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A Critique and Extension of the Stratified Systems Theory Perspective

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If researchers are to be of much help to leaders at the strategic apex of organizations, they must develop models of leadership that specifically address issues of selection, development, and effectiveness of strategic leaders.

SST offers a useful beginning. However, Boal and Whitehead argue that it and other approaches to leadership that focus on either leadership traits or behaviors have not adequately integrated them. To that end, these authors suggest the need to examine the leader's behavioral flexibility and cognitive complexity. Furthermore, the degree to which leaders seek, as well, to use information is seen as crucial. Finally, the importance of the environment, time, and other individual differences is examined in terms of implications for strategic leadership in general and for SST in particular.

BEHAVIORAL FLEXIBILITY

Stewart (1982a) notes that top management leadership consists of three components: demands (what must be done), constraints (that limit what can be done), and choices (discretion in choosing what to do or how to do it). As Mischel (1977) points out, some situations are so demanding (powerful) with respect to situational cues and incentives to behave that virtually everyone would view the situation similarly and have uniform beliefs regarding appropriate behaviors. However, Hambrick and Finkelstein (1987) argue that organizations differ significantly in terms of the latitude of action they afford their leaders.

Thus, while individual characteristics, such as cognitive complexity, may serve to enhance the leader's discretion, other variables in either the task environment (e.g., powerful outside forces) or internal organization (e.g., forces for inertia) may serve to limit the latitude of managerial action. Limits on discretion reduce the potential importance of cognitive complexity as a necessary individual difference.

Consistent with the above point, we argue that SST's cognitive complexity and

time span are useful but fundamentally inadequate to develop a generalized strategic leadership theory and prescriptions (cf. Bass, 1990; Hambrick, 1989). Although most current models of leadership emphasize style or behavior, SST returns to earlier trait approaches that emphasize leader characteristics. While it is clear that any understanding of leadership must afford traits a central role (House, Howard, and Walker, 1991), it is not clear that cognitive complexity, among various traits, should take center stage.

House and Baetz (1979), among many others, have reviewed the research on leader traits and concluded there is a wide constellation of traits, cognitive complexity being only one of many, commonly associated with leadership. Indeed, as Bass (1990) warns, "A person does not become a leader by virtue of the possession of some combination of traits, but the pattern of personal characteristics of the leader must bear some relevant relationship to the characteristics, activities, and goals of the followers" (p. 76).

While SST focuses on the repertoire of mental maps that leaders bring to the situation, it ignores the repertoire of behaviors that leaders can and/or will use in a given situation. Some people are behaviorally more flexible than others. Gangestad and Snyder (1985) show that some individuals, labeled "high self-monitors," will adapt their behavior to fit the situation, but others, "low self-monitors," will not. Dobbins, et al. (1990) found that high self-monitors emerged more frequently as leaders, and Zacarro, Foti, and Kenny (1991) found that high self-monitors were rated more favorably by their subordinates and engaged in more task-related behaviors. Thus, any generalizable theory must consider both traits and behaviors. Contrasting cognitive complexity with behavioral flexibility suggests four possibilities (Figure 14.1).

Figure 14.1
Behavioral Flexibility and Cognitive Complexity Typology

		Behavioral Flexibility (Self Monitoring)	
		High	Low
Cognitive Complexity	High	Informed Flexibles Many Schemas Many Behavioral Responses	Programmed Many Schemas But Limited Behavioral Responses
	Low	Scatter Shooters Few Schemas But Many Behavioral Responses	Plodders Few Few

Cell 1 represents the situation where the leader has both a wide array of cognitive maps with which to interpret the situation and a wide array of behavioral responses. We label these leaders "informed flexibles." Cell 2 represents the situation where cognitive complexity is high, but the leader's repertoire of behavioral responses is low. We label these leaders "programmed." Note that SST as currently formulated would not distinguish between these two types. We believe such a distinction would be particularly important in situations characterized as hyper-turbulence or punctuated equilibrium. Cells 3 and 4 represent situations where the leader has few cognitive maps with which to understand the situation but may either be flexible behaviorally (Cell 3—"scatter shooters) or rigid (Cell 4—"plodders"). Scatter shooters could be successful, even in turbulent environments, if they engage in trial-and-error learning. The problem lies in the inherent inefficiency of this approach compared with one where a person already possesses appropriate cognitive maps. Plodders, who are low in both cognitive complexity and their behavioral repertoire are unlikely to be successful except in highly stable environments.

Finally, while both trait and behavioral approaches to leadership add to our understanding, both approaches underemphasize the importance of the leader's specific task-relevant knowledge. Bass (1990) concluded, in his review of the literature, that task-relevant specialized knowledge was an important contributor to leadership. We argue that what people think is a function of what they know, and what they know determines how they think. In addition, people know what they do and do what they know. Thus, knowledge links thinking and action. Change knowledge and you change both thinking (i.e., cognitive complexity) and behavior, at least potentially.

