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A Behavioral Theory of the Firm—40 Years and Counting: Introduction and Impact

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In this introductory piece, we take stock of the impact of Cyert and March's *A Behavioral Theory of the Firm*, describe current research trends in the behavioral tradition, and introduce the special issue's papers. *A Behavioral Theory of the Firm* is one of the most influential management books of all time. In the book, Cyert and March developed theoretical building blocks that became the foundations for current research in organizational studies in management, economics, political science, and sociology. Cyert and March also made theoretical propositions that are investigated and extended in current work on organizational learning theory and evolutionary economics.

Key words: behavioral theory; bounded rationality; search; aspiration levels; organizational learning; routines; innovation

Introduction

When *A Behavioral Theory of the Firm* (Cyert and March 1963) had become 40 years old, work started on an *Organization Science* special issue. Along with our guest-editors, we have seen this special issue evolve from a call for papers, through submissions and reviews, to a conference at Carnegie Mellon, and now into print. Fittingly for the ideas expressed in a book on organizational processes, it is now 44 years and counting. The special issue has become a forum for reflection on the development of the behavioral theory of the firm as well as for reporting the most recent research. Although it is a daunting task to introduce a stream of research that has become so large and diverse, we will use this introduction to describe some influences of *A Behavioral Theory of the Firm* and suggest directions for future research.

A Behavioral Theory of the Firm (the book) has not generated a behavioral theory of the firm (a theory), at least not if we define theory as a consistent set of defined concepts and assumptions, and derived causal predictions. Instead, there are now many behavioral theories of the firm, each using different assumptions and deriving different predictions. Perhaps it was because they predicted this outcome that Cyert and March called it *A* (not "The") *Behavioral Theory of the Firm*. However, they could not have predicted the book's impact. The book continues to be one of the most influential management books of all time. It has inspired and legitimated new approaches for studying organizations; become a foundational element of organizational studies in management, economics, political science, and sociology; and produced a set of hypotheses that are being tested and elaborated today. This is a remarkably broad influence for a book that made a pointed critique of the (economic) theory of the firm in its days and a few suggestions on how to improve it.

As often happens to work that has had a major impact over a long time, the impact sometimes is more noteworthy in terms of breadth rather than depth. Along with *Organizations* (March and Simon 1958), *A Behavioral Theory of the Firm* is an oft-cited starting point of theory taking a bounded rationality view of decision making and organizational behavior. This use of the theory captures an important aspect of the book, which criticized the maximization assumption and argued for a greater emphasis on behavioral routines in theorizing. At the same time building on the concept of bounded rationality is not a very specific use of the book. Bounded rationality, like rationality, is a lot like ancient Rome—all roads lead to it, so you can get from there to practically anywhere. When bounded rationality, or other assumptions or theory elements from the book are used to build new theory, the result can look strikingly different from the original.

Several research traditions have been influenced by *A Behavioral Theory of the Firm* even though they differ from it in important respects. As we will argue, the influence has often been in the form of adopting its area of research interest and approach to studying organizations. Through the adoption of these elements, the field of organization science (including its branches in management, sociology, and economics) has obtained coherence in outlook and approach even as it is highly diverse in theoretical assumptions. If we are correct in tracing

these commonalities back to *A Behavioral Theory of the Firm*, then the book has been essential for developing a field where diversity coexists with a fruitful dialogue between perspectives. Along with the complexity of the subject matter, these conditions have helped the field of organizational science to make rapid progress.

A more specific influence from *A Behavioral Theory of the Firm* can be seen in the adoption of specific theoretical assumptions of the theory in the construction of other theories. Many organizational theories explicitly adopt bounded rationality as an assumption, and more specific mechanisms like problemistic search and various versions of local (myopic) search have also been used as microassumptions in theories deriving macrolevel predictions such as mimetic isomorphism (DiMaggio and Powell 1983) or organizational momentum (Amburgey et al. 1993). We will briefly note a selection of such influences as an illustration of how broadly the theoretical assumptions in *A Behavioral Theory of the Firm* have spread.

The most direct descendents of *A Behavioral Theory of the Firm* are organizational learning theory (Argote 1999, Huber 1991, Levitt and March 1988, Miner and Mezias 1996) and evolutionary economics (Nelson and Winter 2002). Both follow the book closely in basic assumptions, approaches, and research questions. Organizational learning theory and evolutionary economics are both well-defined traditions that each have a coherent set of assumptions and clearly articulated research questions, and that currently generate much empirical research and theory building. Interestingly, these research traditions are seeing a degree of mixing and integration of ideas (Gavetti and Levinthal 2004). We will examine these research traditions and comment on their recent developments and potential for cross-fertilization.

