

TOWARDS AN ATTENTION-BASED VIEW OF THE FIRM

WILLIAM OCASIO*

J. L. Kellogg Graduate School of Management, Northwestern University, Evanston, Illinois, U.S.A.

The central argument is that firm behavior is the result of how firms channel and distribute the attention of their decision-makers. What decision-makers do depends on what issues and answers they focus their attention on. What issues and answers they focus on depends on the specific situation and on how the firm's rules, resources, and relationships distribute various issues, answers, and decision-makers into specific communications and procedures. The paper develops these theoretical principles into a model of firm behavior and presents its implications for explaining firm behavior and adaptation. © 1997 by John Wiley & Sons, Ltd.

Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others . . .

William James (1890), *The Principles of Psychology*, I: 403-404

Organizations and institutions provide the general stimuli and attention-directors that channelize the behaviors of the members of the group, and that provide the members with the intermediate objectives that stimulate action.

Herbert Simon (1947), *Administrative Behavior*, pp. 100-101

INTRODUCTION

How do firms behave? How do firms determine when, why, and how to respond to or anticipate changes in their environment or internal processes? Why do firms undertake some decisions and moves but not others? Explaining how firms

behave is one of the fundamental issues or questions that define the field of strategy, its priorities and concerns, and the contribution it makes to the theory and practice of management (Rumelt, Schendel, and Teece, 1994). In particular, explaining how firms behave allows us to comprehend whether and when firms are able to adapt to changing environments, whether they successfully change their strategies and capabilities, or whether they fail to respond adequately to competition.

Half a century ago, Herbert Simon (1947) introduced a then new perspective on firm behavior, which boldly departed from economists' theories of rational choice and highlighted the limits of human rationality in explaining how firms make decisions. The limited attentional capability of humans—to the range of consequences of their actions, how these consequences would be valued, and the scope of available alternatives—results in their bounded capacity to be rational. For Simon, organizations influence individual decision processes by allocating and distributing the stimuli that channel the attention of administrators in terms of what selected aspects of the situation are to be attended, and what aspects are to be ignored. Firm behavior, for Simon, is both a cognitive and a structural proc-

Key words: attention, cognition, social structure, theory of the firm

* Correspondence to: William Ocasio, Kellogg Graduate School of Management, Northwestern University, Leverone Hall, 2001 Sheridan Road, Evanston, IL 60208, U.S.A.

ess, as decision-making in organizations is the result of both the limited attentional capacity of humans and the structural influences of organizations on an individual's attention.

Fifty years after its initial publication, this paper aims to rediscover the central importance of the structuring of attention in Simon's (1947) early work on administrative behavior, and update it to incorporate our current understanding of social structures, environmental influences, and individual and social cognition. While the concept of attention has a long history and tradition in organization theory, it has not thus far developed into a unified perspective on firm behavior. Different authors have stressed different aspects of attention allocation and structuring, but ignored others. In particular, theories of attention have moved away from Simon's (1947) dual emphasis on structure and cognition to emphasize either how attention is shaped by routines and bounded rationality (March and Simon, 1958; Cyert and March, 1963), or alternatively, how attention is loosely coupled through enactment processes (Weick, 1979) and organized anarchy (Cohen, March, and Olsen, 1972). In the process the effects of the social structure on the channeling and distribution of decision-makers' attention have been greatly deemphasized if not entirely lost.¹ I propose to bring them back in.

The objective of this paper is thus to explicitly link structure and cognition into an attention-based view of the firm. It explicitly links individual information processing and behavior to the organizational structure through the concepts of procedural and communication channels and attention structures. It differs from and extends Simon's (1947) original formulation by providing an explicit treatment of attentional processing as a multilevel process shaped by individuals, organizations, and the environment. While linking

¹ In their book-length exposition of the garbage can model of decision-making, March and Olsen (1976) utilize the concept of attention structures as a set of rules that constrain how problems, solutions, and participants get linked in the garbage can. This generalization of the model of organized anarchy provides an independent role for organizational structure in the allocation of attention, and has served as a guide in the preparation of this paper. Their more general model, however, unlike the simple model of organized anarchy, has had limited impact on the organizational or strategic management literature. Furthermore, unlike the arguments found in Simon (1947), or the theory presented here, individual-level attention and information processing are absent from March and Olsen's (1976) formulation.

multiple levels, this paper focuses on *organizational attention*, the socially structured pattern of attention by decision-makers within an organization (Ocasio, 1995). The central argument of this open systems perspective (Scott, 1992) is that to explain firm behavior is to explain how firms distribute and regulate the attention of their decision-makers. This idea is based on three inter-related premises:

1. What decision-makers do depends on what issues and answers they focus their attention on (Focus of Attention).
2. What issues and answers decision-makers focus on, and what they do, depends on the particular context or situation they find themselves in (Situated Attention).
3. What particular context or situation decision-makers find themselves in, and how they attend to it, depends on how the firm's rules, resources, and social relationships regulate and control the distribution and allocation of issues, answers, and decision-makers into specific activities, communications, and procedures (Structural Distribution of Attention).

This view provides an alternative explanation for firm behavior both to theories of rational choice, such as game theory and agency theory, and theories that emphasize environmental determinism, such as population ecology. Furthermore, this paper argues that a focus on the structuring of organizational attention to explain firm behavior is of special interest and importance for our understanding of strategic choice (Child, 1972). Corporate strategy, defined by Andrews as the *pattern* of decisions in a company that *determines and reveals* its objectives, purposes, or goals, produces the principal policies and plans for achieving those goals (1971: 13), is understood here as a *pattern of organizational attention*, the distinct focus of time and effort by the firm on a particular set of issues, problems, opportunities, and threats, and on a particular set of skills, routines, programs, projects, and procedures. An attention-based view both shares a strong commonality with and has been influenced by process-based views of strategy formulation and firm behavior (Allison, 1971; Bower, 1970; Burgelman, 1983, 1994), while adding to these an explicit focus on attentional processing.

The next section presents the main outline of

an attention-based perspective and develops three metatheoretical principles underlying this view of organizations as systems of distributed attention. These principles are put to use in the subsequent section to develop a general process model of how firms behave. While a full theoretical development of the implications of an attention-based view is beyond the scope of this paper, the objective here is to provide a process-based model of how firms behave that integrates our understanding of cognition, organizational structure, and strategy formulation. I draw upon the model to provide a set of implications on how attentional processing helps explain when, why, and how organizations adapt to changes in their environment (Astley and Van de Ven, 1983; Barnett and Carroll, 1995). The last section presents conclusions and reviews the contributions of this paper.

ORGANIZATIONS AS SYSTEMS OF DISTRIBUTED ATTENTION

An attention-based theory views firms as systems of structurally distributed attention in which the cognition and action of individuals are not predictable from the knowledge of individual characteristics but are derived from the specific organizational context and situations that individual decision-makers find themselves in. *Attention* is here defined to encompass the noticing, encoding, interpreting, and focusing of time and effort by organizational decision-makers on both (a) *issues*; the available repertoire of categories for making sense of the environment: problems, opportunities, and threats; and (b) *answers*: the available repertoire of action alternatives: proposals, routines, projects, programs, and procedures.² An

²This definition differs from alternative conceptions that separate attention from encoding and interpretation, with the former as the first of various stages in information processing (e.g., Comer *et al.*, 1994). Cognitive psychologists differ in whether they view attention as occurring only as the first stage of perception followed by encoding, or whether attentional processing is itself shaped by the encoding of information. This paper follows both LaBerge's (1995) model of individual information processing and Simon's (1947) and Weick's (1979) conceptualizations at the organizational level, in which encoding is part of attentional processing. While neither Simon nor Weick discussed encoding directly, their respective concepts of decision premises and enacted environments refer to how organizational decision-makers encode information, and both concepts were considered as central parts of organizational attention.

important characteristic of this view of the firm as a system of distributed attention is the relationship between individual and organizational-level information processing (Comer, Kinicki, and Keats, 1994). While other perspectives on organizational cognition emphasize either the shared cognitions of organizational members (Schein, 1985; Daft and Weick, 1984), or those of its top management team (Hambrick and Mason, 1984; Eisenhardt, 1990), this attention-based perspective emphasizes the distributed nature of organizational decisions, actions, and cognitions (Simon, 1947; Boland, Tenkaski, and Te'eni, 1994; Hutchins, 1995). While individuals ultimately do the attending, individual attention is situated in the context of the firm's activities and procedures, and these situational contexts, and the decision-makers, issues, and answers they are linked to, are distributed throughout the firm (March and Olsen, 1976). In this section I develop the three interrelated metatheoretical principles or premises, drawn from different levels of analysis, that underlie this perspective on how firms distribute and regulate the attention of its decision-makers:

1. At the level of individual cognition, the principle of focus of attention links attentional processing to individual cognition and behavior.
2. At the level of social cognition, and building on the perspective of Lewinian social psychology (Ross and Nisbett, 1991), the principle of situated attention highlights the importance of the situational context in explaining what decision-makers attend to.
3. At the organizational level, the principle of structural distribution of attention builds on research and theory from organizational decision-making, strategy formulation, and cognitive anthropology to explain how the firm's economic and social structures regulate and channel issues, answers, and decision-makers into the activities, communications, and procedures that constitute the situational context of decision-making.

