency. Table 2 summarizes the Prospector's salient characteristics and the major strengths and weaknesses associated with this pattern of adaptation.

Analyzers

Based on our research, the Defender and the Prospector seem to reside at opposite ends of a continuum of adjustment strategies. Between these two extremes, a third type of organization is called the Analyzer. The Analyzer is a unique combination of the Prospector and Defender types and represents a viable alternative to these other strategies. A true Analyzer is an organization that attempts to minimize risk while maximizing the opportunity for profit — that is, an experienced Analyzer combines the strengths of both the Prospector and the De-

TABLE 2. Characteristics of the Prospector

Entrepreneurial Problem	Engineering Problem	Administrative Problem
Problem: How to locate and exploit new product and market opportunities.	*Problem:* How to avoid long-term commitments to a single technological process.	*Problem:* How to facilitate and coordinate numerous and diverse operations.
Solutions: 1. Broad and continuously developing domain. 2. Monitors wide range of environmental conditions and events. 3. Creates change in the industry. 4. Growth through product and market development. 5. Growth may occur in spurts.	*Solutions:* 1. Flexible, prototypical technologies. 2. Multiple technologies. 3. Low degree of routinization and mechanization; technology embedded in people.	*Solutions:* 1. Marketing and research and development experts most powerful members of the dominant coalition. 2. Dominant coalition is large, diverse, and transitory; may include an inner circle. 3. Tenure of dominant coalition not always lengthy; key managers may be hired from outside as well as promoted from within. 4. Planning is comprehensive, problem oriented, and cannot be finalized before action is taken. 5. Tendency toward product structure with low division of labor and low degree of formalization. 6. Decentralized control and short-looped horizontal information systems. 7. Complex coordination mechanisms and conflict resolved through integrators. 8. Organizational performance measured against important competitors; reward system favors marketing and research and development.
Costs and Benefits: Product and market innovation protect the organization from a changing environment, but the organization runs the risk of low profitability and overextension of its resources.	*Costs and Benefits:* Technological flexibility permits a rapid response to a changing domain, but the organization cannot develop maximum efficiency in its production and distribution system because of multiple technologies.	*Costs and Benefits:* Administrative system is ideally suited to maintain flexibility and effectiveness but may underutilize and misutilize resources.

Source: Raymond E. Miles and Charles C. Snow, *Organizational Strategy, Structure, and Process* (New York: McGraw-Hill, 1978), Table 4-1.

fender into a single system. This strategy is difficult to pursue, particularly in industries characterized by rapid market and technological change, and thus the word that best describes the Analyzer's adaptive approach is "balance".

The Analyzer defines its *entrepreneurial* problem in terms similar to both the Prospector and the Defender: *how to locate and exploit new product and market opportunities while simultaneously maintaining a firm core of traditional products and customers.* The Analyzer's solution to the entrepreneurial problem is also a blend of the solutions preferred by the Prospector and the Defender: the Analyzer moves toward new products or new markets but only after their viability has been demonstrated. This periodic transformation of the Analyzer's domain is accomplished through imitation — only the most successful product or market innovations developed by prominent Prospectors are adopted. At the same time, the majority of the Analyzer's revenue is generated by a fairly stable set of products and customer or client groups — a Defender characteristic. Thus, the successful Analyzer must be able to respond quickly when following the lead of key Prospectors while at the same time maintaining operating efficiency in its stable product and market areas. To the extent that it is successful, the Analyzer can grow through market penetration as well as product and market development.

The duality evident in the Analyzer's domain is reflected in its *engineering* problem and solution. This type of organization must learn *how to achieve and protect an equilibrium between conflicting demands for technological flexibility and for technological stability.* This equilibrium is accomplished by partitioning production activities to form a dual technological core. The stable component of the Analyzer's technology bears a strong resemblance to the Defender's technology. It is functionally organized and exhibits high levels of standardization, routinization, and mechanization in an attempt to approach cost efficiency. The Analyzer's flexible technological component resembles the Prospector's technological orientation. In manufacturing organizations, it frequently includes a large group of applications engineers (or their equivalent) who are rotated among teams charged with the task of rapidly adapting new product designs to fit the Analyzer's existing stable technology.