ENVIRONMENTAL LINKAGES

SST as developed by Jaques (1976, 1989) and summarized by Jacobs and Lewis in this book, presents what Jaques considers to be a universal model of bureaucratic organization design. Bureaucracies are viewed as managerial employment hierarchies, which include most formal organizations (exceptions include political organizations, entrepreneurs, university academic departments, and so on). Although SST is a unique model, it is consistent with the rational system models developed in organizational theory (Scott, 1987). It adopts and extends the three managerial levels developed by Parsons (1960) and proposes that organizations should have a maximum of seven strata within the three levels (Strata VI and VII—systems level, Strata IV and V—organizational level, and Strata I-III—the production or operational level). The SST model is characterized as a one best way to view organization design and increasing managerial omniscience from level I through VII.

Jacobs and Jaques (1987) and Jacobs and Lewis (this book), in extending the SST model to leadership, considerably refine SST by infusing the analysis with

concepts from open systems, contingency, information, and exchange theory. In our opinion, these pieces represent a major refinement of SST but still do not overcome its deterministic and manager-centered perspective and assumptions. Since our primary concern is strategic leadership, it will be the key focus of our discussion of the implications of SST for organization-environmental linkages. A brief overview of the leadership perspective, focused at the strategic (VI and VII) level, will be presented, and then the environmental linkage will be discussed.

Jacobs and Jaques's theory (1987, p. 50) views the core of strategic leadership as uncertainty reduction (mapping external environment and envisioning desirable and attainable futures) through acquiring and interpreting information to determine appropriate courses of action for the organization. SST leadership theory is built around three basic concepts:

1. Adaptation requirements—the need for organizations to adapt to the environment, characterized by varying degrees of dynamism and complexity, in order to acquire scarce resources and use them efficiently.
2. Requisite frame of reference (cognitive map/complexity) for appropriate exercise of discretion. Leadership is discretionary behavior beyond those behaviors specified by task structure. The level of complexity for frame of references needs to increase with strata since the levels of interdependencies and environmental complexity and uncertainty increase.
3. Information acquisition and use. Since uncertainty reduction is the core of the leadership role at the systems-level, requisite complexity for acquiring and interpreting information to cope with uncertainty due to the lack of information, equivocality, and/or ambiguity is a key factor to successful strategic leadership.

Organizational-Environmental Linkage

The SST position is that systems-level managers are the mechanism for keeping the organization coaligned with its environment, and successful linkage is a function of the cognitive complexity and time perspective of the executive. Jacobs and Jaques (1987) emphasize organization adaptation to the environment. However, as Meyer, Brooks, and Goes (1990) observe, adaptation represents first-order change in response to environmental evolution (relatively slow incremental change). Second-order change involves frame-breaking change at the firm level in response to revolutionary (punctuated, quantum) change in the environment (Meyer, Brooks, and Goes, 1990).

For numerous reasons, environmental turbulence created by revolutionary change poses a major challenge to the generalizability of SST (for a discussion of organization change models, see Duran, Phillips, and Whitehead, 1991; Gersick, 1991; Phillips and Duran, this book). First, bureaucratic organizations can adapt effectively

to environments experiencing slow evolution but have problems in responding appropriately to revolutionary changes (Burns and Stalker, 1961; Kanter, 1990; Lawrence and Lorsch, 1967; Miller and Friesen, 1984).

Second, the complexity of a turbulent environment will exceed the requisite cognitive complexity of any CEO or executive group (Terreberry, 1968), especially if this is a relatively homogeneous group, which might be predictable from an SST perspective. Thus, organizations relying on level VII leaders or the combined capacities of VI and VII are likely to experience severe organization-environmental interface problems. Murray (1989) suggests that when competition is intense, homogeneity in top management team compositions is to be preferred, but under turbulent conditions, a heterogeneous team is preferable. As Hurst, Rush, and White (1989) point out, because a variety of behaviors is needed at the strategic apex (Stratum VII in Jaques's terms), each of which is associated with a different cognitive style, the top management team should be heterogeneous with respect to the cognitive styles of its members. Research by Norbum and Birley (1988) suggests that successful top management teams are heterogeneous with respect to the functional backgrounds of team members. These results suggest the importance of task-relevant knowledge combined with multiple frames of reference.

Third, and closely related to the previous point, second-order organization changes are frame breaking. SST leadership theory emphasizes the progressive development of the appropriate systems domain leaders' frames of reference for mapping and interpreting the environment (Jacobs and Jaques, 1987) and emphasizes the significance of the embeddedness of leadership in the organization structures and processes. To the extent that these frameworks are rooted in adaptive change perspectives and action programs, it is questionable whether the leaders can be expected to generate the appropriate frame-breaking organization changes. Perhaps this is one reason that bureaucracies are consistently better prepared to fight the last, as opposed to the current, war.