Principle 1: Focus of attention

The principle of focus of attention indicates, first, that decision-makers will be selective in the issues and answers they attend to at any one time,

and second, that what decision-makers do depends on what issues and answers they focus their attention on. At the level of individual cognition, attentional processes focus the energy, effort, and mindfulness of organizational decision-makers on a limited set of elements that enter into consciousness at any given time. Focused attention both facilitates perception and action towards those issues and activities being attended to, and inhibits perception and action towards those that are not (Kahneman, 1973). At the individual level, the heedfulness associated with focused attention is expressed through an elevation of activity in cortical neurons coding for a particular item above the activity in neurons coding for different items when a group of objects or ideas are presented for information processing (LaBerge, 1995). The resulting enhanced mindfulness of individuals generates a selective attention on an object or idea that facilitates perception and action towards the object or idea being considered, and away from others.

The selective focus of attention of decision-makers is ameliorated, at least in part, in the case of routine, or well-learned activities. Shiffrin and Schneider (1977), on the basis of experiments involving visual perception, distinguished between two models of attentional processing: controlled and automatic. Controlled processing is highly demanding of attentional capacity, it is largely under the individual's control, and is strongly dependent on activity load. Automatic processing comes into operation without the active control of individuals, is difficult to alter or suppress, and is dependent on extensive long-term learning. A common example given to distinguish controlled vs. automatic attentional processing is driving: a new driver utilizes controlled processing to maneuver the vehicle and to shift gears, actively mindful of driving; an experienced driver utilizes automatic processing, shifting gears without thinking about it.

The distinction between controlled and automatic attentional processing also helps us to understand the linkage between action and the focus of attention. In the case of automatic processing, action is highly routinized and habitual, as decisions are unreflexively triggered by environmental stimuli that is 'automatically' attended to. In the case of controlled processing, the action of decision-makers is triggered by those issues and answers they are mindful of. But given

their selective focus of attention, decision-makers are limited in the number of issues and answers they can attend to in any particular situation, and only those issues and answers will affect what they do (Simon, 1947).

Principle 2: Situated attention

The principle of situated attention indicates that what decision-makers focus on, and what they do, depends on the particular context they are located in. According to this principle, the focus of attention of individual decision-makers is triggered by characteristics of the situations they confront themselves with, and this situated attention directly shapes individuals' behavior (Ross and Nisbett, 1991). It implies that individual decision-makers will vary their focus of attention depending on the situation, and that consistency (or variance) in attention and behavior is dependent more on consistency (or variance) in the characteristics of the situation rather than characteristics of the individuals.

Cialdini and his collaborators (Cialdini, Reno, and Kallgreen, 1990; Cialdini, Kallgreen, and Reno, 1991) found strong evidence for the principle of situated attention in a series of field experiments. Cialdini and his collaborators discovered that individual decisions to litter or not in public parks and parking garages were dependent on the particular situation they found themselves in: the amount (and placement) of litter, whether other individuals (confederates) littered or not, and their exposure to different written signs on public codes of behavior. They found, not surprisingly, that individuals littered less in litter-free environments than in littered ones. More interestingly, they discovered that littering was even less when either a single piece of litter was found, or when litter was directly lined up along the curb (consistent with litter having been previously swept). The effects of exposure to public codes on littering varied directly with the strength of association between the code of behavior and the antilittering norms.

Cialdini *et al's* (1990, 1991) experiments indicate that characteristics of the situation trigger the individual's attention to norms of littering, and that this focus of attention directly affects how individuals behave. Cialdini and his collaborators carefully discount other alternative explanations to their experimental results. For example,

they found that littering decreased when the confederate littered in an otherwise litter-free environment. This result cannot be explained by direct social influence or modeling of the confederate, but is best explained by positing that the confederate, through his or her violation of the norm, directly focuses the subjects' attention on antilittering norms. The overall pattern of results (Cialdini *et al.*, 1990, 1991) demonstrates how the situation shapes the individuals' focus of attention and how, through this focus of attention, the situation influences individuals' actions.

The principle of situated attention operates at the level of social cognition (Fiske and Taylor, 1991). This principle provides a link between how individuals think and decide in any particular situation, and how the organization and its environment shape the situations that individuals find themselves in. While in the field experiments described above the subjects react to the social environment as manipulated by Cialdini and his collaborators, decision-makers in organizations react to situations as shaped by the organization and its environment. In the case of organizational decision-making and action, the principle of situated attention highlights the effects of the organizational and environmental context in shaping individuals' focus of attention and action.

Principle 3: Structural distribution of attention

This principle indicates that the particular context decision-makers find themselves in, and how they attend to it, depends on how the organization distributes and controls the allocation of issues, answers, and decision-makers within specific firm activities, communications, and procedures. According to this principle, attentional processes of individual and group decision-makers are distributed throughout the multiple functions that take place in organizations, with different foci of attention in each local procedure, communication, or activity. Each local activity within the firm involves a set of procedures and communications, and these procedures and communications focus the attention of decision-makers on a selected set of issues and answers.

The distributed nature of attentional processing and action within the firm is present in Simon's (1947) early formulation of an attention-based perspective. Simon (1947: 220) describes organi-

zational behavior as a complex network of attentional processes. He emphasized the distribution and allocation of decision-making functions and the processes whereby the organization influences the attention of its decision-makers. Organizational actions and decisions are seen as resulting from a composite process whereby, for example, the 'major decisions were made neither by the board nor by any officer, nor formally by any group; they evolved through the interactions of many decisions both of individuals and by committees or boards' (Simon, 1947: 222). For Simon, the firm's economic and social structures create, channel, and distribute the attention of decision-makers into discrete processes, and organizational actions and decisions result from the complex interactions among these discrete attentional processes.

In the strategy literature, Bower's (1970) conceptual and empirical examination of investment decisions in a large U.S. diversified firm illustrates how the distribution of focus among organizational decision-makers affects the content and outcome of the corporate resource allocation process. According to Bower, investment decisions are best understood as an interconnected set of stages in a hierarchical process. At each phase of the process—the initiating, integrating, and corporate levels—managers vary in the definition of the situation and the issues they pay attention to. From an attentional perspective, we can reinterpret Bower's framework as showing how the attentional focus of the firm's decision-makers is distributed throughout the various stages of the resource allocation processes, with each stage containing different procedural and communication channels, and each channel producing different foci of attention.

While the concept of distributed attention is implicit in past research and theory on organizational decision-making and strategy formulation (Simon, 1947; Bower, 1970; March and Olsen, 1976), its development of the linkage between organizational and individual information processing builds on more recent research by cognitive anthropologists (Latour, 1987; Lave, 1988; Hutchins, 1995). This research emphasizes how the division of labor in social organizations requires distributed cognition and information processing in order to coordinate the activities of organizational participants. According to this view, the cognition that takes place within social

organizations is not reducible to the cognitive properties of individuals, but results from the organization of communications and procedures in which social cognition takes place. For example, Hutchins (1995) uses ethnographic methods and cultural analysis to examine how the computations required for ship navigation are distributed among crew members performing different procedures and employing different artifacts and equipment. Human cognition in general, and attentional processing in particular, is not a shared activity of a collective mind, but one that is distributed throughout the various concrete procedures and which reflects both existing technology and the social structure of the organization (Hutchins, 1995).