The Analyzer's dual technological core thus reflects the engineering solutions of both the Prospector and the Defender, with the stable and flexible components integrated primarily by an influential applied research group. To the extent that this group is able to develop solutions that match the organization's existing technological capabilities with the new products desired by product managers, the Analyzer can enlarge its product line without incurring the Prospector's extensive research and development expenses.

The Analyzer's administrative problem, as well as its entrepreneurial and engineering problems, contains both Defender and Prospector characteristics. Generally speaking, the *administrative* problem of the Analyzer is *how to differentiate the organization's structure and processes to accommodate both stable and dynamic areas of operation.* The Analyzer typically solves this problem with some version of a matrix organization structure. Heads of key functional units, most notably engineering and production, unite with product managers (usually housed in the marketing department) to form a balanced dominant coalition similar to both the Defender and the Prospector. The product manager's influence is usually greater than the functional manager's since his or her task is to identify promising product-market innovations and to supervise their movement through applied engineering and into production in a smooth and timely manner. The presence of engineering and production in the dominant coalition is to represent the more stable domain and technology which are the foundations of the Analyzer's overall operations. The Analyzer's matrix structure is supported by intensive planning between the functional divisions of marketing and production, broad-gauge planning between the ap-

TABLE 3. Characteristics of the Analyzer

Entrepreneurial Problem	Engineering Problem	Administrative Problem
Problem: How to locate and exploit new product and market opportunities while simultaneously maintaining a firm base of traditional products and customers.	*Problem:* How to be efficient in stable portions of the domain and flexible in changing portions.	*Problem:* How to differentiate the organization's structure and processes to accommodate both stable and dynamic areas of operation.
Solutions: 1. Hybrid domain that is both stable and changing. 2. Surveillance mechanisms mostly limited to marketing; some research and development. 3. Steady growth through market penetration and product-market development.	*Solutions:* 1. Dual technological core (stable and flexible component). 2. Large and influential applied engineering group. 3. Moderate degree of technical rationality.	*Solutions:* 1. Marketing and engineering most influential members of dominant coalition, followed closely by production. 2. Intensive planning between marketing and production concerning stable portion of domain; comprehensive planning among marketing, engineering, and product managers concerning new products and markets. 3. "Loose" matrix structure combining both functional divisions and product groups. 4. Moderately centralized control system with vertical and horizontal feedback loops. 5. Extremely complex and expensive coordination mechanisms; some conflict resolution through product managers, some through normal hierarchical channels. 6. Performance appraisal based on both effectiveness and efficiency measures, most rewards to marketing and engineering.
Costs and Benefits: Low investment in research and development, combined with imitation of demonstrably successful products, minimizes risk, but domain must be optimally balanced at all times between stability and flexibility.	*Costs and Benefits:* Dual technological core is able to serve a hybrid stable-changing domain, but the technology can never be completely effective or efficient.	*Costs and Benefits:* Administrative system is ideally suited to balance stability and flexibility, but if this balance is lost, it may be difficult to restore equilibrium.

Source: Raymond E. Miles and Charles C. Snow, *Organizational Strategy, Structure, and Process* (New York: McGraw-Hill, 1978), Table 5-1.

plied research group and the product managers for the development of new products, centralized control mechanisms in the functional divisions and decentralized control techniques in

the product groups, and so on. In sum, the key characteristic of the Analyzer's administrative system is the proper differentiation of the organization's structure and processes to achieve a balance between the stable and dynamic areas of operation.

As is true for both the Defender and Prospector, the Analyzer strategy is not without its costs. The duality in the Analyzer's domain forces the organization to establish a dual technological core, and it requires management to operate fundamentally different planning, control, and reward systems simultaneously. Thus, the Analyzer's twin characteristics of stability and flexibility limit the organization's ability to move fully in either direction were the domain to shift dramatically. Consequently, the Analyzer's *primary risks* are both *inefficiency and ineffectiveness* if it does not maintain the necessary balance throughout its strategy-structure relationship. Table 3 summarizes the Analyzer's salient characteristics and the major strengths and weaknesses inherent in this pattern of adaptation.

