

Tilburg University

All the wrong moves:

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Publication date:
2002

Document Version
Publisher's PDF, also known as Version of record

[Link to publication in Tilburg University Research Portal](#)

Citation for published version (APA):
Caeldries, F. (2002). *All the wrong moves: Sociocognitive Reflections on Strategy Formulation and Implementation.*

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Embargo tot 13 december 2002

**All the Wrong Moves: Sociocognitive Reflections on
Strategy Formulation and Implementation**

**All the Wrong Moves:
Sociocognitive Reflections on Strategy Formulation
and Implementation**

Rede in vrije vorm uitgesproken bij de openbare aanvaarding
van het ambt van hoogleraar Strategisch Management aan
de Universiteit van Tilburg

door

Prof.dr. Filip Caeldries

Tilburg, 13 December 2002

Faculteit der Economische Wetenschappen
Tias Business School
Universiteit van Tilburg

Informer: Mr. Galilei will be there soon. He may need a bed.

Federzoni: Have they let him out?

Informer: Mr. Galilei is expected to recant at five o'clock. The big bell of Saint Marcus will be rung and the complete text of his recantation publicly announced.

Andrea: I don't believe it.

Informer: Mr. Galilei will be brought to the garden gate at the back of the house, to avoid the crowd collecting in the street.

Andrea: The moon is an earth because the light of the moon is not her own. Jupiter is a fixed star, and four moons turn around Jupiter, therefore we are not shut in by crystal shells. The sun is the pivot of our world, therefore the earth is not the center. The earth moves, spinning about the sun. And he showed us. You can't make a man unsee what he has seen.

Federzoni: Five o'clock is one minute.

Andrea: Listen all of you, they are murdering the truth.

(*Galileo*, Bertolt Brecht 1952)

Honorable Rector Magnificus
Ladies and Gentlemen,

Introduction

The strategic management literature has long been concerned with understanding how organizations relate to an uncertain and changing environment. One of the most fundamental strategic decisions management must make is whether to persist with the current strategic orientation or to change the strategic direction. Deciding whether or not to initiate change is a challenging task as management must not only *observe* environmental events, but also *interpret* them in order to decide whether they are important enough to warrant adaptation in strategy and/or structure. Thus, strategic change decisions may usefully be thought of as a special case of decision-making under uncertainty in which management is confronted with complex informational cues.

Contrasting the characterization of strategic change decisions as inherently complex and uncertain is the argument that “there are simple but fundamental principles underlying every successful strategy. [B]y understanding these basic principles, any manager can use them to design a successful strategy” (Markides 2000: viii). However, if strategy-making is so simple, then why is it so difficult?

In this lecture an attempt is made to explain problems in organizational adaptation by exploring the link between strategy and cognition. Distinct from economic analysis, the cognitive perspective invites us to conceive of managerial behavior driven not by proactive analysis, but by reaction to scarce and ambiguous information. Work linking strategy and cognition is predicated on the assumption that management constructs a simplified model of reality – a mental model – which serves as the basis for strategic decision-making. The basic process linking strategy and cognition is a process referred to as sensemaking. Sensemaking emphasizes that people try to make things rationally understandable to themselves and others. Importantly, how organizations perceive and make sense of their environments directs behavior. Consequently, redirecting behavior requires the deconstruction of old meanings and the

reconstruction of a new understanding. Failure to realign mental models to a changing environment may result in organizational failure. Consider in this respect the case of the Polaroid Corporation.¹

Polaroid: a story of failed organizational adaptation

Polaroid was founded in 1937 by Edwin Land following his invention of light-polarizing filters. At that time, Polaroid's product range included glasses and a desk lamp which reduced glare. During a family vacation in 1943, Land's 3-year-old daughter asked her daddy why she had to wait so long to see the pictures her father had taken with his camera. This question started Land thinking about instant photography. In 1947, Land demonstrated instant film at the Optical Society of America meeting in New York. By 1948, Land had his first salable product: the 5-pound model 95 which sold for \$89.50. During the next three decades, Land and his team perfected instant photography. Through ongoing research, Polaroid was able to significantly improve picture quality, reduce development time, introduce color and one-stop development. The latter innovation is associated with the landmark SX-70 camera which won the triple crown of magazine covers on *Time*, *Life* and *Fortune*. The 1970s were the golden age of Polaroid. Wall Street was in love with Polaroid and its stock sold at a (then historical) 90 times P/E ratio. Polaroid had become a member of the 'Nifty-Fifty' safest US investments.

On October 12, 2001 Polaroid filed a voluntary petition for reorganization under Chapter 11 of the US Bankruptcy Code in the US Bankruptcy Court in Wilmington, Delaware.²

Gary T. DiCamillo, Polaroid's chairman and CEO, stated, "After a thorough analysis of Polaroid's financial condition and the rapidly changing outlook in our key markets, the board of directors and senior management concluded that today's court filings ... were both prudent

¹ This section is based on Tripsas & Gavetti (2000), Polaroid, R.I.P. (*Fortune* 2001), and information available at <http://www.polaroid.com>.

² On July 31, 2002, Polaroid Corporation and One Equity Partners announced that an affiliate of One Equity Partners had acquired substantially all Polaroid assets, creating a new company that would continue to operate under the Polaroid Corporation name. One Equity Partners manages investments and commitments for Bank One Corporation in direct private equity transactions. One Equity Partners will own 65 percent of the new company and the former Polaroid – now known as PDC, Inc. – will own the remaining 35 percent until distributed under a reorganization plan approved by the U.S. Bankruptcy Court.

and necessary” (Polaroid, 2001). Polaroid, once an icon of U.S. industry, had crashed. What had happened?

Much of the demise of Polaroid may be understood by identifying the belief structure with which it was competing in the camera business. Polaroid was operating on the basis of a couple of very deeply-held beliefs (Tripsas & Gavetti 2000). Polaroid was: 1) a technology-driven company, 2) committed to long-term large scale R&D projects, and 3) committed to the belief that customers would always value a physical instant print of photographic quality. Finally, there was the strong belief in the razor/blade pricing model, i.e. prices on cameras were dropped in order to stimulate demand for film. These beliefs significantly influenced Polaroid’s future. Consistent with Polaroid’s belief in the primacy of technology, a substantial amount of money was committed to digital imaging technologies. Thus Polaroid was investing heavily in developing new technological capabilities. During this time an Electronic Imaging group was set up which was to develop an instant digital camera/printer product called ‘PIF’ (Printer In the Field). However, Polaroid’s mental model caused top management to interpret the gradual transition to digital imaging as a shift in *technology* not as a shift in the nature of market demand. As a consequence, the firm never invested in developing any sales or marketing capability specific to digital imaging. Later, during the 1990s, the Electronic Imaging marketing group was given the charter to develop a digital camera concept. By 1992, the group had developed a working prototype. Importantly, members of the Electronic Imaging marketing group (none of whom had any prior experience at Polaroid) were operating with a different mental model than that of Polaroid’s senior management. Thus, the digital camera group tried to influence top management’s belief structure, especially its belief in the razor/blade pricing strategy. Top management, on the other hand, felt that members of the group did not understand Polaroid’s limitations in terms of manufacturing and product development. The continued cognitive conflict between members of the group and top management caused severe delays in the digital camera project. Not until 1996 did Polaroid announce its PDC-2000 product. By then, over 40 other companies were selling digital cameras. By 1997, when the follow-on PDC-3000 was announced, almost all members of the Electronic Imaging group had left

the company. In 1998, Polaroid introduced a Barbie instant camera. In October 2001, it filed for Chapter 11.