A MODEL OF SITUATED ATTENTION AND FIRM BEHAVIOR

This section presents an imaginative model of situated attention in firms to explain how firms behave. The model incorporates the three principles of an attention-based view of the firm, described above, into an integrated framework, as shown in Figure 1. The model presents not a full-fledged theory of firm behavior, but a set of constructs and a set of mechanisms relating these constructs, that outline how attentional processing at the individual, social cognitive, and organizational levels interact to shape firm behavior. The constructs and mechanisms here are grounded in exiting cognitive, structural, cultural, and strategy process perspectives on firm behavior. The contribution of the model is to link these con-

structs and mechanisms in a coherent and systematic fashion and to relate them to the central organizing concept of organizational attention.³ The fundamental components of the model are: (1) the environment of decision; (2) the repertoire of issues and answers; (3) procedural and communicational channels—the firm's situated activities, communications and procedures; (4) the firm's attention structures—its rules of the game, players, structural positions, and resources; (5) decision-makers; and (6) organizational moves. The solid lines in Figure 1 provide a set of mechanisms (1a, 2, 3, 4a, 4b, 4c, 5a, 5b, and 5c) that link the constructs of the model to the three principles of an attention-based view:

1. *Focus of attention:* (5b) Decision-makers focus their attention on a limited set of issues and answers; (5c) the issues and answers they attend to and enact determines what they do.
2. *Situated attention:* The attention of decision-makers is situated in the firm's procedural and communication channels. The situational context of these channels includes: (1a) the environmental stimuli for decision-making; (2) the embodiment of issues and answers in cultural symbols, artifacts, and narratives; and (5a) the interactions among participants in the channel. The context and characteristics of the firm's procedural and communication channels interact to shape the availability and saliency of the repertoire of issues and answers (3).
3. *Structural distribution of attention:* The rules, resources, players, and social positions of the firm generate a distributed focus of attention among decision-makers participating in the firm's procedural and communication channels. The distribution of issues, answers, and decision-makers within the various channels depends on how these attention structures: (4a) generate a set of values that order the importance and relevance of issues and answers; (4b) channel and distribute decision-making into a concrete set of communications and

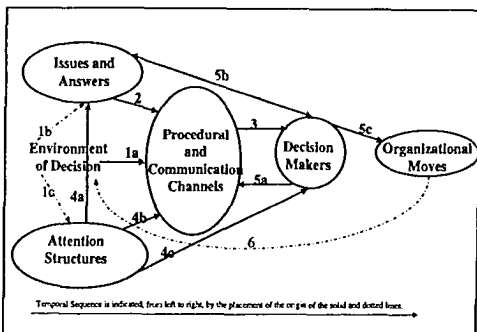


Figure 1. Model of situated attention and firm behavior

³ The contributions of the model, and the paper more generally, to understanding firm behavior can best be described as a form of architectural innovation (Henderson and Clark, 1990), where existing components (in this case the principles, constructs, and mechanisms presented here), many widely accepted in strategic management and organizational theory, others adapted from cognitive science, sociology, and anthropology, are combined into a new configuration.

procedures; (4c) provide decision-makers with a structured set of interests and identities that shape their understanding of the situation and motivate their actions.

The dotted lines show additional mechanisms, not directly part of the model of firm behavior, of how the firm as a cultural and social system is shaped by the environment of action, (1b) and (1c), and how the environment of decision is shaped by previous organizational moves (6). Note that the numbering of the mechanisms does not reflect temporal order, but the presentation sequence of the constructs of the model. Temporal order is reflected, to a first approximation, by the placement, from left to right, of the origins of the lines representing the various mechanisms.

The firm in this model is an open social system where, through attentional processing and decision-making, the inputs from the environment of decision are transformed by the organization into a set of outputs—the organizational moves. In this model, I represent the elements of the firm's social systems—its culture, structure, processes, and individuals—by the repertoire of issues and answers, the attention structures, the procedural and communication channels, and the decision-makers. In the remainder of this section, I present the constructs of this model and discuss the mechanisms that shape attentional processing and firm behavior.

Environment of decision

The *environment of decision* (Barnard, 1938), represented by the enclosed background in Figure 1, encompasses the multiple material, social, and cultural factors, both internal and external to the firm, that impinge upon any decision activity. The myriad of elements of its external environment include economic and financial markets (competitors, customers, and suppliers), tradable resources (raw materials, labor, and capital), technology, and institutional rules (government laws and regulations, professional norms, industry benchmarks). Note that the diverse elements of the firm itself, including the results of past organizational moves (March and Simon, 1958; Cyert and March, 1963), are an integral part of the firm's environment of decision. In an attention-based view the firm's environment of decisions provides the raw stimuli for the structuring of

organizational practices and decision-making (Barnard, 1938):

Mechanism 1a: (Environmental stimuli). In any specific communication or procedural channel, physical, economic, and institutional factors both external and internal to the firm impinge upon the environment of decision and provide a set of stimuli for decision-making.

While the environment of decision provides the raw inputs into decision-making, this paper follows Weick's (1979) conception of an attention-based view in emphasizing the enactment of the environment in the stimuli that is actually attended to. The environment of decisions is of infinite complexity and firms are bounded in their capacity to attend to all (or even most) environmental stimuli that impinge, directly or indirectly, upon any particular situation. Consequently, decision-makers are selective in those aspects of the environment of decisions that they attend to, as different environmental stimuli are noticed, interpreted, and brought into conscious consideration. Through the enactment of issues and answers, described below, decision-makers selectively restrict their attention to a limited set of stimuli, while ignoring others.

Environmental influences on organizational structures and cognition

With regard to cognitive processes, contemporary cultural and institutional perspectives highlight the treatment of cognitive schemas, symbols, and systems of meaning as external and objective to individual decision-makers (Douglas, 1986; Swidler, 1986; DiMaggio and Powell, 1991; Hutchins, 1995; Scott, 1995). According to this perspective the schemas and categories of thought that constitute the available repertoire of issues and answers are products of cultural and institutional processes at varying levels of the environment of decision, including the world system, economic sectors, organizational fields, organizations, and organizational subsystems (Scott, 1995). While a discussion of how these cultural and institutional processes operate is beyond the scope of this paper, for our purposes it suffices to point out how the repertoire of issues and answers is a product of these cultural and institutional processes (Swidler, 1986):

Mechanism 1b: (Cultural and institutional tool kits). Cultural and institutional processes, at varying levels of the environment, provide decision-makers with a repertoire or 'tool kit' of issues and answers from which to construct actions.

Again, while it is beyond the scope of this paper to discuss how the environment shapes the internal organizational structures—its rules, resources, and social relationships—suffice it to say that these structures are themselves embedded in the economic, social and institutional environment of the firm:

Mechanism 1c: (Environmental embeddedness). The firm's rules, resources, and social relationships are embedded in, and shaped by, the firm's economic, social, and institutional environment.

Issues and answers

Issues and answers are the cultural and cognitive repertoire of schemas available to decision-makers in the firm to make sense of (issues), and to respond to (answers) environmental stimuli. The issues confronted by the firm constitute the cognitive categories of problems, opportunities, and threats that make up the agenda of the firm, which are then available to organizational decision-makers to respond to or to ignore (Dutton and Jackson, 1987; Jackson and Dutton, 1988). Organizational decision-makers possess a cultural repertoire of possible schemas for the problems and opportunities that have been encountered in the past, both by the organization and in its environment. Decision-makers also possess a cultural repertoire of answers or action alternatives that can deal with a wide variety of issues, problems, and opportunities in the firm (March and Simon, 1958). This repertoire of answers is encoded in schemas used by organizational decision-makers to describe and understand the standard operating procedures (Cyert and March, 1963), organizational structures and routines (Nelson and Winter, 1982), and cultural 'tool kit' of plans and programs (Swidler, 1986) available as possible solutions to any problem or opportunity confronted by the firm.

Embodiment of issues and answers

Issues and answers constitute both a set of cognitive schemas and scripts for action and a set

of cultural products embodied in organizational artifacts (Hutchins, 1995; Schein, 1985; Swidler, 1986). As cultural products, issues are reflected in the technology, physical space and arrangements, archives, documents, stories, vocabulary, and narratives that are part of organizational memory (Walsh and Ungson, 1991). Here I would like to highlight how the embodiment of issues and answers in cultural products and artifacts increases their availability (Kahneman and Tversky, 1974) for attentional processing. In particular, the firm's cultural products and artifacts are used in concrete activities, procedures, interactions, and communications of the firm.

Mechanism 2: (Embodiment of issues and answers). Issues and answers are embodied in the cultural products and artifacts used to construct the firm's activities and communications.

Procedural and communication channels

The situated and distributed characteristics of attentional processing emphasize how the firm's organization creates for individual decision-makers a set of situational contexts in which attention and action take place. I have termed these situational contexts procedural and communication channels.⁴ *Procedural and communication channels* are the formal and informal concrete activities, interactions, and communications set up by the firm to induce organizational decision-makers to action on a selected set of issues. They are termed *concrete* by virtue of their material existence, and specific location in time and space. They include formal and informal meetings, reports (e.g., action memoranda, quarterly and annual reports, customer satisfaction surveys, costs accounts) and administrative protocols (e.g., personnel evaluations, budgetary and capital appropriations requests, requests for proposals). Sutton and Hargadon (1996) examined one particular type of procedural and communication channel used in the product design,

⁴ The term action channel (Allison, 1971) is equivalent to the concept of procedural and communication channels that I use here. I have settled for the composite term over the simpler one of action channels, first because it is less abstract, and second to connote that both procedures and communications, either independently or jointly, create the situational contexts under which attention takes place.

the brainstorming session, and how it shapes the firm's access to the issues and answers. More generally, Yates (1989) has analyzed the historical use of development of different genres of communications and procedures in large U.S. corporations—including the report, the committee meeting, and the memo—and their role in controlling the flow of information and decision-making.

