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Organizational Adaptation and Higher Education

The recent report of the National Commission on Excellence in Education [46] concluded that "the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a nation and a people. What was unimaginable a generation ago has begun to occur—others are matching and surpassing our educational attainments." The explicit objective of the commission's report was "to generate reform of our educational system in fundamental ways and to renew the nation's commitment to schools and colleges of high quality throughout the length and breadth of our land."

A variety of recommendations were made in the report, which called for innovation and adaptation on the part of educational institutions. These recommendations focused both on elementary and secondary schools and on colleges and universities. However, before educational institutions can implement these recommendations, they must become both knowledgeable and adept at instituting organizational change. They will need to become effective at implementing innovation, reform, and adaptation. One purpose of this special issue of the *Journal of Higher Education* is to point out ways in which reforms, innovations, and adaptations can and have occurred successfully. Hopefully, these articles will contribute to the renewal of America's educational institutions in general and of liberal arts colleges in particular.

Our focus in this issue is mainly on liberal arts colleges, for reasons pointed out in the *Introduction,* and on the concept of adaptation, as opposed to innovation or reform, for reasons that will become clear

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later. This article reviews what is known about organizational adaptation and points out types of adaptation that will be needed in institutions of higher education in the future. The focus is a conceptual one, and specific adaptive actions taken by institutions are not reviewed. Rather, the purpose is to give the reader a framework within which to comprehend adaptation in educational organizations.

In the first section, major conceptual approaches to organizational adaptation are reviewed. The second section discusses the probable environment that institutions of higher education are likely to face in the future that will require adaptation. The third section discusses some adaptive strategies and institutional characteristics that will be needed by colleges and universities if they are to remain effective.

Section 1: Approaches to Organizational Adaptation

"Organizational adaptation" refers to modifications and alterations in the organization or its components in order to adjust to changes in the external environment. Its purpose is to restore equilibrium to an imbalanced condition. Adaptation generally refers to a process, not an event, whereby changes are instituted in organizations. Adaptation does not necessarily imply reactivity on the part of an organization (i.e., adaptation is not just waiting for the environment to change and then reacting to it) because proactive or anticipatory adaptation is possible as well. But the emphasis is definitely on responding to some discontinuity or lack of fit that arises between the organization and its environment.

This kind of organizational change is not the same as "planned change," or what is often called Organization Development (OD). Adaptation focuses on changes motivated by the external environment; OD focuses on changes motivated from within the organization. OD is generally oriented toward changes in individual attitudes and behaviors and in the organization's culture; adaptation is more concerned with organization-level change (see, e.g., [12]). Goodman and Kurke [23] differentiated adaptation and planned change in the following ways:

> Planned organizational change deals with the basis of change; adaptation deals with the conditions or sources of change. Planned organizational change focuses primarily on change within the organization, but the adaptation literature focuses primarily on populations of organizations, and on organization-environment interfaces, and on changes within an organization that are environmentally dictated. The planned organization literature emphasizes the process of actually creating change rather than writ-

> ing about the processes of change (adaptation literature). The planned organizational change literature is devoted to methods and techniques, but the adaptation literature is devoted to theorizing about the change processes or outcomes. [23, p. 4]

This article, and this issue in general, focuses on the process of adaptation because of the pervasive influence of the external environment on liberal arts colleges. Several articles in this issue (e.g., Zammuto, Pfnister, Martin) point out the threats that face liberal arts colleges because of changing environments. Most observers agree that environmental turbulence and complexity have greatly accelerated in recent years (see [58, 59, 41, 52]) and that the ability of organizations to cope with those changes is being stretched. As Toffler noted:

> I gradually came to be appalled by how little is actually known about adaptivity, either by those who call for and create vast changes in our society, or by those who supposedly prepare us to cope with those changes. Earnest intellectuals talk bravely about "educating for change," or "preparing people for the future." But we know virtually nothing about how to do it. In the most rapidly changing environment to which man has ever been exposed, we remain pitifully ignorant of how the human animal copes. [58, p. 2]

Toffler's observation, that little is known about adaptation, is beginning to be rectified somewhat on the organization level. The body of literature on organizational adaptation is relatively new (most of it has appeared since 1970), but it has nevertheless become quite extensive. In fact, it is so extensive that a summary of it must, of necessity, be selective and abridged. Therefore, in this first section, general themes are discussed and examples are used, but a comprehensive survey is not attempted.

One way to organize the conceptual approaches to organizational adaptation is to use a continuum anchored on one end by the assumption that managers have *no* power to influence the adaptability and long-term survival of their organizations. On the other end of the continuum is the assumption that managers have *complete* power to create adaptability and to ensure long-term survival. Figure 1 summarizes the major approaches to organizational adaptation on the basis of this continuum. These approaches to adaptation are briefly explained below.

Approaches Assuming Little or No Managerial Influences

Aldrich [2], Aldrich and Pfeffer [3], Hannan and Freeman [24], Birnbaum [8], McKelvey [39], and others have proposed and elaborated

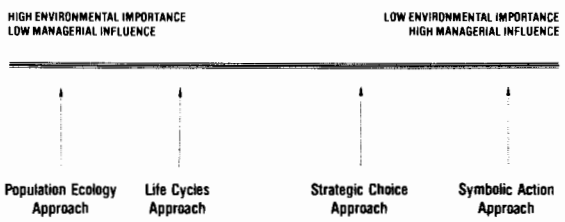

FIG. 1. Categories of Approaches to Organizational Adaptation

a "population ecology" or "natural selection" view of organizational adaptation. The population ecology approach to adaptation focuses on changes in environmental "niches" (i.e., subunits of the environment that support organizations). Two types of "niche" change can occur that lead to organizational adaptation. One is a change in the size of the niche, or the amount of resources available to organizations. The other is a change in the shape of the niche, or the type of organizational activities supported. Zammuto and Cameron [68] pointed out what adaptations are required of populations of organizations when faced with these different types of changes in environmental niches. For example, when a population of organizations encounters a change in niche shape (e.g., certain organizational activities are no longer supported), generalist organizations—those involved in a wide range of activities—are most adaptative. Successful adaptation requires becoming more diversified. On the other hand, when populations of organizations encounter changes in niche size (e.g., fewer resources are available), specialist organizations—those that are especially good at a narrow range of activities—are most adaptative. Successful adaptation requires organizations to specialize.

