"COGNITION AND ORGANIZATIONAL
ANALYSIS: WHO'S MINDING THE STORE?"

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Cognition and Organizational Analysis:
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Cognition and Organizational Analysis: Who’s Minding the Store?

This paper provides a framework for organizing research and theory on cognition as discussed in the organizational literature. Cognition is described in terms of structure, process and style. As a property of systems, and thereby independent of a specific level of analysis, cognition is then discussed across the individual, group and organizational levels of analysis. Several issues are raised concerning the state of theory development and measurement. Research strategies are proposed.
The increasing interest in the cognitive approach to organization analysis is based on the assumption that organizational behaviors are manifestations of cognitive phenomena. But beyond this assumption, analysts differ widely in their preferred level of analysis and methodological approach. The debate is raging as to the appropriate level of analysis. Many insist that "organizations don’t think only people do" (see Sims & Gioia, 1986) or that "organizations don’t cognize" (James, Joyce, & Slocum, 1988; Glick, 1988). Organizational theorists who think otherwise brave attacks of anthropomorphism and reification. Many who attempt to study cognition at the organizational level of analysis succumb to cross-level fallacies (Rousseau, 1985).

As the cognitive paradigm is becoming increasingly popular, one runs the risk of researchers carving out highly specialized niches, using models and methods borrowed from other fields, and becoming constrained by them. For example, by borrowing heavily from psychology many become convinced that the individual level of analysis is the most appropriate. Models and methodologies from psychology have been well developed, proven valid and reliable, so why not use them to study cognition within the organizational context? We feel that the individual-level approach will not advance the development of a cognitive paradigm in organizational analysis. If organizational theorists do not mind the store, who will?

In this paper we review and synthesize the organizational cognition literature in order to construct a map that will let us
see where we are and where we need to go. First, cognition is
defined as a set of core concepts referring to structure, process
and styles. Next, applications of these concepts at the
individual, group, and organizational levels of analysis are
reviewed. This framework helps to identify critical issues and
gaps in theory and in research. Research strategies are discussed
that will encourage developing the cognitive paradigm at the
organizational level of analysis.

Cognitive Approaches to Organization Analysis
The cognitive paradigm in organizational analysis flourished
following the publication of Cyert and March (1963). Organizations
were subsequently described as information processing systems
(Galbraith, 1974; Tushman & Nadler, 1978), social information
processing systems (Salancik & Pfeffer, 1978), bodies of thought,
of thinkers, and sets of thinking practices (Weick, 1979a),
multicephalous organisms capable of symbolic representation (Pondy
& Mitroff, 1978), interpretive systems (Daft & Weick, 1984), and
as minds (Sandeldans & Stablein, 1986). The classic study of
Bougon, Weick, & Binkhost (1977) on the Utrecht Jazz Orchestra
launched the study of cognitive or causal maps in organizations.
This approach was complemented by the study of differences in the
way information is processed, giving rise to the concept of
"cognitive style". The impact of cognitive structures, processes
and styles on behavior has also been studied. For example, risk
averse behavior can be elicited by labelling (categorizing) as
gain vs. loss or as threat vs. opportunity (Tversky & Kahneman,
1974; Dutton & Jackson, 1987).
Core Concepts of the Cognitive Paradigm

Regardless of the level of analysis, the study of cognition is always concerned with three types of phenomena: structure, process, and style.

Cognitive structures are representations of knowledge that contain and organize information. Information is sorted into categories based on similarities of attributes. Categories can be described in terms of width as broad or narrow. Construct systems refer to systems of categories which are related through non-causal relations (e.g., similarity, liking, hierarchy). They can be described as abstract or concrete, and in terms of complexity, differentiation and integration. This refers to the number of elements within a construct system and their interrelationships and has been demonstrated in managerial thinking through verbal protocol analysis (Isenberg, 1986) and in group as well as individual task performance (Driver & Streufert, 1969; Schroder, Driver & Streufert, 1967). Much research has been developed using methodology derived from Kelley (1955) Repertory Grid Techniques (Dunn, Cahill, Dukes, & Ginsberg, 1986; Ginsberg, 1987; Walton, 1986; Reger, 1987).