This introductory essay provides an overview of the principles that are the foundations of the behavioral theory of the firm and discusses how these principles shape current research on organizations. We then turn to an analysis of key concepts and theoretical mechanisms developed in *A Behavioral Theory* and show that these concepts have influenced major theoretical perspectives on organizations, including institutional theory, population ecology, and organizational economics. We discuss the two behavioral research traditions most closely connected to Cyert and March's book: evolutionary economics and organizational learning theory. The extent of empirical support for hypotheses and theoretical mechanisms proposed in *A Behavioral Theory of the Firm* is described. The papers in the special issue are introduced and how they reflect current research on organizations is described.

A Behavioral Approach

A Behavioral Theory of the Firm begins with four commitments that are worth quoting because they explain its impact well and are important for current research:

> 1. *Focus on a small number of key economic decisions made by the firm.* In the first instance, these were price and output decisions; subsequently they included internal allocation and market strategy decisions.
> 2. *Develop process-oriented models of the firm.* That is, we viewed decisions of the firm as the result of a well-defined sequence of behaviors in that firm; we wished to study the decisions by studying the process.
> 3. *Link models of the firm as closely as possible to empirical observations* of both the decision output and the process structure of actual business organizations. The models were to be both explicitly based on observations of firms and subject to empirical test against the actual behavior of identifiable firms.
> 4. *Develop a theory with generality beyond the specific firms studied.* We wanted a set of summary concepts and relations that could be used to understand the behavior of a variety of organizations in a variety of decision situations. (Cyert and March 1963, p. 2, italics in original)

The first and last of these four commitments paralleled the economic theory of the firm (in 1963) through claims to the same domain of research and the same generality. The second and third were departures from the economic theory of the firm, and have become turning points in the study of organizations. Much behavioral research on organizations adheres to these commitments, which have become such a taken-for-granted part of the field that many researchers follow them without knowing that they were so stated by Cyert and March.

The process-oriented models described in the second commitment are most apparent in learning theory and evolutionary economics, as we will discuss later. In these fields, much theorizing concerns how certain events and experiences set in motion processes of decision making, routine development, or routine selection that change organizational behavior. Much organizational research is structurally oriented, however, and examines effects of structures such as top management teams, organizational networks, or institutions on organizational behaviors and outcomes. Despite the focus on structure, the process commitment lives on as a requirement to use descriptions of organizational processes to justify effects of structures on organizations. In modern organizational theory, predictions without a process justification are seen as less legitimate and less theoretically satisfying than those that specify the underlying theoretical mechanism. Readers often examine the process explanation of a structural theory in order to judge its credibility. This is an important part of the legacy of *A Behavioral Theory of the Firm*.

The close linking to empirical observations described in the third commitment has become an integral part of the methodology of organizational theory. The detailed

case studies in *A Behavioral Theory* were highly effective in revealing the decision-making processes used. Along with other early case studies of organizations (Selznick 1949, Gouldner 1954), they showed how much researchers could gain from being close to the phenomenon, reporting the evidence rigorously instead of summarizing it, and drawing general implications from observation of specific organizational processes. Modern qualitative research is a more developed version of this approach to theory building, and has a central role in the field (e.g., see Bechky 2006, Feldman 2004, Kellogg et al. 2006 for recent examples). It owes some of its current legitimacy to *A Behavioral Theory of the Firm*.

The simulation models in *A Behavioral Theory of the Firm* have also inspired much later work. Even simple process models can have implications that are nonobvious and difficult to derive, and simulations offer a key tool for understanding the properties of process models. This potential has been used in many classical and highly cited simulation studies inspired by *A Behavioral Theory* (Axelrod 1984, Cohen et al. 1972, March 1991), as well as modern studies in the same tradition (Carley 1992, Siggelkow and Rivkin 2005, Gavetti 2005) or from different theoretical perspectives (Carroll and Harrison 1994, Carroll et al. 2006). Modern simulation studies owe much of their legitimacy to *A Behavioral Theory of the Firm*.

To a modern reader, the weakest part of the empirical work in *A Behavioral Theory of the Firm* is the quantitative testing of propositions drawn from the case studies, theorizing, and simulations. This should not be surprising when taking into account that the book was published in 1963, approximately two decades before the diffusion of rigorous methods for studying change in organizational theory (e.g., Tuma and Hannan 1984) and the development of techniques for dealing with issues such as selection biases and endogeneity that are often present in field data. The book was simply ahead of its time. Quantitative work such as the comparison of simulation results to actual data on market shares of two duopolists (Cyert and March 1963, pp. 92–93) clearly showed an ambition to pair process models with quantitative testing. Work using event history or panel-data analysis to study causes and effects of organizational change has become a significant part of modern organizational research (e.g., Amburgey et al. 1993, Darr et al. 1995, Haunschild and Sullivan 2002), and represents a direct continuation of *A Behavioral Theory of the Firm*.

