



ESSAYS

Building New Management Theory by Integrating Processes and Products of Thought

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This article advocates that more strategy researchers and managers become engaged in an interactive, reciprocating research process, the objective of which is building pragmatic strategic management theory. To this purpose, the authors suggest how researchers and managers may engage in theory-building processes in which generalized theories of researchers and contextual theories of managers interactively evolve in a new model of double-loop learning. In particular, the authors suggest the following sequence of activities: (a) Researchers should propose integrative theories thought to be generally applicable; researchers and managers should then consider applicability of strategy theory to specific competitive contexts. (b) This strategic logic is then formulated by managers and applied to specific competitive contexts. (c) The market response leads to refining or to redefining the firm's strategic logic. (d) The firm's experience in formulating and in testing strategic logics inform researchers' efforts to develop new strategy theory.

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Pfeffer and Fong (2002) emphasize the inertia of business schools that have not responded to the demands of business. In contrast, Huff (2000) indicates that there are ongoing changes in the roles that business schools perform in the knowledge-creation process with greater emphasis on applied knowledge. Huff (2000), however, also expresses concern that sheltered university business-school research is being eclipsed both because of changes in

demands of globalizing competition and by knowledge produced collaboratively, in practice. Education is an increasingly competitive business, where corporations spend more on business education than do business schools. More than 1,600 corporations possess formal corporate universities that train not only their own employees but also those from other corporations, which compares with 1,200 U.S. educational institutions (Friga, Bettis, & Sullivan, 2003, p. 240). A

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complete lack of response by business schools runs the risk that an increasingly sophisticated customer base will devalue what business-school researchers have to offer.

Taking a more optimistic view of the future of business-school education than Pfeffer and Fong (2002), Huff (2000) and Kor and Mahoney (2000) argue that business schools are best served if they work to produce relevant knowledge in ways that preserve its current strengths: their dedication to problem framing and to data collection, their tradition of peer review, their capabilities at publication, and their commitment to training. This article concurs with Huff (2000) that (a) disciplinary knowledge is useful in specific business contexts, (b) business-school research institutions should produce public goods that companies and that consultants cannot credibly produce, and (c) business schools offer a desirable, neutral ground on which new, more synthetic knowledge can be generated from the interactions of individuals with diverse business, consulting, public, and university experiences. We explore here a knowledge-creation process that embraces such a pluralistic journey for management.

The knowledge-creation process is a central activity for management inquiry (Cannella & Paetzold, 1994). This article invokes the logic and the values of pragmatic philosophy and builds on Evered and Louis (1981) to propose a new form of double-loop learning that joins researchers and managers in a process for theory development. This proposed research approach attempts to reconnect generalizable knowledge with contextual knowledge to combine the rigor of logical positivist/logical empiricist research with the relevance and the groundedness of a pragmatic approach to management research.

Several contemporary research articles (e.g., Mahoney & Sanchez, 1997; Seth & Zinkhan, 1991) have argued that theory building in strategic management should be undertaken with the ultimate objective of developing theory capable of being applied by managers. To this purpose, this article outlines a process for building strategic management theory. We argue that double-loop learning may play a primary role in building strategic management theory, and we apply this perspective to the concept of competence-based competition. Development of evolutionary epistemology (Popper, 1989), renewed interest in pragmatic inquiry in philosophy (Rorty, 1989), and growing attention given to rhetoric within strategic-management studies (Eccles & Nohria, 1992) and eco-

nomics (McCloskey, 1998) provide complementary and reinforcing perspectives that support the research approach proposed here.

Toward a Pragmatic Approach to Developing Strategic Management Theory. A central proposition of pragmatic theory (Dewey, 1929) is that the validity of an argument depends on the consequences of acting on it. From a pragmatic perspective, all meaning and value in strategic management theory are realized through action. Building theory for strategic management has dual objectives of research rigor, in terms of conceptual adequacy, methodological rigor, and generation of accumulated empirical evidence, and practical relevance, in terms of meaningfulness, goal relevance, operational validity, innovativeness, and the feasible cost of implementation (Shrivastava, 1987; Venkatraman & Grant, 1986). Reflective research in management requires a partnership for collaborative learning by practitioners and by researchers who can work together via interactive discussion, among other mechanisms (Balogun, Huff, & Johnson, 2003; Rouse & Daellenbach, 1999; Von Krogh, Roos, & Slocum, 1994).

