Environmental Scanning in High Velocity Environment

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Abstract

Environmental scanning is the process of acquiring , interpreting and controlling flows of environmental information by the organizations in order not to be blindsided by threats, unprepared for opportunities, or ineffective in managing interdependencies with resource controllers and other important stakeholders. High velocity environment refers to a phenomenon in industries that exhibit perpetual state of change. The change triggering events are so dramatic that major portions of prior cognitive frameworks of the environment, which are traditionally highly resistant to change, are rendered ineffective in helping managers make sense of and act within the environment. In high velocity environments, quick adaptation to the environmental changes which in turn require quick noticing and interpretation of the environment stimuli, is a prerequisites for survival. This paper tries to understand the process of noticing and interpreting environment in an organization in a high velocity environment with the help of cognitive perspective of the environment where organizations enact on their environment.

1. Environment

Environment is infinite and includes everything outside the organization. However, it is generally considered to include only those aspects to which organization is sensitive and must respond to survive i.e. those which must be taken into account while making strategic decisions. Factors affecting strategy may arise from either outside or inside the organization, as well as from current or potential customers, competitors,

suppliers, or regulators. The three crucial elements that affect the nature of an organization's environment are

1. complexity of the environment: the number and dissimilarity of environmental actors, as well as their degree of interconnection (Dess and Beard 1984)
2. resource dependence which determines an environment's ability to sustain organizational growth (Starbuck 1976 as quoted in Sutcliffe, 2000)
3. dynamism or the speed with which the environment changes (Dess and Beard 1984)

Mintzberg et. al. (1998) describe ten different schools of thoughts but one of the common threads that link all the schools of thought is the acknowledgement of the importance of environment. The organizations are considered as using strategy to deal with changing environments.

Organizations acquire, interpret, and control flows of environmental information in order not to be blindsided by threats, unprepared for opportunities, or ineffective in managing interdependencies with resource controllers and other important stakeholders (Sutcliffe, 2001)**.** Few managers would argue with the idea that the collection and analysis of information is one of the key elements in managerial decision making. Some scholars (e.g. Pfeffer and Salancick, 1978, 14; Starbuck and Milliken, 1988; Weick, 1974: 117 as quoted in Vodosek and Sutcliffe, 2000) argue that information gathering and processing are crucial to the success of the organization, even more crucial than strategic decision making itself. The activities relating to information processing serve other purposes also viz. help organizational members make sense of their activities (Daft and Weick 1984, Weick and Daft, 1983),

or act as symbols and signals that create meaning or legitimacy (Feldman and March 1981, March and Sevon 1984).

An idea of the importance of information processing can be gauged from the magnitude of spending on information collection. According to a report published by the American Marketing Association, in 200l, U.S. corporations spent $5.5 billion on market research alone--which doesn't include expenditures on software or other information technology (Sutcliffe and Weber 2003).

If we have insights on what to pay attention to and what to ignore, it could then be used to pinpoint the type of data that needs to be collected and the type of analysis that needs to be done. Organizations could then save large amount of time and resources currently spent on collecting and analyzing data that never enter the decision making process. This has become particularly important in case of fast changing environments also known as high velocity environments. Over the last ten years researchers and practitioners have been equally intrigued by the prevalence of fast changes in the environment and the resulting turbulence.

2. High Velocity Environment

Hypercompetition or high velocity environments represent a state of competition with reduced periods of competitive advantage for firms and rapidly escalating levels of competition (Brown and Eisenhardt 1997, 1998), Eisenhardt and Bourgeois (1988), and D'Aveni (1994, 1995) suggest that hypercompetition is not a temporary phase in industries as have been studied in the past. It refers to a phenomenon in industries that exhibit perpetual state of change. The competition levels keep on escalating because of rapid changes in technology regulation and consumer preferences. These industries also have relative ease of entry and exit as a result of which new competitors emerge

overnight. The competitive advantage for firms in these industries is short lived as a result and hence, above average profits cannot be earned based on single innovation or resource advantage. The most significant threat is the steady pace of competence-destroying change that occurs, and the limited ability of managers to foresee the nature of these changes (Brown and Eisenhardt 1998, Eisenhardt and Bourgeois 1989, D'Aveni 1994, Thomas 1996). Besides this uncertainty the firms in hypercompetitive industries face enormous complexity not only due to high number of elements constituting its environments but also because of unpredictable ways in which these elements interact (Bogner and Barr, 2000).

The peculiar feature of high velocity environments is the interaction between the elements of dynamism and complexity. As complexity increases, uncertainty increases because it becomes difficult to understand the cause-effect relationship in both internal and external environments. The complexity arising from diverse workforce, global markets, dispersed production locations, distributed knowledge, government regulation etc. also increases the number of factors that must be taken into account. Add fast changes to these and what we end up with is the need to manage the resulting chaos.

For example, firms that develop and sell computer hardware have seen an endless series of major shifts in the competitive environment since the mid-1970s. In the 1990s, the rise of LAN-based networks, increasingly powerful microchips, the internet, and JAVA programming language, to name just a few, have combined to create multiple openings along the value chain that continue to interact with each other in unpredictable ways. The emerging technologies, unexpected user patterns, and complex interactions among variables that drive this turbulence produce

unforeseeable outcomes. Furthermore, the rapid pace of change, together with interactions throughout software, hardware, and related technologies, is expected to continue into the future (Bogner and Barr, 2000).

The prevalence of high velocity environments is evident when we look at the necessity to increase the speed with which companies assess their competitive environment, develop new products, and bring them to market. In fact, the management press (e.g. Dimancescu and Dwenger 1996; Jones 1993; Meyer 1993; Stalk and Hout 1990; Vasey 1991as quoted in Vodosek and Sutcliffe, 2000) has identified the speed at which companies bring their product to market as one of the most critical issues for companies today. Empirical studies appear to support this contention. For example, Womack, Jones, and Roos (1990) have documented this importance of speed for competitiveness in the automobile industry. In addition, Eisenhardt and colleagues (Bourgeois and Eisenhardt 1988; Eisenhardt 1989; Eisenhardt and Tabrizi 1995; Schoonhoven, Eisenhardt, and Lyman 1990) have looked extensively at the effect of speed on competitiveness of companies in high-velocity environments. They found that fast decision making by top decision makers based on rich real-time information (Bourgeois and Eisenhardt 1988; Eisenhardt 1989) is closely linked to a company's performance. These accounts provide evidence that today's organizations operate in an "age of speed" which requires organizations both to make decisions faster and to implement them more quickly. (Vodosek and Sutcliffe 2000)

Researchers are unanimous that these environments require more responsive form of organizing. Responsive organizations are characterized by sensitiveness to environmental stimuli and ability to act quickly. Responsiveness not must means

being reactive; it also requires that the organization behave more proactively (Clair, Quinn and O'Neill, 2000).