By focusing the attention of decision-makers, procedural and communication channels are a critical part of the firm's attention allocation and serve as conduits for the processing of issues and answers in the making of organizational moves. The particular form and characteristics of the firm's procedural and communication channels significantly impact when, whether, and how decision-makers focus their attention, and how the attention of various decision-makers interacts within the channel. Stinchcombe (1968) has identified three dimensions—spatial, temporal, and procedural—that shape how these organizational contexts focus the attention of organizational decision-makers. The spatial dimensions regulate the availability of issues and answers and their commonality among decision-makers. The temporal dimensions regulate the amount of time organizational decision-makers have available to respond (i.e., the duration of interaction and communications between decision-makers and the deadlines for response). The procedural dimensions regulate the pattern and duration of attention foci to specific issues and answers available for consideration. Together, these three dimensions shape the availability and saliency (Kahneman and Tversky, 1974) of issues and answers within specific channels.

Take an example—a committee meeting. Its spatial dimensions include the physical location, the seating arrangements, the audiovisual equipment and materials, and the written documents available to committee members. The temporal dimensions include the time it is held, its duration, and its temporal proximity to other meetings and communications both of the same committees and of other groups within the organization. The procedural dimensions include the agenda for the meeting, the formal structure of the committee, if any, voting rules, and the formal and informal norms that guide the duties and responsibilities of committee members. The principle of situated attention suggests that each

of these dimensions affects what decision-makers focus their attention on by increasing the availability and saliency of certain issues and answers, and decreasing others. For instance, whether a committee meeting is held in headquarters location, in a manufacturing plant, or in a restaurant affects the saliency of particular issues and answers; a plant location is likely to make manufacturing and production issues and answers more salient, while off-site locations are often used to invoke the generation of novel issues and answers and to challenge prevailing ones. The duration and the agenda of the meeting affect which issues are considered and how much time and energy are devoted to the generation of answers.

As I discuss in the next subsection, the attention structures of the firm channel specific decisions into specific committee meetings, and regulate the spatial, temporal, and procedural dimensions of any specific meeting. While it is beyond the scope of this paper to develop a theory of how the various spatial, temporal, and procedural dimensions interact to focus the attention of decision-makers, the purpose here is to suggest that they are important factors in determining the availability and saliency of issues and answers for consideration:

Mechanism 3: (Availability and saliency of issues and answers). The spatial, temporal, and procedural dimensions of the firm's communication and procedural channels affect the availability and saliency of issues and answers that decision-makers will attend to.

Attention structures

Attention structures (March and Olsen, 1976) are the social, economic, and cultural structures that govern the allocation of time, effort, and attentional focus of organizational decision-makers in their decision-making activities. Attention structures regulate the valuation and legitimization of issues and answers, the creation and distribution of procedural and communication channels, and the interests and identities that guide decision-makers' actions and interpretations. Four categories of attention regulators will be examined in the conceptual model: rules of the game, players, structural positions, and resources. Together these four sets of factors

explain how firms actively regulate attention to the internal and external environment of action and how issues, answers, and decision-makers are allocated into procedural and communication channels. These categories of attention structures, while analytically distinct, do not work independently but interact to organize and allocate the firm's pattern of attention. Players occupy structural positions and are constrained and enabled by the organizational rules of the game. They employ the firm's resources in their attention processes to collectively direct what, when, and how organizations enact and respond to the environment.

The organization's attention structures govern the allocation and distribution of time, energy, effort, and attention through three separate mechanisms. First, the firm's rules, resources, and social relations structure attention in organizations by generating a set of values that order the legitimacy, importance, and relevance of issues and answers. Second, these attention structures channel and distribute the decision-making activity within the firm into a concrete set of procedures and communications. Third, attention structures provide the decision-makers with a structured set of interests and identities. These interests and identities generate in turn a set of decision premises and motivations for actions. In the remainder of the discussion of attention structures I will first describe the four categories of attention structures and then explicate the three separate effects, or mechanisms, that comprise the structural distribution of attention.

Rules of the game

The rules of the game are the formal and informal principles of action, interaction, and interpretation that guide and constrain decision-makers in accomplishing the firm's tasks and in obtaining social status, credits, and rewards in the process.⁵

⁵ This concept of rules of the game is closely related to those of organizational paradigm (Brown, 1978), conceptions of control (Fligstein, 1990), and institutional logic (Jackall, 1988). I use the term rules of the game rather than institutional logic to stress not only the cognitive aspects of rules, but their pragmatic and motivational implications. I use this term rather than organizational paradigm or conceptions of control to suggest that the rules of the game may not be fully coherent and consistent as implied by the concepts of paradigm or conceptions of control, but are often fragmented and partially contradictory.

These rules constitute a set of assumptions, norms, values, and incentives—usually implicit—about how to interpret organizational reality, what constitutes appropriate behavior, and how to succeed. Organizational games are mixed motive games of coordination and conflict, of cooperation and contestation.⁶ Organizations are concurrently: cooperative systems (Barnard, 1938), whose common purpose is the objective of collective action; shifting political coalitions (Cyert and March 1963), whose decision-makers have conflicting interests and goals; and, arenas for contestation, where participants compete for status, power, and material rewards (Allison, 1971; Bower, 1970; White, 1992). The rules of the game provide both a logic of action and embody a set of cultural and material values and incentives that structure and regulate the mixed motives of coordination, bargaining, and contestation that occur within diverse organizational situations.

The firm's principles for action, interaction, and interpretation are collective human constructions that reflect the organization's history and the history of its environment (Selznick, 1957; Fligstein, 1990). This factor greatly complicates our understanding and explanations of firm behavior, as rules must be historically and culturally situated in the social context in which they were derived and developed. For example, in the case of competitive strategy and action, organizational decision-makers develop rules of competition and anticipate, prepare for, and react to competitors' actions based on these rules. These rules of competition define which competitors must be attended to, on what basis competition take place (e.g., price, customer service, low costs, quality, technological innovation), and how the firm should prepare for and respond to competitors' actions. The historical and socially constructed nature of the rules of competition held by organizational decision-makers implies that whether and how a firm attends, anticipates, and responds to a particularly competitive action will change as prevailing rules change.

For instance, Microsoft's rapid and vigorous response to Netscape's entry and early dominance

⁶ Building on the formal theory of games, Schelling (1960) distinguished between three forms of games: zero-sum games, which are governed by pure conflict; coordination (or cooperation) games, where conflict is to everyone's disadvantage; and mixed motive games, where players must reconcile their instrumental ambitions with the gains from cooperation.

of Internet platforms is shaped by its rules of competition in the computer industry. According to Microsoft's CEO, Gates (1995), its biggest competitive challenge is to become the first company in the industry to exploit successfully successive shifts in dominant computer technology. This rule, and the example of IBM, and its initial failure to enact accurately the implications of the personal computer, has driven Microsoft to focus many of its strategic efforts and technology development resources to Internet projects.

Players

An important component of the firm's attention regulation are individuals and groups of individuals who are the players in the organizational game. Players affect the firm's attention regulation through the specific skills, beliefs, and values they bring to the firm (March and Olsen, 1976). The most critical players in attention regulation are typically the CEO and the top management group (Hambrick and Mason, 1984; Hambrick, 1994). Other actors and groups of actors both internal and external to the firm may constitute significant players including middle and divisional management, workers and their union representatives, active board members, major customers and suppliers, institutional investors, financial analysts, consultants and, more recently, the business press.

In explaining the influence of players we distinguish the concept of players first from that of decision-makers and second from the structural positions they occupy. Decision-makers are the concrete social actors that participate in the firm's procedural and communication channels. Players are structurally autonomous social actors or groups of actors (Burt, 1982) which, through their social influence, power, and control, influence and regulate the decision and activities of other decision-makers. Not all decision-makers are players, and in a particular situation players who are not decision-makers may influence a particular organizational action or move. For example, the members of the compensation committee of a firm's board of directors who participate in a particular meeting constitute the decision-makers in that particular procedural and communication channel. But not all the participants are players, as some may have little autonomous influence over the committee's actions of decisions. Fur-

thermore, the firm's CEO is typically a player in that meeting, who shapes the attention of decision-makers, through his or her power and social influence over the board (Wade, O'Reilly, and Chandratat, 1990; Westphal and Zajac, 1995). The CEO is not a decision-maker in that specific channel, being neither present in the meeting nor a committee member.