A key objective of reflective research is achieving a balance between the competing virtues of parsimony and of comprehensiveness, the achievement of which is also a hallmark of good theory (Whetten, 1989). Essential building blocks of theory describe (a) those factors (concepts, constructs, variables) that logically should be specified as part of an explanation of the phenomena of interest, (b) the interrelationships between the factors, and (c) the underlying rationales that justify the selection of factors and that identify causal relationships. To these requirements of good theory, we add the pragmatic criterion of usefulness in action (Kaplan, 1964).

An appropriate epistemology of practice for management research will reflect a concern for the principle of contextualism. Contextualism recognizes that there is a context-dependent gap between concepts of universal theory and concepts useful in a specific context (i.e., useful to a specific manager, at a specific time, on a specific issue [Barnes, Christensen, & Hansen, 1994, p. 47]). Management theory building must necessarily include factors that are responsible for observed patterns in specific management contexts (Burgelman, 1983; Leonard-Barton, 1995; Mintzberg, 1973; Penrose, 1959). The central importance of context is emphasized by Hicks (1976) in the following:

Since it is a changing world that we are studying, a theory that illumines the right things now may illumine the wrong things another time. This may happen because of changes in the world (the things neglected may have grown relative to the things considered) or because of changes in the source of information (the sorts of facts that are readily accessible to us may have changed) or because of changes in ourselves (the things in which we are most interested may have changed). (p. 208)

Not all strategy theory can be universal or timeless. Universality is qualified by the specificities of context. Moreover, the durability of what is taken for knowledge currently will eventually be challenged by changing patterns of investigation, changing abilities to detect and measure, changing norms of discourse, changing needs and priorities, and changing habits of mind. What is accepted as logical, scientific analysis today will eventually be reappraised by history (Chandler, 1962). Studies of the history of ideas (Kuhn, 1970) make plain the evolving nature of both the contents of knowledge and the processes by which theories are elevated to the status of knowledge in society. Evolutionary epistemology (Hull, 1988) suggests that the content of knowledge and the processes of learning are inextricably intertwined and are changing over time and place.

Academics (who are typically characterized as developing strategy theory) and managers (who are typically characterized as applying strategy theory) have a joint mission of pragmatic inquiry (i.e., a shared objective to develop insights that can help an organization achieve goals and improve performance in its specific context). Although we concur with Van de Ven (1989), following Lewin (1951), that "nothing is quite so practical as a good theory" (Van de Ven, 1989, p. 488), we also argue here that nothing is quite so theoretical as a good practice. Exemplars of theory informed by practice include Argyres (1996), Chandler (1990), Hall (1993), Leonard-Barton (1995), Penrose (1960), and Williamson (1975). Managerial action based on practitioners' contextual theories can become a rich source for the researcher interested in developing useful strategy theory.

Weick (1989) argues that "theory cannot be improved until we improve the theorizing process, and we cannot improve the theorizing process until we describe it more efficiently, [and] operate [the theorizing process] more self-consciously" (p. 516). A process of building a pragmatic theory of strategy should aim to integrate economic and cognitive concerns at

three levels: (a) the strategy making and the testing processes of managers competing in specific contexts, (b) the theory building and the testing processes of researchers using theory to derive insights that are generalizable across specific business contexts, and (c) potential interactions between managers and researchers in building theories of strategy that work in important categories of competitive contexts.

This article develops these ideas in the following way. The first section suggests that insights may be developed through dissociative thinking about complex phenomena but that usefully applying such insights in the contexts of real organizations requires integrative capabilities. The second section addresses the limitations of dissociative thinking applied to strategic-management theory building from the perspective of managers. The third section suggests that strategy researchers integrate the economic, cognitive, and organizational concerns that managers face (Huff, 1981, 1990). The fourth section provides a model for building useful strategy theory. The fifth section suggests that double-loop learning may play a central role in building strategic management theory based on concepts of competence-based competition. The sixth section provides concluding comments and recommendations.

DISSOCIATIVE PATTERNS OF THOUGHT

Confronting the dynamic complexity of the real world makes evident the limited ability of researchers and of managers alike to fully comprehend, describe, explain, and (perhaps) predict the world as it is and as it is becoming. Confronted with complex phenomena, human minds often must use dissociative cognitive techniques in first efforts to make sense of the complex world we observe. Dissociative cognitive techniques, consciously used to begin analysis of complex situations, differ from cognitive heuristics and biases (Kahneman, Slovic, Tversky, 1982) that unconsciously and thus unintentionally influence cognitive processes.