The population ecology approach suggests that adaptation is meaningful only if viewed from the population level of analysis (i.e., single organization changes are largely irrelevant). According to advocates, this level of analysis is important because of the many constraints and inertias inhibiting managerial action in organizations (i.e., formal structure, past history, norms, policies, and so on). The only meaningful change occurs as major shifts among entire populations of organizations, not as minor adjustments in existing organizational forms. The environment is viewed as such a powerful and pervasive force that it selects those organizational forms (or adaptations) that are to persist and other organizational forms die out. (For example, Hannan and Freeman [24] suggest that unstable environments select generalist organizations and stable environments select specialist organizations.)

The process is considered to be much like biological selection

theories. The fittest species—those that evolve characteristics that are compatible with the environment—survive while other species become extinct. Most organizations adapt, therefore, not because of intelligent or creative managerial action but by the random or evolutionary development of characteristics that are compatible with the environment. Managerial discretion and influence is neither present nor relevant.

Another approach to adaptation that emphasizes evolutionary change and the powerful role of the environment but that allows for more managerial discretion is the "life cycles" approach to adaptation (see [13, 14, 51] for reviews). Single organizations are the preferred units of analysis, and they are assumed to progress through at least four sequential stages of development. At each stage, unique organizational features develop in order to overcome certain general problems encountered by all organizations. Without direct managerial intervention to alter this natural evolution, organizational adaptations tend to follow a predictable sequence. Cameron and Whetten summarized the sequence as follows:

> Organizations begin in a stage, labelled "creativity and entrepreneurship," in which marshalling resources, creating an ideology, and forming an ecological niche are emphasized. [The problem faced by the organization in this stage is to build legitimacy and acquire the resources needed to survive.] The second stage, the "collectivity" stage, includes high commitment and cohesion among members, face-to-face communication and informal structures, long hours of dedicated service to the organization, and an emerging sense of collectivity and mission. The organizational emphasis is on internal processes and practices, rather than on external contingencies. [The problem faced by the organization is mobilizing the work force and building interdependence.] In the third stage, "formalization and control," where procedures and policies become institutionalized, goals are formalized, conservatism predominates, and flexibility is reduced. The emphasis is on efficiency of production. [The organizational problem in this stage is coordinating and stabilizing the work force and improving efficiency.] The fourth stage emphasizes "elaboration of structure" where decentralization, domain expansion, and renewed adaptability occur, and new multipurpose subsystems are established. [The organizational problem is overcoming rigidity and conservatism and expanding to meet new constituency demands.] [13, p. 527]

In each new stage of development, certain problems are encountered that are overcome by progressing on to the next life-cycle stage. That is, organizations encounter similar issues as they develop over time, and adaptation occurs by acquiring characteristics of the next life-cycle stage. This new stage solves the issues encountered in the

previous stage but also generates issues that motivate further life-cycle development. Therefore, this approach to adaptation assumes that there is a natural tendency in organizations to follow a life-cycle pattern of development.

Two assumptions modify this approach and make it less deterministic than the population ecology view. The first assumption is that managers can speed up, slow down, or even abort this sequential development by their actions. That is, they can cause an organization to stay in an early stage for a long time, to move through the sequence very rapidly, or to go out of business before ever reaching subsequent stages. Second, these stages are most typical of the early history of organizations. After the fourth stage is reached, organizations may recycle through the sequence again as a result of unusual environmental events, leadership turnover, organizational membership changes, and so on. Managerial action can help determine which stage is returned to after stage 4 (see [14]).

Approaches Assuming Substantial Managerial Influence

On the other end of the continuum are approaches to adaptation that consider the decisions and actions of managers, not the external environment, to be the most important causes of organizational adaptation. They emphasize that managers can choose which environment the organization operates in, they can control and manipulate the environment, they can scan and thereby predict in advance environmental events, and so on. In short, organizations are not assumed to be at the mercy of an immutable environment; rather, they can act and influence their environment. The diverse literature on adaptation resulting from managerial action is organized into two major categories for the purpose of review. Several different models of adaptation are subsumed under each category.

One major category of adaptation models is the "strategic choice" approach [17, 3, 5]. A sampling of the different models summarized by this approach includes the "resource dependence" model [49], the "political economy" model [61], the "strategy-structure" model [16], and models by Miles and Snow [40], Miles and Cameron [42], March [35], and Miller and Friesen [43]. Whereas these authors recognize the importance of external environmental influences and the need for a fit between environment and an organization's structure and process [31], a variety of strategies are available to managers that can modify the environment and determine the success or failure of adaptation. As Chamberlain stated:

> Organizations are obviously not pushed and pulled and hauled by market forces which overwhelm them; rather, they demonstrably choose to follow a certain course of action which differs from other courses which they might have chosen and which, indeed, some of their number do elect to follow. Discretion is present. How important it is in the end result is still a moot point, but at least there is no basis for pretending that it has no effect. [15, p. 47]

The strategic choice approach is illustrated by Miles and Cameron [42], who found that organizations adapted very successfully to an extremely turbulent and hostile environment by implementing three types of strategies in sequence: "domain defense" strategies (designed to enhance the legitimacy of the organization and buffer it from environmental encroachment), "domain offense" strategies (designed to expand in current areas of expertise and exploit weaknesses in the environment), and "domain creation" strategies (designed to minimize risk by diversifying into safer or less turbulent areas of the environment). (See Cameron [11] for a discussion of these strategies in higher education organizations.)