I also distinguish players from the structural positions they occupy (see below). Players have an effect to the extent that they have some discretion over the enactment of the structural position and can bring their own personal set of skills, beliefs, and values to those positions. Players exert control over decision-makers through their individual and structural sources of power. Note that the distinction between players and positions is at the heart of debates over managerial discretion. Here, we argue that managers (and other influential players) have a discretionary role in influencing firm attention and behavior (Hambrick and Finkelstein, 1987).

Players provide an entrepreneurial function in the allocation of attention in organizations. Players may influence the structuring of organizational attention either by affecting the generation and valuation of any of the component issues, answers, or procedural and communication channels, or by regulating the structure of linkages between them. Note that the players' sources of extraorganizational influence are not always beneficial to the firm's performance nor are they a source for change. Players often become committed to prevailing organizational structures and strategies, and their personal interests, values, and orientations may come into conflict with the organization's purpose (Selznick, 1957).

Structural positions

Structural positions are the roles and social identifications that specify (a) the functions and orientations of decision-makers, and (b) their interrelationships with other structural positions internal and external to the firm. Structural positions interact with the rules of the game to provide decision-makers with the interests, values, and identities that regulate how they think and act in organizations. Structural positions and relationships arise from the division of labor both within and between organizations. In large modern business enterprises, specialized structural po-

sitions have been developed to attend to the numerous and diverse aspects of the organization's environment. The emergence of structural positions of middle and upper management is associated with an increase in the specialization of function in attending to changes in customers, technologies, competitors, and markets (Chandler, 1962, 1976).

Structural positions provide a source of differentiated attention to different aspects of the organization's environment (Lawrence and Lorsch, 1967) and allow their occupants to focus their time and effort on certain problems and on certain solutions, and to ignore others. Structural positions not only serve to differentiate organizational attention, they also provide structures for their integration. Structural positions shape bargaining, coordination, and contestation within organizations. Structural positions provide for a system of hierarchical authority in organizations that allows conflicts over subunit goals to be resolved and resources to be mobilized.

Resources

Firm *resources* are defined as the set of tangible and intangible assets that allow the firm to perform its activities and to produce its goods and services (Wernerfelt, 1984). Firm resources are embedded in the organization's routines and capabilities (Nelson and Winter, 1982) and provide the organization with the collective skills to perform a wide variety of tasks. In the model, firm resources are the human, physical, technological, and financial capital available to the firm at any moment in time for its objectives.⁷ The set of firm resources comprises its distinctive competencies and inimitable assets (Selznick, 1957; Rumelt, 1984) which provide a primary source of the firm's competitive advantage, as well as other nondistinctive resources whose yield may be at or below the competitive return.

It is important to distinguish the concept of answers from that of resources in the model and the relationship between them and organizational moves. Answers are the cognitive schemas of

⁷ This definition of resources is more narrow than in some resource-based views of the firm (e.g., Barney, 1991). Note that this paper seeks to explain firm behavior in any specific situation, while resource-based views, to the extent that they directly or indirectly address firm behavior, typically refer to behavior across multiple situations.

alternatives considered by organizational decision-makers in making decisions and enacting moves. Resources are the tangible and intangible assets utilized in the construction of organizational moves. The repertoire of answers is shaped, but not fully determined, by existing organizational resources. The schemas used by organizational decision-makers to characterize and describe existing resources are part of the repertoire of action alternatives considered. But alternative answers are often considered, such as answers developed by competing firms, that may not be part of the firm's existing resources. Consequently, translating answers selected by organizational decision-makers into organizational moves requires that either existing resources be deployed or that new resources be acquired or developed.

The valuation of issues and answers

A principal mechanism by which attention structures govern and distribute the attentional focus of decision-makers is through the valuation and legitimization of issues and answers. Among the large repertoire of issues and answers available to decision-makers for consideration, decision-makers are more likely to consider and to attend those with greater legitimacy, value, and relevance to the organization. The valuation and rank ordering of the repertoire of issues and answers result from the cultural, social, and economic structures that govern attention in organization.

The rules of the game play a critical role in the allocation of value and legitimacy to the repertoire of issues and answers. These rules embody the organizational identity and purpose (Andrews, 1971; Barnard, 1938; Selznick, 1957; Dutton and Dukerich, 1991) and provide central guiding concepts that legitimate both the issues and problems that firms consider and the appropriateness of the answers and responses to those issues and problems. The rules of the game embody the set of cultural and material values and incentives that structure the coordination, bargaining, and contestation that occur within diverse organizational situations. These values and incentives specify the system of social and economic rewards and recognition obtained by organizational decision-makers in their interactions and links these rewards to specific issues and answers.

This set of incentives regulates the attention of organizational decision-makers so as to recognize and resolve those issues and activities most highly valued by the firm.

While the rules of the game play are central, the allocation of values, legitimacy, and relevance of issues and answers is a joint product of the firm's rules, positions, players and resources. The principle of structural distribution of attention highlights how the values, legitimacy, and relevance of the various issues and answers are not uniform throughout the firm, but are distributed according to the division of labor. The structural positions interact with the rules of the game so that issues and answers are differentially valued throughout the firm. Different values are assigned to different issues and answers according to the structural position held by decision-makers. Players and resources also play a role in the determination of values. Players are involved in selling of issues, answers, and agenda building throughout the various functions of the firm (Dutton, 1988). Answers and solutions embedded in organizational resources are more likely to be highly valued and legitimate than other answers. Attentional and resource constraints bias the firm in the direction of continuing exploitation and development of existing resources and routines, rather than in the development of new ones (March, 1991). Consequently:

Mechanism 4a: (The valuation of issues and answers). The firm's attention structures govern the valuation and legitimization of the repertoire of issues and answers available to decision-makers. These values are not uniform throughout the firm but are differentiated according to the division of labor inherent in the firm's rules, positions, players, and resources.

The channeling of decision-making

The principle of structural distribution of attention suggests that the firm's rules, players, structural positions, and resources allocate the decision-making activities of the firm into a concrete set of procedural and communication channels. Firms establish a wide variety of channels to collect information, measure human, physical, and financial inputs, monitor outcomes, control resource mobilization, and make decisions. Which chan-

nels are created, what specific agendas and procedures are utilized, and where they are located in time and place, are regulated by the firm's rules of coordination and contestation (Simon, 1947), by the division of labor inherent in the firm's resources and structural positions (Henderson and Clark, 1990; Chandler, 1962), and by the power and influence of organizational players (Jackall, 1988). For example, the diverse structural positions of the firm generate a set of quasi-independent channels for the specific decisions including cash management, inventory control, budgeting, investment analysis, marketing, product design, human resource management, performance evaluation, and strategic planning, among others. More generally, these structural positions interact with the rules of the game, the firm resources, and organizational players to regulate the allocation of the diverse decision-making activities throughout the firm:

Mechanism 4b: (The channeling of decision-making). The firm's attention structures channel and distribute the decision-making activities of the firm into a set of procedural and communication channels.

The structuring of interests and identities

A structural perspective on the distribution of attention highlights the role of attention structures in providing the interests and identities that motivate action and that provide decision-makers with the premises for decisions (Simon, 1947). First, the organizational rules of the game provide the normative frames and systems of interests and identities that motivate action and interpret meaning in organizational situations. These interests and identities shape the enactment of issues by specifying how the environment of action is to be interpreted by organizational decision-makers and which elements of the environment are critical to the organizational game. Second, players structure interests and identities through their network of connections with organizational decision-makers (Burt, 1982). Structural perspectives on action highlight the role of players and networks in structuring incentives and influencing perceptions. Third, structural positions provide for a source of variation in the interests and identities of decision-makers. In any situation, decision-makers who hold different structural positions

will have different interests and social identifications (March and Simon, 1958; White, 1992). Finally, the deployment of firm resources entails a distribution of human capital, with the interests of decision-makers dependent on the degree to which their human capital is associated with the various resources of the firm. Together, the rules, players, positions, and resources of the firm structure the interests and identities that decision-makers face in any situation:

Mechanism 4c: (The structuring of interests and identities). The firm's attention structures provide decision-makers with a structured system of interest and identities to motivate their action and to structure their decision premises.

Decision-makers

Decision-makers are the concrete individuals who jointly participate, within any specific procedural and communication channel, in the enactment of the environment and the social construction of organizational moves. In an attention-based view of the firm, decision-makers attend to the environment of action, the inputs of decision-making, and through their attentional processing selectively construct the mental models that result in organizational moves, the output of decision-making. Decision-makers are situated in the firm's procedural and communication channels, the concrete location in time and space where attentional processing occurs.