There is a large literature on sense making in management studies (Weick, 1995). Some of the fundamental first steps that may be undertaken intentionally in sense-making efforts are the following:

1. Analyzing dynamically interrelated phenomena as if their interrelationships are invariant over time (static or comparative statics analysis);

2. Reducing a continuum of possibilities to extreme polar cases and/or to a limited set of intermediate cases; and
3. Analyzing phenomena ostensibly subject to multiple influences as if they were subject to a single influence or to a limited set of influences.

These and related cognitive techniques are often first steps in developing theories about the nature of some phenomena of interest and about their interrelationships when viewed from the perspective of the relevant simplifying assumptions (e.g., static analysis, polar cases, a single source of influence). Of course, insights into causal relationships derived from such dissociative theoretical analysis are not universally true; they suggest only possible tendencies in complex phenomena in a real-world setting (e.g., one that may be dynamic, continuous, and subject to multiple influences). The ability of a dissociative theory to explain or to predict actual events in the real world has to be tested in various contexts to determine its usefulness.

One powerful motive for the dissociation of content and process perspectives in strategy theory building may have been the desire of many early strategic-management researchers to achieve legitimacy for strategy as a management discipline by demonstrating that research in strategic management can be conducted scientifically, which was taken to be the reductionist, positivist mode of inquiry typical of the physical sciences. Perhaps because positivistic economics had gained substantial institutional influence as a scientific discipline in United States' business schools in the 1960s and 1970s, much early strategic-management research reflected (implicitly or explicitly) a key presumption of positivistic economics. Reflecting the presumption that differences in the psychological processes of decision makers could be ignored, a widely emulated mode of strategy theorizing arose in which deductive reasoning from the first principles of positivistic economic theory (which intentionally ignore the cognitive processes of humans) was asserted to be sufficient for the prediction of organization behaviors and competitive outcomes.

In developing theory that is useful in the strategic management of organizations, the potential gains from developing more integrative theory are considerable. In building a pragmatic strategic management theory, the current article suggests the necessity of integrating two dichotomous patterns of dissociative thinking that have become endemic in strategy theorizing: an exclusive focus on either (a) the economic

content of strategy formulation or (b) the cognitive processes attendant to strategy implementation (Huff & Reger, 1987; Schendel & Hofer, 1979).

Along these lines, Simon (1957, 1982) was perhaps the most vocal early critic of the positivistic viewpoint in economics, which tried to separate economic content and cognitive processes by assuming perfect rationality of decision makers. Through researching organizational decision making and human cognitive processes, Simon (1957) proposed an alternative premise for management science based on the principle of bounded rationality:

The capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the real world—or even for a reasonable approximation to such objective rationality. (p. 198)

Through the concept of bounded rationality, Simon (1957) sought to integrate the intrinsically dissociative theories of economics that were premised on describing and on predicting outcomes of organizations' competitive interactions solely on the basis of externally observable organization variables and theories of organizational action that recognize and incorporate the cognitive limitations of decision makers within organizations. In particular, Simon (1957, 1982) sought to replace a so-called economic man with a so-called administrative man who connects strategy formulation and strategy implementation. In this regard, it is useful to recall Simon's (1976) further distinction between *substantive rationality* and *procedural rationality*.

Substantive rationality refers to the rationality posited by the neoclassical economist; it identifies the economic ends that perfectly rational managers with perfect information would pursue in a fully defined context. Procedural rationality is the rationality of human decision makers in actual organizations and in real situations; it reflects the limited means or procedures that humans actually employ in an effort to make decisions in a complex, causally ambiguous, and changing environment where information is imperfect and incomplete. The central challenge to strategic-management researchers is to develop theory that integrates the pressures of market competition that require managers to attain the economic ends of substantive rationality (e.g., profitability, increased firm value) while indicating ways to attain those ends using the means of procedural rationalities that are

Table 1
Dissociative Patterns of Thought to Be Integrated in Strategic Management

<i>Dichotomies in Current Strategy Theory</i>	<i>Desired Integration in a Pragmatic Theory</i>
Positivistic economics vs. human cognition	Economic objectives and cognitive processes
Substantive rationality vs. procedural rationality	Bounded rationality (substantive rationality constrained by procedural rationality)
Strategy content vs. strategy process	Strategy content defined by strategy processes (i.e., capabilities in action)
Strategy formulation vs. strategy implementation	Formulation coevolving and integrated with implementations

bounded relative to the complexity of competitive environments.