Miles and Snow [40] suggested that organizations develop a particular orientation—a "strategic competence"—that leads them to implement these various types of strategies at different times and in different ways. For example, "prospector" organizations are inclined to be "first in," to implement strategies early and innovatively. "Analyzer" organizations are inclined to wait for evidence that the strategy will be successful before implementing new adaptations. "Defenders" seek for stability and are slow to adapt. "Reactors" implement strategies sporadically and are often unable to follow through with a consistent adaptive response. Miles and Snow [40] and Snow and Hrebiniak [57] have found empirical evidence linking these strategic orientations to effective adaptation under varying environmental conditions.

Miller and Friesen [43] studied thirty-six organizations and 135 different organizational adaptations in order to identify how organizations adapted over time. They used historical case studies so a longitudinal time-frame could be observed. Evidence for the strategic choice approach was found as they identified several major "archetypes of organizational transition." The most prominent archetypes among successful organizations were entrepreneurial revitalization, scanning and troubleshooting, consolidation, centralization and boldness, and decentralization and professionalization. These authors concluded that "there do not appear to be a very great number of common transition

types" [43, p. 288]. That is, only a few major adaptation strategies implemented by managers are typical of a large variety of organizations.

One major issue that permeates the strategic choice approach is whether adaptations are implemented incrementally (i.e., small, piecemeal changes are put into place by managers) or in a revolutionary way (i.e., major shifts occur affecting many organizational elements). On the one hand, some writers suggest that organizations adapt by "muddling through" or by implementing "a succession of incremental changes" [32]. Change occurs without requiring major aberrations from the routine. As March put it:

> Managers and leaders propose changes, including foolish ones; they try to cope with the environment and to control it; they respond to other members of the organization; they issue orders and manipulate incentives. Since they play conventional roles, organizational leaders are not likely to behave in strikingly unusual ways. And if a leader tries to march toward strange destinations, an organization is likely to deflect the effort. Simply to describe leadership as conventional and constrained by organizational realities, however, is to risk misunderstanding its importance. Neither success nor change requires dramatic action. The conventional, routine activities that produce most organizational change require ordinary people to do ordinary things in a competent way. [35, p. 575]

On the other hand, Miller and Friesen [44] represent those who argue that adaptation occurs in a revolutionary way. They point out that organizations possess a great deal of momentum, or inertia, that serves to inhibit alterations or reforms. Past strategies, structures, goals, political coalitions, myths and ideologies, and so on contribute to that momentum, so that major adjustments in a substantial part of the organization have to be made in order for adaptation to occur.

> Organizational adaptation is likely to be characterized by periods of dramatic revolution in which there are reversals in the direction of change across a significantly large number of variables of strategy and structure.
>
> Revolutions that display reversals for a high proportion of variables occur with very significantly high frequency. These major reorientations seem to take place because many excesses or deficiencies have developed during periods of pervasive momentum or because a new strategy requires realignments among many variables. Thus there follows a myriad of structural and strategic reversals. [44, pp. 593, 612]

The second category of adaptation models on this end of the continuum is called the "symbolic action" approach [48, 47, 18, 7]. It differs from the strategic choice approach by focusing on change in symbols,

interpretations, and stories as opposed to change in structure and technology. The logic of this approach is that organizations are glued together mainly by the presence of common interpretations of events, common symbols, common stories or legends, and so on or by a "social construction of reality" [7]. Social construction of reality means that the interpretation of reality in an organization is a product of social definition. Shared meanings are much more important than are events themselves. Part of the socialization process in organizations is giving members access to these common meanings. The role of the manager, in turn, is to create, manipulate, or perpetuate these meanings so that they are accepted in the organization and thereby influence organizational behavior. Pfeffer summarized this perspective in the following way:

> The activity of management is viewed as making what is going on in the organization meaningful and sensible to the organizational participants, and furthermore developing a social consensus and social definition around the activities being undertaken. Management involves more than labeling or sense making—it involves the development of a social consensus around those labels and the definition of activity. [48, p. 21]

Organizational adaptation comes about through the use of a variety of strategies involving language, ritual, and symbolic behavior designed to modify organization members' shared meanings. Weick [65] referred to this as "enacting" the external environment. Several of the more prominent methods of adaptation in this approach are as follows:

1. *Interpreting history and current events.* "The effectiveness of a leader lies in his ability to make activity meaningful for those in his role set—not to change behavior but to give others a sense of understanding what they are doing and especially to articulate it so they can communicate about the meaning of their behavior. . . . If in addition the leader can put it into words, then the meaning of what the group is doing becomes a social fact. . . . This dual capacity . . . to make sense of things and to put them into language meaningful to large numbers of people gives the person who has it enormous leverage" [50, pp. 94–95].
2. *Using rituals or ceremonies.* Gameson and Scotch [22] noted the ritualistic function of firing managers and coaches of professional sports teams whose win-loss records were bad. The firings did not so much represent a substantive change as they did a symbolic one designed to give the impression that things would get better. Inaugurations, ceremonies, and commencements are sym-

bolic functions used frequently to manage meanings and interpretations in order to influence organizational adaptation.

3. *Using time and measurement.* Time spent is one measure of the importance of organizational activities [47]. Therefore, spending more time at one activity than another helps managers convey messages of priority to other organization members. Similarly, what is measured almost always receives more attention in organizations than what is not measured. Adaptation is facilitated by managers, therefore, through their use of time and quantitative measurement.
4. *Redesigning physical space.* Providing a new physical setting often conveys the message that something new is going on or that a different direction is being pursued. Similarly, attributes of physical settings often are interpreted as manifestations of power in offices and buildings (e.g., larger space, higher space, more central space, and so on). Pfeffer noted that "skilled managers understand well the importance of physical settings for their symbolic value. The size, location, and configuration of physical space provide the backdrop against which other managerial activity takes place, and thereby influence the interpretation and meaning of that other activity" [48, p. 41].
5. *Introducing doubt.* "The introduction of doubt into a loosely coupled system is a much more severe change intervention than most people realize. Core beliefs, such as the presumption of logic and the logic of confidence, are crucial underpinnings that hold loose events together. If these beliefs are questioned, action stops, uncertainty is substantial, and receptiveness to change is high" [66, p. 392].