Cyert and March (1963) thus made a general methodological point and provided specific examples. The general methodological point was that theory should model organizational processes, and should be generated through systematic observation of processes in actual organizations. One component of this point is that organizational theory should not oversimplify. Although parsimony is needed in theory building, parsimony that throws out basic insights—like replacing a process model with a maximization assumption—can be harmful. The broad acceptance of this point and frequent reference of *A Behavioral Theory of the Firm* suggest that the book is an important rallying point for researchers interested in organizational processes. The specific examples have also left a clear mark on the literature through the legitimizing effect on qualitative research and simulation work, as well as a set of ideas on how to quantitatively model organizational processes, which is currently very important.

A Behavioral Foundation for Theory

A Behavioral Theory of the Firm made a number of concrete theoretical advances through proposing novel concepts and mechanisms. Work directly descendent from *A Behavioral Theory* is characterized by its use of many of these simultaneously and by high fidelity to the original formulation. An important part of the legacy of the book, however, is that these theoretical advances have found their way into the foundation of many other theories, where they have been combined with new concepts and mechanisms to produce new theory. This provision of raw material for theory building is the reason why Cyert and March (1963) is a foundational piece not just for specific research traditions, but also for organizational theory as a field. Below we review selected mechanisms from *A Behavioral Theory of the Firm*, and examine their effects on major research traditions. We stress that this is not intended to be a complete review, which would be unwieldy because of the sheer magnitude of the effect that Cyert and March (1963) has had on the organizational research.

Key concepts and mechanisms discussed in *A Behavioral Theory of the Firm* are bounded rationality, problemistic search, the dominant coalition, standard operating procedures, and slack search. *Bounded rationality* was known from earlier work (Simon 1952, March and Simon 1958), but its implications for organizational decision making was developed more fully in *A Behavioral Theory of the Firm. Problemistic search* started from the model of individual motivation in March and Simon (1958) but became a model of *organizational* reactions to low performance. The theory of the *dominant coalition* explains how the organization can have goals despite the different interests of its participants. The theory of *standard operating procedures* and routine behavior providing organizational regularity made organizational routines a central concept of organizational theory. The theory of *slack search and innovation* is an account of why organizations sometimes develop new products, technologies, or practices even when they are not solving specific problems, which complements the theory of problemistic search. These theoretical concepts and mechanisms, and subprocesses discussed in their

development, have been used in a number of organizational theories, including institutional theory, population ecology, and organizational economics.

Institutional theory explains how the firm adapts to a symbolic environment of cognitions and expectations and a regulatory environment of rules and sanctions. This theory has a very active empirical research tradition (see Scott 2001 for a review). The theory assumes bounded rationality; additional key borrowings from the behavioral theory of the firm are uncertainty avoidance, loose coupling, and decision making under ambiguity (Meyer and Rowan 1977, DiMaggio and Powell 1983). As a result of this borrowing, some branches of institutional theory, such as the highly active research stream on the diffusion of institutions (reviewed in Strang and Soule 1998), have predictions that are consistent with the theory of interorganizational learning (Levitt and March 1988, Greve 1996). The theory of the diffusion of institutions is built on the concept of mimetic isomorphism as a response to uncertainty, which DiMaggio and Powell (1983, p. 151) saw as an inexpensive form of problemistic search. Later work has established this connection empirically by showing that mimetic behavior is strengthened by high uncertainty (Haunschild 1994). Extensions to this theory are now being made by researchers examining the interaction between problemistic search spurred by own failures and mimetic processes (Rao et al. 2001, Chuang and Baum 2003).

Population ecology explains the effects of legitimacy and competition on the evolution of industries and the life chances of individual firms, and newer treatments also examine how attempts to change firms in response to competition affect firm survival and performance. Population ecology has a very strong record of empirical research (see reviews in Hannan and Freeman 1989, Carroll and Hannan 2000). The original formulation of population ecology saw it as an alternative to theories of firm adaptation such as the behavioral theory of the firm (Hannan and Freeman 1977), but population ecology has increasingly adopted concepts from the behavioral theory of the firm in studies of the causes and consequences of change. Important concepts from Cyert and March (1963) that have been directly incorporated into newer ecological theory are satisficing, competence traps, and myopic search (e.g., Miner et al. 1990, Amburgey et al. 1993, Barnett and Hansen 1996, Baum and Singh 1996, Dobrev et al. 2003). These concepts have helped population ecology scholars and learning scholars start a stream of research integrating concerns of learning and competition in models of organizational change, performance, and survival (e.g., Ingram and Baum 1997, Barnett and Freeman 2001). Another active strand of research that blends population ecology and learning theory examines how learning from previous experience in other firms affects the success of new entrepreneurial ventures (e.g., Carroll et al. 1996, Phillips 2002).