As the environments of organizations become more dynamic, the relevance of strategy research to the management of organizations will increasingly depend on an integration of the economic ends of substantive rationality with the cognitive means of procedural rationality. Table 1 suggests some current dichotomies in the dissociative patterns of thought underpinning strategy theories and the desired integrations to be sought in developing theory within the pragmatic approach. In particular, we emphasize here that dissociative thinking within strategy has limited our understanding of how strategy formulation and strategy implementation coevolve.

The intent of pragmatic theory building is to (a) consider economic objectives that are not separated from cognitive processes, (b) place in the foreground that substantive rationality is often limited by procedural rationality, (c) recognize that strategy content cannot be separated from strategy process, and (d) emphasize that strategy formulation and that strategy implementation coevolve. The double-loop learning process we propose between researchers and practitioners can help link strategy implementation and strategy formulation by linking know-how and know-why.

The remainder of this article suggests integrating the processes of procedural rationality and the product of substantive rationality in building a useful strategic management theory that integrates theory and practice. We consider this integration from the perspectives of managers (the second section), researchers (the third section), and interactions between managers and researchers (the fourth section). In all three

contexts, following Simon (1957, 1982) we emphasize a synthesis of positivism and of pragmatism.

MANAGERS' NEED FOR STRATEGIC INTEGRATION

Organizations function as open systems that try to attain distinctive sets of performance goals in dynamic environments (Weick, 1995). The efforts of an organization to attain its performance goals are guided, either explicitly or implicitly, by a strategic logic (Sanchez, Heene, Thomas, 1996), which is an organization's operative theory about how the development and the deployment of firm-specific resources and of combinative firm-level capabilities (Kogut & Zander, 1992) will lead to an acceptable level of goal attainment in a specific, competitive business context. The strategic logic and the resulting actions of an organization must meet a market test for competence by continuously generating offerings that satisfy customer needs at least as well as the offerings of competing organizations. This process of managers' contextual strategy theory building and strategy theory testing is suggested by the feedback loop shown in Figure 1. Not only does the firm's strategic logic guide the firm in developing and in applying resources and capabilities to create product offerings, but also market response leads to refining or to redefining a firm's strategic logic.

Managers engaged in contextual theory building and contextual theory testing face a compelling need for theoretical integration because effectively adaptive responses by managers often require that they understand connections between know-how and know-why.¹ Managers must devise contextual strategy theories that suggest practical ways to design and to manage human processes that are inherently cognitively limited, and thus only procedurally rational, but that nonetheless manage to achieve strategic goals that include substantively rational economic objectives (like economic profitability, growth, and/or accounting returns on investments).

Just as the complexity of competitive phenomena may lead to dissociative thinking in the so-called ivory towers of academia, top managers of companies may also fall back on dissociative modes of thought when facing the complexity of their business environments. This need for cognitive simplification can manifest itself in the formulation of competitive strategy being isolated from the business realities of the mar-

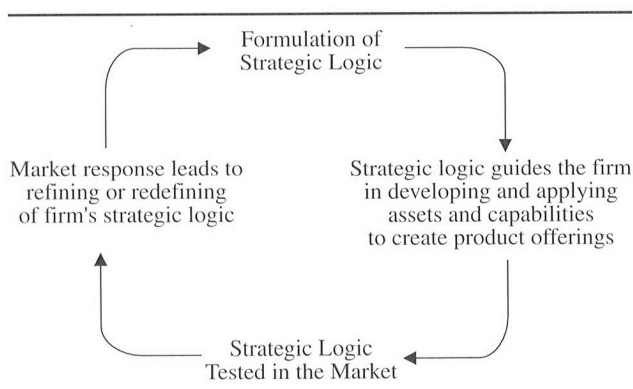


Figure 1: Contextual strategy theories of managers face the market test for competence.

ketplace. Such thinking can lead to systematic biases in decision-making processes such as anchoring on recent events that may lead to poor strategic decisions. Thus, the need for integration is felt by both managers and researchers alike. We turn now to the researchers' need for strategic integration.