3. Limitations of Traditional Approaches of Assessing Environment

Managers trying to make decisions in such environments find that these ongoing conditions do not conform to more established understandings of environmental scanning. The traditional approaches to assessment also known as linear adaptive models involve use of a checklist to assess the environment. They mainly involve finding out the governmental changes – new legislations, new enforcement priorities, competitive changes – adoption of new technologies, new competitors, price changes, new products, supplier changes – changes in input costs, supply changes, changes in number of suppliers, market changes – new uses of products, new markets, product obsolescence etc. (Power et al (1986)as quoted in Mintzberg et al (1998)- strategy safari p 29) or using some framework like porter's five forces framework etc. (Pitkethly, 2003)

Linear-adaptive models stress such factors as goals, plans, and actions that are designed to steer the organization towards its objectives. However, the linear-adaptive model is not well suited to understanding hypercompetitive industries since in the absence of well defined business models for projecting revenues, managers are unable to set concrete goals, let alone know when they have attained them. The situation is similar to the case of an industry starting *ab initio* (Anand, Hoffman, and Novak, 1998). Managers in such industries operate on the edge of their ignorance. In hypercompetition the rapidly occurring and significant events radically undermine the usefulness of major concepts within prior cognitive frameworks of competition

(Reger and Palmer 1996). The events are so dramatic that major portions of prior cognitive frameworks of the environment, which are traditionally highly resistant to change, are rendered ineffective in helping managers make sense of and act within the environment. More specifically, we suggest that while cognitive frameworks are likely to remain rooted in some generalized understanding of product, technology, and firm identity, many of the traditional constructs managers use to anchor beliefs about the industry (input factors, buyer preferences, identity of rivals, substitutes, and potential entrants, and relevant resource accumulation) are no longer helpful markers on the cognitive maps used by managers to guide firms through the competitive environment. Managers do have a general understanding of which factors will have some importance for future competitive advantage and why; it is based on this level of understanding that managers identify the potential long-term profitability of a market and make commitments to new competitive positions. Beginning in the early stages of hypercompetition, however, the dynamics of market competition mean that there exists significant uncertainty ex ante about how those factors will be organized or about what roles particular factors will play in competition, and for how long. Thus, while firms know they need to make large resource allocations to a certain function, such as R&D, the environment is so uncertain that firms are unable to identify with a high degree of certainty which technical capabilities, or other investments, will be "winners" Managers must spend considerable energy in field construction, that is, in ensuring that the different elements that make up an organizational field (DiMaggio & Powell, 1983) meaningfully. So the checklist approach traditionally followed is not applicable. Managers in hypercompetition struggle to understand the spread of about a new product, service, organization, or industry through managers' symbolic language

behavior. They also find it difficult to manage the process by which key stakeholders accept a venture as appropriate and right.

Porter's five forces framework is not of much helpful either. Changes in technology and entry of a diverse set of new competitors mean that the factors of production in the market are constantly changing. This is in sharp contrast to the homogenizing, efficiency-seeking behavior that Structure-conduct-performance (which constitutes theoretical base for Porter's five forces framework) models assume when they indicate markets tending toward a steady or equilibrium state (Bain 1959). The managers typically have difficulty articulating barriers, the intensity of competitive rivalry among firms, and even the relative power among and buyers. This is because field boundaries in terms of markets, rivals, and partners are difficult to assess (Anand, Hoffman and Novak 1998). Managers in hyperturbulent industries do not have relatively stable factors of production on which they can focus. Changes are quite large in scale and scope (major changes in technology, entry of powerful new competitors) and of long duration. Indeed, successful firms are those that can regularly disrupt the industry status quo (D'Aveni 1994). Yet, managers still must be able to assess the environment in such industries as the pioneering firms can have a tremendous impact on the trajectory of an industry's evolution (Aldrich & Fiol, 1994). In such environments early successes are quickly amplified, while early failures are rapidly dampened.

4. Why use Cognitive Framework for Environmental Scanning

This paper deals with the question of how organizations know their environment and cognition, by definition, has to do with the "act or process of knowing" (random house dictionary). Cognitive science suggests that how individuals make sense of and

act within their environments is tied to their cognitive frameworks or mental models. These frameworks can be defined as mental representations of things or events (Weick 1990, 1995). They are developed over time through experience, vicarious learning, and direct communication from others (i.e., teaching) (Fiske and Taylor 1991). The development of these frameworks is path dependent; the past shapes the template for understanding the future.

Cognitive frameworks influence what is noticed by making some stimuli more salient than others; they provide rules and relationships that influence the interpretation of what is noticed, and they suggest what actions should be taken by which individuals (Galambos et al. 1986). When confronted with stimuli, these frameworks enable managers to "comprehend, understand, explain, attribute, extrapolate, and predict" (Starbuck and Milliken 1988 p. 51 as quoted in Bogner and Barr, 2000).

Though essentially an individual-level concept, cognitive frameworks are influenced by the interactions individuals have with others. These interactions give rise to commonly shared ideas, or concepts. As interactions occur among a number of different individuals within a given social grouping, the commonly shared ideas begin to take on an existence of their own, independent of the individuals that created them, and we begin to talk about frameworks existing at higher levels. These "shared belief systems" make coordinated activity possible by providing a common framework for noticing and interpreting new stimuli and for coordinating appropriate action. For firms operating in a competitive marketplace, interactions that lead to shared frameworks occur among individuals within the firm. At the within-firm level, interactions among individuals give rise to firm-level frameworks. Over time, individuals within the firm share experiences and knowledge with one another, and a

base of common knowledge and "views of the world" begins to form. (Barr and Huff 1997).

Research suggests that when exposed to similar stimuli, top managers in different organizations will form different interpretations of the same issue (e.g. Meyer, 1982). Daft and Weick (1984) argued that these differences may be, in part, the result of frameworks, or contexts, that direct information, attention, and interpretation. In other words, top managers' interpretations are a product of multiple sources of influence, and these sources may emanate from different levels of the managers' overall contexts. Thomas and McDaniel (1990) found that in addition to an organization-level context embodied in such factors as strategy, the structure of a top management team (a group-level contextual feature) accounted for interpretation variance across top managers from different organizations.

As past research has shown (e.g., Milliken & Lant, 1991), top executives facing the same objective stimuli often perceive their organizations as facing differently defined environments. The importance of this observation to strategic management is that responses to an organization's environment, and ultimately, the organization's performance, are highly dependent on these different interpretations (Dutton & Duncan, 1987). Previous research has further demonstrated that these interpretations are susceptible to systematic biases and errors rooted in a variety of sources and levels of analysis (Thomas and.Shankster,1994).

The traditional approaches to environmental scanning treat cognition as a black box i.e. do not acknowledge and appreciate the decoupling between availability of information from the issue of whether decision makers pay attention to it or not. Paying attention to information, in turn is decoupled from the issue of whether this

information becomes part of the decision making process (Vodosek and Sutcliffe 2000). What information managers pay attention to and what information they ignore and why is largely unknown if we follow the rationalist traditional approaches to environmental scanning. Furthermore the mechanisms through which managers incorporate the information that they have focused on into their decision have to be explored in order to truly appreciate the problem of environmental scanning in high velocity environments.

It is only the cognitive perspective with its interpretive and enactment stances that throws light on the actual process of how stimulus in the environment is noted and when it is taken till the decision making stage. It is hence obvious that the best answer about environmental scanning in high velocity environment would be found in cognitive perspective. Moreover as Rajagopal and Spreitzer (1997)contend "The only perspective in which the role of managerial cognitions …is explicit, the cognitive lens perspective….. Managerial cognitions are variously defined as knowledge structures, core beliefs, cause maps, and schemas (as quoted in Walsh, 1995). In the cognitive model, the interpretive processes through which managers enact the environmental/organizational context are emphasized."

5. Cognitive Perspectives of Environment

In addition to explaining the heterogeneity in behavior to same stimuli by similar firms, cognitive theories also expand our view of the environment. There are three perspectives of environment viz. objectivist, perceptual or interpretevist and enactment. The latter two can be said to be a part of the cognitive perspective.

Objective Perspective

Under the objectivist perspective environment is said to consist things outside the organization. It includes every event and element which has any effect on the activities of the organization. Although, one can conceive an organization's environment to encompass every event that affects it, only the crucial ones either in terms of magnitude of occurrence, or their impact or in terms of frequency of occurrence. There dimensions typically considered for analyzing the environment of the organization are

- stakeholders
- components
- attributes
- industry characteristics

The environment is independent of the organization and its members. The dimensions mentioned above, events and the processes in the environment are concrete, measurable, and determinate. These can be objectively found out. Any relevant change in the environment requires changes in the organization and the organization needs to adapt for survival. The goal of managers is to adapt to things "out there".