The Polaroid story raises a number of intriguing questions:

- how do belief structures, or mental models, develop? In the case of Polaroid, Edwin Land, the founder, had a profound impact on the development of Polaroid's belief structure. But what about "average companies" without strong founders?
- how to explain the cognitive inertia at the level of top management? Clearly, Polaroid was severely penalized for holding on to its beliefs too long (especially the razor/blade pricing model). Did historical success blind Polaroid management to changes in the environment?
- whose cognitions matter? Senior management and members of the Electronic Imaging group engaged in a significant amount of cognitive conflict. In the Polaroid case, senior management "won". But did it really win? Social exchange inside the company did not produce a shared set of beliefs causing several people to leave the company. The dissidents simply left.
- how important is turnover or diversity in top management teams as a driver of cognitive diversity? Several new CEOs took charge of Polaroid, but not much changed in terms of belief structures.
- how do managers make sense of their environment? And what happens if all of a sudden environmental events no longer make sense?

In this lecture, we can impossibly answer all of these questions. Nevertheless, some interesting insights may be gained by building on the cumulative body of work addressing the relationship between strategy, organizational change and cognition.

While the research agenda in the strategic management literature is increasingly being defined by the economic sciences, "[a] number of studies have now accumulated which suggest that a range of concepts and techniques borrowed from the cognitive sciences offer considerable promise as a means of gaining rich insights into issues and processes which lie at the heart of the field of strategic management" (Hodgkinson 1997(a): 625). In a similar vein, Mintzberg, Ahlstrand and Lampel (1998) have argued that "if [the cognitive school] can deliver on its intentions, it

could very well transform the teaching and practice of strategy as we know it today” (1998: 150).

Sensemaking: the link between strategy and cognition

Work linking strategy to cognition assumes that managers act on a mental model of their environment. A mental model encompasses both the concepts and the relationships between them an individual uses to develop an understanding of the environment. Mental models serve as “maps” enabling individuals and organizations to make sense of their environment.

Accepting that mental models affect organizational action, research has explored the relationship between cognitive structures and processes and patterns of organizational action. The basic process linking cognition and strategic action is a process referred to as “sensemaking” (e.g., Weick 1995). Sensemaking emphasizes that people try to make things rationally understandable to themselves and others. The fundamental idea of sensemaking is that “... reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs” (Weick 1993: 635). Sensemaking therefore reflects the notion that “... individuals are not seen as living in, and acting out their lives in relation to, a wider reality, so much as creating and sustaining images of a wider reality, in part to rationalize what they are doing. They realize their reality, by reading into their situation patterns of significant meaning” (Morgan, Frost, and Pondy 1983: 24).

Sense is made of the environment via the operant mental models. Mental models affect sensemaking in three important ways. First, when observing environmental events, individuals will notice those elements of the environment that are most salient to or offer support for extant mental models. Stimuli that are inconsistent with the operant mental models will typically not be recognized (e.g., Kiesler & Sproull 1982). Thus Starbuck and Milliken (1988) found that the beliefs held by managers regarding what is important will tend to push information that might indicate the need for new mental models to the background where they were unlikely to be acted upon.

Second, events, once noticed, will be interpreted in relation to the operant mental model.

Third, mental models direct action. The specific strategic actions considered will tend to reflect the current mental model. In consequence then, mental models not aligned with a changing environment may prevent managers from noticing events and developing new understandings about those events thereby causing delays in organizational adaptation (e.g., Barr, Stimpert & Huff 1992).

The more general point made in the sensemaking literature is that unless “sense is made” of the environment, there is nothing to decide (Weick 1993).

Observing the critical importance of the sensemaking process in explaining strategic action, several studies have attempted to improve our understanding of the process of sensemaking as well as the contextual determinants affecting it.

The starting point for much of this work is Daft and Weick’s (1984) model of organizations as interpretive systems. In their study, Daft and Weick have described sensemaking as involving three tasks: scanning (or noticing), interpreting and responding (see also Thomas, Clark & Gioia 1993).³ Each of these three tasks is complex and is associated with a specific type of uncertainty (Milliken 1990).

Scanning (or noticing) involves gathering information about events in the organization’s environment that might affect the organization’s functioning. In this phase, managers experience *state uncertainty* as they don’t feel confident to have developed a full understanding of what the major events affecting the organization are.

During the second task or phase – interpretation – managers assess the meaning and significance of events. While different levels of an organization may be involved in the scanning activities, interpretation is typically seen as an activity dominated by upper echelon managers (e.g., Hambrick & Mason 1984). In this phase, managers experience effect uncertainty. “Effect uncertainty exists when managers are unsure about what effect an environmental event will have on the organization and thus are uncertain about whether an environmental change represents a

³ In a similar vein, Kiesler and Sproull (1982) refer to these three tasks as noticing, interpreting and incorporating (1982: 550).

threat or opportunity for the organization” (Milliken 1990: 44). Resolving effect uncertainty requires explicit statements about cause-and-effect relationships and results in an unambiguous classification of an environmental event as either a threat or an opportunity. Interestingly, a number of studies have found that effect uncertainty can be resolved by engaging in information-rich scanning behaviors. Specifically, it was found that a high level of information use in top management teams (TMTs) was positively related to interpreting events as opportunities (Thomas, Clark & Gioia 1993). In a similar vein, Thomas and McDaniel (1990) found that establishing structural mechanisms (such as boundary spanners) in order to increase information availability and use increases the likelihood that managers will interpret environmental events both as an opportunity and as controllable.

The final phase in sensemaking – responding – involves reducing the degree of response uncertainty as management is considering possible adaptive (core or peripheral) changes. Adaptive changes can only be made once management is confident about how it should respond. Indeed, without the creation of meaning, there is simply nothing to decide.

Research involving managerial sensemaking has often focused on the second phase of the sensemaking process – interpretation. Interpretation involves attaching meaning to events and as such involves fitting the available information into structures for understanding and decision-making. Meanings attached to events are often influenced by *how* these events are categorized. Thus, “when decision-makers use particular labels to describe a given issue, the labels initiate a categorization process that affects the subsequent cognitions and motivations of the decision-maker” (Thomas, Clark & Gioia 1993: 241).

Two of the most salient labels used in the strategic management literature are “opportunity” and “threat”. Several studies have found that the specific nature of organizational responses to an environmental event will be determined by whether the event was classified as an opportunity or as a threat. Thus, Staw, Sandelands and Dutton (1981) have argued that the perception of an environmental event as a threat restricts the number of alternatives for action considered. According to the so-called threat-rigidity effect, interpreting an event as a threat distorts information-processing – in that information consistent with conservative

interpretation frames is overemphasized. This, in turn, generates pathologies such as action restriction causing rigidity in response formulation (Staw *et al.* 1981).

Several empirical studies have found evidence supporting the existence of a threat-rigidity effect. Ginsberg and Venkatraman (1992), for example, observed that when decision-makers viewed the issue of electronic filing of tax forms as an opportunity, they exhibited greater commitment to adopting this new technology. In an experimental study, Fredrickson (1985) found that simply labeling an issue as a problem rather than as an opportunity significantly influenced action recommendation.

Clearly then, the SWOT instrument, one of the most salient tools in strategy analysis, is cognitively biased. The presence of a threat-rigidity effect suggests that – because language is not neutral – users of the SWOT instrument naively risk falling victim to significant decision-making pathologies. Observing the cognitive biases inherent in the SWOT instrument, the question might also be raised whether some of the decision-making pathologies can be avoided by attending to the individual-level, team-level and organization-level characteristics surrounding the use of the SWOT instrument. At the organizational level, for example, research has observed a positive effect of quantity of information on the likelihood of describing an event as an opportunity (Thomas, Clark & Gioia 1993). Simply increasing the absolute amount of information available to teams using the instrument will influence the nature of the group's sensemaking process. The bigger implication suggested by the preceding analysis is the need for a comprehensive assessment of the cognitive assumptions embedded in tools of strategy analysis. Managers and academics alike ought to realize that cognitively flawed instruments simply cannot generate good strategy analysis!