RESEARCHERS' NEEDS FOR STRATEGIC INTEGRATION: INQUIRY FROM THE INSIDE AND INQUIRY FROM THE OUTSIDE

Evered and Louis (1981) note the multiple dissociated research approaches in the organizational sciences. These research approaches fall into categories of inquiry from the outside or of inquiry from the inside. On one hand, inquiry from the outside is motivated by a positivist, reductionist, deductive orientation to scientific research that builds strategic management theory through detached observations and quantitative data. Inquiry from the inside, on the other hand, is motivated by a more inferential, systemic orientation to scientific research based on more subjective, qualitative data gathered through studying organizations from the inside. The outcome of inquiry from the outside, seeking know-why, will not be identical to inquiry from the inside, seeking know-how. Having knowledge about something is not the same thing as being immersed in the experience. C.S. Lewis, as quoted in Lindvall (1996) referred to this distinction of know-why and know-how as the human dilemma of knowing:

Either to taste and not to know—or, more strictly, to lack one kind of knowledge because we are in an experience or to lack another because we are outside of it.

As thinkers we are cut off from what we think about; as tasting, touching, willing, loving, hating, we do not clearly understand. . . . You cannot study pleasure in the moment of nuptial embrace, nor repentance while repenting, nor analyze the nature of humour while roaring with laughter. . . . I have an idea that the true analysis of a thing ought not to be like the thing itself. I should not expect a true theory of the comic to be itself funny. . . . Books are not the thing itself; they are only the scent of a flower we have not found, the echo of a tune we have not heard, news from a country we have never yet visited. (pp. 8, 56)

Lewis teaches us the two ways of knowing: *savoir* (analysis) and *connaitre* (intimate experience). As suggested in Table 2, inquiry from the outside follows the positivist approach to research that progressively builds up a reconstructed logic (Kaplan, 1964) about organization behaviors and competitive interactions. Inquiry from the inside, on the other hand, follows a more pragmatic scientific tradition that tries to discover the actual logic in use (Kaplan, 1964) in organizations and thereby to understand the theory in use (Argyris & Schön, 1978) within organizations. Exemplars of such inquiry from the inside include Bartlett and Ghoshal (1998), Brown and Eisenhardt (1998), Porac, Thomas, and Baden-Fuller (1989), and Zuboff (1984).

The positivist/empiricist mode (Hunt, 1994) of inquiry from the outside uses a priori categories derived from a preexisting theoretical framework (i.e., a reconstructed logic) to test and to refine existing theory, with the ultimate objective of developing a generalized theory capable of making explanations and predictions that are not dependent on a specific context. Inquiry from the inside, on the other hand, tries to discover situationally relevant entities, categories, and relationships that seem useful in discovering the logic in use (Kaplan, 1964) of participants in the situation under study. The discovered logic in use of an organization is likely to be contextually embedded and may, to a significant degree, be tacit (Polanyi, 1962).

The dissociation of these two research approaches has resulted in so-called reconstructed logic developed by strategic-management researchers pursuing positivist inquiry from the outside that has become dissociated from the actual logic in use within organizations, whereas the relevance of theories developed by researchers on the inside of specific organizations to other organizations or to other competitive contexts often remains unclear. Simply put, our suggestion to combine the positivist mode of research in strategy

Table 2
Modes of Inquiry Management Studies

<i>Source of Difference</i>	<i>Inquiry From the Outside</i>	<i>Inquiry From the Inside</i>
Researcher's relation to research subject	Detachment; neutrality	Being there; immersion
Validation basis	Measurement; logic	Experiential; personal knowledge
Researcher's role	Detached observer	Active participant
Source of categories	A priori	Interactively emergent
Aim of inquiry	Generalizability	Situational relevance
Type of knowledge acquired	Universal; nomothetic; <i>theoria</i> ; know-why	Particular, ideographic, <i>PRAXIS</i> , know-how
Nature of data and meaning	Factual; context free	Interpretive; contextually embedded
Philosophical paradigm	Logical positivism/logical empiricism	Pragmatism; hermeneutical dialectics
Logic of inquiry	Logic of justification; reconstructed logic; product of thought; substantive rationality	Logic of discovery; logic in use; process of thought; procedural rationality
Learning theory	Espoused theory	Theory in use

SOURCE: This table is a modified and expanded version of Evered and Louis (1989, p. 389).

and the pragmatic mode of research in strategy will enable us to achieve the theory development that can be achieved by the positivist mode of research operating in isolation, and more. If real-world business phenomena were described in positivist terms only, then much of the drama of business-strategy processes would be needlessly placed behind the scenes.