Fourth, SST emphasizes hierarchical differences in power and capacity. This orientation is not likely to develop the organization culture conducive to capturing and using the expertise located below the strategic levels in the system. In frame-breaking change situations, the expertise, perspective, and proclivity for developing the appropriate organization response might be more prevalent in the strata below the systems domain.

Fifth, consistent with Daft and Lengel (1986), SST strategic leadership recognizes the increasing levels of uncertainty, lack of information, equivocality (conflicting interpretations), and ambiguity (inadequate quality). Revolutionary environmental change creates all of these informational uncertainties and the need for frame-breaking individual change. "Wicked" as opposed to "tame" problems are associated with revolutionary environmental change (Rittel and Webber, 1973). Tame problems can be defined, structured, and solved through obtaining and/or developing additional information and applying the appropriate analytic techniques. However, wicked problems are indeterminate and cannot be definitively formulated,

and hence no agreed-upon criteria can be developed to ascertain if or when a solution has been found.

We believe SST is more oriented toward solving tame problems. Time span of feedback and the individual's cognitive complexity are important variables in categorizing the environment and selecting leaders who can solve tame problems. However, cognitive complexity may be less essential for dealing with wicked problems. Because of their indeterminate nature, wicked problems may lead the cognitively complex leader to be overcome with analysis paralysis. In addition to or perhaps rather than cognitive complexity, we will suggest that the construct of "street smarts" (Wagner and Sternberg, 1990) may be more useful for selecting leaders who must deal with wicked problems. This is because of its explicit focus on types of knowledge and its implicit recognition of the need for behavioral flexibility.

TIME

Time is a critical variable in SST leadership theory; however, the theory fails to deal explicitly with time as a nonlinear, multidimensional, and cultural phenomenon. Given the uncertainty absorption and environmental interpretation role (most likely involving both multinational and multicultural dimensions) ascribed to executive leaders, understanding the cultural nature of time is critical to the theory. We will use the complementary frameworks proposed by Hall and Hall (1987) (monochronic, polychronic, and rhythmic time) and Kelly and McGrath (1988) (Newtonian, Einsteinian, and transactional perspectives of time) in developing our conclusions about the significance of the cultural nature of time and our argument that the SST perspective is overly simplistic.

The culturally dominant view of time in the United States (and the one we think is implicit in SST as currently formulated) is Newtonian (Kelly and McGrath, 1988) or monochronic time (Hall and Hall, 1987). Here time is viewed as atomistic but homogeneous, abstract and absolute, linear, segmented, and tangible. In monochronic-time cultures, time is a fundamental structuring variable, characterized by a clock and calendar orientation and driven by schedules and agendas. For example, things like being on time, time management, and saving, wasting, or losing time are perspectives characteristic of this orientation.

Time also can be viewed from an Einsteinian or polychronic perspective, the antithesis of the monochronic time orientation. Here, time is viewed as indivisible but differentiated, abstract but relational with the simultaneous occurrence of many things, and multidimensional. Within this framework time might be identified in terms of movement, and, to some degree, the radar scope captures this notion. The event time between plans is a function of their current location and relative movement. As they change location, so does the event time between them. Organizations and people do not operate in a vacuum.

Hall and Hall (1987, p. 18) propose that the orientation of polychronic people differs substantially from that of monochronic people. For example, polychronic people tend to be less focused, more distractible and flexible, less time-and schedule-conscious, and more oriented to relationship, family, and people (e.g., people are more important than schedules), and they have a longer time frame than monochronic people. These differences have substantial implications for leadership in a multicultural environment.

A third view of time is transactional. Here time is cyclical, not linear. One interesting aspect of the cyclical concept—circadian rhythm—leads to "entrainment" of various physiological and behavioral responses. Entrainment is the phenomenon in which one cyclic process becomes captured by, and set to oscillate in rhythm with, another process (Kelly and McGrath, 1988). The four elements of entrainment are rhythm, mesh (synchronization), tempo, and pace. Entrainment thus becomes a process that integrates temporally differentiated activities and behaviors. Organizational strategies such as planning, scheduling, and group-task forces may be viewed as attempts to induce temporal complementarity among temporally asymmetric worlds (Bluedorn and Denhardt, 1988).

The cross-cultural nature of most large bureaucratic organizations, viewing time as a cultural and variable phenomenon, and the role of time span of feedback in SST emphasize some implications of time perspective for the theory. First, the time span of feedback is not constant but is a function of changes in other variables inherent in the environment in which an action is taken as well as the response of others to the action taken. One of the things being observed in large business organizations is that the time span between idea to marketplace is being greatly compressed, as is the time span between an organization's actions and a competitor's reaction. In fact, Peters (1990) suggests that the next great arena of competition will be time. Those who can compress it will win. This suggests that rather than time span of feedback, the relative time span of learning and response is most important.