Each of these strategies of adaptation under the symbolic action approach assumes substantial power on the part of managers to change the definition of the external environment and to change organizational behavior in response to those definitions. The environment is not assumed to be immutable (as with the population ecology approach); on the contrary, it is assumed to be almost entirely a product of social definition. Adaptation occurs by changing definitions.

Review

By way of review, aproaches to organizational adaptation can be organized into at least four categories based on the importance of the roles played by the external environment and by management in influ-

encing organizational survival. The population ecology approach assumes a prominent role for the environment and virtually no role for management action. The life cycles approach assumes a prominent role for the environment and evolutionary forces, but some discretion is assumed for management in altering those naturalistic forces. The strategic choice approach assumes a prominent role for both environment and management, but the balance is shifted toward management. The strategies implemented by managers can change the external environment as well as the organization. The symbolic action approach assumes a prominent role for management, through the ability to manipulate symbols and social definitions, and a less prominent role for the external environment.

Having reviewed the major approaches to adaptation, the question remains: What does this mean for institutions of higher education? Is one approach to adaptation better than another? What should managers and administrators in institutions do to make their organizations more adaptable?

To answer these questions, it is necessary to review the environmental conditions that are likely to face institutions of higher education in the future. That is, to understand how colleges should adapt, it is first necessary to understand what conditions will be characteristic of the external environment that perpetuate imbalances and require adaptation. The next section speculates on what future environments will be like for educational organizations.

Section 2. The Nature of Postindustrial Environments

It is generally acknowledged that factors in the external environment are increasing in their influence on organizations. Organizations are more frequently being required to be good at adaptation in order to survive. Roeber noted, for example:

> The characteristic mode of change in Western industrialized countries has been integrative, and the key characteristic is loss of slack. Partial equilibrium solutions are becoming less satisfactory, particularly where interaction between organizations and their social environment is involved. Consequently, the environment is becoming more of a factor inside organizations and requires more explicit attention. [52, p. 154]

Roeber's point, that the environment is becoming more dominant at the same time that organizations are faced with less slack, suggests that adaptive strategies should constitute a critical concern of future managers.

Several authors have discussed the changes that are occurring in the external environment that make attention to it more crucial than ever before. These changes are leading to what some call postindustrial society [56, 6], the technetronic era [9], the information society [38], the telematic society [37], and the third wave [59]. These authors all point out that environments in the future will be radically different for institutions than are the current environments of industrialized society. In a recent provocative article, for example, Huber [28] pointed out several ways in which postindustrial environments will be different from present or past environments. He stated that "postindustrial society will be characterized by more and increasing knowledge, more and increasing complexity, and more and increasing turbulence. These, in combination, will pose an organizational environment qualitatively more demanding than those in our experience" [28, p. 4].

Taking "increasing knowledge" as an example, environments of the future will contain a great deal more knowledge than is currently available. Because knowledge feeds on itself, the current knowledge explosion is likely to continue at exponential rates. The availability of computers that are more "friendly" (i.e., little, if any, training needed), more "intelligent" (i.e., able to coach the user), and more up-to-date (i.e., have access to more cutting-edge data) will contribute to both the availability of existing knowledge to institutions and the generation of new knowledge. Because knowledge will be able to be distributed rapidly, managers and administrators in institutions will have more information upon which to base decisions and less need to interact in face-to-face meetings to obtain it. Knowledge will become more continuous in its availability, more wide-ranging in the subjects it covers, and more direct in its sources.

This increase in knowledge and its availability through computer technology is also likely to produce increased complexity in the environment. Complexity is generally defined by three dimensions: numerosity, specialization or diversity, and interdependence. Miller explained the relationship between these three factors: "As a system's components become more numerous, they become specialized, with resulting increased interdependence" [45, p. 5]. That is, managers and administrators in institutions in a postindustrial environment will be exposed to a greater number of environmental elements (i.e., time and distance buffers will be greatly reduced by communication and transportation technologies, and more elements in the environment will become directly relevant). This abundance of environmental elements will force a greater degree of specialization of managers and adminis-

trators since overload could quickly occur otherwise. Increased specialization will, in turn, lead to the requirement of even greater interdependence among managers and institutions. Although institutions will have to be more loosely coupled in structure to cope with this environmental complexity [31], they will also need to become more tightly coupled in their information exchange.

The knowledge explosion and the increased complexity of the environment also contribute to a greater degree of turbulence. That is, increased access to information will require more rapid decision making and action implementation. Events in this kind of an environment will, as a result, occur more rapidly, and the timeliness required of managers will produce a tendency toward short time-frame strategies. More decisions in less time, along with a tendency toward shorter and more numerous events, will lead to a major increase in the turbulence of organizational environments (see [28] for an elaboration).