In political science, *A Behavioral Theory of the Firm* has been important for research on organizational effects on political decision making and public administration. Its ideas of bounded rationality, search, and organizational routines are central in Allison's (1971) analysis of the Cuban missile crisis. Later work used this theory in combination with theory of political decision making and gaps between decisions and action (Brunsson 1989), and theory of decision processes with decoupling of problems, solutions, and participants (Cohen et al. 1972, March and Olsen 1989). As a result, the attention pattern of policy makers and the generation of agendas and alternatives has become a central part of scholarship in public policy (Kingdon 1984), and recent work builds on these ideas to explain the behaviors of public organizations (e.g., Christensen and Lægreid 2003, Olsen 2003).

Organizational economics is a growing subfield of economic theory that has a strong interest in explaining the boundaries of the firm (Coase 1937, Williamson 1975), but has also expanded into exploration of a number of related issues on organizational structure, coordination, decision rights, and internal behaviors such as influence activities and politics. The emphasis on the boundaries of the firm is different from that of learning theory, but other theoretical interests are shared. Moreover, there are overlaps in basic ideas that are not always explicitly acknowledged, but suggest an intellectual debt to March and Simon (1958) and Cyert and March (1963). First, bounded rationality is held as important by many authors, although the details of how it is incorporated into the theory differ (Radner 1996, Williamson 1985). Second, the emphasis on conflicts of interest and internal negotiations matches the theory of goals in Cyert and March (1963) and its precursor statement (March 1962), and is central in game theoretic treatments of organizations (Grossman and Hart 1982, Holmstrom and Milgrom 1989, Milgrom and Roberts 1988). Organizational economics has other influences as well, and is affected by constraints imposed by the need for tractable models, so the models differ from Cyert and March (1963) in important details. For example, decision making with satisficing and search for alternatives is usually not considered, and models often impose a principal-agent structure with no exit option for the players. These changes give the models a narrower scope than the Cyert-March dominant-coalition model where all participants bargain and the March-Simon inducements-contributions model where participants also consider the choice of exiting the organization. The rate of progress in this area is so rapid, however, that models capturing additional learning theoretical concepts may be in the works already.

Two Behavioral Research Traditions

A Behavioral Theory of the Firm has also given rise to research that follows the original theory more closely

than the examples given above. This work is primarily found in evolutionary economics and in organizational learning theory. Evolutionary economics examines organizational and industrial evolution processes based on a model of firms as routine-based agents that change incrementally through search rather than as a result of optimization (Nelson and Winter 1982). This theory has a very active tradition of modeling the consequences of these behavioral assumptions for industrial evolution, as well as empirical work on routine and capability changes in organizations (representative work is found in Dosi et al. 2000). Much attention is spent on the issue of how organizations come to develop heterogeneous sets of capabilities and sustain (or modify) them over time. The theory assumes bounded rationality in decision making and views routines as a stabilizing factor in firm behaviors and search processes as a source of changes.

One branch of research in evolutionary economics is empirical studies on the origin, modification, and transmission of organizational routines. Field studies have shown that routines are created and stabilized as a result of problem-solving activities and changes in the workload, and that organizations handle increases in workload through greater specialization of roles and increased coordination activities (e.g., Adler 1993, Narduzzo et al. 2000). Once formed, routines developed in one part of the organization are transferable—with some errors and modifications—and can be put into use when the organization expands or incorporates new units (Argote et al. 1990, Epple et al. 1996, Florida and Kenney 2000, Winter and Szulanski 2001). Acquisitions can also extend the capabilities of the acquiring firm (Karim and Mitchell 2000).

The path dependence of routines is an important implication of evolutionary theorizing and empirical research, and many have studied how path dependence of routines leads to persistent heterogeneity of capabilities in organizational populations and difficulties in adapting to invasions by new routine sets (such as new technologies). Persistently heterogeneous capabilities have been shown to be the result of gradual learning and resource-allocation processes (Helfat 1997) that result in stable firm differences in performance (Henderson and Cockburn 1994), and to be determined more strongly by the history of the focal firm than by its environment (Kogut and Zander 2000). Indeed, the flip side of the strong relation between firms and capabilities is firm difficulties in adapting to environmental changes that call for replacement of capabilities (Tushman and Anderson 1986, Henderson and Clark 1990).

The path dependence of routines also has important implications for firm adaptation to stable environments. Many simulation studies have shown that the incremental changes that would result from path-dependent capabilities do not reliably help organizations to find optimal capability sets based on immediate performance feedback (e.g., Levinthal and March 1981, Herriot et al. 1985, Dosi and Kaniovski 1994). This has led to investigations of alternative mechanisms for adaptation such as firm search strategies that are partly resistant to local feedback (Gavetti and Levinthal 2000, Gavetti 2005).