The transnational nature of organizations creates multicultural environments as the domains in which the leader must cope with several different perspectives of time and spans of feedback. In addition, because of the networked nature of many of these systems, multiple time perspectives could be encompassed within the systems domain in which executive leadership operates. Examples of situations with high potential for time diversity at the strategic leadership level include alliances among countries (such as NATO) and joint business ventures between a monochronic and polychronic time culture. Problems between Japanese and Americans are, at least partially, attributable to differences in time orientations, such as relationship versus "let's do it now" perspectives, or the concept of appropriate age versus merit for executive leaders (that is, the relationship between time and competence), and so forth (Hall and Hall, 1987).

Finally, by focusing on only the calendar time span of feedback, SST has not addressed other equally important aspects of time: synchronization, sequence, rate, and allocation. As Bluedorn and Denhardt (1988) point out, one of the most

important aspects of time concerns bringing the right objects to the right place at the right time and in the right order. In addition, if time is viewed as a commodity (McGrath and Rotchford, 1983), then it must be rationed and allocated among competing demands.

PERSON

Person/trait variables play a central role in SST in two ways. First, similar to Ashby's (1956) theory of requisite task variety, Jacobs and Jaques (1990) hypothesize that for successful performance to occur, there must be a match between the complexity of the environment (as assessed by the time span of feedback of critical tasks) and the cognitive complexity of the individual (as currently assessed by the Career Path Appreciation technique, Stamp, 1988). The second person trait variable is referred to as "temperament." A reflection of the person's temperament is his or her "proclivity" to develop complex mental models (cognitive maps). In support, Levi and Tetlock (1980) found that the cognitive complexity of an individual was significantly correlated with the complexity of the cognitive maps developed to portray the same event.

This proclivity, or cognitive style (cf. Streufert and Nogami, 1989) ultimately prepares the person with sufficient cognitive complexity to cope with the task demands at the highest level. Jacobs and Jaques (1990) speculate that the Myers-Briggs Type Indicator may be a measure of this "proclivity." Before reviewing the role of temperament and proclivity, we turn to the literature on information processing to place these two constructs in perspective. Much of the research on human information processing has recently been reviewed by Lord and Maher (1990), and we use their review as a jumping-off point.

Information Processing

Lord and Maher (1990) suggest there are four basic models that can be used to describe human information processing. They are the rational, limited capacity, expert, and cybernetic. Rational models, though more prescriptive than descriptive, are widely used in economic theory (Becker, 1976), motivation theory (Vroom, 1964), and subjective utility models of decision making (Edwards and Tversky, 1967). These models assert that individuals do, or should, assign probability and utility values to hypothetical events and choose among available alternatives to maximize expected utility. While rational models are not highly descriptively accurate, because of limited, short-term memory capacity, it is also true that, with the help of decision aids, rational models are widely used to solve tame problems. Examples of decision aids would be linear programming models, stochastic inventory models, and capital asset pricing models.

Limited capacity models, recognizing the limitations of cognitive processing, focus on how people simplify information processing through the use of heuristics (Hogarth, 1981; Tversky and Kahneman, 1974) and implicit theories and schema (Gioia, 1986; Nisbett and Ross, 1980); or how they limit the decision-making tasks by using suboptimal decision rules (e.g., Simon's 1955 satisficing model). Two points are of interest to us. First, while the use of certain heuristics may result in predictable biases, they do not always lead to errors in judgment. Secondly, although it is thought that there are general heuristics common across people, Sherman and Corty (1984) point out that experts use different heuristic principles than do novices. Thus, the role of task-specific expertise must be considered. Both Goodwin, Wofford, and Harrison (1990) and Scott (1969), among others, argue and provide support for the contention that cognitive complexity is task-specific and nontransferable.

Expert models of information processing assume that individuals rely on already developed knowledge structures to supplement simplified means of processing data. Experts differ from novices both in the use of more elaborate schema (Chi, Glaser, and Reese, 1982) derived from their knowledge of the subject matter (Glaser, 1984) and in how they process information (Glaser, 1982). However, as Lord and Maher (1990) point out, experts are not superior in a general sense but only within their limited domain of expertise. Knowledge structures are task-specific. Chi, Glaser, and Farr (1988) suggest that the superior performance of experts is a function of the interaction between knowledge structures and the processes of reasoning and problem solving. This line of research needs to emphasize the acquisition of knowledge structures. As Glaser (1984) notes, quoting Siegler and Richards (1982), "Knowledge of specific content domains is a crucial dimension of development in its own right and changes in such knowledge may underlie other changes previously attributed to the growth of capabilities and strategies" (p. 98).