Interpretevist Perspective

The objectivist perspective considers that the data from the environment can be viewed and scanned without any cognitive limitations. However, the enormity of the environment brings to spotlight the cognitive limitations of the individuals and organizations. Though the environment generates the data, it can be converted into information for decision making which depends on the perception and interpretative schemas of the managers. This perceptual or interpretive perspective brings to fore the importance of perceptions and interpretations. So the environmental data needs to

be interpreted and this equivocation needs to be reduced. The environment is still considered to be independent of the organization and its members, however, there is now a distinction between reality that exists out there, and what managers make of the data. The goal of managers is to reduce the complexity, uncertainty, and equivocation in scanning the environment. The focus, thus, shifts to improving accuracy of what managers' see, improving their perceptions, reducing equivocation etc.

An example would that of a game of twenty questions (based on Daft and Weick, 1984). In this game one person leaves the room and the remaining people select a word that the person has to guess when he/she returns, and the only clue given about the word is whether it signifies an animal, vegetable, or mineral. The person trying to guess can ask up to 20 questions that can be answered in yes or no in an effort to guess what the word is. Each question is asked to find some new information about the correct word. It is the perception and interpretation of the person trying to guess the word that plays a decisive role. Organizations similarly try to find out what the consumer want through market surveys, personal interviews, demographics data etc. Here scanning is more a sort of discovery.

Enactment Perspective

The third perspective is enactment perspective. Here the dichotomy between the reality and the perception is more elaborate. Instead of recognizing the dichotomy between the organization and its environment, the dichotomy between the environment as a stream of experience and what managers' make of this experience is recognized. Here the environment is considered to be an act of invention. This does not mean that there are no real objects. The environment is considered as an ambiguous field of experience devoid of threats and opportunities. The enacted environments contain real objects such as machines, pipes, valves etc. The existence

of these is not questioned. What is questioned is the significance and the meanings attached to these. A machine can be viewed as just consisting of atoms, another piece of metal etc, however, it is considered a machine for some purpose. People are said to exist in two worlds the world of events and things and the world of words about events and things. The central question in enactment perspective is the abstracting and symbolizing process that relates the two worlds. The process necessarily results in inaccurate map of the same reality because the words changes continuously and no two events can be said to be the same. The above two perspectives are not of much help when one moves from simple, observable processes to complicated interpretations of events spanning time and involving multiple observations, wherein the necessity of summarizing selecting, discarding and simplifying become prominent. As one deals with things that are not directly observable but must be inferred from observables what Kaplan (1964) calls type III concepts – constructs) there is no recourse but to use accumulated knowledge about how the world operates to make sense out of it. There are no meaning that world gives as valid. There are only created beliefs, more or less supported by what one considers as evidence, and held with more or less conviction or doubt. Environment is not inherently meaningful or predefined.

In the above two perspectives the environment was said to exist independent of the observer. However, under enactment perspective it is recognized that "there is no methodological process by which one can confirm the existence of an object independent of the confirmatory process involving oneself." (Weick 2001,p. 184)

The meaning is created by the observer.

There is no such thing as experience until the manager does something. Passive reception of a shower of inputs is not synonymous with having an experience.

Experience is a consequence of an activity. The manager literally wades into the swarm of "events" that surround him and actively tries to unrandomize them and impose some order. The manager acts physically in the environment, attends to some of it, ignores most of it, talks to other people about what they see and are doing. As a result the surroundings get sorted into variables and linkages and appear more orderly. (Weick , 1979, p 148)

Hence "Information is a variable and becomes meaningful Decision makers give meaning to stimuli that was data before it became stimuli. Then they take actions which become input for their future actions and other's actions." (Sutcliffe, 2001)

It is important to note the difference between enactment and perception/interpretation. Under interpretation there is a presumption that the object to perceive/interpret is evident (Weick, 1995, p.14) No such presumption is made under enactment perspective.

Unlike objectivist and perceptual perspective which presume a real material environment whose boundaries are clearly distinct from the concrete material organization here the boundaries are not given importance. What is inside and what is outside is clearly distinguished in the above two perspectives. The criterion often is legal ownership. However, the moment the notion of control separate from ownership is introduced confusion builds up about the boundary. This brings attention to shifting of boundaries. Similarly when other criterion like culture, identity and strategic priorities are introduced one would find the boundaries blurring further. The trends in corporate sector such as recent foci on processes and supply chain management have made the boundaries fuzzy. According to Weick (1977) "While the categories

external/internal or outside inside exist logically, they do not exist empirically. The outside or external world cannot be known." Under enactment perspective, the notion of creation of environment through attentional processes shifts the focus from characteristics of objective external environment and the boundaries to the decisions processes by which organizations select and ignore information.

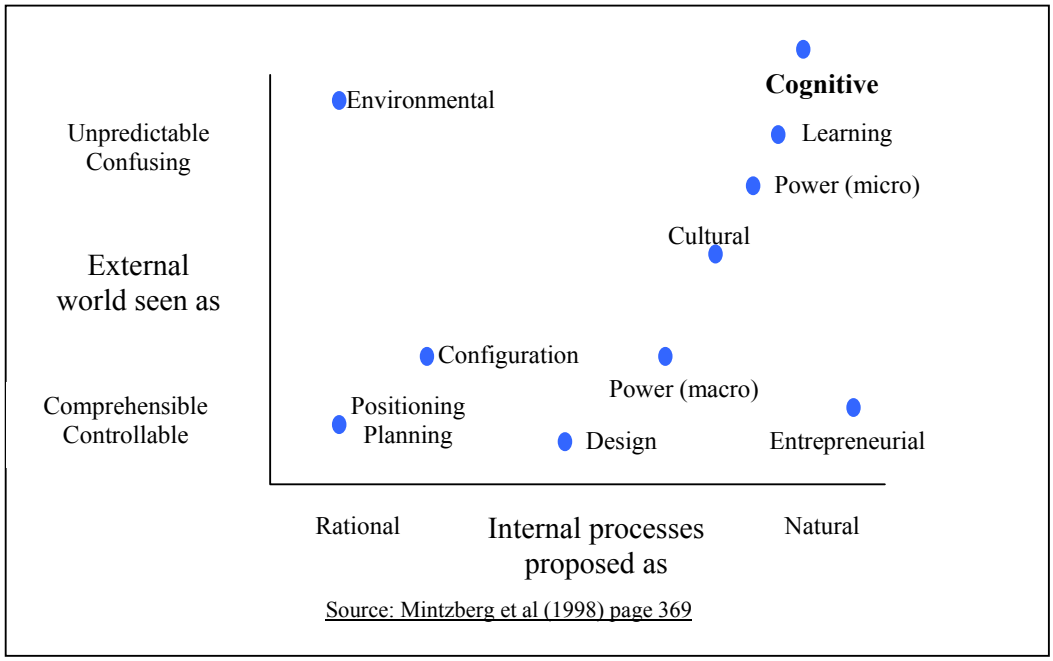
Another important insight that the enactment perspective offers is the source of change. The enactment perspective does not accept that the organization be regarded as reactive sensors to things in the environment. As Follet demonstrates it is difficult to pin down the source of change

> As we perform a certain action out thought towards it changes and that changes our activity…You may say, "When I talk with Mr. X he always stimulates me." Now it may not be true that Mr. X stimulates everyone; it may be that something in you has called forth something in him. ….I never react to you but to you-plus-me; or to be more accurate, it is I-plus-you reacting to you-plus-me. "I" can never influence "you" because you have already influenced me; that is in the very process of meeting, by the very process of meeting, we both become something different. It begins even before we meet, in the anticipation of meeting. We see this clearly in conferences. Does anyone wish to find out the point where the change begins? He never will.(Follet (1924) as quoted in Weick, 1995 page 33)

Consider the game of twenty questions explained above again. The game had an inbuilt accuracy built into it. There was one correct answer and all the person had to do was improve his sensemaking from the cues he receives from the questions he asks. So accuracy was the motive. We can explain the enactment perspective using a

variation suggested by wheeler, **(**taken from Daft and Weick, 1984**)**. Once the player leaves the room so that remaining can choose a word, the game unfolds in a different manner. Instead of choosing one word through consensus, everyone thinks of a word in mind and answers yes or no to the questions asked by the player in a manner that fits both his own reply and all the previous replies. In this variation there are different answers that emerge for different questions asked. There is no one correct reality. The answer does not exist independent of the player asking questions and the focus shifts from accuracy to reasonableness (to be explained in detail below). In this way reality/environment is constructed. However, in organizations instead of one individual enacting the environment, environments are socially created.