The structuring of participation

The focusing of attention in social organizations emerges from the social interactions among the decision-makers who participate in any specific situation. Organizations are not unitary actors, but are comprised of multiple decision-makers, with distinct identities, interests, and social positions (Cyert and March, 1963). The focusing of attention in organizations is thereby conditional on whether, when, and how decision-makers participate in the firm's procedural and communication channels. Participation is in turn conditional on the time, energy, and effort of decision-makers, and on the attentional demands on their time from other channels. Participants bring to any specific activity or situation knowledge of alternative issues and answers, as well as interests and

identities that shape which issues and answers become more salient. Who participates in a decision process shapes which issues and answers are attended to, and consequently what decision-makers do (March and Olsen, 1976):

Mechanism 5a: (The structuring of participation). Decision-making is the product of interactions among participants in the firm's procedural and action channels. The structuring of participation is, in turn, conditional on the time, energy, interests, and identities of organizational decision-makers, and on the demands placed on decision-makers by alternative channels.

The enactment of issues and answers

At the organizational level, the focusing of attention of decision-makers creates a concentration of their energy and effort on a limited set of issues and answers. Through the social construction and enactment of issues organizational decision-makers selectively restrict their attention to a limited set of stimuli in the complex environment of action, while ignoring others. Decision-makers are not passive recipients of environmental stimuli, but active creators of the environmental stimuli that they impose upon their actions: 'enactment emphasize[s] that managers construct, rearrange, single out, and demolish many of the "objective" features of their surroundings' (Weick, 1979: 164).

This paper extends Weick's concept of enactment by highlighting how the principles of an attention-based view interact to shape attentional processing and the enactment of the environment. First, decision-makers will be selective in their focus of attention to issues and answers. Second, attentional processing is situated in the firm's procedural and communication channels. This situational context shapes the enactment of the environment by increasing the availability and saliency of certain issues and answers, relative to others, and by the interaction among participants in the channel. The structures of attention shape the enactment of the environment through the channeling of decision-making activity to specific channels, through the valuation of issues and answers, and through the structuring of interests and identities of decision-makers. These prin-

ciples interact to shape the enactment of issues and answers by decision-makers:

Mechanism 5b: (Enactment of issues and answers) Decision-makers will enact the environment of decisions by focusing their attention on a limited number of issues of answers. This attentional focus is shaped both by characteristics of the situation—the availability and saliency of issues and answers (3) and the interactions among participants within the channel (5a)—and by the structural determinants of attention—the values, legitimacy, and relevance accorded to the various issues and answers (4a) and the structured interests and identities of decision-makers.

This repertoire of available issues and answers is invoked not just in the case of routine situations or standard operating procedures, but is applied to novel situations by seeking analogies and areas of commonality with past situations, activities, and events in the firm (March and Olsen, 1976; Weick, 1979).

Organizational moves

Organizational moves are the output of attentional processing and decision-making which is situated in procedural and communication channels. *Organizational moves* are the myriad of actions undertaken by the firm and its decision-makers in response to or in anticipation of changes in its external and internal environment. Organizational moves include both implicit and explicit decisions made by the organization and its decision-makers, as a result of both controlled and automatic attentional processes. Organizational moves encompass both exchanges of resources and information with the firm's external environment as well as changes in the firm's own resources and attention structures. I use the concept of organizational move instead of the more common concept of organizational decision for several reasons: organizational moves include both the plans for actions implied in an organizational decision and the actions themselves; the concept of moves highlights how they are shaped by the rules of the games, its players, structural positions, and procedural and communication channels; and the term connotes how moves are interdependent and are shaped and affected by the context, order,

and timing of other organizational moves. Note, however, that moves may or may not be implemented and lead to strategic change. For example, the adoption of strategic plans by a firm's executive committee is an organization move. Its implementation requires a myriad of subsequent moves by organizational decision-makers.

The selection of organizational moves

The principle of focus of attention implies that the selection of organizational moves depends on the issues and answers that decision-makers attend to. Two interrelated aspects are of particular importance to understanding how the focusing of issues and answers shapes a firm's strategic behavior and the selection of organizational moves. First, the enactment of issues and answers entails both passive attention to the environment and active preparation and focusing of energy and effort. Recent cognitive research has emphasized preparation as one of the principal manifestations of attentional processing (LaBerge, 1995). The preparatory manifestation of attention operates by directing attention to a particular stimulus prior to the time that stimulus occurs and facilitates speed and accuracy of perception and action. Preparatory attention is driven by the importance and relevance of issues and answers and by the interests and identities of decision-makers. Decision-makers will direct their attention to environmental stimuli associated with highly valued issues and answers and which serves to enhance their interests and identities.

Second, decision-makers' enactment of the issues and answers is situated in the firm's procedural and communication channels and may vary across them. For example, the environment may be enacted in terms of long-term competitive opportunities and threats in the firm's strategic plans, and in terms of short-term cash flow considerations in its investment processes. Who participates in procedural and communication channels and the structures that regulate them determine what issues and answers are utilized in specific channels. According to the theory proposed here, firms may not be consistent across channels and situations to the specific aspects of the environment they pay attention to and may vary in the specific moves they undertake. Consequently:

Mechanism 5c: (Selection of organizational moves). Decision-makers will select among alternative organizational moves depending on which issues and answers they attend to. The attention to issues and answers results both from passive response to environmental stimuli and preparatory attention and effort and will vary depending on the procedural and communication channel where decision-making is situated.

Finally, organizational moves, the output of the firm decision-making process, become part of the firm's environment of decision and are an input into the construction of subsequent moves:

Mechanism 6: (Effects on subsequent moves). Organizational moves, once enacted, become part of the firm's environment of decision and are inputs to the construction of subsequent organizational moves.

CHARACTERISTICS OF THE MODEL FOR EXPLAINING FIRM BEHAVIOR AND ADAPTATION

One of the critical issues in strategy to which the model can be applied is whether and how firms adapt to changing environments. In summarizing how an attention-based view of the firm explains organizational adaptation, and more generally how firms behave, the following characteristics are highlighted that differentiate the current theory from alternative explanations of firm adaptation and behavior.

(1) *Small contingencies in the firm's procedural and communication channels may significantly change organizational adaptation and behavior.* An attention-based view of the firm implies that the ability of the firm to adapt successfully to a changing environment is conditional on whether the firm's procedural and communication channels focus the attention of organizational decision-makers on an appropriate set of issues and answers. An attention-based view opens the black box of the firm to highlight the importance of situated attentional processes in selectively focusing decision-makers' attention. Consistent with the principle of situated attention, small differences, or contingencies, in the spatial, temporal, and procedural dimensions of the firm's

procedural and communication channels, and in the spatial and temporal order in which these processes take place, may have significant impacts upon the focus of attention of decision-makers and the subsequent organizational moves.

The importance of contingencies in situated attention in explaining organizational adaptation and behavior is also a central insight of the garbage can model of decision-making (Cohen *et al.*, 1972; March and Olsen, 1976). The role of situational contingencies in the current formulation of an attention-based perspective differs, however, from the garbage can model in two ways. First, as stated earlier, and consistent with Cialdini's research findings (Cialdini *et al.*, 1990, 1991), the contingencies shape decision-making by shaping the focus of attention and cognitive processing of individual decision-makers. Second, the current formulation highlights the importance of rules, norms, and procedural dimensions associated with a firm's procedural and communication channels.

(2) *Inertia, inappropriate change, or successful adaptation may result from situated attentional processes.* An attention-based view of the firm suggests that a firm's ability to adapt to a changing environment is contingent on the firm's enactment of its environment, and on its ability to focus the attention of its decision-makers on the appropriate issues and answers. The determination of inertia and adaptation in an organization remains a central debate in the study of organizations and firm behavior (Astley and Van de Ven, 1983; Barnett and Carroll, 1995). Unlike either theories based on rationality or theories based on environmental determinism, an attention-based view of the firm provides a unified process-based explanation for the conflicting findings of both inertia and successful adaptation in organizations. An attention-based view implies that whether and how firms adapt to a changing environment is not a foregone conclusion but results from specific contingencies arising from the respective firm's procedural and communication channels and attention structures. This is an improvement over the current state of theorizing where different theories are applied to explain different outcomes, but no unified theoretical framework incorporated disparate outcomes.

An attention-based view of the firm extends the explanations of firm adaptation offered by Weick's (1979) perspective on organizational

enactment of the environment. Which of multiple enacted environments are selected by the firm to shape organizational response is conditional on the firm's procedural and communication channels and its attention structures. Explaining organizational strategies and action requires an understanding of how the rules of the game, structural positions and arrangements, players, and resources interact to distribute and channel the attention of organizational decision-makers into specific procedural and communication channels, and to draw upon issues and answers in organizational memory. Further research and theoretical development are required to explain how these interactions affect firm adaptation.