Unlike the previously discussed models, cybernetic models are dynamic, rather than static, and temporal, rather than atemporal. Feedback plays a key role in altering behavior, learning, and cognitive processes. Rather than using sophisticated processes to achieve optimization, as the rational model suggests, optimization occurs through learning and adaptation. Hogarth (1981) argued that heuristics that apply suboptimal decision rules in discrete decision situations may yield optimal decisions in continuous environments when decisions are recurring. However, the usefulness of cybernetic models diminishes when the time span of feedback is lengthy or courses of action are costly to reverse.

The importance of environmental dynamism is of particular importance when viewing information-processing models. Drawing on the review of forecasting research methods by Pant and Starbuck (1990), we conclude that complex models work better in stable environments but the opposite also is true, that is, simple models predict better in turbulent environments where complex models mistake noise for information. Models that predict trends well in stable environments do not preduct turning points in turbulent environments. Unfortunately, turning points

can be discovered only retrospectively. The best predictor of the future in the short run is the immediate past, but in the long run no single model works well, and complex models do worse (Pant and Starbuck, 1990). As Pant and Starbuck (1990) point out, quoting Niels Bohr, "Prediction is very difficult, especially about the future."

This line of research raises questions about the general usefulness of equating time span of feedback with cognitive complexity, with focusing on cognitive complexity as a generic trait, devoid of context, and, most importantly, assuming that complexity is always to be preferred. Under crisis or turbulence less cognitively complex persons may be more successful. Schroder, Driver, and Streufert (1967) suggest, for example, that the relationship between cognitive complexity and environmental complexity could be visualized as a set of inverted U curves, with optimal functioning occurring at some intermediate level of environmental complexity.

In addition, under crisis, time spans become compressed, especially the response time span. Under crisis, decision makers consider less information, focus on shorter-term consequences, and stereotype more. These effects are likely to hold true irrespective of the level of cognitive complexity (Weick and Bougon, 1986). Complex models may lead to analysis paralysis unless coupled with a bias for action (Peters and Waterman, 1982). Under turbulence, especially involving changes of direction, models that worked well in the past become dysfunctional, a la the "failure of success" syndrome (O'Toole, 1985). Miller (1990) points out that organizations sow the seeds of their own destruction by focusing on, and overemphasizing, their core competences to the neglect of other organizational needs.

Cognitive Complexity

Cognitive complexity contains two basic dimensions: differentiation, which refers to the number of characteristics or dimensions of a problem that are included, and integration, which refers to the number of connections, and the rules governing those connections, among differentiated concepts. Both dimensions are thought to vary widely across individuals, and it is assumed by SST that both dimensions, within limits, are fixed in the person. However, within organizations it is likely that for any particular problem, one or both of these dimensions will be constrained. Shull, Delbecq, and Cummings (1970) coined the term *bounded discretion* to point out that technically sound solutions are often constrained by laws, customs, and ethical considerations and therefore are not acceptable, even for discussion.

Thus, it is possible for the individual's cognitive complexity to exceed the complexity of the allowable solution space. SST, it seems to us, assumes that higher leader complexity will always be functional, an assumption that we believe is an empirical question and may be problematical. In SST, cognitive complexity is thought to be necessary to deal with the many variations in the environment

facing the leader. However, one of the functions of leadership is the creation of meaning (Boal and Bryson, 1988; Smircich and Stubbart, 1985).

Hence, we agree that strategic leadership requires, among other things, the ability to simplify the many into the few—in the vernacular, "to separate the wheat from the chaff." It is not clear that this is necessarily related to cognitive complexity (e.g., President Ronald Reagan). Noel (1989), for example, points out that the CEOs he studied had narrow obsessions that drove their behavior. Furthermore, of various salient capacities required of different types of strategic leaders, it is unclear if cognitive complexity is related to them (cf. Shrivastava and Nachman, 1989; Westley and Mintzberg, 1989). In contrast to Hunt and Ropo (this book), Bass's (1990) review of current theories of charismatic and transformational leadership does not suggest that cognitive complexity plays much, if any, role. In fact, as currently formulated, SST views charismatic leadership as a breakdown in the system and therefore a sign of ineffectiveness. Our position is that this is increasingly likely at the strategic level under conditions of equivocality and turbulence.

Boal and Bryson (1988) argue that there are two types of charismatic leaders. The first type arises under conditions of crises. They suggest that crises sever the linkage between action and outcomes. According to Boal and Bryson, leaders who reestablish this linkage, restoring systems' effectiveness, are seen as charismatic. We believe that leaders who are cognitively complex and behaviorally flexible are more likely to respond effectively to crisis situations. Thus, unlike current formulations of SST, we think it could be extended to encompass this form of charismatic leadership. They imply that Admiral W. F. "Bull" Halsey may have been such a leader.