Complications in sensemaking

Earlier, sensemaking was described as an interpretive process involving the construction and reconstruction of meaning to ongoing events (e.g., Weick 1995). In this section, attention is focused on certain imperfections and complications in the sensemaking process.

First, we consider how decision-makers interpret environmental events. This leads us to introduce the concept of *attribution*.

Second, while sensemaking is an individual-level activity, as a process it is inherently social (Weick 1995). Thus a manager's concept of the environment is not private in the sense that it develops independently of the social exchange network in which management is embedded. This observation leads us to introduce the concept of *enacted environments*.

Attribution

A prominent area of research exploring the effects of sensemaking on organizational action has focused on attributional processes. Initially developed by Heider (1958), attribution theory holds that managers will act as "naïve psychologists" attempting to assign meaning to the events surrounding them. Social psychological approaches to attribution theory have focused attention on the observation that individuals tend to attribute personal success to personal causes, and personal failure to situational or environmental causes. Thus job applicants receiving a job offer will attribute receiving the job offer to personal factors such as having the right experience, putting on a good performance, etc. Likewise, job applicants not receiving a job offer will attribute their failure to receive the job offer to the interviewer, to the specific situations surrounding the job interview, etc. Similar attribution biases have been observed in situations of managerial sensemaking.

"When executives are planning for the future, they focus on actions which their companies can take to achieve their objectives. If future outcomes are positive, and executives are asked to explain these outcomes, the readiest explanation lies in the actions they took. These actions will be recalled and discussed in the context of good performance. However, if outcomes are negative, it is not possible to explain them through management's actions aimed at achieving positive outcomes. Therefore, executives must identify and discuss environmental events which negated the effects of their own actions. This results in an external focus when discussing poor performance" (Clapham & Schwenk 1991: 226).

This pattern of blaming environmental threats for negative outcomes and associating positive outcomes with organizational strengths is called self-serving attribution.⁴

⁴ An alternative explanation for self-serving attribution argues that managers will use self-serving attributions to signal to outside constituencies that management is in control (e.g., Salancik & Meindl 1984). According to the "impression management" argument, managers

In an early study on self-serving attribution in managerial sensemaking, Bowman (1976) has analyzed the contents of annual reports in the food-processing industry. Bowman found that management of firms in the bottom quartile blamed the firm's financial position on negative environmental conditions. Conversely, the management of firms in the top quartile explained their success in terms of internal organizational factors such as planning and managerial expertise. Later studies have replicated Bowman's findings in a variety of contexts (e.g., Bettman & Weitz 1983, Clapham & Schwenk 1991, Wagner & Gooding 1997).

Importantly though, social psychological studies of patterns of attribution have also observed a tendency for individuals acting as *observers* to develop patterns that differ from those they would produce as *actors* (e.g., Kelley & Michela 1980). As *actors*, managers credited positive organizational outcomes to organizational strengths and blamed negative organizational outcomes on environmental threats. Conversely, *observers* will attribute organizational successes to environmental opportunities and explain organizational failures in terms of managerial weaknesses (Wagner & Gooding 1997). The finding of an actor-observer effect in attributional sensemaking has at least two important implications.

First, the presence of an actor-observer effect can generate significant intra-organizational conflict as the attributions of employees (acting as internal observers) will tend to place responsibility for negative performance outcomes with top management. Top management, on the other hand, will point toward environmental threats as an explanation for negative outcomes. The conflict between employees' attributions (management is to blame) and top management's attributions (the environment is to blame) can generate significant affective conflict inside the organization ultimately leading to a breakdown of structures of social exchange.

"explain their firm's performance not merely for the sake of causal understanding or personal esteem, but also to account for it, so investors and others can decide to become involved or not in the organization. Their attributional accounts are political statements that reassure constituents or induce them ... to participate in the organization's affairs" (Salancik & Meindl 1984: 239). Accepting the impression management position, the following effects are hypothesized: 1) management will be biased to take credit for positive outcomes; and 2) management will similarly be biased to take credit for negative outcomes as " [a] management trying to assure constituencies that it controls the firm's outcomes would be ill-advised to blame too many of its troubles on external circumstances. Doing so would imply that management lacked control over the outcomes" (Salancik & Meindl 1984:

Second, managers crediting themselves for their own organization's positive outcomes and simultaneously attributing other managers' (competitors') positive outcomes to environmental opportunities risk becoming complacent as they will tend to overemphasize their own expertise. Managerial complacency and self-satisfied inaction – triggered by the actor-observer effect – increases the likelihood of strategic persistence. Stated otherwise, managers will be less likely to engage in strategic change when external factors are seen as causes of poor organizational performance (e.g., Lant, Milliken & Batra 1992).

Enactment

The second complication in sensemaking we would like to highlight is that managerial sensemaking does not involve an “objective” environment but rather an “enacted” environment, i.e., an environment subjectively constructed by the decision-maker.

Much of the competitive strategy literature is predicated on the assumption that competitive environments are objective entities that can be understood and interpreted through careful and directed use of analytical techniques (such as Porter's (1980) five forces model). In addition, defining the boundaries of competition is not believed to be a problem.

However, patterns of competitive interaction are complex and ambiguous in cognitive content. Under conditions of bounded rationality, competitive strategies cannot be formulated unless complexity and ambiguity are reduced to a level where management can actually make sense of the surrounding environment. The cognitive, and hence subjective, construction of industry boundaries serves to reduce ambiguity and complexity thereby enabling management to focus its competitive activity on those firms *subjectively* believed to be its rivals. The process of sensemaking serves to stabilize the boundaries of competition and facilitates the coordination of competitive activity among firms. As such, boundaries of competition (describing both industries and strategic groups) exist primarily in the minds of managers rather than as objective delineations.

242). Empirical support for the impression management position has been mixed (see e.g., Clapham & Schwenk 1991 and Barr, Stimpert & Huff 1992).

The cognitive elements of competitive enactment may be described as follows:

“[M]arkets are pools of information about the characteristics and behaviors of firms. Interpreting this information requires a framework and nomenclature for describing variation among firms. Frameworks are partly generic across many organizational fields and partly specific to the technologies and traditions of a particular industry. Market cues are interpreted relative to existing frameworks, and form the basis for “attribute beliefs”. Attribute beliefs are what organizations know about each other and constitute the raw material used to discriminate the boundaries of competitive markets. Reducing the number of attributes down to a core set of dimensions, classifying firms on these dimensions, and identifying those firms most competitively relevant to one’s own are the keys to knowing who is a rival and who is not. Business strategies become feasible only after this discrimination is made. Blending organizational similarities and differences while anticipating the actions and reactions of rivals is the tacit problem-solving behind competitive strategy” (Porac & Rosa 1996: 370-371).

Importantly then, constructing images of rivalry is not simply an act of deliberate analysis. Images of rivalry result from a process of competitive *enactment*. Enactment refers to the fact that in organizational life people produce part of the environment they face.

This social constructionist perspective on competitive structures is based on Weick’s (1979) observation that organizations *create* their environments and then act as if their cognitive constructions were true. According to the social constructionist perspective, industries and strategic groups are sociocognitive - and thus distorted - representations of competitive environments.

Importantly however, images of rivalry will often develop through a process of *collective* sensemaking. Thus, while managers may somewhat naively believe that their cognitive representations of their competitive environment are private and independent, in reality mental models will be highly similar across rivals suggesting the existence of “group-level” beliefs about the market place.⁵ Cognitive convergence among rival firms will emerge through processes of direct and indirect imitation.