In causal systems, categories are related through cause–effect relations. Such systems can be described as tightly associated or loosely coupled, as in the case of habits or contingent events taken for causal events. Causal systems can be established by trial and error, empirical testing, or can be created by salience and contiguity, e.g., temporal sequencing. For example,
superstitious behavior is caused by erroneous perceptions of cause and effect based on contiguous events. Causal systems are also responsible for attribution phenomena (Kiesler & Sproull, 1982; Ford, 1985). Cognitive mapping techniques have been used to measure the degree of perceived individual control over events or elements (Weick & Bougon, 1986). These systems can be extremely complex as they contain feedback loops which can amplify the positive or negative effect of one variable on another (Maruyama, 1963; Masuch, 1985).

Cognitive processes refer to the search, selection and retention involved in information processing (Weick, 1979b). The manner in which information is sought, selected, organized, interpreted and stored is thought to reflect the nature of the task or the environment, e.g. levels of uncertainty, ambiguity, analyzability and routineness (Ungson, Braunstein, & Hall, 1981; Cowan, 1986; Daft & Weick, 1984; Dutton & Duncan, 1987; Perrow, 1970; Tushman & Nadler, 1978; Salancik & Pfeffer, 1978). Furthermore, the task itself often determines the level of analysis. For example, decision making is most often treated at the individual level (Slovic, Fischhoff, & Lichtenstein, 1977), while strategy formulation is considered an organizational level phenomena (Lyles & Mitroff, 1981). Scanning, however, has been discussed at both levels (Hambrick, 1982; Frederickson, 1984).

Cognitive process is also relevant to the discussion of systematic biases found in decision making (Tversky & Kahneman, 1974; Hogarth & Makridakis, 1981). Information processing capacity is limited by
the existing cognitive structures and processes (Miller, 1978; Broadbent, 1958; March & Simon, 1958; Huber, 1982; Schneider, 1987). As a result, simplification, retrospective rationalization, self justification, overconfidence, escalation and erroneous attribution of causality can occur (Schwenk, 1984; Hall, 1984; Huff & Schwenk, 1985; Beyer, 1981; Staw, 1981; Barnes, 1984). Furthermore, it has been argued that under conditions of threat, information processing becomes restricted resulting in rigidified behavior (Staw, Dutton, & Sandelands, 1981).

Notions of learning rely on cognitive change processes (Hedberg, 1981). Watzlawick, Weakland, & Fisch (1974) describe first order change as embedded in existing cognitive structures and processes, while second order change requires cognitive restructuring. This is also the basis of the difference between single vs. double loop learning (Argyris & Schön, 1978). These notions derive from Piaget's (1954) discussion of accommodation and assimilation in which information is assimilated to fit the schema or the schema is changed to accommodate the information.

Cognitive styles refer to the differences in the manner of selecting, organizing and interpreting information. For example, the Myers-Briggs Inventory (1962), based on Jungian theory, measures information gathering (perceptual) and information evaluating (cognitive) styles. This instrument has been extensively used for management development and some research, although there is much debate as to its validity and reliability (see Schweiger, 1983; Robey & Taggart, 1981; Taggart & Robey,
1981; Robey & Taggart, 1983). These styles have been related to problem formulation (Ramaprasad & Mitroff, 1984); information search (Blaylock & Rees, 1984; Herden & Lyles, 1981), design preferences (Mitroff & Kilmann, 1976), change strategies (Slocum, 1978), entrepreneurship and innovation strategies (Miller, Toulouse, & Belanger, 1985; Henderson & Nutt, 1980)