The second type of charismatic leader, according to Boal and Bryson, arises in situations where the linkage between values and action has been severed. Leaders whose visions reconnect this linkage are also seen as charismatic. We argue that at the strategic level, conflicts over goals and a lack of consensus are likely to prevail (Cameron, 1986). Quinn (1988) argues that the master manager is able to achieve a balance in these competing values. We see this as problematic. Rather, we argue that one or more stakeholders (Freeman, 1984) are likely to be ignored by the leader, the result of which is a severing of the linkage between their values and their actions.

It is unclear whether SST is applicable to leaders who have charismatic effects because of their visions. However, analysis of the speeches and writings of such leaders, e.g., Martin Luther King, could suggest whether the core construct of SST, cognitive complexity, was related to the emergence of this type of charismatic leadership. A key issue separating this form of charisma versus crisis produced is that visions, unlike crises, have no necessary time limit for resolution. Thus, the idea of linking cognitive complexity to the time span of feedback, as SST currently does, limits the extendability of SST for understanding this form of strategic leadership. In any case, among various trait approaches to leadership, only SST affords cognitive complexity such a central role.

Proclivity

Jacobs and Jaques (1990) suggested that the Myers-Briggs Type Indicator (MBTI) might reflect a person's proclivity to build mental models. In addition, they suggest that as people move progressively higher in their organizations, SST would predict that the proportion of intuitive-thinking types would increase. While not directly addressing this issue, McCaulley (1990) reviewed all the data collected by the Center for Applications of Psychological Type. She concluded that while managers, in general, were more heavily weighted toward sensing types, as opposed to intuitive types, top managers were more evenly divided between sensing and intuitive types. She did not address the proportion of thinking versus feeling types in her review, but the data she presents show that thinking types are in the majority in fifty-one of fifty-nine samples studied. It is not clear whether this dimension discriminated across leadership levels. McCaulley (1990) suggests that, overall, top executives are somewhat more likely to be extrovert-intuitive-thinking-judgmental (ENTJ) types.

Extroverts favor quick action as opposed to introverts, who emphasize conceptualizing the problem clearly and engaging in thoughtful deliberation before making decisions. Intuitive types are more concerned with the "big picture" and visions as opposed to sensing types, who favor practical experience. Thinking types favor logical analysis of causes and effects as opposed to feeling types, who decide by weighting the relative importance or value of competing alternatives. Finally, judging types enjoy organizing, planning, and moving quickly to a decision as opposed to perception types, who are curious and open to change and prefer to keep their options open.

With respect to time, extroverts see time as more episodic, and introverts view it more continuously. Intuitives are more future-oriented, and sensing types are more oriented to the present. Thinking types view time as a past-present-future continuum and do not emphasize any special stage. Judging types are less oriented to the past than are feeling types. Finally, meeting objectives by target dates comes more easily to sensing-thinking-judgmental (STJ) types. It must be noted, however, that all types are found among top managers. While the evidence supports the contention that some types are proportionately more represented, it does not show that leaders of one type are more successful than leaders of another type.

In fact, Barr and Barr (1989) argue that leaders need to develop all the processes of type—both those that come naturally to a person and those that do not. We speculate that equivocality and turbulence require one type of leader but that clarity and stability require another. The good staff general is not necessarily a good field general, especially in times of battle. The opposite is also true. A good field general may be ill-suited to lead a peacetime army (cf. Hunt and Phillips, 1991).

Jacobs and Jaques (1987) suggest that intuitives, as measured by the MBTI, have a greater proclivity to develop mental models and would be expected, ceteris paribus, to be more cognitively complex. However, Bensimon (1987) did not find that the use of multiple frames of reference by college presidents was related to whether

or not they identified themselves as intuitive. A follow-up study by Birnbaum (1990) reported that those presidents who were identified as both being intuitive and having complex multiframe perspectives were more problem-oriented and likely to engage in active information search processes.

However, Ruble and Cosier (1990) did not find that cognitive style, as measured by the Myers-Briggs Type Indicator, was related to prediction accuracy on a multiple-cue probability learning task. Furthermore, it is well known that confidence in one's decisions increases proportionately to increases in information; however, the correctness of the decision does not. In fact, there is often a negative correlation between the accuracy of a decison and the confidence in the decision. Usually those who have data in statistical form make better decisions than those who have raw data (Hogarth, 1981).

Information Seeking and Using

The discussion up to this point has focused on how individuals process information, but we have not addressed, nor does SST, the degree to which individuals actively seek and use information. Individuals differ in both the degree to which they actively seek new information for problem solving as well as the kinds of information they seek (Einhorn and Hogarth, 1985; Hershey, et al. 1990). In addition, they differ in the degree to which they use the information (Ashton and Ashton, 1990; Ross and Lepper, 1980). By contrasting seeking with using behavior, we develop the typology in Figure 14.2.