Organizational learning theory uses the concepts and mechanisms of *A Behavioral Theory of the Firm* directly, and has added a number of new research questions and learning mechanisms. Research on intraorganizational, organizational, and interorganizational learning share many common elements. The first focuses on the learning by groups, departments, or units that constitute organizations; the second focuses on learning at the level of the overall organization; and the third takes special interest in the routes, mechanisms, and effects of learning from other organizations. Research on both intraorganizational and organizational learning examines how organizational units learn from experience. Interpreting organizational experience and drawing appropriate inferences from it can be challenging (Levitt and March 1988, March et al. 1991), which has led researchers to examine both the nature of the learning processes involved and their potential for producing outcomes that are unfavorable to the organization (March 1981, 1991). Similarly, an important question in interorganizational learning is the extent to which the learning processes have biases that harm individual organizations or organizational populations (Miner and Anderson 1999, Miner et al. 1999).

Many reviewers discuss the branches of learning theory on intraorganizational learning (Argote and Ophir 2002), organizational learning (Schulz 2002), and interorganizational learning (Ingram 2002) separately because of some differences in emphasis, although these branches have a large set of shared assumptions. However, there are two important links between levels of analyses that suggest a need to take a unified view of these branches. First, similar learning mechanisms may be found at multiple levels of analysis. For example, myopic search may be behind imitation both within and across organizations, as may be seen through the similarities of diffusion processes in these two contexts (cf. Levin et al. 1987, 1992). Second, a single learning process can have consequences at multiple levels in organizations. For example, in a study of surgical teams, Reagans et al. (2005) found that learning occurred at the level of individuals, teams, and the organization. Current research should thus aim to understand commonalities and differences in learning at these different levels.

A current trend in research on learning from experience at all levels of analysis is taking a more fine-grained approach to characterizing experience. Cyert and March (1963) analyzed particular dimensions of experience, such as whether it was above or below aspiration levels. Current work extends the dimensions

of experience investigated. For example, Haunschild and Sullivan (2002) examined how experience heterogeneity affects learning processes and outcomes and McKendrick (2001) examined how the social structure of an industry caused heterogeneity in learning outcomes. The learning processes spurred by the experience of competing with other organizations have been the topic of many studies (e.g., Barnett and Hansen 1996, Barnett 1997, Ingram and Baum 1997, Baum and Ingram 1998). Conversely, collaboration with other organizations also triggers learning processes that have been examined extensively (Barkema et al. 1997, Larsson et al. 1998, Gulati 1999, Gulati and Gargiulo 1999).

Another trend in studies of learning from experience is analyzing how the organizational context interacts with experience to affect learning processes and outcomes (Argote and Todorova 2007). Current work extends Cyert and March's (1963) focus on aspects of the context such as the extent of organizational slack to other dimensions of the context, including the organization's structure (Sorenson 2003) or culture (Edmondson 1999, Bunderson and Sutcliff 2003). For example, Kane et al. (2005) found that a contextual dimension affected organizational learning: Groups that shared a superordinate social identity were more likely to learn from each other than units lacking an overarching social identity.

How experience is captured and encoded in organizational memory is an important topic generating interest among researchers of organizational learning at different levels of analysis. Research on two components of organizational memory or repositories of organizational knowledge is particularly active. First, researchers are examining how organizational experience is encoded in organizational routines (e.g., see Cohen and Bacdayan 1994, Feldman 2004) or rules (March et al. 2000) as well as how that knowledge interacts with knowledge embedded in individuals. Second, researchers are analyzing the embeddedness of organizational experience in transactive memory systems (Wegner 1986), or the knowledge of who knows what (Brandon and Hollingshead 2004, Lewis et al. 2005, Liang et al. 1995), and the effect of those memory systems on organizational performance. In addition to work on organizational memory, research examines its converse—organizational forgetting or the decay of organizational knowledge (e.g., Argote et al. 1990, Benkard 2000).

How organizational units learn from the experience of other units is a very active research area. Levitt and March (1988) argued that not only do organizations learn from their own experience, they also learn from the experience of other units. Researchers of organizational learning test this proposition empirically by examining how and when organizational units learn from the experience of other units. This form of learning is often referred to as knowledge transfer (e.g., see Darr et al. 1995, Schulz 2001). Research in this area examines the mechanisms or processes through which transfer occurs and the conditions that facilitate or impede it. One highly active research area involves examining how social networks affect knowledge transfer (Hansen 1999, Reagans and McEvily 2003). Much work has also examined the learning processes that lead to interorganizational diffusion of innovations (e.g., Greve 1996, Haunschild and Miner 1997, Kraatz 1998). Related to the work on transfer is research on absorptive capacity, defined as the ability of organizations to incorporate external knowledge (Cohen and Levinthal 1990). Although interorganizational networks and other social structures affect the flows of information to organizations, their ability to interpret, apply, and build on this information also affects their ability to convert available external information into internal organizational knowledge. Absorptive capacity is currently a very active research tradition with excellent empirical support (e.g., Lane et al. 2001, Tsai 2001, Jansen et al. 2005).