Reactors

The Defender, the Prospector, and the Analyzer can all be proactive with respect to their environments, though each is proactive in a different way. At the extremes, Defenders continually attempt to develop greater efficiency in existing operations while Prospectors explore environmental change in search of new opportunities. Over time, these action modes stabilize to form a pattern of response to environmental conditions that is both *consistent* and *stable*.

A fourth type of organization, the Reactor, exhibits a pattern of adjustment to its environment that is both *inconsistent* and *unstable;* this type lacks a set of response mechanisms which it can consistently put into effect when faced with a changing environment. As a consequence, Reactors exist in a state of almost perpetual instability. The Reactor's "adaptive" cycle usually consists of responding inappropriately to environmental change and uncertainty, performing poorly as a result, and then being reluctant to act aggressively in the future. Thus, the Reactor is a "residual" strategy, arising when one of the other three strategies is improperly pursued.

Although there are undoubtedly many reasons why organizations become Reactors, we have identified three. First, *top management may not have clearly articulated the organization's strategy.* For example, one company was headed by a "one-man" Prospector of immense personal skills. A first-rate architect, he led his firm through a rapid and successful growth period during which the company moved from the design and construction of suburban shopping centers, through the construction and management of apartment complexes, and into consulting with municipal agencies concerning urban planning problems. Within ten years of its inception, the company was a loose but effective collection of semi-autonomous units held together by this particular individual. When this individual was suddenly killed in a plane crash, the company was thrown into a strategic void. Because each separate unit of the company was successful, each was able to argue strongly for more emphasis on its particular domain and operations. Consequently, the new chief executive officer, caught between a number of conflicting but legitimate demands for resources, was unable to develop a unified, cohesive statement of the organization's strategy; thus, consistent and aggressive behavior was precluded.

A second and perhaps more common cause of organizational instability is that *management does not fully shape the organization's structure and processes to fit a chosen strategy.* Unless all of the domain, technological, and administrative decisions required to have an operational strategy are properly aligned, strategy is a mere statement, not an effective guide to behavior. One publishing company wished, in effect, to become an Analyzer — management had articulated a direction for the organization which involved operating in both stable and changing domains within the college textbook publishing industry. Although the organization was comprised of several key Defender and Prospector

characteristics such as functional structures and decentralized control mechanisms, these structure-process features were not appropriately linked to the company's different domains. In one area where the firm wished to "prospect", for example, the designated unit had a functional structure and shared a large, almost mass-production technology with several other units, thereby making it difficult for the organization to respond to market opportunities quickly. Thus, this particular organization exhibited a weak link between its strategy and its structure-process characteristics.

The third cause of instability — and perhaps ultimate failure — is *a tendency for management to maintain the organization's current strategy-structure relationship despite overwhelming changes in environmental conditions.* Another organization in our studies, a food-processing company, had initially been an industry pioneer in both the processing and marketing of dried fruits and nuts. Gradually, the company settled into a Defender strategy and took vigorous steps to bolster this strategy, including limiting the domain to a narrow line of products, integrating backward into growing and harvesting, and assigning a controller to each of the company's major functional divisions as a means of keeping costs down. Within recent years, the company's market has become saturated, and profit margins have shrunk on most of the firm's products. In spite of its declining market, the organization has consistently clung to a Defender strategy and structure, even to the point of creating ad hoc cross-divisional committees whose sole purpose was to find ways of increasing efficiency further. At the moment, management recognizes that the organization is in trouble, but it is reluctant to make the drastic modifications required to attain a strategy and structure better suited to the changing market conditions.

Unless an organization exists in a "protected" environment such as a monopolistic or highly-regulated industry, it cannot continue to behave as a Reactor indefinitely. Sooner or later, it must move toward one of the consistent and stable strategies of Defender, Analyzer, or Prospector.

Management Theory Linkages to Organizational Strategy and Structure

Organizations are limited in their choices of adaptive behavior to those which top management believes will allow the effective direction and control of human resources. Therefore, top executives' theories of management are an important factor in analyzing an organization's ability to adapt to its environment. Although our research is only in its preliminary stage, we have found some patterns in the relationship between management theory and organizational strategy and structure.