Figure 14.2
Information Seeking and Using Typology

Degree to Which the Leader Incorporates Information and Revises Beliefs/Mental Models	Degree to Which New Information Is Actively Sought: Low	Degree to Which New Information Is Actively Sought: High
Low	Information Avoiders	Information Discarders
High	Information Sensitives	Information Junkies

Cell 1 represents the situation where the leader neither actively seeks nor uses information. We label these leaders information avoiders. Novices often evidence information searches that lack both coherence and efficiency (Chi, Feltovich, and Glaser, 1981; Larkin et al., 1980), and when coupled with a relative insensitivity to new evidence (Edwards, 1968; Einhorn and Hogarth, 1978), we have a case approximating cell 1. It is doubtful, but not impossible, that many top executives would be like this—for instance, a situation when nontask-related criteria are used as the primary basis for selection, for example, family firms. The cell 2 leader, whom we label the information discarder, evidences a strong decision confirmation bias. Evidence consistent with prior beliefs is used more often to make decisions than evidence that is inconsistent with prior beliefs (Ross and Lepper, 1980). Mitroff's (1974) study of highly regarded NASA scientists found that if data were inconsistent with their "pet" theories, they ignored the data.

Information sensitives (cell 3) do not actively scan the environment for data but will incorporate data presented to them in revising their decisions. There is some evidence that sensitivity toward the use of data is the result of professional training (Ashton and Ashton, 1990). Those who actively seek and use information (cell 4) we label information junkies (a label Ted Turner is said to have used to describe his motivation to start CNN). SST, like most other models of leadership, does not sufficiently consider the importance of information seeking and usage. However, studies by Daft, Sormunen, and Parks (1988) and Eisenhardt (1989b) find that organizational success is influenced by the degree to which top management seeks and uses information.

A partial reconciliation of SST and the above findings is the realization that search processes are not usually distributed across problem identification, alternative generation, and choice. As Simon (1987) points out, expert chess players will choose an alternative fairly quickly but may spend considerable time checking to see that a plausible move does not have a hidden weakness. Perceived weaknesses are a function of the degree to which current data deviate from schemas, scripts, or knowledge structures.

Early theories of leadership emphasized the traits of leaders, much as SST does by focusing on cognitive complexity and temperament examples. More recent models of leadership emphasize leader behaviors and style. We argue that each approach adds understanding but is not sufficient (see House and Baetz, 1979). If it was, we would expect leaders to be transferable across organizational contexts. But Shetty and Perry (1976) found that outsiders who became CEOs, were effective only if they possessed relevant industry knowledge.

Thus, we believe, more emphasis needs to be placed on understanding the schemas and scripts that executives possess. Or, to paraphrase Sam Ervin, "What did the President know, and when did he know it?" A major difference between schemas and scripts (whether personal or organization) and cognitive complexity is that the former can be codified and shared while the latter can be developed only within the person's genetic endowment. That is, Jaques (1978, 1989) argues that

some/most people are genetically not equipped to develop the levels of cognitive power required to function successfully at higher levels in the organization.

To close this section and to introduce the next, we quote Bruner (1957, pp. 132-133). "Presented with a complex stimulus, the subject perceives in it what it is ready to perceive; the more complex or ambiguous the stimulus, the more perception will be determined by what is already 'in' the subject and the less by what is in the stimulus" (Cited in Huber, 1991, pp. 104).

Schemas

Four types of schemas are discussed in the literature—self, person, event, and person-in-situation (Lord and Foti, 1986). Self schemas contain information about one's own personality and behavior. Person schemas focus on trait and behavior information common to certain groups or types of people, for example, leaders (cf. Hunt, Boal, and Sorenson, 1990). Event schemas (scripts) entail knowledge about the typical sequence of events in a given situation. Event schemas are especially important but may be dysfunctional for wicked problems or under environmental turbulence because they might lead to applying old solutions to new problems. Person-in-situation schemas contain information about people and behavior typically found in particular situations. Understanding schemas is particularly important because they affect the perception and retrieval of information and the normative appraisal of events, people, and objects, influence what is learned, and serve as a guide for action (Feldman, 1986; Isenberg, 1986; Lord and Foti, 1986).

Isenberg (1986) has argued that managers engage in plausible reasoning, as opposed to logical reasoning and probabilistic thinking. Both allow managers to cope with uncertainty and ambiguity, and both are embedded in the schemas and the structure of knowledge one possesses. Little is known about how or why individuals change their schemas. Clearly, the more the situation is routine, the more the decision maker will automatically involve schemas rather than thinking. Nystrom and Starbuck (1984) argue that if organizations are to avoid crises, they must unlearn, that is, discard, old schemas (that are assumed no longer to be functional) and learn new schemas (that are assumed to be functional). Continued failure, as well as novelty, promotes unlearning (cf. Langer, 1978), but this is hardly a recipe for success unless experimentation allows the leader to pilot-test different possible strategies while limiting potential losses. Feldman (1986) suggests that the less knowledge possessed by the individual, the more likely inappropriate generalizations will be made and that learning is determined by the interaction of knowledge and experience. He suggests experiences that contradict existing schemas promote the most learning.