Since cognitive theories expand our view of what environment is composed of, the relationship between environment and organization and the source of change, we find it a source of useful insights for application to high velocity environments. This is compatible with Mintzberg et al (1998) identification of cognitive school with unpredictable confusing environment and natural decision making processes as shown in the figure below:



Source: Mintzberg et al (1998) page 369

The above discussion on the three perspectives of environment suggests that it is not the substance or properties and parts that are problematic as identified by linear adaptive frameworks. It is the existence of the environment as an entity that is problematic. The enactment perspective sensitizes us that what the environment is and where it is cannot be taken for granted. The environment is located in the minds of the managers rather than outside of them. So it is their belief structure that matters in analyzing the environment. So instead of taking a stand on which of the three perspectives we can use the model suggested by Weick and Daft, 1984 which is based on the idea that the organizations vary in their beliefs about environment and their intrusiveness into the environment.

A basic premise of the model – that organizations differ systematically in the mode by which they interpret the environment – is especially relevant to this study. Underlying the interpretive systems model are two constructs, analyzability (termed

"assumptions about the environment") and intrusiveness. Analyzability is the degree to which an organization assumes that the environment is concrete, that events and processes are explicit, measurable, and determinant. Intrusiveness is the thoroughness with which an organization seeks feedback about its actions on the environment, absorbs this information, and responds.

Dichotomizing analyzability and intrusiveness into 'high' and 'low,' Daft and Weick (1984) create a four-cell typology of interpretive stances (see Figure 1). The four stances are labeled discovering, enacting, conditioned viewing, and undirected viewing. We present examples of firms in mature industries associated with each stance.

FIGURE 1. INTERPRETIVE STANCE TYPOLOGY

(From Daft & Weick, 1984)

		Managers: Assume the environment is not □ Analyzable Rely on limited, soft Information Are open to a variety of cues	Managers: Assume the environment is not exactly analyzable Place emphasis on constructing the environment rather than discovering it
	LOW		
		Gather information irregularly, Heuristically	Experiment, test, simulate Ignore precedent, rules, expectations
		"UNDIRECTED VIEWING" "CONDITIONED VIEWING"	"ENACTING" "DISCOVERING"
ANALYZABILITY			
		Managers: Assume the environment is Analyzable	Managers: Assume the environment is analyzable
	HIGH	Create standard data collection	
		Procedures	Place emphasis on

Develop interpretation within traditional boundaries	detecting "correct" response for each stimulus
Do not initiate unusual routines	Use careful probes such as
to learn about the environment	market research, focus groups, trend analysis
LOW	HIGH

ORGANIZATIONAL INTRUSIVENESS

1. Discovering Stance. Organizations with a discovering stance are ideal-form creatures of management science. Such firms value analyzability highly by assuming that the environment contains "right answers" that can be detected through the use of appropriate probes such as market research and competitive intelligence. They are also highly intrusive, seeking, and processing information that help test casual linkages between organizational action and environmental response. Examples of firms with a discovering stance are market research leaders such as Proctor & Gamble and Unilever.

2. Enacting stance. Organizations with an enacting stance are highly intrusive, valuing experimentation, testing, coercion, bending of rules, and invention like Apple, such firms assume that the environment is not so much analyzable as it is enactable. Examples of such firms are innovative, risk-taking, and rapid-response firms such as 3M and Microsoft.

3. Conditioned viewing stance. Organizations with a conditioned viewing stance assume the environment is highly analyzable. Yet they are constrained in their intrusiveness. A good exemplar of this stance is General Motors, which for decades was the leading spender on market research; yet it failed to anticipate the rise of the economy car in the early 1970s. Firms with a conditioned viewing stance are usually very competent in a particular product or industry segment (such as GM with family cars), so much so that their core competence turns into core rigidity. Xerox is another well-known example; after having practically invented the personal computing environment, "copier head" top managers killed the development and exploitation of valuable in-house research (Smith & Alexander, 1988 as quoted in Anand,Hoffman and Novak, 1998).

4. Undirected viewing stance. Organizations with an undirected viewing stance take a rather circumscribed view of the environment by assuming that it is not analyzable and cannot be acted upon. This stance is a manifestation of poor leadership and inept management. The Harley-Davidson company was blighted by an undirected viewing stance in the late 1970s. Crippled by the Japanese incursion into the United States market, Harley-Davidson was plagued by poor quality, low productivity, excessive costs, and hostile labor relations. Market share in its core competence – the heavy motorcycles category – plunged from 78% in 1973 to 30% in 1981 (Reid, 1990). Dealers were sending bikes back to the factory in Milwaukee in large numbers. Although Harley-Davidson enjoyed high levels of brand loyalty, customers began to defect in droves as the company became insensitive to feedback from the environment. This example underscores the point that well known organizations can

Let their interpretive stance go weak by becoming less intrusive and assuming that the environment is no longer analyzable. (Anand, Hoffman and Novak 1998)

6. What is Noticing and Interpretation under Cognitive Theories

Scanning as defined by Aguilar (1967,p.6) is an "organization's search for information about events and relationships in the outside environment, the knowledge of which would assist managers in strategy formulation.".Daft and Weick (1984) define scanning as the process of monitoring the environment and providing environmental data to managers. In case of objectivist perspective of environment scanning is akin to bracketing some portion for further attention and ignoring others. If we regard environment as a stream of experience then scanning would mean punctuating this flow of experience and noticing/encoding it. In case of our twenty questions example, it refers to deciding the questions to ask. Scanning is concerned with data collection. The organization may use formal data collection systems, or managers may acquire data about the environment through personal contacts.

Noticing environmental data or information is one key step in coping with changes in the environments. Researchers like Starbuck and Milliken (as quoted in Weick, 1995,p.51) prefer the word noticing to scanning because the former term implies a more informal, more involuntary beginning to the process of sense making. Scanning looks more deliberate, strategic, more under control of preconceptions, and less open to innovation. According to them noticing refers to activities of filtering, classifying and comparing whereas sense making refers more to interpretation and the activity of determining what the noticed cues mean. It is in the noticing stage that the external

environment is directly engaged into. All processes for further processing of the stimuli start where noticing ends. Noticing determines whether people even consider responding to the environment events. If events are noticed, people make sense of them and if events are not noticed they are not available for sensemaking. (Weick, 1995,p. 51)

The other important step is interpretation. Scanning and interpretation are different, though they form an almost inseparable part of environmental scanning. Interpretations occur after scanning. Data are given meaning. Here the human mind is engaged. Perceptions are shared and cognitive maps are constructed. An information coalition of sorts is formed. The organization experiences interpretation when a new construct is introduced into the collective cognitive map of the organization. Organizational interpretation is formally defined as the process of translating events and developing shared understanding and conceptual schemes among the members of upper management. Interpretation gives meaning to data, but it occurs before organizational action(Daft and Weick ,1984).

Interpretation involves categorization of data or information which involves placing stimuli into frameworks (or schemas) to make sense of the stimuli(Sutcliffe 2001).

An attempt is made to reduce the equivocation in the environmental stimuli.

The cognitive theories have sensitized us to the fact that no issue is inherently strategic. Rather, an issue becomes strategic when top management believes that it has relevance for organizational performance. Environmental scanning entails focus on processes that shape the set of issues that top management sees as strategic. It focuses on processes that take place during the early stages of decision making, when issues are first identified and diagnosed. As one public policy researcher has stated, "We're

talking here not about how issues get decided, nor about how decisions are implemented and what impacts they have, but rather how issues come to be issues in the first place" (Kingdon, 1990,p. 1).