Indirect imitation occurs because strategists from different firms face similar technical/material problems with a finite number of solutions. Belief similarity develops as a result of interpreting the same cues and solving the same problems. Direct imitation occurs because of both formal and informal communication among a set of competitors. Such communications permit the mutual exchange of ideas and concepts by externalizing individual mental models in a publicly observable form. The

⁵ Interorganizational similarity in representations of competitive structure implies the existence of non-random patterns of beliefs rather than total homogeneity (Porac & Rosa 1996).

net result of both indirect and direct imitation is that the strategic choices of individual firms take place within the context of many shared beliefs about *how* and *with whom* to engage in transactions in the market place” (Porac, Thomas & Baden-Fuller 1989: 400, emphasis added).

Empirical evidence documenting the existence of cognitive convergence among rival companies may, for example, be found in Lant and Baum’s (1994) study of competition in the New York hotel industry. Here the authors found that the group of hotels identified as relevant competitors operated as a *de facto* cognitive community as a significant degree of cognitive similarity was observed among the management teams within this group.

The cognitive convergence argument is fundamentally historical, i.e., diversity in the early stages of competitive structure will gradually give way to increased similarity. Thus Levenhagan, Porac and Thomas (1993) have proposed the notion of a “cognitive life cycle of market domains”, a model which in many ways parallels the classic product life cycle concept. According to Levenhagan *et al.*, competitive structures (market domains) develop through a four-stage cycle: concept formation, concept championing, concept appropriation, and institutionalization. During the first stage (concept formation) innovative ideas (challenging established core concepts) are introduced thereby creating cognitive diversity. The introduction of innovations provokes cognitive activity as doubt is cast on the established interpretations of the environment (e.g., Greve & Taylor 2000). During the last stage (institutionalization) cognitive diversity has given way to the emergence of “industry recipes” (Spender 1989), i.e., a shared understanding of judgements concerning issues of product, technology, markets, personnel etc. In the institutionalization stage, an industry recipe – as discourse – emerges as an “unintended consequence of managers’ need to communicate by word and example within the industry” (Spender 1989: 188).

At a broader conceptual level, the convergence of cognitive structures results from the dual processes of competitive and institutional isomorphism introduced in the new institutional theory (e.g., Meyer & Rowan 1977; DiMaggio & Powell 1983).

Institutional theory argues that organizations in the same population or industry tend toward similarity (isomorphism) over time as they seek to

conform to common influences and through processes of social exchange that diffuse common knowledge and understandings. Typically, two types of isomorphism pressures are identified:

- competitive isomorphism: pressures toward similarity originating in the specific structure of market competition. That is, organizations that frequently meet each other in competitive space will start “looking alike”.
- institutional isomorphism: pressures toward similarity triggered by the need to achieve legitimacy within the larger environment. Organizations seeking legitimacy (and thus survival) will engage in specific actions not because these actions will lead to increased effectiveness and efficiency, but rather because these actions conform to socially accepted notions of what constitutes “appropriate competitive behavior”.

Institutional isomorphism works through three mechanisms:

- coercive isomorphism: pressures toward similarity originating with those organizations on which the organization is dependent for critical resources.
- mimetic isomorphism: pressures toward similarity due to the uncertainty in the environment. Uncertainty is reduced by imitating (mimicing) organizations that are perceived to be successful. Consider in this respect the widespread attempt at replicating GE’s successes by mimicing essential aspects such as six sigma.
- normative isomorphism: pressures toward similarity resulting from processes of professionalization (e.g., training and education, professional networks of social exchange such as conferences, trade fairs, trade associations, etc.). Here the emphasis is on a process of socialization involving an organization’s exposure to a set of socially constructed beliefs and understandings. Consider, for example, the various processes of professionalization causing the diffusion of management practices such as BPR and six sigma.

Summarizing, from an institutional perspective, the tendency for organizations to imitate each other constitutes an important source of uncertainty reduction. However, imitation also causes a significant degree of cognitive convergence among seemingly independent organizations. While managers may believe themselves to be in full and

independent control of their organization's activities, in reality they would seem to be "preconscious" implementers of socially scripted behaviors aimed at increasing their organization's legitimacy (social fitness) within the broader environment. Thus, the belief systems on which management is acting may usefully be interpreted as socially constructed schemas rather than private mental models reflecting the idiosyncracies of a specific organization. In consequence then, managerial behavior may be described as scripted, unreflective, ritualistic and habitual rather than rational, intentional and strategic.

Work exploring the relationship between institutional theory and organizational change suggests that organizations experience tremendous persistence forces that make recognizing the need for change and implementing change difficult (e.g., Oliver 1997). Indeed, when activities are highly institutionalized, organizations foreclose on many alternative courses of action not because such activities are considered ineffective, but because the institutionalized context prevents organizations from noticing the potential viability of such courses of action in the first place. Recognizing a relationship between institutional environments and managerial cognition, a number of researchers have drawn attention to the notion of cognitive inertia. Cognitive inertia implies that "firms experiencing a downturn in their business may actually perpetuate this state of affairs due to the inability of strategists to revise their mental models of competitive space sufficiently quickly to adapt successfully to the changing environment" (Hodgkinson 1997(b): 923). Research has found strong support for problems of cognitive inertia. For example, in a study of the U.S. financial services industry, Reger and Palmer (1996) found that managers were very slow to incorporate new information into their mental models even during periods of extreme environmental change. Prior to 1982, federal regulations resulted in a clear separation between commercial banks, thrifts, brokerage and credit unions.⁶ Price and geographic deregulation combined with states easing banking restrictions and an increasingly

⁶ Commercial banks sold traditional banking products (e.g., passbook savings and checking accounts, commercial and consumer loans), thrifts offered only savings accounts and home mortgages, credit unions specialized in consumer loans for limited memberships, and brokerages provided investment products and handled equity issues (Reger & Palmer 1996: 25).

adverse macroeconomic environment caused the financial services industry to undergo severe changes. Examining executives' cognitive maps revealed that "managers relied on cognitive maps reflecting obsolete industry boundaries rather than configurations representative of the deregulated industry" (1996: 22).

The concept of cognitive inertia is closely related to both Oliver's (1997) notion of normative rationality and Reed's (1991) concept of contextual rationality. The normative/contextual approach to rationality argues that choices are influenced by historical precedent and social justification. Under conditions of normative/contextual rationality, the nature of the decision-making process is not a deliberate effort toward the realization of pre-stated economic goals. Instead, decision-making needs to be seen as habitual, unreflective, and embedded in norms and traditions. The embeddedness of decision-making in historical allocations of resources generates, at the level of the individual, cognitive sunk costs. Cognitive sunk costs are "the social and psychological costs associated with altering firm habits and routines that prevent firms from seeking economically feasible alternatives" (Oliver 1997: 702). Cognitive sunk costs include employees' fears about learning new skills and competencies, top management's unwillingness to depart from its founder's vision, a general unwillingness to be disloyal to long-standing corporate traditions, and management's concern that resource changes will erode its power base (Oliver 1997). If cognitive sunk costs resulting in cognitive inertia prevents managers from initiating needed organizational change, the question arises as to what can be done to make management more mindful of the likelihood of the persistence of non-aligned cognitive schemas.

The preceding analysis has described managers as cognitively embedded individuals. In the cognitive paradigm, what managers do is in large part a function of managers' internal representations of their environment. While managers are not denied independent activity, the cognitive paradigm informs us that all managerial activity is embedded in a context of socially constructed belief systems and representations. Managers exhibit individual activity, but such activity is inevitably constrained by shared frameworks of meaning existing largely outside

the individual manager. As such, much managerial behavior is inconsistent with the model of rational choice.