Some Behavioral Hypotheses

A Behavioral Theory of the Firm contains a number of hypotheses and theoretical mechanisms that yield new hypotheses. Although these have not been afforded equal attention in subsequent research, there are some distinct research traditions that directly build on *A Behavioral Theory of the Firm*. Of these, we will discuss work on routines, problemistic search, and slack search. The theory of standard operating procedures in Cyert and March (1963) specified that organizational behavior has a high component of procedure following, which includes rules for performing tasks and handling information. Rules offer simplification and standardization, and, used flexibly enough, can also handle variation. This theory influenced Nelson and Winter's (1982) theory of routines, which has become influential both as a component of evolutionary economics theory and as a research topic for strategy scholars interested in organizational capabilities (e.g., Kogut and Zander 1992, Teece et al. 1997). The role of routines in explaining the development of organizational capabilities can be seen through multiple routes. First, learning-curve research has investigated outcomes such as costs and quality, showing gradual improvement over time within production establishments, but also transfer effects consistent with imperfect observation and learning of routines by outsiders (Argote et al. 1990, Levin 2001). Second, firm capabilities grow as a function of (relevant) experience in a way that suggests gradual fine-tuning of routines (Levinthal and Myatt 1994, King and Tucci 2002, Zollo et al. 2002). Given these findings, an interest in more direct observation of how routines are developed and transferred is understandable.

Direct observation of routines has been done in a number of studies, including work showing how routines

change as a result of external influences such as new technologies (Barley 1986, 1990) or new team members (Kane et al. 2005). Because routines are so central to organizational functioning, large-scale replacement of routines is a complex endeavor that is done at different speeds depending on the group level of agreement with the new routines and encouragement of experimentation (Edmondson et al. 2001, Pisano et al. 2001). Organizations handling frequent routine changes may develop routines for changing routines (Adler et al. 1999). Even stable organizational functioning requires flexible use of routines, as variation in the inputs given to routines may require switching among alternative routines or even development of new routines (Pentland 1992, Feldman 2000). At a higher level of analysis, the routine composition of organizational populations changes as organizations select routine sets through their own experience or through interpretation of external events (Anderson 1999, Miner et al. 1999). Although learning of routines occurs quite naturally, there is still substantial variation in the routines used by different organizations engaged in competition, leaving the organizations that can find and maintain better routines with a competitive advantage (Knott 2001, 2003).

The theory of aspiration levels, performance feedback, and problemistic search in Cyert and March (1963) directly leads to empirical predictions. However, it took 15 years before the first empirical test of these predictions based on quantitative methods appeared (i.e., Manns and March 1978), which seems to have been because the predictions are not cross-sectional, but rather predict how a firm will change its behaviors given its level of performance compared with managerial aspiration levels. A particularly difficult problem was the estimation of the aspiration levels, which the theory predicted to be a function of recent performance, past performance levels (historical aspiration level), and the recent performance of other firms (social aspiration level). As a result, empirical tests required data collection approaches and analytical methods that did not see widespread use in management theory until the late 1980s. After these methodological obstacles were overcome, the pace of research on aspiration levels and problemistic search has increased to the point where it is one of the most active research streams on strategic change in firms.

Two important contributions helped start empirical research on this subject. A study of aspiration level updating showed that decision makers followed the predictions made in Cyert and March (1963) and demonstrated a method for direct investigation of aspiration levels (Lant 1992). A study on firm risk taking showed how the predictions of aspiration level updating and problemistic search in Cyert and March (1963) could be applied along with prospect theory (Kahneman and Tversky 1979) to explain intertemporal variation in firm risk taking (Bromiley 1991). The latter contribution was important because work on firm risk taking has become a sizable empirical research stream with studies contrasting predictions from finance theory with either prospect theory, the behavioral theory of the firm, or both. A recent review reported many empirical studies on this topic and good support for the behavioral theory of the firm (Nickel and Rodriguez 2002).

Although the theory in Cyert and March (1963) can be applied to risk taking, it most directly predicts organizational search and change. Problemistic search implies that organizational aspiration levels adapt to the past experience of the focal organization and those of comparable organizations. Once organizational performance falls below the aspiration level, search for solutions will occur and organizational changes become more likely. Because problemistic search is myopic, the changes will likely occur near the apparent problem or in areas that the organization has recently changed. Much work has shown that performance below the aspiration levels affects outcomes such as the overall strategy (Lant et al. 1992, Miller and Chen 1994, Audia et al. 2000) as well as specific actions such as market entry (Greve 1998), investments (Greve 2003b), research and development (Bolton 1993), and interfirm collaborations (Baum et al. 2005). Some studies have examined interactions of problemistic search and contextual factors such as the experiences of others (Chuang and Baum 2003) and organizational inertia (Audia and Greve 2006).