7. The process of noticing and interpretation

Lyles and Schwenk (1992) elaborated on the processes by which individual level schemata are combined into organizational level knowledge structures and the processes by which knowledge structures change in response to environmental changes. They suggested that when environmental change invalidates existing assumptions organizational members articulate and advocate elements of the new knowledge structure. These are then combined through the activities of key decision makers (or the dominant coalition) into a new knowledge structure which is communicated to the other members of the organization.

The process is explained in detail below:

The process of knowing the environment is an ongoing and continuous process. Though it has been explained as a linear process, there may be issues at different stages in the organization. The model described below complements Garbage can (Cohen, March and Olsen, 1977) characterization of organizations.

Individual processes

Who perceives

Changes in a firm's environment may be perceived by many members. Once members of organizations become aware of environmental information, further processing occurs as executives make sense of it and formulate an interpretation that provides the basis for decisions and actions. Each member interprets environmental

cues in different ways. “Interpretation has the aspects of comprehending, understanding, explaining, attributing, extrapolating, and predicting” (Starbuck and Milliken, 1988, p. 51 as quoted in Lyles and Schwenk 1992). These people could be at any level in the managerial hierarchy. For strategic issues we can rule out the possibility of lower level managers getting involved, however, as we shall explain below under issue selling, the role of middle level managers’ is crucial in noticing environmental stimuli.

When is it percieved:

However, when the change begins to affect company performance and when it cannot be adequately explained or predicted through the existing knowledge structure, it creates a challenge to that existing knowledge structure and creates an interactive effect among the organizational participants, the environment, and behavior.

Group processes

The individuals who noticed the changes now interpret the stimuli either themselves or in consultation with others. If found important for the organization they initiate the issue selling process, wherein political processes are evoked when different coalitions (such as operators, managers, and analysts and support staff) within a firm who hold alternative schemas advocate their own positions through such mechanisms as task forces and special reports .These different coalitions attempt to influence others and to gain the agreement of others about the coalition’s interpretation of events (Lyles and Mitroff, 1980).

The main aim is to bring the issue to the attention of the key decision maker or decision makers in the top management team.

The individual level processes are still in operation here, for example when other members of the organization and the members in the top management team are being bought in for supporting a particular issue. However, the activity now is a social one, as joint/shared meaning instead of individual one becomes important.

Changes in the organizational knowledge structure occur as a result of the impact of the interpretation of environmental events, results of past organizational actions, the influence of the key decision-makers, and the advocacy position of coalitions within the firm. The political processes have to do with the negotiating and bargaining that takes place to gain support for alternative schemas. Socio-political themes, such as credibility and power, have been shown to influence the acceptance of particular views (Lyles and Mitroff, 1980).

Organizational mind / Key decision makers and labeling of issue

Once the key decision-makers sense and interpret changing environmental events, they frame them in the problem formulation process as problems, opportunities, or crises (Dutton and Jackson, 1987; Lyles and Mitroff, 1980; Mintzberg ***et*** *al.,* 1976).These decision-makers have a strong influence on the development of the organizational knowledge structures since it is primarily they who interpret the importance of environmental events and who communicate their view of the knowledge structure through speeches and statements.

It seems likely that the key decision-makers' schemata closely reflect the collective mind of the organization and they influence the attitudes and beliefs of others in the organization by communicating and networking .Once the key decision- makers have determined that the change challenges the crucial elements of the knowledge

structure, they make changes in the knowledge structure and communicate these changes to others in the organization.

8. How to Improve Noticing and Interpretation

Often information collected in organizations is either too much, too little, or wrong. Evidence from laboratory studies suggest that individual rarely acquire the right amount of information before they make decisions (Connolly 1988; Connolly and Gilani 1982; Connolly and Serre 1984). They acquire too little information when decision stakes are large or too much when stakes are low. Individuals are also not able to judge reliably the differential validity of information, nor do they consistently acquire information form the cheapest of the available valid sources.(Vodosek and Sutcliffe, 2000 :161)

In enactment perspective environment is a stream of experience. Given the limitations of human mind, people must be the noticing/encoding only select set of events. However, this encoding is not arbitrary. So if we understand what gets noticed and what cues are extracted we can take steps to improve noticing and similarly we can improve interpretation.

What is noticed and what cues are depends on context in two important ways. First context affects what is extracted as a cue in the first place; the concept of frame is used as shorthand for the structure of context. Second, context also affects how the extracted cue is then interpreted.

From the social cognition literature (Fiske and Taylor ,1991) it is clear that the things people notice are "things that are novel or perceptually figural in context, people or behaviors that are unusual or unexpected, behaviors that are extreme and (sometimes) negative, and stimuli relevant to our current goals….Our attention also orients us to situationally or personally primed categories. Recently, frequently and chronically encountered categories are more accessible for use, and they profoundly influence the encoding of stimuli" (Fiske and Taylor as quoted in Weick 1995,p.52).

9. Factors Affecting Acquisition of Information

Research in the area of organizational information processing shows that a myriad of factors affect the acquisition, analysis and use of information in an organization including individual difference variables and variables related to characteristics of the organizations information system, structure, and strategy (Sutcliffe 2001). Organizational member's acquisition and use of information are not only influenced by the appropriate normative factors but also by several normatively irrelevant task characteristics. These findings indicate that large and costly departures from optimality may be frequently found in the acquisition and use of information in the real world settings.

The table given below summarizes various cognitive biases and heuristics identified in decision making by bounded rational individuals.

Table 1 Selected heuristics and biases

Heuristic/bias	**Effects**
Availability	Judgment of the probability of easily recalled events

	are distorted
Selective perception	Expectations may bias observation of relevant events
Illusory correlation	Encourage the belief that unrelated variables are correlated
Law of small numbers	Overestimation of the degree to which small samples are representative of the population
Regression bias	Failure to allow for regression to the mean
Wishful thinking	Probabilities of desired outcome are judged to be inappropriately high
Illusion of control	Overestimation of personal control over outcomes
Logical reconstruction	Logical reconstruction of events which cannot be accurately recalled
Hindsight bias	Overestimation of predictability of past events

Source: adapted from C.R Schwenk (1988)

In order to improve scanning and interpretation despite the presence of the above heuristics and biases, the managers need to be aware of the pitfalls of these heuristics and develop a healthy skepticism of what they see and interpret. Here the best practices of organizations known as High Reliability Organizations (hereinafter referred to as HRO) like Nuclear aircraft carriers, nuclear power generating plants, hospital emergency departments can be used. The people in these firms face all varieties of surprises but still manage to perform well. The basic feature that these firms exhibit compared to other organizations is Mindfulness (term coined by Weick and Sutcliffe (2001)). The two important features that can aid the managers in seeing

more and interpreting better in the light of the aforementioned heuristics and biases are preoccupation with failure and reluctance to simplify interpretation.

Preoccupation to failure

Kiesler and Sproull (1982) in their essay on problem sensing give the following insights

> people attend to and encode salient material –events that are unpleasant deviant, extreme, intense, unusual, sudden, brightly lit, colorful, alone, or sharply drawn. In the world of organizations, salient information includes unanticipated drains on cash flow, new taxes and regulations (unpleasant information), predictions of best and worst outcomes (extreme information), disruptions of routine and emergencies (intense, unusual, sudden information), and publicity and iconoclastic executives (colorful information). The behavior and outcomes of competitors, of course, are sharply drawn – a figure against ground.

Preoccupation to failure is an attempt to look for such punctuations in experiences instead of waiting for the same. This feature is reflected in small things like frequent incident reviews, the reporting of errors no matter how inconsequential, and employees' obsession with the liabilities of success. This tendency is evident in statements like "there's nothing as blinding as success" made by Robert D Haas, Chairman of Levi Strauss & Company. Any lapse from expectations is treated as a symptom of something wrong with the system. Hence close calls and near misses are regarded as a kind of failure that reveals potential danger rather than as evidence of success. The procedures are often updated after a close call or near miss has been

experienced to incorporate new experience and enrich understanding of the organization and the environment. Reporting of errors is encouraged even if they seem inconsequential or bad news. In these organizations it is made hard for the people to hide mistakes of any kind.