One thing that is clear is that for academic researchers to believe in the inherent superiority of their reconstructed logic can be a fatal conceit (Barnard, 1938, p. 321). Like two scissor blades, both reconstructed logic (know-why) and logic in use (know-how) must work together for incisive learning of both general strategic-management principles and their appropriate application. To counteract dissociation between (reconstructed) strategy theory espoused in academia and strategy theories actually used in various organizations, the next section proposes a new model for building a strategic-management theory that interactively links researchers and managers in a double-loop learning process.

A MODEL FOR INCORPORATING PRAGMATIC THEORY BUILDING INTO STRATEGY RESEARCH

A mission of reconnecting theory building from the outside and theory building from the inside requires a process of interconnected research and practice in which interactions between managers and researchers have a purposeful focus on theory building. We therefore propose a new model for a pragmatic approach to theory building based on an interactive process of

double-loop learning (Argyris & Schön, 1978) between managers and researchers, as suggested in Figure 2. Here, we argue for the following sequence of activities:

1. Researchers should propose integrative theories thought to be generally applicable; researchers and managers should consider applicability of strategy theory to specific competitive contexts;
2. this strategic logic is then formulated by managers and applied to specific competitive contexts;
3. the market response leads to refining or redefining the firm's strategic logic; and
4. the firm's experience in formulating and in testing strategic logics inform researchers' efforts to develop new strategy theory.

We discuss Figure 2 further below and consider both double-loop learning's impact on theory building by managers and double-loop learning's impact on theory building by researchers. However, before doing so, we believe it is important to emphasize that the pragmatic mode of research in strategy (i.e., inquiry from the inside) we regard as a complement to (and not a substitute for) the positivist research mode in strategy (i.e., inquiry from the outside).

Double-loop learning's impact on theory building by managers. Argyris and Schön (1978), building on general systems theory and on cybernetics (Ashby, 1940), characterize organizational learning as the detection and the correction of error. This form of learning may occur at different conceptual levels within organizations (Levitt & March, 1988). For example, Sanchez (1996) suggests that organizational knowledge may

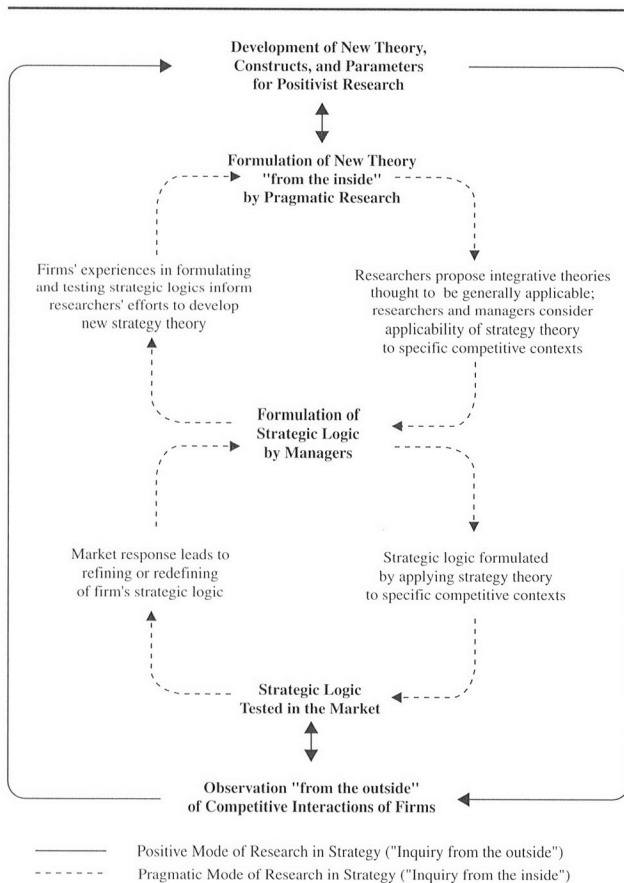


Figure 2: Joining pragmatic and positivist approaches in strategy theory and practice.

exist in at least three forms, categorized by whether knowledge is based on process, purpose, or state levels of understanding. These levels of understanding characterize three forms of knowledge: know-how (practical understanding of how to do things), know-why (theoretical understanding of why things work), and know-what (strategic understanding of what things can be done).