The collapse of sensemaking

In this section, a specific problem related to the social character of sensemaking is analyzed: What happens if environmental conditions are such that decision makers can no longer make sense of their environment? What if the ensuing loss of sensemaking creates instability in the organizational and social structures in which the sensemaking process takes place?

According to Weick (1993) organizations may sometimes experience a collapse of sensemaking. Consider in this respect the following statement by a senior executive of a pharmaceutical company.

“Just a few years ago I felt differently about the future. I knew what my three most important moves were. I knew precisely what we had to accomplish to grow the company’s value. [...] Today I’m in a different predicament. I don’t know what my top three moves are. There might be five moves that matter. Or one. I can sense that the rules have changed. But I can’t put my finger on what they are. It feels awful” (Slywotsky 1996: 11).

Here, management is confronted with a situation where the old labels, the old understandings no longer work. Management’s noticing of what it perceives to be incongruous events creates confusion without understanding, i.e. there is a collapse of sensemaking.⁷

Sensemaking processes in organizations may collapse due to two separate but interrelated processes.

First, a loss of sensemaking is experienced because past interpretive schemas and past understandings are inadequate to make sense of events unfolding. The environment surrounding the firm cannot be understood, it no longer “makes sense”.

Second, new meanings may fail to develop due to a loss of organizational structure. Remember that an organization can be understood as “a network of intersubjectively shared meanings that are sustained through

⁷ See also the result reported by Brunner and Postman (1949) in their experiment exposing individuals to both normal and anomalous playing cards. Even after increasing exposure time, some subjects experienced a total collapse of sensemaking as they failed to correctly identify the anomalous cards. In the process, subjects experienced acute personal distress.

the development and use of a common language and everyday social interaction” (Walsh & Ungson 1991: 60). Emphasizing that sensemaking is intrinsically a social process, new meanings can only emerge when the underlying social processes are intact. However, organizations encountering severe environmental turbulence (associated with negative performance outcomes) may sometimes experience a disintegration of organizational structure. The disintegration of structure may, for example, manifest itself in subordinates questioning or even challenging the leadership of upper echelon management. The consequence of structural disintegration is that “...none of the orders given by superiors are any longer listed to, and that each individual is only solicitous on his own account, and without any consideration for the rest. The mutual ties have ceased to exist, and a gigantic and senseless fear is set free” (Freud 1922/1959 in Weick 1993: 637). The consequence of structural collapse is what Sigmund Freud (1922/1959) has called panic. Panic, in turn, deprives an organization of the means to create new meanings, new understandings. The collapse of structure – following environmental turbulence – leads to panic further leading to a collapse of sensemaking. Not having the ability to ascribe meaning to unfolding events, the organization is adrift as no and/or inconsistent decisions are made. The collapse of sensemaking ultimately leads to the total disintegration of the organization.

The collapse of sensemaking and its disastrous consequences are vividly illustrated in Weick’s (1993) analysis of the 1949 Mann Gulch fire in the state of Montana.⁸ The disastrous story begins when in the afternoon on August 4, 1949, a lightning storm passing over the Mann Gulch area sets fire in a dead tree. The Mann Gulch fire was the 13th fire of the season. The fire was eventually spotted on August 5 at 12:25 p.m.. That same afternoon, smokejumpers were dispatched to Mann Gulch in an attempt to get the fire under control. The cargo drop did not go smoothly as the plane carrying the smokejumpers encountered heavy turbulence at normal drop altitude and was forced to climb before dropping the cargo. The jump was completed between 3:50 and 4:10 p. m.. Fire-fighting gear was scattered on the south side of the gulch. By 5:10 p.m. the smokejumpers had gathered their gear. At that time the crew was a half

⁸ The following account is a summary of the events as described in Weick (1993) and Rothermel (1993).

mile removed from the fire. None of the smokejumpers felt threatened by the fire. One of the crew members stated:

“I took a look at the fire and decided it wasn’t bad. It was burning on top of the ridge and I thought it would continue on up the ridge. I thought it probably wouldn’t burn much more that night because it was the end of the burning period (for that day)” (Rothermel 1993: 2)

About 20 minutes later, at 5:30 p.m., the fire suddenly blew up. Spotfires were emerging below the crew and strong winds began sweeping the fire toward the smokejumpers. With the fire only 200 yards away, Wagner Dodge turned the group around and had them turn up the hill toward the ridge. They were soon moving through bunch grass that was two and a half feet tall and were quickly losing ground to the 30-foot-high flames. Dodge realized that his crew was still carrying all of their tools and that they were not moving fast enough. He ordered them to drop their tools, and then, to everyone’s astonishment, he lit a fire in front of them and ordered them to lie down in the area it had burned. No one did, and they all ran for the ridge. Foreman Dodge survived by lying down in the ashes of his escape fire. Two other smokejumpers outran the fire and crossed over the ridge. All other firefighters, 13 in total, died in the Mann Gulch fire. The hands on one of the crew member’s watch melted at 5:56 p.m. which has been treated officially as the time the 13 people died. They had started trying to control the fire only 46 minutes earlier.

What happened in those 46 minutes? According to Weick’s analysis, the 13 smokejumpers died because both the sense of what was happening around them and the means to rebuild that sense collapsed together. When the smokejumpers landed at Mann Gulch, they were expecting to find a 10:00 fire, i.e. a fire that can be surrounded completely and isolated by 10:00 the next morning. The smokejumpers used the 10:00 fire as a mental frame enabling them to interpret their environment and to make the appropriate decisions. Unfortunately, the frame “in use” was inconsistent with the situation they encountered in the gulch. Because they operated within the wrong frame, less and less of what they saw around them made sense. The 10:00 fire they were expecting to find didn’t behave like a 10:00 fire. Yet the behaviors unfolding in the time period of 46 minutes were all consistent with a 10:00 fire script. The crew’s inability to switch interpretive schemes killed 13 of them.

Crucial in the Mann Gulch story is the simultaneous and reinforcing loss of sensemaking and the loss of structure. According to Weick, the organizational structure of the group collapsed when Dodge told the crew to drop their tools. As Weick puts it, “if the retreating people are told to discard the very things that are their reason for being there in the first place, then the moment quickly turns existential. If I am no longer a firefighter, then who am I? With the fire bearing down, the only possible answer becomes, An endangered person in a world where it is every man for himself” (1993: 637). Not surprisingly then, when foreman Dodge ordered his crew to move into the escape fire he had lit in front of them, his second in command was overheard as saying “to hell with that, I’m getting out of here” (Weick 1993: 635). Weick concludes: “Dodge’s command lost its basis when the smokejumpers threw away their organization along with their tools” (1993: 637).

The tragedy at Mann Gulch and Weick’s subsequent analysis of these events hold a number of important lessons for management.

First, environmental changes exposing an organization to unfamiliar events may precipitate a loss of sensemaking. Organization members may no longer be able to understand events. Leadership should be acutely aware of the fact that environmental turbulence may cause a wide-scale loss of sensemaking and should consider it a priority to rapidly restore meaning.

Second, when loss of sensemaking coincides with significant changes in organizational structure and roles, the ability to construct new meanings may have been destroyed. Combined with the already prevailing loss of sense, organizational disintegration becomes almost inevitable. As Weick puts it : “The recipe for disorganization reads, Thrust people into unfamiliar roles, leave some key roles unfilled, make the task more ambiguous, discredit the role system, and make all of these changes in a context in which small events can combine into something monstrous. Faced with [such] conditions, organizations ... come crashing down” (1993: 638).