Cognitive styles at the individual level of analysis are thought to be closely linked to personality and behavior (Witkin, Dyk, Fason, Goodenough, & Karp, 1962; Gardner, Jackson, & Messick, 1960). Some commonly studied styles are: 1) field independence, which reflects the degree to which individuals' perceptions distinguish figure from ground, has been related to analytic vs. intuitive reasoning; 2) category width, which reflects the number of objects sorted per category and has also been measured by the outward limits within which a stimulus can be assigned to a category/structure; 3) cognitive complexity measures the degree of differentiation among constructs and their interrelatedness (also known as integrative complexity or multidimensional thinking); 4) intolerance of ambiguity which was initially demonstrated in perceptual tasks as premature closure has been shown to be related to dogmatism - i.e. close mindedness; and 5) locus of control, which reflects degree to which people feel that they have control over what happens to them, is related to attribution phenomena.

These styles have been examined in the management literature in terms of perceptions of task characteristics (Stone, 1979), confidence in decision making (Gul, 1984; 1985), information
search/selection in merger & acquisitions (Blaylock & Rees, 1984), openness to information (Davidson, 1977), company growth and internationalization (Bradley, 1984), policy analysis (Baum, 1982), perceptions of environmental uncertainty and organizational need for change (Paine & Anderson, 1975), entrepreneurship and strategies of innovation and risk taking (Miller, Kets de Vries, & Toulouse, 1982; Miller & Toulouse, 1986).

Level of Analysis

**Individuals as units of analysis.** Most of the cognitive organizational literature focuses on the individual level of analysis (for example, the majority of the contributions in Sims and Gioia, 1986) as a consequence of the borrowing from psychology. The organizational literature typically refers and defers to authors like Abelson (1976), Bartlett (1932), Fiske and Taylor (1984), Kahneman, Slovic & Tversky (1982), Kelley (1955), Neisser (1976), and Nisbett & Ross (1980). Several fields within psychology serve as suppliers of concepts, hypotheses and methodologies. For example, Tolman's (1925) experiments with mice provides to basis for discussions of cognitive maps. Hebb's (1949) description of the psychophysiology of the brain provides the basis for Sandelands & Stablein's (1986) discussion of the "organization mind".

Response tendencies or behavior of individuals in organizational settings is explained or inferred by way of individual cognition. For example, individuals are given scenarios, cases, simulations in which they respond to or indicate how they would respond to a
given situation in which some cognitive map is elicited which becomes the independent variable. Or, cognitive structures are inferred based on observed behavior. Individual maps are often aggregated and said to represent group and/or organizational level phenomena. Problems arise when these individual phenomena are attributed to other levels of analysis. This raises issues of whether aggregation adequately reflects organizational level phenomena (Glick, 1985; Rousseau, 1985).

Groups as the level of analysis. When individuals join and participate in groups, they bring with them their cognitive maps that may then be modified according to group processes and pressures. The Asch (1955) experiments demonstrated that individual perceptions could be brought in line by group pressures to conform. This was also demonstrated in increased communication aimed at deviants (Schacter, 1951) until they are discredited or ignored (Janis, 1972). Group cognition evolves through members' interaction with the event and with each other through communication (Donnelon, Gray, & Bougon, 1986), social interaction (Gray, Bougon, & Donnellon, 1985) and politics (Walsh, Henderson, & Deighton, 1986). In this manner, reality (behaviorally enacted) is defined, i.e. socially constructed.

Groups dynamics can encourage sharing maps to the extent reality is ignored or reinterpreted as in Janis (1972) discussion of groupthink. Bion (1961) found that group members come to share fantasies about "raison d'être". In Festinger, Riecken, & Schacter's (1956) example, the Seventh Day Adventists' prediction
of the end of the world, the day which came and went unnoticed, was reinterpreted to reinforce the strength of the group’s belief. Sapienza (1985) demonstrates that metaphors (structures) emerge in group discussions about environmental issues that then determine the strategy pursued. Methods for surfacing assumptions (structures) about organizational stakeholders to evaluate their validity and then impact on strategic decision making groups have been described (Mitroff, Emshoff, & Kilmann, 1979; Finney and Mitroff, 1986).