(3) *Both structural regularities and cognitive repertoires of issues and answers underlie attentional processes in organizations.* While both structural (Blau, 1994) and cognitive theories (Weick, 1979, 1995) are typically presented as alternative explanations for firm behavior, an attention-based view of the firm highlights how both the social and economic structures of attention and the cultural and cognitive repertoire of issues and answers have independent influences upon the firm's procedural and communication channels and subsequently on the enactment of the environment (Ocasio, 1995). Explanations of how firms adapt to changes in the environment must account for both the effects of social structures and the effects of managerial cognitions and both effects are mediated through the firm's procedural and communication channels.

(4) *Selective focus of attention facilitates firm's strategic actions.* Limited attentional capacity for nonroutine activities by organizational decision-makers implies that alternative issues will compete for his or her selective attention, energy, and effort. This limited capacity for controlled attentional processing underlies the importance of strategic focus. Traditionally, theories of bounded rationality have stressed the inhibitory aspects of selective attention, showing how the limited attentional capability of humans creates a departure from the omniscient rationality of economic theories of choice (Simon, 1947, 1957). But the focalization and concentration of consciousness associated with selective attention create adaptive properties of critical concern to strategic activity, as they facilitate the accuracy, speed, and sustained processing of information in perceptual judgements and actions (LaBerge,

1995: 8–12). The accurate planning and performance of strategic actions and the speed of their execution require that individual and group decision-makers concentrate their energy, effort, and mindfulness on a limited number of issues and tasks. Successful strategic performance thereby requires the sustained focusing of attention and effort associated with controlled attentional processing.

CONCLUSIONS

Fifty years after the introduction of attentional perspectives on administrative behavior (Simon, 1947), this paper brings back an underdeveloped insight into Simon's initial formulation—that to explain firm behavior is to explain how organizations and their structures channel and distribute the attention of their decision-makers. Based on theoretical insights and research findings from cognitive science, social psychology, organizational theory, and strategy process perspectives, this paper presents and develops three theoretical principles that underlie this central insight of an attention-based view of the firm. Existing theories of bounded rationality, enacted environments, and managerial cognition all share the first principle of the theory—that what decision-makers do depends on how they selectively focus their attention on certain characteristics of the organization and its environment, and ignore others. This paper extends these perspectives by adding two additional principles: (1) an emphasis on the situated and variable nature of attentional processes in organizations; and (2) an explicit linkage of managerial cognition to the channeling and distribution of attention by the firm's social, economic, and cultural structures. While a careful reading of *Administrative Behavior* (Simon, 1947: 79–109) reveals that all three principles were present in Simon's initial theory, later theoretical development moved away from these last two premises either towards a theory of satisficing and bounded rationality, or towards loose coupling and enacted environments. This paper rediscovers Simon's insights and updates them to reflect contemporary theoretical developments and research.

This paper builds upon the three theoretical principles of an attention-based view and develops a cross-level, process model of how

firms behave—one of the fundamental issues for the field of strategy (Rumelt *et al.*, 1994). This conceptual model does not constitute a fully developed theory of firm behavior, but an initial formulation, based on a set of theoretical constructs and a set of general mechanisms linking those constructs. A central contribution of the model is that it highlights the importance of procedural and communication channels in situating the attention of decision-makers and in contributing to the variations in attentional processing and the enactment of the environment. Another important contribution is that it brings together under the central organizing concept of attentional processing a wide variety of cultural, social, cognitive, and economic mechanisms, at multiple levels of analysis, that shape how firms behave.

The complexity of the model is both a virtue and a weakness. An advantage is its ability, unlike theories of rational choice or theories of environmental determinism, to explain both stability and change in response to changing environmental conditions. Its disadvantage lies in its relatively primitive state of theoretical development, in the generality and high level of abstraction of its mechanisms, and in the large attentional demands it makes on the reader to process and integrate the wide variety of seemingly disparate theories and constructs employed. As the title of this paper suggests, the theoretical development of an attention-based view is still in its preliminary stages. Each of the mechanisms presented in the model is quite general, and allows for significant theoretical elaboration and empirical testing. Given the multiple levels of analysis and concepts employed here, research based on an attentional perspective may rely on multiple methodologies including ethnographies, case studies, historical analysis, field experiments, content analysis, and computer simulations.

An attention-based view helps explain whether and how firms adapt to changing environments. At one level, the theory provides an answer similar to organizational perspectives on the enactment of the environment (Weick, 1979; Ocasio, 1995)—adaptation to the changing environments depends on how firms enact their environment. Failures of adaptation are failures of enactment, failures to successfully attend to the relevant issues and answers. This paper adds to this explanation an emphasis on how the firm's attention structures and its procedural and com-

munication channels are linked to the capacity of the firm to adapt to changing environments. The development and transformation of the modern business enterprise analyzed by Chandler (1962, 1976) and others can be reinterpreted as the development of new forms of attention regulation that increase the firm's adaptability and competitiveness. Chandler focused on what we have called structural arrangements and procedural and communication channels as principal components of what we now know as the modern multi-business enterprise. Others (e.g., Fligstein, 1990) have emphasized the changing rules of the game (conceptions of control in Fligstein's terms) to explain the corporate transformation. This suggests that an attention-based perspective may help answer another important question of strategy: what is the function of, and the value added, of the headquarters unit in a multibusiness firm (Rumelt, Schendel, and Teece, 1994)? The principal function of the headquarters unit is, in the current model, to regulate and govern organizational attention.

Finally, the paper advances our understanding of firm strategy and behavior by emphasizing how selective attention both facilitates and inhibits perception and action. Previous attentional perspectives in the organization's literature stressed the inhibitory aspects, as selective attention leads to departures from the model of omniscient rationality in economic theories of choice. But the focusing of attention by organizational decision-makers allows for enhanced accuracy, speed, and maintenance of information-processing activities, facilitating perception and action for those activities attended to. Whether attentional processes facilitate or inhibit organizational adaptation and performance is contingent on whether the firm's procedural and communication channels and attention regulators focus and distribute the attention of organizational decision-makers in directions that are congruent with the firm's environmental opportunities and constraints.

While an attention-based view of the firm can bring together multiple dimensions and perspectives into an explanation of firm behavior and strategy, it is not meant to replace the resource-based view of the firm or competitive perspectives on corporate strategy. An attention-based view cannot explain, by itself, the sources of the firm's competitive advantage. Although it may help illustrate sources of firm heterogeneity at any

point in time, it cannot explain why firm heterogeneity persists under competitive pressures. I have argued that the channeling and distribution of attention are central to the formulation and implementation of corporate strategy and that attention structures and the deployment of procedural and communication channels can be a major source of the firm's adaptive capabilities. But a full understanding of competitive advantage and firm heterogeneity requires that we integrate an attention-based view of the firm with resource and industry perspectives to develop a dynamic theory of business strategy and value creation.

ACKNOWLEDGEMENTS

I would like to thank Rebecca Henderson, Jim March, Dan Levinthal, Marc Ventresca, Don Lesnard, Ranjay Gulati, and the anonymous *SMJ* referees for comments, suggestions, advice, and encouragement.

REFERENCES

Allison, G. T. (1971). *Essence of Decision: Explaining the Cuban Missile Crisis*. Little, Brown, Boston, MA.

Andrews, K. R. (1971). *The Concept of Corporate Strategy*. Dow-Jones, Homewood, IL.

Astley, W. G. and A. H. Van de Ven (1983). 'Central perspectives and debates in organizational theory', *Administrative Science Quarterly*, **28**, pp. 245-273.

Barnard, C. I. (1938). *The Functions of the Executive*. Harvard University Press, Cambridge, MA.

Barney, J. B. (1991). 'Firm resources and sustained competitive advantage', *Journal of Management*, **17**, pp. 99-120.

Barnett, W. P. and G. Carroll (1995). 'Modeling internal organizational change', *Annual Review of Sociology*, **21**, pp. 217-236.

Blau, P. M. (1994). *Structural Contexts of Opportunities*. University of Chicago Press, Chicago, IL.

Boland, R. J., R. V. Tenkaski and D. Te'eni (1994). 'Designing information technology to support distributed cognition', *Organization Science*, **5**, pp. 456-475.

Bower, J. L. (1970). *Managing the Resource Allocation Process*. Harvard Business School Press, Boston, MA.

Brown, R. H. (1978). 'Bureaucracy as praxis: Toward a political phenomenology of formal organizations', *Administrative Science Quarterly*, **23**, pp. 365-382.

Burgelman, R. (1983). 'A process model of corporate venturing in the diversified major firm', *Administrative Science Quarterly*, **28**, pp. 223-244.

Burgelman, R. (1994). 'Fading memories: A process theory of strategic business exit in dynamic environments', *Administrative Science Quarterly*, **39**, pp. 24-56.

Burt, R. (1982). *Toward a Structural Theory of Action: Network Models of Social Structure, Perception, and Action*. Academic Press, New York.