Increases in knowledge, complexity, and turbulence in postindustrial environments will place enormous strains on managers of educational organizations. In particular, although the necessity of designing and implementing adaptive strategies will dramatically increase, the "bounded rationality" [36] of managers will act as a constraint on their ability to do so. That is, the cognitive capacity of managers can be exceeded easily by the necessity to consider all the information and events present in a postindustrial environment. It is simply impossible for managers to initiate adaptive strategies in the same ways in postindustrial environments as they do now. The institutions themselves will have to be designed so as to enhance their ability to adapt, aside from the manager's specific strategies. Simon explained this requirement in the following way:

> Organizational decision making in the organizations of the postindustrial world shows every sign of becoming a great deal more complex than the decision making of the past. As a consequence of this fact, the decision-making process, rather than the processes contributing immediately and directly to the production of the organization's final output, will bulk larger and larger as the central activity in which the organization is engaged. In the postindustrial society, the central problem is not how to organize to produce efficiently (although this will always remain an important consideration), but how to organize to make decisions—that is, to process information. [56, pp. 269–70]

In view of these turbulent conditions, it becomes clear that all four approaches to organizational adaptation will be required as managers and administrators encounter the postindustrial environment. Insti-

tutional forms will have to emerge that are compatible with a diversity of environmental elements (the population ecology approach). Transitions to new stages of development will have to be closely monitored and planned for since they will occur more rapidly and sporadically in a postindustrial environment (the life cycles approach). Strategic choices by managers will be required that enhance the adaptability of the institution by expanding information search capacities while constraining information-processing requirements in order to make the choices more reasonable (the strategic choice approach). Interpreting the environment for the institution will become an even more critical task for managers due to its complexity and turbulence (the symbolic action approach).

Although none of these activities (i.e., designing diversity into institutions, managing rapid organizational transitions, implementing strategic choices, and interpreting the environment) are unknown to managers and administrators, the nature of the postindustrial environment and the phenomenon of bounded rationality will require that they be implemented in the kinds of institutions that have not been common in the past. That is, the nature of the institutions themselves will need to be different if they are to be adaptive to this new environment. The third section of this article proposes some characteristics that will be required by institutions of higher education and by managers in order to remain adaptable in future environments.

Section 3. Adaptability and the Janusian Institution

In discussing the challenges of managing organizations during turbulent times, Drucker observed some characteristics that managers must assure if organizations are to survive. "The one certainty about the times ahead, the times in which managers will have to work and to perform, is that they will be turbulent times. And in turbulent times, the first task of management is to make sure of the institution's capacity for survival, to make sure of its structural strength and soundness, of its capacity to survive a blow, to adapt to sudden change, and to avail itself of new opportunities" [19, p. 1]. For managers and administrators in higher education to assure capacity for survival, strength and soundness, adaptability to sudden change, and the ability to take advantage of new opportunities in a postindustrial environment with turbulence, information overload, rapid-fire events, and complexity all increasing at exponential rates, they will need to become Janusian thinkers and develop Janusian institutions.

Janusian Thinking

Rothenburg [53] introduced the concept of "Janusian thinking" while investigating the creative achievements of individuals such as Einstein, Mozart, Picasso, and O'Neill, as well as fifty-four highly creative artists and scientists in the United States and Great Britain. Janusian thinking is named after the Roman god Janus, who was pictured as having at least two faces looking in different directions at the same time. Janusian thinking occurs when two contradictory thoughts are held to be true simultaneously. The explanation or resolution of the apparent contradiction is what leads to major breakthroughs in insight.

> In Janusian thinking, two or more opposites or antitheses are conceived simultaneously, either as existing side by side, or as equally operative, valid, or true. In an apparent defiance of logic or of physical possibility, the creative person consciously formulates the simultaneous operation of antithetical elements and develops those into integrated entities and creations. It is a leap that transcends ordinary logic. What emerges is no mere combination or blending of elements: the conception does not only contain different entities, it contains opposing and antagonistic elements, which are understood as coexistent. As a self-contradictory structure, the Janusian formulation is surprising when seriously posited in naked form. [54, p. 55]

The surprising nature of Janusian formulations results from the preconception that two opposites cannot both be valid at the same time. However, holding such thoughts engenders the flexibility of thought that is a prerequisite for individual creativity. Such flexibility is also the key to effective problem solving. As pointed out by Interaction Associates:

> Flexibility in thinking is critical to good problem solving. A problem solver should be able to conceptually dance around the problem like a good boxer, jabbing and poking, without getting caught in one place or "fixated." At any given moment, a good problem solver should be able to apply a large number of strategies. Moreover, a good problem solver is a person who has developed, through his understanding of strategies and experiences in problem solving, a sense of appropriateness of what is likely to be the most useful strategy at any particular time. [30, p. 15]

Similarly, perpetuating Janusian characteristics in institutions also has the effect of producing flexibility and adaptability, and it enables organizations to cope better with unpredictable environmental events. A large variety of sometimes contradictory characteristics must be present in order to make adaptation effective on the institution level. For example, Weick pointed out some of these contradictory characteristics by asserting:

> The problem of organizational effectiveness has traditionally been punctuated into conclusions such as those that the effective organization is flexible and productive, satisfies its members, is profitable, acquires resources, minimizes strain, controls the environment, develops, is efficient, retains employees, grows, is integrated, communicates openly, and survives. I would like to propose a different set of punctuations. Specifically, I would suggest that the effective organization is (1) garrulous, (2) clumsy, (3) superstitious, (4) hypocritical, (5) monstrous, (6) octopoid, (7) wandering, and (8) grouchy. [64, p. 193]

Several Janusian characteristics are discussed below that are proposed as necessary in effective higher education institutions in postindustrial environments.

Janusian Institutions

In addition to being aware of and implementing all four of the approaches to adaptation discussed previously, managers and administrators will need to perpetuate the following characteristics in their postindustrial institutions. Both loose coupling and tight coupling will be required. A loosely coupled system is one where connections among elements are weak, indirect, occasional, negligible, or discontinuous (see [62, 66]). Diffusion from one part of the organization to another occurs unevenly, sporadically, and unpredictably, if it occurs at all. Loose coupling refers to process looseness, not necessarily structural looseness. Tightly coupled systems, on the other hand, are controlled and coordinated so as to achieve specified goals. Centralization and hierarchy are prevalent so that all organizational action is directed toward similar purposes. Structure and process are interdependent (see [55]).