Reluctance to simplify interpretations

Simplifying interpretations refers to following a one size fits all approach. Simple interpretations are suitable for simple phenomenon, but when the environment is complex, unstable, unknowable, and unpredictable as discussed in the first section simplification would constrain vigilance and observation. One needs to see more and in order to do this HROs position themselves to see more. Recall the modified twenty questions game. The chances of success are maximized if the more questions are thought through before asking. People in HROs generally prolong their analysis to better grasp the nature of the problems that come up. People are encouraged to express different views of the world and it is rare that anybody's views are dismissed. People are not shot down for surfacing information that makes them look like skeptics/those who challenge status quo. Questioning is encouraged in meetings. The boundary spanners in these organizations have diverse experiences, they cultivate a healthy skepticism to received wisdom, and they have negotiation tactics that reconcile differences of opinions. (Weick and Sutcliffe, 2001)

10. More Insights on Improving Environmental Scanning in High Velocity Environments.

Performance monitoring instead of scanning

There is a tradeoff between time-consuming data analysis and planning process and speedy decision making. However, this does not mean that the most effective organizations forgo analysis of important information as a precursor to decision making. Recent studies suggest that organization is high-velocity environments pay more attention to performance monitoring than to more traditional scanning activities. Organizational scanning provides information about the overall business environment. Scanning is critical for planning, strategy formulation, and long-term decision making. Performance monitoring, by contrast, provides more specific information about an organization's business situation and whether it is effective in fulfilling its goals and meeting the demands of stakeholders (Eisenhardt 1989; Huber 1991). Information about a company's performance relative to competitors, existing technologies, and product markets in which the company operates is useful for making operational and tactical decisions; is important for uncovering or discovering idiosyncratic threats, problems, or trends; and leads to more timely and accurate detection of problems and opportunities (D'Aveni 1994; Eisenhardt 1989). This enables them to initiate corrective action before crises materialize (Eisenhardt 1989). In addition to its salutary effect on problem sensing, performance monitoring can positively influence performance indirectly through its effect on trust. Frequent interactions enable executives to develop norms of trust that permit quick and reliable responses when situations become difficult (Sutcliffe, 2001)

These observations about the way social reality is formed in organizational settings suggest a powerful prescription for strategic managers. They must look first to themselves and their actions and inactions, and not to "the environment" for explanations of their situations, indeed, research on organizational crises reveals that

in many cases top managers' thinking patterns, not external environments, cause crises. As Karl Weick advises: If people want to change their environment, they need to change themselves and their actions not someone else.....Problems that never get solved, never get solved because managers keep tinkering with everything but what they do (Weick. 1975, ,p.152 quoted in Weick,1995)).

Because of the temptation to assign convenient blame, the contributions of strategic management research should help managers reflect on the ways in which managers' actions create and sustain their particular organizational realities (Smircich and Stubbard 1985 ,p.728)This parallels high reliability organization's trait of sensitivity to operations.

Sensitivity to operations

This involves paying close attention to operations, the front line, and the imperfections in these features. One must know what the right way is of doing things to know what has gone wrong. This feature involves development of collective cognitive map of the operations at any one moment by each involved. This is the only way near misses can be identified and their causes ascertained. The loopholes in the system's defenses/barriers/safeguards whose potential existed for some time prior to the onset of deviations are examined carefully so that operations can be improved. HROs are adept at recognizing these "free lessons" that signal development of unexpected events through frequent assessments. This requires free sharing of information irrespective of the position in the hierarchy. Detailed information is provided to everyone on what's happening in the organization. All people are encouraged to speak up. The basic premise is that people who refuse to speak out of

fear/ignorance/indifference enact a system that knows less than it needs to know to remain effective(Weick and Sutcliffe, 2001).

Accuracy speed tradeoff

Although the pursuit of information accuracy may have positive benefits such as contributing to more innovative decision solutions, it may also have some untoward effects in organizations. Specifically, as Weick, Sutcliffe and Obstfeld (1997) suggest, the pursuit of accuracy may curtail intraorganizational interaction and communication because people may withhold judgments until they can demonstrate that their analysis is sound. In complex, partially understood environments like high-velocity environments, "norms that favor accuracy may silence the reporting of imprecise hunches about anomalies that could cumulate into crisis" (Weick, Sutcliffe and Obstfeld 1997: 36).

In the enacted world what drives action is plausibility and not accuracy. Recall the example of modified twenty questions game. There is no one correct answer and the answer changes as the questions change. Sutcliffe and Weber Klaus, (2003) explored the relationships between organizational changes, the accuracy of managers' perceptions, and organizational performance. They had expected that initial investments in improving the accuracy of senior managers' perceptions would have produced increasing returns for a while, flatten out, and eventually decline. The reasoning was as follows: - an early investment in accuracy would greatly enhance the quality and timeliness of top managers' strategic moves, thus facilitating changes and improving performance, but that ever more detailed analysis would make only marginal contributions. Eventually, the returns would become negative as the quest

for ever greater accuracy consumed resources and distracted managers from initiating timely actions.

Their results showed that the relationship between perceptual accuracy and the magnitude of organizational change did indeed follow this inverted U-shaped pattern. Initial investments in improving the accuracy of senior managers' perceptions triggered more change, but eventually, as improvements in accuracy began to taper off, so did the magnitude of change. Eventually, investments in accuracy became, as expected, negatively associated with change. The relationship between accuracy and performance, however, confounded our expectations. Instead of the inverted U-shaped curve we saw between accuracy and change, the relationship between accuracy and performance turned out to be linear and negative. When it came to performance, it seemed that any extra effort spent on improving the accuracy of top executives' knowledge about the environment damaged rather than improved performance. In other words, as accuracy decreased, performance got better--a result that seemed counterintuitive.

The findings suggest that perceptual accuracy at the very top executive levels is actually a source of competitive disadvantage for most firms. The task of leaders is to manage ambiguity and to mobilize action, not to store highly accurate knowledge about their environment.

Having shown that accuracy does not guarantee competitive advantage, one can turn attention to the effects of top executives' interpretive frameworks and focus on interpretive orientations, or, in simple terms, mind-sets. An interpretive orientation is a propensity to frame new situations in a particular light. As psychologist Karl Weick

describes in his 1995 book, Sense making in Organizations, a generalized interpretive orientation is a "minimal sensible structure" consistent enough to filter information and focus attention but loose enough to allow improvisation and speedy adjustments. Interpretive orientations can be compared along a number of dimensions--for example, the degree to which events are interpreted as threats versus opportunities.

The authors' research suggests that how accurate senior executives are about their competitive environments can indeed be less important for strategy and corresponding organizational changes than the way in which they interpret the information about their environments. Therefore, investments in shaping those interpretations may create a more durable competitive advantage than investments in obtaining and organizing more information.

Symmetrical information systems and empowering middle level managers

Symmetrical information systems are those in which employees are provided with mechanisms for dialog with each other, supervisors, and top managers. Asymmetrical information system, by contrast, lack mechanisms of dialog. Symmetrical information systems may enable employees to have a deeper understanding of their organization’s goals, plans, and relationships with key actors in the environment than asymmetrical information systems. As a consequence, lower-level employees in symmetrical information systems may be better primed to recognize important information than employees in asymmetrical ones. Ultimately this higher awareness of important information in symmetrical information systems may affect the quality of information analysis itself.

Providing detailed real time information on what is happening helps in maintaining a big picture. An organizations knows more or less than what its individual members know (Vodosek and Sutcliffe,2000).