Chandler, A. D. (1962). *Strategy and Structure*. MIT Press, Cambridge, MA.

Chandler, A. D. (1976). *The Visible Hand: The Managerial Revolution in American Business*. Harvard University Press, Cambridge, MA.

Child, J. (1972). 'Organizational structure, environment, and performance: The role of strategic choice', *Sociology*, **6**, pp. 2-22.

Cialdini, R. B., C. A. Kallgren and R. R. Reno (1991). 'A focus theory of normative conduct', *Advances in Experimental Social Psychology*, **24**, pp. 201-234.

Cialdini, R. B., R. R. Reno and C. A. Kallgren (1990). 'A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places', *Journal of Personality and Social Psychology*, **58**, pp. 1015-1026.

Cohen, M. D., J. G. March and J. P. Olsen (1972). 'A garbage can model of organizational choice', *Administrative Science Quarterly*, **17**, pp. 1-25.

Corner, P. D., A. J. Kinicki and B. W. Keats (1994). 'Integrating organizational and information processing perspectives on choice', *Organization Science*, **5**, pp. 294-308.

Cyert, R. M. and J. G. March (1963). *A Behavioral Theory of the Firm*. Prentice-Hall, Englewood Cliffs, NJ.

Daft, R. L. and K. Weick (1984). 'Toward a model of organizations as interpretation systems', *Academy of Management Review*, **9**, pp. 284-295.

DiMaggio, P. D. and W. W. Powell (1991). 'Introduction'. In P. D. DiMaggio and W. W. Powell (eds.), *The New Institutionalism in Organizational Analysis*. University of Chicago Press, Chicago, IL, pp. 1-38.

Douglas, M. (1986). *How Institutions Think*. Syracuse University Press, Syracuse, NY.

Dutton, J. E. (1988). 'Understanding strategic agenda building and its implications for managing change'. In L. R. Pondy, R. Bland and H. Thomas (eds.), *Managing Ambiguity and Change*. Wiley, New York, pp. 127-144.

Dutton, J. E. and J. Dukerich (1991). 'Keeping an eye on the mirror: Image and identity in organizational adaptation', *Academy of Management Journal*, **34**(3), pp. 517-554.

Dutton, J. E. and S. E. Jackson (1987). 'Categorizing strategic issues: Links to organizational action', *Academy of Management Review*, **12**, pp. 76-90.

Eisenhardt, K. M. (1990). 'Making fast strategic decisions in high-velocity environments', *Academy of Management Journal*, **32**, pp. 543-576.

Fiske, S. T. and S. Taylor (1991). *Social Cognition* (2nd ed.). Random House, New York.

Fligstein, N. (1990). *The Transformation of Corporate Control*. Harvard University Press, Cambridge, MA.

Gates, W. P. (1995). *The Road Ahead*. Viking, New York.

- Hambrick, D. C. (1994). 'Top management groups: A conceptual integration and reconsideration of the "team" label'. In B. M. Staw and L. L. Cummings (eds.), *Research in Organizational Behavior*, Vol. 16. JAI Press, Greenwich, CT, pp. 171-213.
- Hambrick, D. C. and S. Finkelstein (1987). 'Managerial discretion: A bridge between polar views on organizations'. In L. L. Cummings and B. M. Staw (eds.), *Research in Organizational Behavior*, Vol. 9. JAI Press, Greenwich, CT, pp. 369-406.
- Hambrick, D. C. and P. A. Mason (1984). 'Upper echelons: The organization as a reflection of its top-managers', *Academy of Management Review*, 9, pp. 193-206.
- Henderson, R. M. and K. B. Clark (1990). 'Architectural innovation: The reconfiguration of existing technologies and the failure of established firms', *Administrative Science Quarterly*, 35, pp. 9-30.
- Hutchins, E. (1995). *Cognition in the Wild*. MIT Press, Cambridge, MA.
- Jackall, R. (1988). *Moral Mazes: The World of Corporate Managers*. Oxford University Press, New York.
- Jackson, S. E. and J. E. Dutton (1988). 'Discerning threats and opportunities', *Administrative Science Quarterly*, 33, pp. 370-387.
- James, W. (1890). *The Principles of Psychology*. Holt, New York.
- Kahneman, D. (1973). *Attention and Effort*. Prentice-Hall, Englewood Cliffs, NJ.
- Kahneman, D. and A. Tversky (1974). 'Judgment under uncertainty: Heuristics and biases', *Science*, 185, pp. 1124-1131.
- LaBerge, D. (1995). *Attentional Processing: The Brain's Art of Mindfulness*. Harvard University Press, Cambridge, MA.
- Latour, B. (1987). *Science in Action*. Harvard University Press, Cambridge, MA.
- Lave, J. (1988). *Cognition in Practice*. Cambridge University Press, Cambridge, UK.
- Lawrence, P. R. and J. W. Lorsch (1967). *Organization and Environment: Managing Differentiation and Integration*. Harvard Business School Press, Boston, MA.
- March, J. G. (1991). 'Exploration and exploitation in organizational learning', *Organization Science*, 2, pp. 71-87.
- March, J. G. and J. P. Olsen (1976). *Ambiguity and Choice in Organizations*. Universitetsforlaget Bergen, Norway.
- March, J. G. and H. A. Simon (1958). *Organizations*. Wiley, New York.
- Nelson, R. R. and S. G. Winter (1982). *An Evolutionary Theory of Economic Change*. Harvard University Press, Cambridge, MA.
- Ocasio, W. (1995). 'The enactment of economic adversity: A reconciliation of theories of failure-induced change and threat rigidity'. In L. L. Cummings and B. M. Staw (eds.), *Research in Organizational Behavior*, Vol. 17. JAI Press, Greenwich, CT, pp. 287-331.
- Ross, L. and R. E. Nisbett (1991). *The Person and the Situation: Perspectives of Social Psychology*. McGraw-Hill, New York.
- Rumelt, R. P. (1984). 'Towards a strategic theory of the firm'. In R. B. Lamb (ed.), *Competitive Strategy Management*. Prentice-Hall, Englewood Cliffs, NJ, pp. 556-570.
- Rumelt, R. P., D. Schendel and D. J. Teece (1994). *Fundamental Issues in Strategy*. Harvard Business School Press, Boston, MA.
- Schein, E. (1985). *Organizational Culture and Leadership*. Jossey-Bass, San Francisco, CA.
- Schelling, T. C. (1960). *The Strategy of Conflict*. Oxford University Press, London.
- Scott, W. R. (1992). *Organizations: Rational, Natural, and Open Systems* (3rd ed.). Prentice-Hall, Englewood Cliffs, NJ.
- Scott, W. R. (1995). *Institutions and Organizations*. Sage, Thousand Oaks, CA.
- Selznick, P. (1957). *Leadership in Administration*. Row, Peterson, Evanston, IL.
- Shiffrin, R. M. and M. W. Schneider (1977). 'Controlled and automatic human information processing. II. Perceptual learning, automatic attending, and a general theory', *Psychological Review*, 84, pp. 127-190.
- Simon, H. A. (1947). *Administrative Behavior: A Study of Decision-making Processes in Administrative Organizations*. Macmillan, Chicago, IL.
- Simon, H. A. (1957). *Models of Man*. Wiley, New York.
- Stinchcombe, A. L. (1968). *Constructing Social Theories*. Chicago University Press, Chicago, IL.
- Sutton, R. M. and A. Hargadon (1996). 'Brainstorming groups in context: Effectiveness in a product design firm', *Administrative Science Quarterly*, 41, pp. 685-718.
- Swidler, A. (1986). 'Culture in action: Symbols and strategies', *American Sociological Review*, 51, pp. 273-286.
- Walsh, J. P. and G. R. Ungson (1991). 'Organizational memory', *Academy of Management Review*, 16, pp. 57-91.
- Weick, K. M. (1979). *The Social Psychology of Organizing* (2nd edn.). Random House, New York.
- Weick, K. M. (1995). *Sensemaking in Organizations*. Sage, Thousand Oaks, CA.
- Wade, J. B., C. A. O'Reilly and I. Chandratat (1990). 'Golden parachutes: CEOs and the exercise of social influence', *Administrative Science Quarterly*, 35, pp. 587-603.
- Wernerfelt, B. (1984). 'A resource-based view of the firm', *Strategic Management Journal*, 5(2), pp. 171-180.
- Westphal, J. and E. J. Zajac (1995). 'Who shall govern? CEO/Board power, demographic similarity, and new director selection', *Administrative Science Quarterly*, 40, pp. 60-83.
- White, H. C. (1992). *Identity and Control: A Structural Theory of Social Action*. Princeton University Press, Princeton, NJ.
- Yates, J.-A. (1989). *Control through Communication: The Rise of System in American Management*. Johns Hopkins University Press, Baltimore, MD.