Third, in case of a simultaneous collapse of sensemaking and organizational structure, the ability to construct new meanings is significantly compromised. Faced with the unavailability of a formal organizational structural approach to restoring sensemaking, does an organization have an alternative or will panic occur? Observing the

prevalence of environmental turbulence, organizations can and should prepare for an eventual loss of sensemaking. Organizations can “practice” giving meaning to seemingly incomprehensible events via the structured and directed use of methods of “mental deframing”.⁹

Scenario planning, for example, has been described as an approach to “stretch” interpretive schemes (e.g., Schoemaker 1993). A structured use of the scenario planning technique may enhance managers’ cognitive agility by reducing the likelihood of holding on to non-aligned cognitive schemas in the face of stressful environmental events thereby increasing the likelihood that when unfamiliar events unfold, avoid a collapse of sensemaking (and consequently a collapse of organizational structure). Approaches to programmed conflict through formalized debate (such as dialectical inquiry and devil’s advocacy) have been proposed on similar grounds (e.g., Mason & Mitroff 1981). Hamel’s (2000) structured approach to strategy as revolution, Weick’s (1993) notion of institutionalized improvisation, and much of the strategic group decision support literature may similarly be interpreted as attempts to developing an organization’s capacity to construct new meanings. Borrowing from work in anthropology and cognitive development, Roos and Victor (1999) have recently proposed a model of strategy formulation as “serious play”. According to Roos and Victor, the complex social dynamic of strategy-making involves a three phase process: “1) the construction of the knowledge gathered from analysis and experience; 2) the sharing of meaning emerging from that knowledge, and 3) the transformation of identity assimilating the new knowledge” (1999: 352).

Realizing that responding to environmental changes requires the social construction of new meanings, it has been argued that what we need are “models which provide strategic decision support to the group by acting as a negotiative device to facilitate the involvement of the key decision-makers in gradually constructing an alternative social reality” (Eden 1992: 804). A characteristic shared by all of the aforementioned

⁹ The benefit of “practicing” for environmental complexity and ambiguity is amply illustrated in Rothermel’s (1993) reflections on the 1985 Butte forest fire. In his report for the Forest Service of the U.S. Department of Agriculture, Rothermel writes: “On August 29, 1985, 73 firefighters were forced into cleared safety zones while fighting the Butte fire. [...] Only five firefighters needed to be hospitalized. [...] Crews caught in the Butte fire survived a crown fire, a fire that was much more intense than the grass fire that killed firefighters at Mann Gulch. [...] The crews on the Butte fire could not have survived without safety zones that had been cleared *before* they were needed and were within easy reach. [...] In addition to fire shelters developed since the Mann Gulch fire, the crews on the Butte fire had the benefit of survival training. The Butte fire crews had well-trained

approaches is that they allow for the institutional development of deframing skills as a dynamic core capability.

Fourth, according to Weick (1993), panic (in the previously introduced Freudian sense of the word) follows from a collapse of sensemaking “when members of a group lack goals and values transcending the self-interest of each member” (Weick 1993: 645). While the strategic management literature on developing vision statements has met with some scepticism, the sharing of a transcendental set of values and norms may serve as a potent “insurance policy” against the collapse of structure. The deep-scripting of an organization via a shared set of values and norms may very well facilitate the emergence of new patterns of social exchange necessary for the construction of new interpretive schemes. Moreover, the presence of a strongly shared set of values and norms, significantly reduces the costs resulting from conflicts of interest in cooperative behavior, i.e. agency costs. Indeed, the sharing of a transcendental set of values and norms may very well be a necessary condition for implementing Weick’s (1993) concept of institutionalized improvisation. Implementing this concept – because it implies a decentralization of decision-making authority – increases an organization’s exposure to problems of divergence of goal structures. However, having a transcendental set of values and norms will lead to lower agency costs.

Fifth, organizational disintegration may happen very quickly as the collapse of sensemaking and the collapse of structure are subject to a deviation-amplifying feedback loop. That is, the collapse of structure leads to a collapse of sensemaking which leads to a further collapse of structure, and so on. Importantly, following the first cycle of this loop management may not have much time to put the organization “back on track”. Again, the availability of a deeply-shared set of values and norms or the ability to benefit from the pro-active use of structured approaches to mental deframing may slow down the clock as members can quickly create new networks of social exchange enabling the construction of new meanings.

Sixth, the troublesome fact of the matter is that many organizational post-mortems reveal that in most cases a solution to the problem

leaders. The crews were well disciplined; no one attempted to run from the fire. They stayed together and followed orders even though they were badly frightened” (Rothermel 1993: 7-9).

encountered was available inside the organization but somehow it never got implemented. In the Mann Gulch story, Dodge knew that creating an escape fire in front of them and moving the crew into the burned area could save them. Unfortunately, nobody followed him into the escape fire as by then the legitimacy of his leadership had already been destroyed. Similarly, in the Polaroid story, the Electronic Imaging group was operating on a mental model that, in retrospect, seemed much better aligned with the events unfolding in Polaroid's competitive and marketing environments. In the Mann Gulch case, leadership had the solution. In the Polaroid case, middle management had the solution. However, in both cases, something went awfully wrong in the process of developing a joint understanding of the environment. Somehow then, in both cases no satisfactory answer was found to one of organization's most fundamental problems: the co-location of knowledge and (legitimated) decision-making authority.

Sensemaking and organizational adaptation.

The process of sensemaking was introduced within the context of organizational adaptation. Sensemaking involves placing stimuli (often environmental stimuli) into some kind of framework. When people put stimuli into frameworks, this enables them "to comprehend, understand, explain, attribute, extrapolate and predict" (Starbuck & Milliken 1988: 51). Thus sensemaking was described as an interpretive process necessary for "organizational members to understand and to share understandings about such features of the organization as what it is about, what it does well and poorly, what the problems it faces are, and how it should resolve them" (Feldman 1989: 19).

While sensemaking is in essence a social activity (Weick 1995), the "making of sense" occurs at the level of the individual. Organizational change however, involves a collective effort. Indeed, coordinated social activity becomes problematic if no shared understanding has been developed. ¹⁰

¹⁰ In this sense, Barr and Huff (1997) have pointed to Haas' (1992) work on "epistemic communities". In his work, Haas points to the following defining characteristics of epistemic communities: 1) a shared set of normative and principled beliefs, 2) shared causal beliefs, 3) shared notions of validity, and 4) a common policy framework.

What processes then link individual-level sensemaking and collective action?

Clearly, for collective change to occur, some sort of instability in an organization's dominant frame of reference needs to be established. The process of disconfirming existing understandings will very often involve a significant amount of symbolic action (e.g., Quinn 1980). In addition, the emergence of new interpretive schemes will typically occur via a process of negotiated social construction (Berger & Luckmann 1966), i.e. the various parties seeking to affect the construction of new interpretive schemas will need to arrive at a "consensus" through a process of reciprocal influencing. Reciprocal influencing suggests the need to consider *sensegiving* as a process complementary to *sensemaking*. Sensemaking revolves around "meaning construction and reconstruction by the involved parties as they attempt to develop a meaningful framework for understanding the nature of the intended strategic change" (Gioia & Chittipeddi 1991: 442). Sensegiving, on the other hand, involves "the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality" (Gioia & Chittipeddi 1991: 442).

The complementary nature of sensemaking and sensegiving is well documented in Gioia and Chittipeddi's (1991) ethnographic work on organizational change.

According to the authors, an organizational change effort moves through a number of different stages. In stage 1 (envisioning), top management tries to make sense of the changed environment. Subsequently, in stage 2 (signaling), top management attempts to communicate its interpretation of the environmental stimuli to the various organizational stakeholders. In stage 3 (re-visioning), these stakeholders in turn will engage in a process of sensemaking as they try to ascribe meaning to the messages they are receiving. Possibly, in this stage stakeholders are changing their own interpretive schemes. In stage 4 (energizing) stakeholders engage in sensegiving processes of their own as they set up a dual pattern of communication. On the one hand, they will be responding to top management's signals in an attempt to influence/change the interpretive schemes underlying top management signaling activity. On the other hand, stakeholders will start a broad-

based communication program in an attempt to ensure an organization-wide commitment to the proposed organizational change.