Face to face interaction

Decision makers in organizations in which performance is monitored continually through frequent, mandatory, intense, face-to-face operations meetings, or through other mechanisms such as frequent written reports detailing performance targets, sense the environment more quickly and accurately (Eisenhardt 1989)

In a changing world, it is not just the old answers that are suspect. It is also the old questions. And once people are uncertain what questions to ask, then they are put in the position where they have to negotiate some understanding of what they face and what a solution would look like. Puzzles now represent both threats and opportunities, the same event means different things to different people, and more information will not help them. What will help them is a setting where they can argue, using rich data pulled from a variety of media, to construct fresh frameworks of action-outcome linkages that include their multiple interpretations. The variety of data needed to pull off this difficult task are most available in variants of the face to face meeting (Weick 1995).

Meetings are sense makers for this reason and they are also one of the main sites where requisite variety can be mobilized in the interest of sensing and regulating more of the variety that confronts the organization.

Improve communication mechanisms

Donnelin et al (1986) as quoted in Vodosek, and Sutcliffe,.(2000),were also interested in documenting the role of shared meaning in creating organized action. They expected that shared meaning would be a precondition to organized action. They explored how communication behaviors can produce shared meanings. They found, to their surprise, that groups could engage in organized action without having developed shared beliefs about taking the action. Communication mechanisms were critical to achieving collective action. Such action took place even when organizational members held different beliefs, so long as they beliefs were consistent with the same organized action.

The above is also important to empower middle and lower level managers. Most of the research on information processes in organizations assumes that information is readily available for top executives to perceive, pay attention to, scan, or process. Traditionally, midlevel managers have been seen as suppliers of information to top managers (Thompson, 1967). Also, top managers have been found to receive information from external sources such as boards of other companies that they serve on, publications targeted to executives, and consultants. With the exception of the work by Dutton and Colleagues on how middle managers sell issues to top management (Dutton and Ashford, 1993)

There is little recent organizational research that examines how information enters an organization or how information gets acquired, who acquires it, and in what form it reaches top decision makers. Issue selling is the process by which individuals affect others' attention to and understanding of the events, developments, and trends that

have implications for organizational performance (Dutton & Ashford, 1993). Because no issue is inherently important or strategic, individuals' claims about what matters (that is, their issue selling) determine, in part, which change initiatives get activated (Dutton & Ashford, 1993). Issue selling shapes an organization's investment of time and attention and thereby shapes, in part, the actions and changes that ensue.

In a pluralistic organizational world, managers coexist with different and competing interests and perspectives. Through the issue-selling process, managers push their ideas forward to effect change.

It highlights the social process by which the stimuli residing in an individual mind of a member of the organization reaches the collective mind of the organization.

All this requires symmetrical information systems.

Interpretation

Fundamental to the interpretation process is the categorization of data or information which involves placing stimuli into frameworks to make sense of the stimuli. While numerous categories are possible, the literature highlights "opportunity" and "threat" as two salient general categories used by decision makers when interpreting information in regard to environmental changes, events, trends, or developments (Dutton & Jackson, 1987).These general labels capture top executive's beliefs about the potential effects of environmental events and trends on the organization more broadly, and may even determine those effects because the extent to which top decision makers interpret environmental conditions as opportunities or threats predisposes them to respond in predictable ways (Dutton and Jackson, 1987).

Here we summarize the results that help in improving interpretation of noticed environmental stimuli.

Opportunities are more likely to be constructed in organizations where multiple courses of action are envisioned and favored (Dutton, 1993) or where decision makers perceive they have more control. Managers with higher degree of discretion are likely to environ many courses of action and to perceive that they have a higher degree of control, which means they will be more likely than their counterparts with a low degree of discretion to frame environmental variations or discontinuities as opportunities.

Managing equivocation

Bartunek's (1984) study of ideological and structural change in a religious order is a powerful example of how symbolic reframing by organizational leaders can lead to fundamental, substantive organizational change. She documents the changes in interpretive schemas within this organization and the relationship between interpretive change and organizational restructuring. She found that although leadership and environmental events are key triggers to organizational change the influence of these factors is moderated by the interpretive schemas of the organization. She found that their leaders have the most impact is on these interpretive schemas. By providing alternative schemas they facilitate change in these schemas and subsequent organizational change.

Interpretation characteristics suitable for high velocity environments

Since managers in high velocity environments are likely to experience equivocation in their data, equivocality reduction will have to be resorted to. This can be done through

discussion to arrive at a common interpretation or on the basis of action taking to see what actually works.

The assembly rules in such organizations should involve fewer rules to guide for processing data into collective interpretations. Moreover these should not be enforced very strictly.

Organizational level

Jackson and Dutton (1988) as quoted in Land, (2001) study applied categorization theory to managerial interpretation of strategic issues. Categorization theory holds that in order for individuals to make sense of their worlds, they form categories in their minds under which experiences can be classified and understood. Cognitive categorization appears to be fundamental requirement for learning. Jackson and Dutton set out to demonstrate that managers would categorize strategic issues as potential threats or opportunities. They also attempted to discover the issue characteristics that influence how a manager classifies issues one way or another. Their evidence suggests that managers did use this categorization scheme and viewed threats as negative and opportunities as positive. Threats and opportunities also elicited different emotions. Their findings were surprising in that it was not entirely clear how issue characteristics map onto these two categories. Managers seem to have a negative (threat bias) i.e. they were more likely to interpret issues as threats than opportunities. However, issues that were ambiguous might be interpreted as a threat or an opportunity. The more control a manager they had over the environment the more likely they were to see an ambiguous as an opportunity. Although the basis tenets of categorization theory were applicable to managers issue classification it was

apparent that the interpretations of managers were complex and that more work was needed to determine the factors that influence their interpretations.

Thomas and McDaniel (1990) studied the impact of top management team structure on interpretations. This was one of the first studies of managerial interpretations to examine the influence of contextual factors. They found that top management team that were structured so as to process large amounts of information were more likely to label strategic issues positively (i.e. as opportunities). Such team structures were also related to higher degrees of information usage and higher perceptions of control over issues. Their findings reinforce Jackson and Dutton's findings that managers who perceived more control over the environment were more likely to perceive issues positively. The Thomas and McDaniel's study related the structure of the management team to the labeling of strategic issues. This relationship seemed to work through processing of large amounts of information and perceiving control over the environment. Taken together these findings suggest that managers who are able to process information readily (i.e. are not overwhelmed) felt more control over their environment and thus perceive strategic issues as possible opportunities for action, not threats. The strength of the effects of context in this study versus the strength of finding found in Jackson and Dutton study suggested that contextual factors play a critical role in determining how managers process information and interpret this information.

Thomas et al (1993) performed an empirical study that linked the constructs of organizational scanning, interpretation, action, and outcomes. The distinct contribution of their work is that it builds a theoretically meaningful framework about

cognition in organizations and conducts a comprehensive study to document whether the predicted relationships hold empirically. Their study extended the exploration of an explanation of managerial interpretations to ask the questions – do these interpretations influence strategic change and performance. Similar to prior studies they found that high levels of scanning and information usage were associated with positive interpretations and perceptions of control regarding strategic issues. These positive interpretations and perceptions of control, in turn were associated with strategic change which in turn was associated with higher performance.

Action orientation as way to improve interpretation

Weick (1995) argue that better information processing may not be so much be characterized by the ability to choose between accurate images and misperceptions, but rather the ability to enhance plausibility and choose between different potential misperceptions. (Sutcliffe, 2001)

Research examining differences between failing and surviving companies also highlights the pitfalls of extensive strategic planning, information gathering, and information analysis. For example executives in failing and surviving companies appear to differ in the speed with which they update mental models (Barr, Stimpert, and Huff 1992). The performance differences can be explained by focusing on the possibility that surviving companies engage less in formalized scanning, strategic planning and competitive analysis, and more in trial-and-error action. This enables better discernment of important trends, threats, and opportunities and facilitates second-order learning and changes in executives' mental models of key cause-effect relationships (Lyles and Mitroff 1980)

What is important for the current analysis is that formal systems for learning about competitive environments (e.g. systems that emphasize long-term strategic planning and information analysis) are slow to operate and get bogged down in detail. Consequently, these systems often represent the environment as it was, not as it is. Moreover, opportunities for interaction and communication are often limited in these systems. Thus, decision makers in organizations with more formalized strategic planning of information systems are less likely to be aware of current environmental information than their counterparts in organizations without such systems.