Group cognition can be measured as an aggregation of individual cognitive structures, as a composite derived from group interaction and consensus, or as an assemblage (Weick & Bougon, 1986). For example, in the UJO (Utrecht Jazz Orchestra) case, group level maps were created through aggregation of individual (average) cognitive maps (Bougon et al., 1977). Composite cause maps are discussed, agreed, and argued such that the group process is considered in crucial factor. An example of assemblage is that of Hall’s (1984) study of the Saturday Evening Post in which he created an organizational level map based on the group maps of departments and their interactions.

In group-level analyses, the cognitive phenomena of interest are conceptualized as attributes of groups. The relationship between individual and group level cognition however is not necessarily clarified. Maps are often considered to be "shared" or at least publically agreed upon. This leaves unanswered the question as to the extent to which conformity reflects true change in structures
at the individual levels. Walsh et al. (1986) address this issue in terms of coverage and consensus which reflects the scope of domain and the amount of overlap. The different impact or influence that individual members have on the outcome of group decisions provide a measure of political processes (Walsh & Fahey, 1984). Also the relationship between individual and group cognition has been explored in terms of cognitive styles, e.g. levels of integrative complexity (Driver & Streufert, 1969).

Organizations as units of analysis. Cognitive phenomena are here conceptualized as properties of the organization. Specific organizational cognition, such as scanning, is thought to affect strategic behavior (Hambrick, 1982). Perceptions of the environment relate to the degree of strategic analysis and innovation (Miller & Friesen, 1983). Organization adaptiveness is also considered to be a function of managerial perceptions (Daft & Weick, 1984; Hedberg, Nystrom, & Starbuck, 1976; Paine & Anderson, 1978).

In the corporate culture literature, discussions of values, beliefs, assumptions, myths, ideologies express the notion that these phenomena exist at the organization level of analysis (Smircich, 1983; Schein, 1985). Beliefs determine design (Sproull & Sproull, 1981); ruling myths create the general strategic framework (Starbuck, 1982); and organization stories serve as scripts i.e. prescriptions for behavior (Martin, 1983). These stories, supposedly reflecting the uniqueness of an organization's "culture", were found to be paradoxically similar (Martin,
Feldman, Hatch, & Sitkin, 1983). The question of differences at the organizational level of analysis has also been addressed in terms of the types of beliefs (structures) (Schneider & Shrivastava, forthcoming) and the characteristic ways of processing information (Shrivastava & Schneider, 1984).

**Issues in Organizational Cognition Research**

In the previous section we have discussed the key aspects of cognitive phenomena at several levels of analysis as described in the organizational literature. Table 1 summarizes our framework.

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**Insert Table 1 here**

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By looking at the map we can see that there are some gaps that need to be explored. Much of the discussion is at the individual level of analysis if not in theory then in measurement. In what follows we will discuss some of the reasons for those gaps and some of the problems encountered in trying to fill them.

**Attack on "Anthropomorphism" and "reification"**

To talk about cognition at levels of analysis above individuals immediately triggers charges of anthropomorphism (i.e., individual human characteristics and processes are attributed to other levels of analysis), and of reification. This recalls older controversies about whether organizations have goals (Simon, 1973), or whether organizations can display behavior (Weick, 1979b).
Those who claim that only individuals have certain properties, e.g., "goals", "behavior", "thinking", rarely define the meaning of these properties in a testable way. Cognitive science and artificial intelligence have defined the concepts of cognitive structure, process, and styles in a level-independent way. Campbell (1974) has illustrated how cognition, i.e., structure (retention), and information processing (variation and selection) can be inferred from and tested against observable behavior at many different levels of analysis. This renders anthropocentric the argument of anthropomorphism.