Bedeian (1986) suggests four potential sources of experiences that contradict existing schemas. They include:

1. Borrowing from other organizations. Institutional theory suggests that under conditions of uncertainty, coerciveness, and professional training leaders are likely to mimic the behaviors of others (DiMaggio and Powell, 1983; Levitt and Nass, 1989).
2. Introducing changes in current procedures based on feedback from the environment. This approach is often utilized in action research. Argyris and Schön (1978) point out that individuals possess a cognitive theory, referred to as the espoused theory, which represents a normative ideal regarding how they should behave, and a theory-in-use, which actually guides their behavior. They argue that learning involves a change in the theory-in-use. However, Fiol and Lyles (1985) contend that learning requires understanding and cognition of the reasons beyond an event. Thus, we argue that feedback that results in either a change in the espoused theory, a change in the theory-in-use, or recognition of the discrepancy between them should be termed learning.
3. Original innovations. Einstein is often quoted as saying, "Imagination is more important than knowledge." How to increase the likelihood of creativity and innovation at both the individual and organizational level has been a recurring theme in management (cf. Cosier and Schwenk, 1990; Morgan, 1986; Taggart and Robey, 1981; Zaltman, Duncan, and Holbeck, 1973). Usually suggestions focus on either identifying and overcoming individual, group, and organizational barriers to innovation or advocating the use of certain techniques such as devil's advocate and dialectical inquiry (Mason and Mitroff, 1981; Schwenk, 1989).
4. Blind variations. Population ecology (Aldrich, McKelvey, and Ulrich, 1984) suggests that organizations continually experience random variations. Variations that enhance effectiveness are retained, and those that do not are selected out. Unlike previous approaches, population ecology does not suggest that these variations be conscious and purposeful.

Street Smarts

Recently, Wagner and Sternberg (1990) have suggested three kinds of tacit knowledge collectively referred to as "street smarts," which differentiate successful managers and executives from less successful ones. The three kinds of tacit knowledge are knowledge about managing oneself, managing others, and managing tasks. Managing oneself refers to knowledge regarding self-motivation and self-organization, such as overcoming procrastination. Managing others refers to knowledge concerning subordinates, peers, and superiors. An example would be how to negotiate with important organizational stakeholders (see Savage, Blair, and Sorenson, 1989).

Managing tasks refers to knowledge about how to do specific managerial tasks well, such as conducting a performance appraisal review. As such, each type of

the above forms of tacit knowledge represents different schema possessed by successful managers. Recent theoretical and empirical work has emphasized the importance of learning to manage oneself under the rubic of self-leadership (Manz, 1986; Manz and Sims, 1980), while traditional transactional theories of leadership (e.g., path-goal) emphasize managing others. The third component, task knowledge, is usually not emphasized in discussions of leadership (see Hunt, Boal, and Sorenson, 1990, for an exception). Based upon our earlier discussion, we believe this is a serious omission.

Wagner and Sternberg (1990) note that what one learns from experience, not experience per se, is sufficient for the acquisition of street smarts. How best to structure the environment to promote learning thus becomes a key task for the leader and by the leader. Feldman (1986) offers four suggestions for improving the likelihood that individuals will learn from experience. They are:

1. Increase the amount and immediacy of useful feedback. This can be enhanced by requiring that specific predictions as to results be made and by setting up data collection and interpretation systems to make feedback inevitable.
2. Create an environment that promotes learning. One way to do this would be to institutionalize the role of devil's advocate.
3. Hire or train employees to be experts in both substance and process.
4. Do not expect infallibility. Allow for failure. As Feldman (1986) says, "Everyone wants to learn, but nobody wants to be wrong" (p. 283). Besides experience, leaders can learn vicariously or through imitation, though these approaches appear to be more useful in stable, rather than turbulent, environments (cf. Huber, 1991).

CONCLUSION

In this chapter we argue that as presently conceptualized, SST leadership theory is both incomplete and situation-bound. It appears to be most relevant for leaders in bureaucratic organizations operating in a relatively stable environment. In this situation, strategic leaders are more likely to possess the requisite cognitive complexity and time perspective to perform the key uncertainty absorption role, through environmental interpretation and mapping role, as envisioned by SST theory. We have suggested that SST needs to (1) consider the behavioral flexibility, as well as cognitive complexity, of the leader; (2) focus on the degree to which the leader seeks and uses information as well as his or her capacity to process information; and (3) take into account the leader's knowledge and schemas. In addition, we have argued that a broader conception of time needs to be incorporated in SST. We believe the insights developed in this chapter can be used to strengthen SST theory.