As Sutcliffe (2001) argues

> Action taking may be a better mechanism for generating data and for instantiating opportunities for dialogue, bargaining, negotiations, and persuasion that are essential for developing a good sense of what is going on and what to do about it. Further, action and cognition are mutually reinforcing. Actions allow for the assessment and reassessment of causal beliefs, which subsequently lead executives to undertake new action to test the newly asserted relationships. Over time, as supporting evidence mounts, more significant changes in beliefs and actions evolve.

Action generates new information and increases opportunities for interaction that can help in decision makers modify faulty understandings and update previously held inaccurate perceptions. In effect, action facilitates learning. Consequently, decision makers in more action-oriented organizations are likely to develop better representations of a current environment and to more quickly update existing environmental models than their counterparts in organizations that are less action-

oriented (Sutcliffe, 2001). Furthermore, action-oriented organizations may adapt more quickly to future, changing environments than more sluggish organizations."

Chaotic Action Is Preferable To Orderly Inaction (Weick 1979)

The discussions of the enacted environment have emphasized that meaning is retrospective and only elapsed experience is available for meaningful interpretation. The practical implications of this are that an organization would be in a better position to improve its efficiency if the elapsed experience were filled with action rather than inaction. Action, when viewed retrospectively, clarifies what the organization is doing, what business it is in, and what its projects may be. Inaction, viewed retrospectively, is more puzzling and more senseless: there is a greater likelihood for bizarre meanings to be attached and for an unhealthy amount of autism to be introduced. Action, in other words, provide tangible items that can be attended to.

In the absence of actions, any act of reflection is directed toward relatively unfilled periods of lived experience. This means that to find a filled period of action that can be made sensible, the reflection pushes further back in time and fixates on more dated experience. Since that experience is even farther out of touch with current happenings, the likelihood of misinterpretation is increased.

Action orientation means thinking of mitigation rather than anticipation. The mindset is of cure rather than prevention. Prevention is not possible because it is impossible to anticipate every situation and condition and provide for the same. So advance information on how to get out of a situation is often in short supply. Due to this people need to initiate action before they could think through all the possible implications of their actions. This delivers result because action enables them to gain

experience and a clearer picture of what they are treating. Unlike anticipation, which encourages people to think and then act, action orientation encourages people to act while thinking or to act in order to think more clearly.(Weick and Sutcliffe, 2001 ,p.69 -70)

Cognitively complex top management team

Considering the need to maintain alignment between managerial structure and environmental demands, Chandler (1990) and Prahlad and Bettis (1986) observe that limited information processing abilities at the headquarters level can constrain the performance of companies. This constraint can be addressed by executives by increasing the cognitive capacity of their top management team such that the team's internal complexity is sufficient relative to its environment (Ashby 1956). In fact, the definition of cognitive complexity entails the two elements that form the key to adaptive strategy: differentiation, defined in cognitive terms as the ability to see multiple dimensions of situations and integration, the capacity to make connections among those dimensions (Harvey, Hunt, Schroder 1961 as quoted in Wells and Bantel 2000)

Because of their divergent capabilities, cognitively complexity individuals have been found to be creative (McGill, Johnson, and Bantel 1993). Higher cognitive complexity should therefore enhance capacity to recognize the relevance of seemingly unrelated cues from multiple aspects of the environment. Such creativity may yield two key advantages: the competitive variety necessary in complex environments, and the innovation essential in resource-scarce environments. In other words, not only should this cognitive capacity improve ability to plan for multiple strategic contingencies, but

it should also foster development of the qualitatively new ideas necessary to achieve innovation.

In addition, because of their integrative capabilities, cognitively complex individuals have been found to process information more quickly and flexibly than others (Lee, 1994, as quoted in Wells and Bantel 2000). Thus cognitive complexity at the team level as well should be associated with the ability to make connections among the disparate elements of the environment quickly. Such teams should be able to effect t6he swift changes in company strategy necessary in dynamic environments.

Although member of top management teams are likely to have relatively high levels of cognitive complexity as individuals, they are subject to inherent limits in information processing capacity. Therefore, the key to sustaining adequate strategic decision making capability in demanding environment may be to enhance the cognitive complexity of the top management teams as a whole. Research to date has focused on two primary methods of enhancing the cognitive complexity of decision making teams. First, the composition of the team may be expanded in order to broaden the group's access to relevant information. Second the team may employ processes that facilitate the integration of these differentiated views.

Potential sources of cognitive diversity include demographic heterogeneity in factors such as age, length of service in an organization as well as specifically within a given team, functional experience, and academic major (Bantel and Jackson 1989). Diversity can have costs, however. For example, groups with the diverse membership conducive to strategic differentiation may experience greater difficulty communicating (Roberts and O'Reilley 1979) as well as have lower satisfaction and higher turnover (Pfeffer 1983).

It appears that teams may need integrating processes in order to capitalize on diverse compositions. Teams facing ambiguity seem to function better when leaders pay scrupulous attention to member inputs (Korsgaard, Schweiger, and Sapiencza 1995), as well as when individuals listen carefully to each other (Weick and Roberts 1993).

Conclusion

Firms in IT industry, telecommunication industry face a difficult challenge of adapting quickly in fast changing, i.e. high velocity environments. In these industries decisions must be made and action taken in minutes rather than months. Time to think deeply, to analyze thoroughly, to mull and ponder, has become an unfulfilled wish. As a result, more and more organizations and individual in them are thrust into what is, for them, unchartered territory: decision making under tremendous time pressure and without adequate information. Errors ranging from missed opportunities to public relations disaster abound. This paper suggests that the cognitive perspective of environment will help managers deal with high velocity environment. Research in this field helps to arrive at some ways to improve noticing and interpretation leading to decision making in the organization.

- Preoccupation to failure
- Reluctance to simplify interpretations
- Performance monitoring instead of scanning
- Accuracy speed tradeoff
- Symmetrical information systems and empowering middle level managers
- Face to face interaction
- Improve communication mechanism
- Interpretation

- Managing Equivocation
- Organizational Levels Action Orientations a way to improve interpretation
- Chaotic action rather than inaction
- Cognitively complex top management team

Further work is required to explore empirically the application of these suggestions in high velocity environment.

Moreover, there are certain inherent contradictions in the cognitive view of the environment where the emphasis is on the interpretation managers put on what they perceive and the environments they themselves construct. In such a view, the idea that firms should adapt to their environment seems to be potentially erroneous, since firms themselves create the environment. If the environment were merely a social construct one might well view attempts at objective analysis of the environment as redundant, but the environment that surrounds a company however can play a critical role in the firm's success or failure. It is thus possible to err too far in the direction of considering the environment as a relative and not absolute concept (Pitkethly, 2003).Those who prefer metaphor to reality quote Weick's story of soldiers lost in the Alps who find their way to safety aided by a map of Pyrenees(Weick1990, 1995). This might indicate towards a bias to wards preserving the only stories of wrong map users who survive. One has to concede therefore that an ability to understand the reality and implications of one's surrounding environment clearly and not through some darkened glass is essential (Pitkethly, 2003).

Hence, cognitive perspective should be viewed as complimentary to traditional approaches rather than a substitute to them. For most managers, interpreting the signs of the times and the implications for their organizations correctly is crucial and if they fail to analyze the organizations environment correctly, it will be difficult to build

sound strategies for change. As Pitkethly(2003) puts that it is after all better to start a journey with an accurate and appropriate map, to hold it the right way up and understand where one is on it than use any map, which like some medieval cartographer's imaginings , better reflects thoughts than reality.

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