The second charge against using concepts like cognitive processes at higher levels of analysis is that this leads to reification, which means "to treat an abstract concept as if it referred to a thing" (Weick, 1979b, p. 34). However, reification at the individual level is also possible. Concepts like knowledge, memory, and information processing become "things" (just like personality traits), and these "things" are then used to "explain" observable behavior of individuals. This appears to be an obstacle to the conceptualization of cognition at group and organizational levels although not at the individual level.

The obstacle disappears as soon as one ceases to reify cognition at the individual level. Concepts like memory and information-processing cease to be "real" objects and become hypothetical constructs. Observable behavior mainly serves to suggest (context of discovery) and test (context of verification) models of these constructs. The concept of behavior is itself an
abstract concept which can be applied at all levels of analysis (see Ackoff & Emery, 1972, for a level-independent systematic development of a conceptual and terminological system). Underlying the different levels of analysis and corresponding scientific disciplines is the assumption that each structural level of social reality requires its own level of description.

Terms and constructs at different levels of analysis.
The same terms are used to refer to cognitive phenomena at different levels of analysis. Examples are beliefs, schemas, information processing rules, memory, learning, and cognitive complexity. In our view, the cognitive paradigm requires at the same time a certain uniformity in terminology across levels of analysis, and a diversity. The convergence of cognitive psychology and artificial intelligence illustrates the benefits of a common terminology that reflect abstract essential properties of cognitive phenomena.

Differences between constructs at different levels arise from two sources: different measurement procedures and different nomological relations. The measurement procedures used influence the meaning of a scientific concept. For example, the measurement tasks through which properties of individual memory are tested is very different from the way properties of organizational memory might be tested. A construct is also defined through the network of nomological relationships; if levels are independent, then isomorphism of relationships across levels should be the exception. Rousseau (1985) discusses the differences between
individual and group learning in this regard.

Measurement and levels of analysis.
Most empirical studies of cognition at levels above the individual level are based on measurement below that level of analysis. Examples at the group level are Schroder et al. (1967) and Bougon et al. (1977). In these studies, information concerning individual group members is combined and the result interpreted as a group property. Hall's (1984) study uses departmental cause maps to reconstruct organizational cognitions. Few studies have measured organizational cognition directly at the organizational level. Examples are Bettman and Weitz (1983) who used annual reports, and Bartunek (1984) who based her study on official company documents. The use of lower-level information to create higher-level measures is questionable, because it raises ambiguity about whether one is truly measuring higher-level phenomena. Rousseau (1985) recommends that focal-level variables should be preferred to aggregated variables.

Direct vs inferred measurement of cognition.
The major difference in measurement methods is between those which directly question subjects about their cognitions and those which are based on inferences. Examples of studies using direct measurement are Bougon et al. (1977), Ford & Hegarty (1984), Isenberg (1986) and Salancik & Porac (1986). Other studies infer cognition from observed behavior (Bowman, 1963; Hammond, Stewart, Behmer, & Steinmann, 1975). However, Blake, Hammond, & Meyer (1973) have compared self-reports of judgment policies with the
policies inferred from subjects' behavior and found substantial divergence.

The researchers using direct measurement tend to interpret their results as reflecting the subjects' true cognitions. This interpretation is likely to be invalid for a number of reasons. First, subjects often lack awareness of the knowledge that underlies their own behavior. Self-reports are more likely to produce "espoused theories" than "theories-in-use" (Argyris & Schon, 1978). Second, subjects may not possess any precomputed cognitive structures but construct ad hoc representations (Kahneman & Miller, 1986). Third, even if they possess such precomputed structures, these may not be accurately retrieved because of availability and other heuristics (Tversky & Kahneman, 1974). Fourth, subjects may not be willing to disclose their true thoughts for reasons related to self-justification and impression management (Chatman, Bell, & Staw, 1986; Tetlock, 1985).