Lutz [33, 34] recently pointed out that the main responsibility of managers in higher education is to reinforce and perpetuate the tightly coupled elements in their institutions. Weick's statement is used as support for this point of view: "The chief responsibility of the administrator in a loosely coupled system is to reaffirm and solidify those ties that do exist" [67, p. 276]. Lutz responded: "That is exactly the point I was trying to make in my article, hence its title. To reaffirm and strengthen organizational ties or couplings is the administrator's chief responsibility. As university administrators fail in that responsibility, higher education is going to be in trouble" [34, p. 297].

The point of view advocated in this article is contrary to that of Lutz. In order for institutions to be adaptive in postindustrial environments, both tight and loose couplings will need to be reinforced and reaffirmed by administrators. Neither can predominate perma-

nently over the other. One reason for this is that initiating innovations requires loose coupling, but implementing innovation requires tight coupling. "During the initiation (discovery) stage, the organization needs to be as flexible and as open as possible to new sources of information and alternative courses of action. . . . During the implementation stage, however, . . . a singleness of purpose is required . . . in order to bring the innovation into practice" [20, p. 175].

Postindustrial institutions of higher education will be required to remain loose enough to develop multiple, innovative adaptations. At the same time, they must be tight enough to implement them quickly and to change major components of the organization as needed. The self-design characteristics called for by Hedberg, Nystrom, and Starbuck [26], Weick [63], and Galbraith [21]—where high levels of experimentation and temporariness exist—will need to be matched with the ability to communicate and act quickly and efficiently through tight coupling. To do this, new arrangements such as ad hoc structures, collateral or parallel processes, or matrix arrangements may have to become much more common.

Actions designed both to achieve stability and to achieve flexibility will be required. Adaptation, in a technical sense, is designed to reestablish equilibrium between the organization and its environment. As mentioned earlier, adaptation is motivated by an imbalance or discontinuity between the requirements of the environment and the organization. Adapting to meet these requirements, therefore, makes the organization more stable but also less flexible. Adaptation establishes a certain organizational history that provides continuity, but it makes less likely radical departures from current functioning.

Adaptability, on the other hand, generally refers to the ability to cope with novel changes in the environment by maintaining a repertoire of unique, unconnected responses. It is synonymous with flexibility. Maintaining adaptability requires that organizational histories be at least partially forgotten so that improvisations can occur as required. Too much flexibility inhibits a sense of continuity and identity, and too much stability inhibits the ability to respond to completely new environmental features [66].

In postindustrial environments, institutions will need to be both stable (i.e., maintain a strong identity and a common interpretation of the environment) and at the same time be flexible (i.e., have a high degree of experimentation, trial-and-error learning, detours, randomness, and improvisation) as they encounter environmental elements that they have never before experienced. Because pressures will be

present to fragment institutions, a strong identity and sense of institutional history is needed, but that identity and history must be systematically ignored in some circumstances. Mechanisms designed to erase organizational memory and to kill previous frameworks will be as important as mechanisms designed to operationalize current frameworks and reinforce the institution's culture. Short-term stability and long-term adaptability will both be prerequisites of effectiveness.

A wider search for informatoin as well as mechanisms to inhibit information overload will be required. Postindustrial environments will require that institutions increase their sensing and receptor capabilities because of the tremendous amount of knowledge that will be available. Not being aware of critical elements in the environment could lead to an institution's demise. With increasing turbulence and complexity coupled with an exponential growth in the amount of knowledge available, managers and administrators will have to increase markedly their abilities to acquire that knowledge (see [25]).

On the other hand, these same environmental characteristics can quickly lead to information overload. There will simply be too many fragmented elements to consider at one time. Because of the constraints of bounded rationality [36], mechanisms will have to be present to filter knowledge and reduce the amount that must be attended to [1].

To satisfy these two contradictory requirements, institutions may need to develop specialized scanning units, ad hoc probing and sensing groups, formalized interpretation systems, boundary spanning units, and so on [28]. The purpose of such units would be to both gather more information and to reduce, synthesize, or select out information required for adaptation decisions.

More consensus in decision making while also having more heterogeneity will be needed. In institutions where a high level of consensus exists, change and adaptation can occur both rapidly and efficiently. Time is not required to consider multiple, conflicting points of view or coalitional interests. The institution can be mobilized much more quickly when faced with disruptive environmental events than when the multiple stake holders do not agree on a common action.

Ashby's [4] "law of requisite variety" indicates, however, that complexity in one element must always be matched by equal complexity in another element. Contingency theorists (e.g., [10, 31]) have found that this principle applies to the relationship between organizations and their environments. Complexity in the environment must be met with complexity (i.e., heterogeneity) in the organization for equilibrium to occur. There will be a requirement in postindustrial environments,

therefore, for intraorganizational heterogeneity (i.e., multiple viewpoints, specialization, diversity) to exist in order for institutions to maintain adaptability. Too much homogeneity, on the one hand, can lead to "groupthink" phenomena [29] and to narrowness of strategic alternatives. Too much heterogeneity can lead to revolution and anarchy in adaptation. Both consensus and homogeneity as well as diversity and heterogeneity, therefore, are needed simultaneously as prerequisites of adaptability.

To achieve these two contradictory states simultaneously, institutions will need to rely on new kinds of computer decision support systems that allow preferences and interests to be instantaneously aggregated and compared [28], new varieties of consensus-building group decision processes [60], formalized diffusion mechanisms that gather preferences and build commitment among institutional members when adaptation is required, redundant structures and process mechanisms that function independently, and so on.

Other characteristics of Janusian institutions also will be important to cope with postindustrial environments, such as high specialization as well as high generality of roles, proactivity and reactivity in strategic decisions, continuity of leadership and the infusion of new leaders with new ideas, deviation amplifying and deviation reducing processes, and so on. These characteristics are not elaborated here because of the constraint of space. However, the important point to be made is that the adaptability needed by institutions in postindustrial environments will require that Janusian characteristics be present. The deliberate redesign and restructuring of institutions will be a necessary prerequisite for these new environments.