The theory of slack search has also seen much empirical testing, but the full extent of this work is difficult to assess because it has not been reviewed recently. *A Behavioral Theory* proposed that organizational slack reduces conflict and increases innovativeness. It is the latter proposition that has seen most work. An early review paper found nine studies with fairly weak results (Damanpour 1991), but later this research stream has been strengthened by work modifying the theory to propose that organizational slack has an inverted U-shaped relation with organizational innovativeness because excess amounts of slack reduce the managerial discipline needed to convert innovation efforts into product launches (Nohria and Gulati 1996). With this modification, the theory predicts innovations quite well. Others have proposed that strategy-innovation fit affects innovation-launch decisions (Dougherty 1992) and that problemistic search is more effective when slack search has generated a buffer of innovation development processes (Greve 2003a). Despite these suggested moderating effects, there are still many studies investigating the direct effects of organizational slack on innovations, and some have found strong supportive results (Geiger and Cashen 2002). Research on how organizational slack affects innovations is currently in an active phase, and has moved past the point of proving an effect and onward to investigating the conditions under which the effect is strongest.

A Behavioral Agenda

The articles in this special issue suggest future research directions that are likely to advance our understanding of particular research questions developed in *A Behavioral Theory of the Firm*. In this section we discuss more general approaches that we believe will advance the agenda of *A Behavioral Theory* and thereby increase our understanding of organizations.

The Cyert and March book aimed to open up the "black box" of the internal workings of organizations. It departed from models prevalent in economics that characterized firm decisions as being made by monolithic, unitary actors. Decisions in organizations were instead seen as produced by collections of individuals with different interests, information, and identities. These differences led to interesting phenomena, such as conflict and subgoal optimization, which had important implications for firm behavior and performance. The internal processes and structures of the firm that were described so richly in the Cyert and March book are not developed in depth in many contemporary approaches to organizations. Much of contemporary organizational theory such as population ecology or institutional theory focuses on external relationships between organizations and their environments, and some treatments in those traditions have moved closer to models of an organization as a unitary actor.

By contrast, the Cyert and March book not only examines the internal workings of organizations but also examines the articulation between the organization and its external environment. For example, organizations have multiple goals, including goals that place them in contact with external events such as market competition. Organizational aspiration levels are based not only on internal comparisons to past performance but also on external comparisons to competitors. Search is conducted internally in the organization, but also affected by its relations to external actors. We strongly encourage a resurgence of interest in the internal structures and processes of organizations to complement the progress that has been made in understanding their external relationships.

We also encourage more explicit acknowledgement that many decisions in organizations are made by standing groups, such as top-management teams or boards of directors, or by looser collections of individuals, such as Cyert and March's dominant coalition. Much work in economics (see Marschak and Radner's 1972 theory of teams for one exception) treats the firm as if it is an individual making a decision. Although there was a rich body of research on group decision making in psychology (e.g., see Davis 1973, Hinsz et al. 1997, Kerr et al. 1996, Stasser and Titus 1985), that work has primarily been conducted in the laboratory where small groups come together for brief periods and members do not have a history of interaction or exist in a larger social context. We encourage a greater focus on understanding organizational decision making. This focus will require theory that incorporates the social processes and contextual factors that affect organizational decisions as well as an understanding of how decisions made by different groups or individuals within a firm combine to produce organizational actions.

The *Organization Science* Special Issue

Papers for the special issue were due in May 2005. After an initial round of reviews, authors who were encouraged to revise and resubmit their work to the special issue were invited to a conference at Carnegie Mellon University in May 2006. The conference provided an opportunity for authors to obtain feedback about their work and for the editors to identify common themes in the manuscripts. The conference was funded by the Carnegie Bosch Institute for Applied Studies in International Management and by the Center for Organizational Learning, Innovation, and Performance at Carnegie Mellon University. We gratefully acknowledge the support of these centers and especially thank Johannes Elling, Eva Maria Höller-Cladders, and Michael Trick, the current and former presidents of the Carnegie Bosch Institute. Colleagues from Carnegie Mellon commented at the conference on the impact of the Cyert and March book on various fields of management. We would like to thank several scholars for their insightful remarks and contributions to the conference: Jared Cohen, Ilker Baybars, Robyn Dawes, Yuji Ijiri, George Lowenstein, Stanley Zin, and especially Margaret Cyert. A high point of the conference was Dean Kenneth Dunn's announcement that an auditorium at the Tepper School of Business (formerly the Graduate School of Industrial Administration) at Carnegie Mellon University would be named in honor of James G. March.

After another round of review, the special issue editors selected papers that exemplify the high standards of *A Behavioral Theory* and its broad influence, for inclusion in the special issue. The authors are affiliated with institutions in different disciplines in Europe, Asia, and North America, reflecting the interdisciplinary and international impact of the book. The papers use different methods including quantitative field studies, qualitative case studies, laboratory experiments, and simulations. The manuscripts build on the concepts and hypotheses developed in *A Behavioral Theory of the Firm*.