There exists little empirical evidence assessing the reliability and validity of direct measures (see Bougon, 1986, for an exception). The automatic identification of the measures with the constructs ("definitional operationism") leads to an atheoretical, reifying view of cognition. In the inferential approach, the measurement methods are seen as providing fallible data, the interpretation of which requires a nomological network. Studies which infer cognition from behavior also avoid the criticism that cognition is irrelevant for behavior. The major risk in an inferential approach is that alternative constructions of
cognition might explain the data just as well if not better. But this risk is inherent in science. Schein's (1985) inferential, iterative method for measuring culture in organizations may provide a useful approach to studying cognition.

Research direction: Linking levels
In our view, studies of individual cognition have organizational relevance only in the context of research involving several levels of analysis. Individuals do not necessarily share or have similar maps for group or organizational behavior to occur (Weick, 1979b; Donnellon, Gray, & Bougon, 1986; Finney & Mitroff, 1986). The social judgment paradigm also offers evidence for this as Brehmer (1976) reported differences between overt (group shared) vs. covert (individually held) judgment policies, a widely replicated finding.

One research direction relates group or organization-level variables to individual cognition (Calder & Schurr, 1981). Examples of relevant questions are: how do organizations influence the development of individual schemas (March & Simon, 1958)? How do organizations guide the acquisition of individual expertise in different organization-relevant domains (Dearborn & Simon, 1958)? How do organizations influence the instantiation of schemas that guide both private thought and public expressions (Chatman et al., 1986; Tetlock, 1985).

A second research direction concerns the effect of individual cognitive processes on cognitive processes at higher levels of
analysis. Most commonly this involves looking at the influence of the CEO or founder on organizational culture or strategy (Kets de Vries & Miller, 1984; Gupta, 1984; Schein, 1985; Siehl, 1985; Hambrick & Mason, 1984). Another common example is the discussion of the dominant coalition (group), i.e. "dominant logic", on strategic behaviors (organization level) (Prahalad & Bettis, 1986). The research reported by Schroder et al. (1967) is an example where characteristics of individual cognitive functioning (e.g. integrative complexity) were related to group phenomena. Brehmer's (1976) research demonstrates the degree of agreement individual vs. group level maps.

A third avenue for research are the reciprocal interactions of cognition at several levels of analysis. These interactions are probably most easily observable during periods of change and paradigmatic shifts in groups and organizations. For example, Staw et al. (1981) discussion of the effects of threat on information processing at several levels within the organization illustrates the logic of this type of research. However, research has to go beyond descriptions and demonstrate how the phenomena at the different levels is mutually influencing.

CONCLUSIONS
Providing a framework to classify cognitive phenomenon discussed in the organizational literature clarifies important issues that need to be addressed in the field. First it demonstrates that organizational analysts have been playing it too safe. We have borrowed from individual psychology because it has been "tried and tested". We have avoided anticipated accusations by reviewers of
anthropomorphism and reification by adding facile disclaimers such as "Of course organizations don't think, only individuals do". Rather than sins of commission we choose sins of omission. We avoid guilt by avoiding dealing with cognition at the organization level of analysis. This creates inconsistency in our theoretical arguments as well as when we move towards measurement.

It's time to become legitimate and to confront cheap criticism by reviewers who use anthropomorphism and reification as easy outs. Our own responsibility, however, is to carefully develop theory and measurement. This means establishing conceptual equivalence between levels of analysis, developing models for understanding the interrelationship of levels of analysis, and developing the measurement capability at the focal level of analysis.