Summarizing then, organizational adaptation may usefully be understood as a process in which sensemaking and sensegiving activities occur in a sequential and reciprocal fashion gradually encompassing expanding audiences as the organizational change effort unfolds.

Gioia and Chittipeddi's analysis has several important implications for management practice.

First, their analysis argues for a reconceptualization of the leadership role of the CEO. Specifically, the CEO's role during a time period of organizational change "might best be seen as one that involves calling into question an obsolete interpretive scheme, framing a new interpretive scheme in understandable and evocative terms, providing guidance for action toward the incipient change, and exerting influence to accomplish it" (1991: 446).

Second, the development of a captivating vision statement in the early phases of the organizational change provides a symbolic foundation for members of an organization to develop and embrace the alternative interpretive scheme. Observing that symbols mobilize action (e.g., Quinn 1980), a compelling vision statement may serve as a powerful instrument of symbolic construction.

Third, organizational change is a negotiated process involving the organization's top management team (TMT) and parties both inside and outside the organization. While upper echelon managers can easily dominate the process of emergence of new interpretive schemes, TMTs must still recognize that the imposition of an interpretive scheme involves a process of negotiation and re-negotiation of meanings between all actors involved. Stated otherwise, TMT reasoning is embedded in a context of social controversy involving arguing and debate. Failure to manage this process of negotiated social construction will inevitably result in an aborted organizational change process where cognitive conflict will lead to affective conflict ultimately triggering a deviation-amplifying process of collapse as described by. Developing new shared understandings is a necessary condition to accomplish coordinated social tasks such as organizational adaptation.

Whose cognitions matter?

Work linking cognition to strategy is based on the belief that decision-makers act on a mental model of the environment. But who are those decision-makers? In other words: whose cognitions matter?

The empirical literature on interpretation in organizations suggests that actors *throughout* the organization affect the way an organization behaves. Such a perspective is consistent with theories of cognitive consensuality or shared strategic frames (e.g., Huff 1982) which suggest that "... organizations are a network of intersubjectively shared meanings that are sustained through the development and use of a common language and everyday social interaction" (Walsh & Ungson 1991: 60). According to this perspective then, organizational activity does not originate with a singular (i.e. top management's) mental map, but instead derives from the jointly held understandings developed through social interchange.

While organizations may be described as a *distributed* knowledge systems (Tsoukas 1996), much of the strategic management literature is built on the premise that the authority and ability for strategic decision-making rests with the firm's top management team (e.g., Andrews 1971).¹¹ In consequence then, it is the belief structure of top management teams that will be most closely related to strategic action. Indeed, "... the imposition of meaning on issues characterized by ambiguity has become the hallmark of modern top managers" (Thomas, Clark & Gioia 1993: 240, see also Tsoukas 1996: 22).

The focus on top management teams as key strategic actors was made most visible in Hambrick and Mason's (1984) formulation of upper echelon theory. According to Hambrick and Mason a firm's strategic decisions (and the resulting organizational outcomes) may be thought of as reflections of the cognitive bases of an organization's top management

¹¹ Specific reference is made to that (dominant) part of the strategic management literature that considers strategy formulation as a rational, sequential decision-making process (i.e. the design and planning schools) (Mintzberg, Ahlstrand & Lampel 1998). The importance attributed to TMTs is significantly less in studies viewing strategy formation as an emergent negotiated process involving many members of an organization (e.g., Lindblom 1959, Quinn 1980).

team (TMT).¹² Hambrick and Mason argued that top management team diversity would be associated with less consensus and thus lower performance due to decreased cohesion resulting from cognitive and affective conflict.

Since Hambrick and Mason's landmark article, much attention has been devoted to analyzing the relationship between TMT characteristics and organizational outcomes. Empirical studies of the TMT characteristics-performance relationship have typically operationalized TMT characteristics using demographic variables. The use of demographic variables (such as age, functional specialization, team tenure heterogeneity) is based on a variety of research findings suggesting that demography is an important causal variable affecting a number of intervening cognitive processes and, through them, organizational outcomes (e.g., Pfeffer 1983).¹³

Hambrick and Mason's focus on demographic TMT characteristics is not new. Illustrative of the historical dominance of the demography approach is Dearborn and Simon's (1958) classic study of the relationship between executives' functional backgrounds and their selective perceptions of management situations. In their study, Dearborn and Simon asked managers to define the most important problem facing a company in a case study that was presented to them. When managers identified what was according to them the most important problem, it was observed that managers' historical exposure to the goals and activities of their specific functional departments led them to attend only to the information that related to the activities of that specific department. Stated otherwise, marketing managers suggested that the company in the case study faced a marketing problem while finance managers thought that the financial situation of the company was the most important problem. Dearborn and Simon's finding of selective perception is based on a simple exposure effect: i.e. exposure to the activities and goals of a specific functional

¹² While initially the role of a single individual (the CEO) has been emphasized, strategy research has gradually moved to the study of top management teams. Top management teams are typically defined as the top two tiers of an organization's management (e.g., Wiersema & Bantel 1992).

¹³ According to Pfeffer (1983) the use of demographic variables for the purpose of explaining organizational outcomes is often preferred given that demographic characteristics often serve as good proxies for (less easy to operationalize and measure) deep-level psychological processes. Further benefits of using demographic variables include objectivity, parsimony,

department leads to the development of a belief structure that systematically biases managers' information-processing capabilities. Clearly, the Dearborn and Simon study suggests the adoption of functional specialization and tenure as demographic variables explaining organizational performance.

Extending the research tradition of Dearborn and Simon, Hambrick and Mason's (1984) upper echelon theory argues that demographic traits and diversity in traits affect the cognitive capabilities of TMT and, through them, organizational outcomes. In the Hambrick and Mason model, each manager's perceptions and interpretations reflect his or her idiosyncratic cognitive base, i.e. the organized knowledge this manager holds about an issue including both the attributes of the issue and the relationships among the attributes. Cognitive bases matter because they limit the field of vision (selective perception) and because they filter the information that is processed. Because a manager's cognitive base evolves from previous experiences, demographic variables, it is argued, become possible indicators of its qualities.

Over time, much attention has focused on the performance effects of TMT demographic diversity.

Some researchers have argued that higher levels of top management team (TMT) diversity lead to a better analysis of environmental issues and thus to increased organizational performance (e.g., Bantel & Jackson 1989). Fundamental to associating TMT diversity with positive organizational outcomes is the belief that TMT demographic diversity leads to cognitive diversity which in turn counteracts the effects of selective perception, simplifications and biases resulting from bounded rationality. Other researchers, however, have argued that higher levels of TMT diversity increase the likelihood of team conflict and loss of group cohesion which in turn leads to lower organizational performance (e.g. Hambrick & Mason 1984).

Empirical studies have been unable to produce consistent support for either of these hypothesized relationships. The finding of considerable disagreement on the diversity-performance relationship has turned

comprehensibility, logical coherence, predictive power, and testability (Hambrick & Mason 1984).

attention to the possible moderating effect of industrial environments. More specifically, a positive TMT diversity-performance relationship is hypothesized to exist in dynamic and complex environments as heterogeneous TMTs will increase the quality of the decision-making process via an increased exposure to a greater variety of information sources, skills and competencies than would otherwise be available in a more homogeneous TMT. Alternatively, a negative relationship is hypothesized to exist in stable environments suggesting that in stable environments TMT diversity becomes dysfunctional due to a loss of team cohesion and collapse of behavioral integration.