A theory of management has three basic components: (a) a set of assumptions about human attitudes and behaviors, (b) managerial policies and actions consistent with these assumptions, and (c) expectations about employee performance if these policies and actions are implemented (see Table 4). Theories of management are discussed in more detail in Miles (14).

During the latter part of the 19th Century and the early decades of the 20th, mainstream management theory, as voiced by managers and by management scholars, conformed to what has been termed the *Traditional* model. Essentially, the Traditional model maintained that the capability for effective decision making was narrowly distributed in organizations, and this approach thus legitimized unilateral control of organizational systems by top management. According to this model, a select group of owner-managers was able to direct large numbers of employees by carefully standardizing and routinizing their work and by placing the planning function solely in the hands of top managers. Under this type of management system, employees could be expected to perform up to some minimum standard, but few would be likely to exhibit truly outstanding performance.

Beginning in the twenties, the Traditional model gradually began to give way to the *Hu-*

TABLE 4. Theories of Management

Traditional Model	Human Relations Model	Human Resources Model
Assumptions	*Assumptions*	*Assumptions*
1. Work is inherently distasteful to most people. 2. What workers do is less important than what they earn for doing it. 3. Few want or can handle work which requires creativity, self-direction, or self-control.	1. People want to feel useful and important. 2. People desire to belong and to be recognized as individuals. 3. These needs are more important than money in motivating people to work.	1. Work is not inherently distasteful. People want to contribute to meaningful goals which they have helped establish. 2. Most people can exercise far more creative, responsible self-direction and self-control than their present jobs demand.
Policies	*Policies*	*Policies*
1. The manager's basic task is to closely supervise and control his (her) subordinates. 2. He (she) must break tasks down into simple, repetitive, easily learned operations. 3. He (she) must establish detailed work routines and procedures and enforce these firmly but fairly.	1. The manager's basic task is to make each worker feel useful and important. 2. He (she) should keep his (her) subordinates informed and listen to their objections to his (her) plans. 3. The manager should allow his (her) subordinates to exercise some self-direction and self-control on routine matters.	1. The manager's basic task is to make use of his (her) "untapped" human resources. 2. He (she) must create an environment in which all members may contribute to the limits of their ability. 3. He (she) must encourage full participation on important matters, continually broadening subordinate self-direction and control.
Expectations	*Expectations*	*Expectations*
1. People can tolerate work if the pay is decent and the boss is fair. 2. If tasks are simple enough and people are closely controlled, they will produce up to standard.	1. Sharing information with subordinates and involving them in routine decisions will satisfy their basic needs to belong and to feel important. 2. Satisfying these needs will improve morale and reduce resistance to formal authority—subordinates will willingly cooperate and produce.	1. Expanding subordinate influence, self-direction, and self-control will lead to direct improvements in organizational performance. 2. Work satisfaction may improve as a "by-product" of subordinates making full use of their resources.

[a] Source: Raymond E. Miles, *Theories of Management* (New York: McGraw-Hill, 1975), Figure 3-1.

man Relations model. This model accepted the traditional notion that superior decision-making competence was narrowly distributed among the employee population but emphasized the universality of social needs for belonging and recognition. This model argued that impersonal treatment was the source of subordinate resistance to managerial directives, and adherents of this approach urged managers to employ devices to enhance organization members' feelings of involvement and importance in order to improve organizational performance. Suggestion systems, employee counseling, and even company unions had common parentage in this philosophy. The Depression and World War II both acted to delay the development and spread

of the Human Relations model, and it was not until the late forties and early fifties that it became the prime message put forth by managers and management scholars.

Beginning in the mid-fifties, a third phase in the evolution of management theory began with the emergence of the *Human Resources* model which argued that the capacity for effective decision making in the pursuit of organizational objectives was widely dispersed and that most organization members represented untapped resources which, if properly managed, could considerably enhance organizational performance. The Human Resources approach viewed management's role not as that of a controller (however benevolent) but as that of a facilitator — removing the constraints that block organization members' search for ways to contribute meaningfully in their work roles. In recent years, some writers have questioned the extent to which the Human Resources model is applicable, arguing for a more "contingent" theory emphasizing variations in member capacity and motivation to contribute and the technological constraints associated with broadened self-direction and self-control. The Human Resources model probably still represents the leading edge of management theory, perhaps awaiting the formulation of a successor model.