For example, Boeing's engineering drawings and specifications for the fabrication of a wing section for the 777 convey the know-how that specifies how the desired 777 wing section is to be made by a subcontractor. The know-how provided in the design drawings and in specifications is distinct from the design theory (know-why) that enables Boeing to develop that wing design, and it is distinct from the know-what knowledge that enables Boeing to identify the 777 product concept as a viable application of available know-why and know-how. Learning may occur at a purely operational or know-how level, for example, when error detection and correction lead to

changes in the way wings are made, but do not lead to changes in the firm's design procedures or market objectives. Learning at the strategic level, on the other hand, is a higher order organizational process (Sanchez, 1994) that, in the words of Argyris and Schön (1978), occurs "when error is detected and corrected in ways that involve the modification of an organization's underlying norms, policies, and objectives" (p. 3).

The double-loop level of learning through the detection and the correction of errors at the strategic level of understanding within an organization are often made problematic precisely because of the dissociation of espoused theory and theory in use is so prevalent within—and so often unknowingly or stoically accepted by—organizations and their managers. The problem of such dissociation for the individual manager has been described by Argyris and Schön (1978) as follows:

When someone is asked how he would behave under certain circumstances, the answer he usually gives is his espoused theory of action for that situation. This is the theory of action to which he gives his allegiance and which, upon request, he communicates to others. However, the theory that actually governs his actions is his theory-in-use, which may or may not be compatible with his espoused theory; furthermore, the individual may or may not be aware of the incompatibility of the two theories. (p. 11)

The actual theories in use (i.e., the operative knowledge) in an organization may be only poorly articulated (if at all) within that organization because articulating the understanding of many individuals and groups within an organization may require significant effort and cost. When actual theories in use are not openly discussed and appraised within an organization, detection and correction of error in theories at the strategic level may become impossible within an organization, and the organizational capacity to learn at the strategic level may become dysfunctional.

A critical dynamic for the learning organization is therefore a process that regularly brings managers' and employees' mental models into the open in an organization, where they can be discussed and challenged (Senge, 1990). A fundamental benefit of the double-loop learning process suggested in Figure 2 is to improve the ability of managers to develop strategy theory in specific business contexts by involving researchers who can help bring to the surface the assumptions, norms, and practices of an organiza-

tion's theories in use and thereby make an organization's theories in use more accessible, discussible, testable, and changeable.

In this pragmatic effort to develop more explicit and useful integrative strategy theories, researchers and managers may be able to jointly compose a picture of essential interdependencies between strategy content and organizational processes in the context of a given organization. Double-loop learning can mitigate systematic biases in decision making and can provide richer insights into the interdependencies of strategy formulation and strategy implementation. These richer insights into the interdependencies of content and of processes in various contexts may suggest both general principles and specific techniques for reconnecting strategy formulation and strategy implementation. Managers who adopt this interactive approach to strategy theorizing may thereby improve their understanding of how to compete successfully in specific competitive contexts.

Double-loop learning's impact on theory building by researchers. Although strategic-management researchers may have a natural tendency to talk primarily to each other, an active dialogue between researchers and managers is critical to building a more useful strategic management theory. Bowman (1990) sums up the argument for greater theoretical interaction between researchers and managers:

There is always the risk that the professor would rather interact intellectually with other professors and doctoral students than with executives. While the first interaction is obviously worthwhile, to miss the second is folly. Most of us exist in professional business schools that, as with all professional schools, exist to help the professions—the worldly managers and managers-to-be. . . . The practitioner and the researcher are *doubly linked* [italics added]: the researcher supplies insights, relationships, and theory for the practitioner. But the practitioner supplies puzzles, ideas, judgments, and priorities for the researcher. (pp. 25, 27)

Thus, the fundamental argument of this article is that just as managers may be aided in strategic theorizing by a double-loop process of interaction with researchers, researchers may be assisted by the double-loop model in discovering principles and techniques for linking dissociative theories and for building more integrative strategy theory that improves understanding of how strategy formulation and strategy implementation coevolve.