However, even the introduction of an industry moderating variable has been unable to generate more clarity. Thus, an explicit test of the moderating effect of industry environments by West and Schwenk (1996) failed to find consistent support for any of the hypothesized effects. West and Schwenk conclude that pursuing this line of inquiry further will yield results “inconsistent at best and fruitless at worst” (1996: 571). The authors recommend instead to focus more on the specific strategies of firms as a factor influencing the optimal degree of TMT demographic diversity.

Observing that strategies, next to environments, may be an important determinant of decision-making complexity, Carpenter (2002) recently argued that strategic context will likely moderate the effect of TMT demographic diversity on firm performance. Somewhat surprisingly perhaps, Carpenter found evidence for a positive relationship between TMT demographic diversity and performance at *low* levels of strategic complexity. Conversely, a negative relationship between TMT demographic diversity and performance was found at *high* levels of strategic complexity. Carpenter’s finding of a negative TMT diversity-performance relationship in high complexity settings clearly suggests that in such settings the positive benefits of TMT sociocognitive conflict are counteracted by the negative effects of affective conflict.

While various empirical studies have shown that organizational outcomes are influenced by TMT characteristics, the sustained variability in research findings clearly signals the need for a more direct measurement of managerial cognition. The need for a more direct operationalization and measurement of managerial cognitions is further reinforced by

studies demonstrating that TMT demographic diversity imperfectly correlates with cognitive diversity (e.g., Glick, Miller & Huber 1993).

Demographic studies of TMT characteristics have typically focussed on TMT diversity. However, demographic diversity is not hypothesized to have a *direct* effect on organizational outcomes. TMT demographic diversity is believed to have an *indirect* effect on outcomes through its effect on TMT cognitive diversity. Not surprisingly then, studies addressing the relationship between TMT cognition and organizational outcomes have focused on TMT cognitive diversity. TMT cognitive diversity refers to “variation in beliefs concerning cause-effect relationships, and variation in preferences concerning various goals for the organization” (Miller, Burke & Glick 1998: 41).

While the quantity of empirical studies exploring the relationship between TMT cognitive diversity and organizational outcomes is significantly less than those exploring the demographic diversity-outcomes relationship, several interesting insights have been reported.

Consider, for example, Miller, Burke and Glick’s (1998) study of the relationship between TMT cognitive diversity and the comprehensiveness of strategic decision-making processes. Comprehensiveness as a strategic process variable is of interest as this is the process variable most often hypothesized as an intervening variable in studies of TMT demographic diversity and organizational outcomes.¹⁴ TMT cognitive diversity is hypothesized to be positively related to comprehensiveness of strategic decision-making processes. Several arguments supporting a positive relationship exist:

- Cognitively homogeneous TMTs may be exposed to groupthink, i.e. a deterioration of mental efficiency, reality testing, and moral judgement that results from in-group pressures (Janis 1972: 9). Conversely then, cognitive diversity may “create disagreements and equivocal experiences that result in more extensive discussions of strategic options, more learning opportunities, and thereby, reduce the likelihood of a groupthink-type phenomenon occurring” (Lant, Milliken & Batra 1992: 591).

¹⁴ Comprehensiveness is defined as “the extent to which an upper-echelon executive group utilizes an extensive process when dealing with immediate opportunities and threats” (Miller, Burke & Glick 1998: 40).

- Cognitive diversity among TMT members may reduce a team's exposure to information search bias, confirmation bias and other biases that lead management to focus on what is consistent with previous thinking (Bazerman 1994).
- Cognitive diversity in TMTs will cause the TMT to allocate funds to activities aimed at resolving disagreements (Glick *et al.* 1993).
- Cognitive diversity will negatively affect TMT cohesion (behavioral integration). Low levels of TMT cohesion will, in turn, lead to increased comprehensiveness as TMT members will be more likely to encourage debate and initiate studies designed to reveal flaws in members' interpretations.

While some arguments suggesting a negative effect of TMT cognitive diversity and comprehensiveness exist (e.g., communication breakdown), conceptual research suggests the dominance of a positive relationship. Surprisingly then, Miller *et al.* (1998), in a series of studies, found that TMT cognitive diversity negatively affected the comprehensiveness of strategic decision-making. Especially the existence of preference diversity (differences in goals structures) was found to cause the negative effect on comprehensiveness. Interestingly, the negative finding for TMT cognitive diversity echoes Carpenter's (2002) negative demographic diversity finding. The following conclusion may therefore be offered: Diversity in TMTs often triggers affective conflict suggesting that pursuing the benefits of TMT cognitive conflict without investing in conflict resolution mechanisms may ultimately end up hurting organizational outcomes.

The counterintuitive presence of a negative cognitive diversity-comprehensiveness (and thus performance) relationship also suggests the need to introduce moderating variables. Thus, Calori, Johnson & Sarnin (1994) have demonstrated that – consistent with Ashby's (1956) Law of Requisite Variety – CEOs' cognitive complexity should be matched by the level of complexity of their environment. The Calori *et al.* study begins by describing CEOs as “cognizers” given that “the imposition of meaning on issues of ambiguity has become the hallmark of the modern top manager” (Thomas, Clark & Gioia 1993: 240). CEOs, it is argued, need to counteract the dysfunctional effects of cognitive diversity and complexity inside the TMT by developing an integrative perspective, i.e.

they must be able to develop consensual cognitive maps. In order to establish cognitive integration, CEOs will need high levels of cognitive complexity. Managerial cognitive complexity is determined by two interrelated aspect: the number of concepts considered (comprehensiveness) and the number of linkages between concepts considered (connectedness). Using cognitive mapping techniques, and consistent with the principle of requisite cognitive complexity, Calori *et al.* observed a positive relationship between the complexity of the environment and the cognitive complexity of CEO mental maps.

The Calori *et al.* study and related research focusing directly on managerial cognitions suggest that “mental models of managers are a better predictor than managerial characteristics of whether changes in top management team membership will be associated with changes in strategy” (Barr, Stimpert & Huff 1992: 33).

Conclusion

In this lecture, we have argued that the successful implementation of strategic changes implies the social construction of new meanings. Central to the social construction of new meanings is the process of sensemaking in which members of an organization seek to develop a workable – but unavoidably distorted – understanding of their environment. The process of managerial sensemaking, due to its embeddedness in external networks of social exchange is subject to pressures toward cognitive convergence. Thus, within a single industry, managerial sensemaking will seldom be independent, reflecting instead consensually developed norms of both *what* needs to be done and *how* it should be done. It was also observed that collectively shared understandings exhibit significant temporal stability thus causing problems of persistence of strategic orientation.

From the perspective of the individual manager, the ultimate aim of further developing our understanding of the process of managerial sensemaking is to enhance “the practice of strategic management through the development of intervention techniques for facilitating strategic conversations” (Hodgkinson, Bown, Maule, Glaister & Pearman 1999: 977). The call for an improved practice of strategic management is

not without significance for business schools. Introducing the cognitive perspective can enrich our understanding of the process of strategy formulation and implementation. For example, observing that cognitively flawed instruments cannot produce good strategic analysis, we are urged to critically assess available instruments and to consider introducing new instruments such as cognitive mapping. Cognitive maps are hierarchical structures reflecting an individual's perception by capturing both the concepts and the (causal) relationships between them. As such, cognitive maps may be a useful instrument for the purpose of 1) depicting the nature and significance of cognitive processes shaping strategic decision-making; 2) surfacing the cognitive assumptions implicit in extant mental models; 3) deframing old mental models and reframing new ones, and 4) developing consensual understandings and meanings.

While much methodological and conceptual progress still needs to be made, a structured and directed use of the cognitive perspective is likely to transform the teaching and practice of strategy as we know it today. Business schools can and should play an important role in this process.

Acknowledgements

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