The presence of Janusian thinking in individuals and Janusian characteristics in organizations often appears to be frightening (because of unpredictability) or even silly (because of inconsistency). However, it is precisely because of this attribute that both individuals and organizations operate successfully in turbulent and unknown environments. Initiating both continuity and change in leadership, specialization and generalization, proactivity and reactivity, and other seemingly contradictory characteristics will produce the adaptability necessary for effective institutions of higher education in the future.

Summary

The first section of this article reviewed different approaches to organizational adaptation. These approaches were categorized according to the amount of discretion they assumed for managers and the

importance of the external environment. It was argued in the second section that each of these approaches will be required to operate simultaneously in institutions of higher education in a postindustrial environment. That environment was described as being characterized by more and increasing knowledge, complexity, and turbulence.

In addition to relying on these four common approaches to adaptation, however, it was proposed that managers and administrators will also be required to help design and perpetuate characteristics and processes in their institutions that have been somewhat uncommon in the past. That is, self-contradictory attributes will need to be developed and reinforced both in individual administrators and in their institutions in order to maintain adaptability in a postindustrial environment. Educational institutions with these characteristics and processes were labelled "Janusian" institutions because of the presence of contradictory phenomena that operate simultaneously within them.

The intent of this article, then, has been not only to review and provide a framework for the organizational adaptation literature but to propose how adaptation might be best facilitated in institutions of higher education. Liberal arts colleges, like other types of colleges and universities, will survive and prosper as they become adept at implementing adaptive strategies in the required ways and as they develop characteristics that match with the demands of the postindustrial environment.

References

1. Ackoff, R. L. "Management Misinformation Systems." *Management Science,* 14 (1967), 147–56.
2. Aldrich, H. *Organizations and Environments.* Englewood Cliffs, N.J.: Prentice-Hall, 1979.
3. Aldrich, H., and J. Pfeffer. "Environments of Organizations." *Annual Review of Sociology,* 2 (1976), 79–105.
4. Ashby, W. R. "Principles of the Self-Organizing Dynamics System." *Journal of General Psychology,* 37 (1947), 13–25.
5. Barnard, C. I. *The Functions of the Executive.* Cambridge, Mass.: Harvard University Press, 1938.
6. Bell, D. *The Coming of Postindustrial Society.* New York: Basic Books, 1973.
7. Berger, P., and T. Luckmann. *The Social Construction of Reality.* New York: Doubleday, 1967.
8. Birnbaum, R. *Maintaining Diversity in American Higher Education.* San Francisco: Jossey-Bass, 1983.
9. Brezezinski, Z. *Between Two Ages: America's Role in the Technetronic Era.* New York: Viking Press, 1970.

10. Burns, T., and G. M. Stalker. *The Management of Innovation.* London: Tavistock, 1961.
11. Cameron, K. S. "Strategic Responses to Conditions of Decline: Higher Education and the Private Sector." *Journal of Higher Education,* 54 (July/August 1983), 359–80.
12. Cameron, K. S., and R. E. Quinn. "The Field of Organizational Development." In *Classics in Organization Development,* edited by R. E. Quinn and K. S. Cameron. Oak Park, Ill.: Moore Publishing, 1983.
13. Cameron, K. S., and D. A. Whetten. "Perceptions of Organizational Effectiveness Over Organizational Life Cycles." *Administrative Science Quarterly,* 26 (1981), 525–44.
14. ———. "Models of the Organization Life Cycle: Applications to Higher Education." *Review of Higher Education,* in press.
15. Chamberlain, N. W. *Enterprise and Environment: The Firm in Time and Place.* New York: McGraw-Hill, 1968.
16. Chandler, A. D. *Strategy and Structure: Chapters in the History of the American Enterprise.* Cambridge, Mass.: M.I.T. Press, 1962.
17. Child, J. "Organizational Structure, Environment, and Performance: The Role of Strategic Choice." *Sociology,* 6 (1972), 1–22.
18. Cohen, M. D., and J. G. March. *Leadership and Ambiguity: The American College President.* New York: McGraw-Hill, 1974.
19. Drucker, P. F. *Managing in Turbulent Times.* New York: Harper and Row, 1980.
20. Duncan, R. B. "The Ambidextrous Organization: Designing Dual Structures for Innovation." In *The Management of Organization Design: Strategies and Implementation,* edited by R. H. Kilmann, L. R. Pondy, and D. P. Slevin, pp. 167–88. New York: Elsevier North Holland, 1976.
21. Galbraith, J. R. "Designing the Innovating Organization." *Organizational Dynamics,* 11 (1982), 5–25.
22. Gameson, W. A., and N. R. Scotch. "Scapegoating in Baseball." *American Journal of Sociology,* 70 (1964), 69–76.
23. Goodman, P. S. and L. B. Kurke. "Studies of Change in Organizations: A Status Report." In *Change in Organizations,* edited by P. S. Goodman, pp. 1–46. San Francisco: Jossey-Bass, 1982.
24. Hannan, M. T., and J. Freeman. "The Population Ecology of Organizations." *American Journal of Sociology,* 82 (1977), 929–64.
25. Hedberg, B. L. T. "How Organizations Learn and Unlearn." In *Handbook of Organizational Design,* Vol. 1, edited by P. C. Nystrom and W. H. Starbuck, pp. 3–27. New York: Oxford University Press, 1981.
26. Hedberg, B. L. T., P. C. Nystrom, and W. H. Starbuck. "Camping on Seesaws: Prescriptions for a Self-Designing Organization." *Administrative Science Quarterly,* 21 (1976), 41–65.
27. Huber, G. P. "Decision Support Systems: Their Present Nature and Future Applications." In *Decision Making: An Interdisciplinary Inquiry,* edited by G. R. Ungson and D. N. Braunstein. Boston: Kent, 1982.
28. ———. "The Nature and Design of Postindustrial Organizations." *Management Science,* in press.