The cognitive approach to organizational analysis holds much promise, but a substantial reorientation of effort is needed to fulfill it. The redirection involves: 1. A concentration on what is organizational about individual cognition. 2. The study of cognition at group and organizational levels. 3. Developing models linking levels to demonstrate the interaction across levels. Success in all of these directions requires greater efforts at conceptualizing cognitions in an organizational context, and the development of reliable and valid measurement instruments.
Table 1
A Framework for Classifying Organizational Cognition

INDIVIDUAL

STRUCTURE

beliefs (Sproull & Sproull, 1981)
cognitive maps
  (Bougon et al., 1977;
   Weick & Bougon, 1986;
   Ford & Hegarty, 1984)
cause maps (Hall, 1984)
schema(ta)
  (Weick, 1979a;
   Walsh, 1984; Schwenk, 1985)
scripts (Gioia & Poole, 1984)
implicit theories
  (Walton, 1986; Brief & Downey, 1983)
knowledge systems (Shrivastava, 1984)
distilled ideologies (Salancik & Porac, 1986)
taxonomic structures (Porac & Thomas, 1987)

PROCESSES

assiliation/accomodation (Gioia, 1986)
attribution (Kiesler & Sproull, 1982;
  Huff & Schwenk, 1985)

Biases (Tversky & Kahnemen, 1974;
  Hogarth & Makridakis, 1981)
limited capacity (Miller, 1978;
  Broadbent, 1958)
simplification (Schwenck, 1984)
justification,
retrospective rationalization (Staw, 1981)
escalation
  (Staw, 1981; Schwenck, 1986; Whyte, 1986)

STYLES

Myers-Briggs (1962)
field independence (Gul, 1983)
category width (Gul, 1985)
locus of control (Miller et al, 1982)
tolerance of ambiguity (Gupta, 1984)
cognitive complexity; multidimensional thinking
  (Streufert & Driver, 1969; Isenberg, 1986;
   Schroder et al., 1967)
managerial frames of reference
  (Mitroff & Shrivastava, 1983)

GROUP

STRUCTURES
basic assumptions (Bion, 1961)
metaphors (Sapienza, 1985)
ideologies (Dunbar et al., 1982)
negotiated beliefs (Walsh & Fahey, 1984; Walsh et al., 1986)
coincident meaning (Gricar et al., 1984)

PROCESSES

groupthink (Janis, 1972)
strategic assumption analysis (Mitroff et al., 1979)

STYLES

integrative capacity (Driver & Streufert, 1966)
functional domain (Dearborn & Simon, 1958)

ORGANIZATION

STRUCTURES

bodies of thought (Weick, 1979a)
cognitive systems (Weick, 1979b; Daft & Lengel, 1986)
cognitive maps (Weick, 1979b; Bougon et al., 1977)
cause maps (Hall, 1984)
influence diagrams (Roos & Hall, 1980; Diffenbach, 1982)
interpretive systems (Daft and Weick, 1984)
ideologies (Beyer, 1981)
mind (Sandelands & Stablein, 1986)
ruling myths (Starbuck, 1982)
myths (Boje et al., 1978)
symbols (Bougon et al., 1985)
beliefs (Sproull & Sproull, 1981)
basic assumptions (Schein, 1985; Schneider & Shrivastava, forthcoming)
decision-rules (Cyert and March, 1963)

PROCESSES

search-selection-retention (Weick, 1979b)
input-throughput-output (Katz & Kahn, 1966)
information processing systems (Galbraith, 1974; Miller, 1978)
multinationals as examples (Egelhoff, 1981; Keegan, 1972)
sensemaking (Weick, 1979b)
threat rigidity cycles (Staw et al., 1981)
sets of thinking practices (Weick, 1979a)
attribution (Bettman & Weitz, 1983)
learning (Hedberg, 1981; Duncan & Weiss, 1986;
Fiol & Lyles, 1985; Shrivastava, 1983)

STYLES
frames of reference (Shrivastava & Schneider, 1984)
comprehensiveness (Frederickson, 1984)
characteristic ways of
perceiving and believing (Schein, 1985)
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## Table 1
A Framework for Classifying Organizational Cognition

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<td>basic assumptions (Blon, 1961)</td>
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