Consistent with our review of the literature, research on aspiration levels is well-represented in this special issue. Three manuscripts examine how performance relative to aspiration levels affects organizational behavior and performance. Harris and Bromiley (2007) extend the behavioral theory of the firm to a new domain: financial misrepresentation. Based on an analysis of financial restatements identified by the U.S. Government

Accounting Office as resulting from accounting irregularities, Harris and Bromiley find that top-management incentive compensation and low organizational performance relative to aspirations increase the likelihood of financial statement misrepresentations. The theory is an extension of the mechanism of problemistic search to include misconduct as a potential outcome as well as the usual legitimate approaches to problem solving, and the findings present troubling implications for currently popular incentive schemes.

Baum and Dahlin (2007) analyze how organizations' learning from their own and others' experience is conditioned by their performance relative to aspirations, which integrates the previously separate literatures on learning curves and problemistic search. Based on an analysis of a longitudinal data set on accident costs in U.S. freight railroads, the researchers find that as performance deviates from aspiration levels, organizations benefit less from their own experience and more from the experience of other firms in the industry. Baum and Dahlin suggest that their findings indicate that performance near aspiration levels leads to local search, whereas performance away from aspirations fosters nonlocal search.

Park (2007) investigates how performance relative to aspirations affects the choice of strategic positions in the U.S. food-processing industry. He finds that firms are more likely to position themselves close to other firms when their performance is below aspiration levels, and that they choose high-performing firms as targets of imitation. The second finding is particularly novel because it shows that high performance is more likely to cause a firm to be seen as a role model, and hence to be imitated, than it is likely to cause the firm to be seen as a strong competitor that should be avoided. Thus, not only do these papers extend the predictions of *A Behavioral Theory of the Firm* to new outcomes, they also elaborate the theory of how and when performance relative to aspirations affects organizational behavior and performance.

The next paper in this special issue builds on another concept central to *A Behavioral Theory*: the concept of search. Winter, Cattani, and Dorsch (2007) use computational models to examine hypotheses advanced in *A Behavioral Theory of the Firm* about the interplay of local and nonlocal search and the consequences of cognition versus local feedback. The Winter et al. (2007). paper advances the use of simulation, a tool introduced to the organizational sciences by *A Behavioral Theory*. The researchers demonstrate that a search strategy that combines the guidance of local search with a moderate level of nonlocal "obsession" is advantageous when searching a "rugged landscape."

Gavetti and Rivkin (2007) examine the strategic changes in the internet portal firm Lycos, and use their observations to compare the positional and evolutionary perspectives on strategy and to propose a middle ground. They find that distinguishing different forms of search is important to understand strategic changes, and they argue that the theory of search should be extended to include the effects of cognitive representations and strategic information sensors. They also develop propositions on how search patterns change as an industry evolves.

The next three papers in the special issue build more on the general principles of *A Behavioral Theory of the Firm* and less on the specific propositions than the first five papers. Moore, Oesch, and Zietsma (2007) use the concept of myopic search to develop and test hypotheses about market-entry decisions. Based on an analysis of market-entry decisions by entrepreneurs and by participants in an experiment, the researchers find that potential entrants base their decisions on evaluations of their own competence and neglect the competence of competitors, which leads to an egocentric bias in entry decisions. Jacobides examines the role of organizational structure in search behavior in his analysis of how Greece almost went to war with Turkey in 1996 over uninhabited islets. Jacobides (2007) shows how organizational structure contributed to the escalation and suggests that hierarchy can be an antidote to such escalation. Pitelis argues that although the theories of Cyert and March (1963) and Penrose (1959) have differences, they also have many similarities. Pitelis integrates the two theories, with particular attention to the concepts of slack resources and intrafirm conflict.

Because a major goal of the special issue was to take stock of the impact of *A Behavioral Theory of the Firm*, we include several Perspective essays that chart the impact of the work on different subfields. Dosi and Marengo (2007) discuss the influence of *A Behavioral Theory of the Firm* on evolutionary economics. Cohen (2007) describes how *A Behavioral Theory* builds on Simon's *Administrate Behavior*, which moved decision making to the foreground in the analysis of organizational heavier and relegated concepts such as habit and emotion to the background. Augier and Prietula (2007) focus on the development and the impact of the computational model in *A Behavioral Theory of the Firm*. Gavetti, Levinthal, and Ocasio (2007) provide a neo-Carnegie theoretical approach that incorporates developments since the initial publication of the Cyert and March book, including an open systems perspective and a more embedded characterization of organizations, as well as recent findings in the study of cognition. Finally, we are delighted to have a contribution from James G. March, coauthor of *A Behavioral Theory of the Firm*. Jim, thank you for developing *A Behavioral Theory of the Firm* and for your remarkable contributions to our understanding of organizations. We hope that this special issue advances a behavioral theory of the firm.

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