29. Janis, I. *Victims of Groupthink.* Boston: Houghton-Mifflin, 1972.
30. Interaction Associates. *Tools for Change.* San Francisco: Interaction Associates, 1971.
31. Lawrence, P., and J. W. Lorsch. *Organization and Environment.* Homewood, Ill.: Irwin, 1967.
32. Lindblom, C. E. "The Science of Muddling Through." *Public Administration Review,* 20 (1959), 79–88.
33. Lutz, F. W. "Tightening Up Loose Couplings in Organizations of Higher Education." *Administrative Science Quarterly,* 27 (1982), 653–69.
34. ———. "Reply to More on Loose Coupling." *Administrative Science Quarterly,* 28 (1983), 296–98.
35. March, J. G. "Footnotes to Organizational Change." *Administrative Science Quarterly,* 26 (1981), 563–77.
36. March, J. G., and H. A. Simon. *Organizations.* New York: Wiley, 1958.
37. Martin, J. *Telematic Society: The Challenge for Tomorrow.* Englewood Cliffs, N.J.: Prentice-Hall, 1981.
38. Masuda, Y. *The Information Society.* Bethesda, Md.: World Future Society, 1980.
39. McKelvey, W. *Organizational Systematics: Taxonomy, Evolution, and Classification.* Berkeley: University of California Press, 1982.
40. Miles, R. E. and C. C. Snow. *Organizational Strategy, Structure, and Process.* New York: McGraw-Hill, 1978.
41. Miles, R. H. *Macro Organizational Behavior.* Glenview, Ill.: Scott Foresman, 1980.
42. Miles, R. H., and K. S. Cameron. *Coffin Nails and Corporate Strategies.* Englewood Cliffs, N.J.: Prentice-Hall, 1982.
43. Miller, D., and P. H. Friesen. "Archetypes of Organizational Transition." *Administrative Science Quarterly,* 25 (1980), 268–99.
44. ———. "Momentum and Revolution in Organizational Adaptation." *Academy of Management Journal,* 23 (1980), 591–614.
45. Miller, J. G. "Living Systems: The Organization." *Behavioral Science,* 17 (1972), 1–182.
46. National Commission on Excellence in Education. *A Nation at Risk: The Imperative for Educational Reform.* Report to the Secretary of the U.S. Department of Education, Washington, D.C., 1983.
47. Peters, T. J. "Symbols, Patterns, and Settings: An Optimistic Case for Getting Things Done." *Organizational Dynamics,* 7 (1978), 3–23.
48. Pfeffer, J. "Management as Symbolic Action: The Creation and Maintenance of Organizational Paradigms." In *Research in Organizational Behavior,* Vol. 3, edited by L. L. Cummings and B. M. Staw, pp. 1–52. Greenwich, Conn.: JAI Press, 1981.
49. Pfeffer, J., and G. R. Salancik. *The External Control of Organizations.* New York: Harper and Row, 1978.
50. Pondy, L. R. "Leadership Is a Language Game." In *Leadership: Where Else Can We Go?,* edited by M. W. McCall and M. M. Lombardo, pp. 87–99. Durham, N.C.: Duke University Press, 1978.

51. Quinn, R. E., and K. S. Cameron. "Organizational Life Cycles and Shifting Criteria of Effectiveness: Some Preliminary Evidence." *Management Science,* 29 (1983), 33–51.

52. Roeber, R. J. C. *The Organization in a Changing Environment.* Reading, Mass.: Addison-Wesley, 1973.

53. Rothenburg, A. *The Emerging Goddess.* Chicago: University of Chicago Press, 1979.

54. ———. "Creative Contradictions." *Psychology Today* (June 1979), 55–62.

55. Scott, W. R. *Organizations: Rational, Natural, and Open Systems.* Englewood Cliffs, N.J.: Prentice-Hall, 1981.

56. Simon, H. A. "Applying Information Technology to Organization Design." *Public Administration Review,* 34 (1973), 268–78.

57. Snow, C. C., and L. G. Hrebiniak. "Strategy, Distinctive Competence, and Organizational Performance." *Administrative Science Quarterly,* 25 (1980), 317–35.

58. Toffler, A. *Future Shock.* New York: Random House, 1970.

59. ———. *The Third Wave.* New York: Morrow, 1980.

60. Van Gundy, A. B. *Techniques of Structured Problem Solving.* New York: Van Nostrand Reinhold, 1981.

61. Wamsley, G., and M. N. Zald. *The Political Economy of Public Organizations.* Lexington, Mass.: D. C. Heath, 1973.

62. Weick, K. E. "Educational Organizations as Loosely Coupled Systems." *Administrative Science Quarterly,* 21 (1976), 1–19.

63. ———. "Organizational Design: Organizations as Self-Designing Systems." *Organizational Dynamics,* 6 (1977), 30–46.

64. ———. "Re-punctuating the Problem" In *New Perspectives on Organizational Effectiveness,* edited by P. S. Goodman and J. M. Pennings, pp. 146–84. San Francisco: Jossey-Bass, 1977.

65. ———. *The Social Psychology of Organizing.* Reading, Mass.: Addison-Wesley, 1979.

66. ———. "Managing Change Among Loosely Coupled Elements." In *Change in Organizations,* edited by P. S. Goodman, pp. 375–408. San Francisco: Jossey-Bass, 1982.

67. ———. "Administering Education in Loosely Coupled Schools." *Phi Delta Kappan,* 63 (1982), 673–76.

68. Zammuto, R. F., and K. S. Cameron. "Environmental Decline and Organizational Response." Discussion paper. National Center for Higher Education Management Systems, Boulder, Colorado, 1983.