Linking the Strategic Typology to Management Theory

Are there identifiable linkages between an organization's strategic type and the management theory of its dominant coalition? For example, do top executives in Defenders profess Traditional beliefs about management and those in Prospectors a Human Resources philosophy? The answer to this question is, in our opinion, a bit more complex than simply "yes" or "no".

One of our studies investigated aspects of the relationship between organizational strategy-structure and management theory. Although the results are only tentative at this point, relatively clear patterns emerged. In general, Traditional and Human Relations managerial beliefs are more likely to be found in Defender and Reactor organizations, while Human Resources beliefs are more often associated with Analyzer and Prospector organizations. But this relationship appears to be *constrained in one direction;* it seems highly unlikely that a Traditional or Human Relations manager can function effectively as the head of a Prospector organization. The prescriptions of the Traditional model simply do not support the degree of decentralized decision making required to create and manage diversified organizations. It is quite possible for a Human Resources manager to lead a Defender organization. Of course, the organization's planning and control processes under such leadership would be less centralized than if the organization were managed according to the Traditional model. Using the Human Resources philosophy, heads of functional divisions might either participate in the planning and budgeting process, or they might simply be delegated considerable autonomy in operating their cost centers. (In Defender organizations operated according to the Human Resources philosophy, human capabilities are aimed primarily at cost efficiency rather than product development.)

The fit between management theory and the strategy, structure, and process characteristics of Analyzers is perhaps more complex than with any of the other types. Analyzers, as previously described, tend to remain cost efficient in the production of a limited line of goods or services while attempting to move as rapidly as possible into promising new areas opened up by Prospectors. Note that the organization structure of the Analyzer does not demand extensive, permanent delegation of decision-making authority to division managers. Most of the Analyzer's products or services can be produced in functionally structured divisions similar to those in Defender organizations. New products or services may be developed in separate divisions or departments created for that purpose and then integrated as quickly as possible into the permanent technology and structure. It seems likely to us, although our evidence is inconclu-

sive, that various members of the dominant coalition in Analyzer organizations hold moderate but different managerial philosophies, that certain key executives believe it is their role to pay fairly close attention to detail while others appear to be more willing to delegate, for short periods, moderate amounts of autonomy necessary to bring new products or services on line rapidly. If these varying managerial philosophies are "mismatched" within the Analyzer's operating units — if, for example, Traditional managers are placed in charge of innovative subunits — then it is unlikely that a successful Analyzer strategy can be pursued.

Holding together a dominant coalition with mixed views concerning strategy and structure is not an easy task. It is difficult, for example, for managers engaged in new product or service development to function within planning, control, and reward systems established for more stable operations, so the Analyzer must be successfully differentiated into its stable and changing areas and managed accordingly. Note that experimentation in the Analyzer is usually quite limited. The exploration and risk associated with major product or service breakthroughs are not present (as would be the case in a Prospector), and thus interdependencies within the system may be kept at a manageable level. Such would not be the case if Analyzers attempted to be both cost-efficient producers of stable products or services and active in a major way in new product and market development. Numerous organizations are today being led or forced into such a mixed strategy (multinational companies, certain forms of conglomerates, many organizations in high-technology industries, etc.), and their struggles may well produce a new organization type and demands for a supporting theory of management. Whatever form this new type of organization takes, however, clearly its management-theory requirements will closely parallel or extend those of the Human Resources model (15).

Conclusions

Our research represents an initial attempt: (a) to portray the major elements of organizational adaptation, (b) to describe patterns of behavior used by organizations in adjusting to their environments, and (c) to provide a language for discussing organizational behavior at the total-system level. Therefore, we have offered a theoretical framework composed of a model of the adaptive process (called the adaptive cycle) and four empirically determined means of moving through this process (the strategic typology). In addition, we have related this theoretical framework to available theories of management (Traditional, Human Relations, Human Resources). Effective organizational adaptation hinges on the ability of managers to not only envision and implement new organizational forms but also to direct and control people within them.

We believe that managers' ability to meet successfully environmental conditions of tomorrow revolves around their understanding of organizations as integrated and dynamic wholes. Hopefully, our framework offers a theory and language for promoting such an understanding.

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