Bourgeois (1984) notes that "reductionism eliminates much of the richness that characterizes the strategic management process and may constrain the advancement of strategic management as an academic discipline" (p. 586). Similarly, allegiance to a single mode of inquiry limits a researcher's apprehension of the breadth and the depth of organizational phenomena. Appreciation of diverse research approaches and of "triangulation" (Jick, 1979) helps to maintain openness, flexibility, and disciplined imagination in research (Weick, 1989) that is essential in building useful management theory. The pragmatic epistemology we propose here encourages the methodological inclusiveness and tolerance of diversity and of multiplicity in research designs so critical to good theory building in management (Evered & Louis, 1981; Mahoney, 1993). We next consider the use of this pragmatic, evolutionary approach to research in competence-based theory building.

THE PRAGMATIC APPROACH TO THEORY BUILDING IN COMPETENCE-BASED STRATEGIC MANAGEMENT

"Far better an approximate answer to the right question . . . than an exact answer to the wrong question, which can always be made precise."

—John Tukey (1962), statistician

Competence-based research is a useful example of the results of pragmatic theory building and a way that occurs through the integration of process and of content research. In this section, we first directly discuss the integration of content and of process variables. Second, we focus on an important component of current competence-based research: strategic flexibility. Third, we then consider more generalized issues and examine more central principles.

Much prior strategic management research has used either cognitive modeling (e.g., Huff, 1990) or economic modeling (e.g., Balakrishnan & Wernerfelt, 1986) to build theory. Growing interest in concepts of competence-based competition, however, is stimulating some economics-oriented thinkers to address the organizational processes by which resources and competences are created, used, and renewed (e.g., Mahoney & Pandian, 1992). Research in this area is developing concepts of dynamic capabilities (Teece, Pisano, & Shuen, 1997), strategic flexibility (Sanchez, 1995), organizational learning (Spender, 1996), and the interrelationships of resources and of organizational

processes in a network of resources (Black & Boal, 1994). At the same time, some cognitive researchers have begun to investigate ways that mental models of managers influence processes for identifying and acquiring key resources and for defining and developing organization competences (Barr, Stimpert, & Huff, 1992; Fiol, 1991). Thus, research in competence-based theory is now exploring the ways that differences in economic performance may result not only from heterogeneous resource endowments—substantively rational or content variables—but also from heterogeneous mental models—procedurally rational or process variables—and the differential cognitive and coordination capabilities of managers in deploying resources (Mahoney, 1995).

These converging lines of research suggest that growing numbers of strategy researchers are beginning to explore the ways that economic objectives and cognitive processes can actually be interrelated in the management of organizations. Emerging competence-based concepts may therefore provide a research framework for joining theory and practice and for achieving an integration of previously dissociated strategy theories. We now discuss some of the improvements in strategy theory being pursued through the pragmatic approach to competence-based theory building.

Integration of content and of process variables. A central aspiration of much competence-based theory building is an integration of strategy formulation and of strategy implementation (Mahoney & Sanchez, 1997). Interrelationships between strategy content and strategy processes are being addressed, for example, through research into the interactions of an organization's existing knowledge base and of its organizational learning processes (Cohen & Levinthal, 1990).

Barney (1992) argues that "in the analysis of competitive advantage, process issues must always be integrated with content issues" (p. 56). Building a competence-based theory of strategy requires a conceptual integration of process and of content, for which the model of double-loop learning by researchers and managers is likely to prove essential. On one hand, without a dialectical interaction between researchers and managers, process-oriented research may become dissociated from competitive economic concerns and thus fail to distinguish adequately management practices and organizational processes of greater competitive importance from those of lesser importance. On the other hand, resource-based and

other economics perspectives, if dissociated from human cognitions and from organizational processes, are likely to fail to recognize adequately the cognitive and the coordination processes required to identify and to deploy resources in ways that enable an organization to compete successfully. Thus, the pragmatic approach to building competence-based strategy theory necessarily seeks to join these currently dissociated perspectives.

Understanding the nature and the origins of strategic flexibility. Because in uncertain environments there are cognitive limits to managers' and to researchers' abilities to identify now resources that will be strategically valuable in the future, competence-based theory building shifts the focus of strategy research from acts of commitment and of preemption based on specific-use resources to understanding the ways that managers can cultivate and use flexible resources and capabilities—especially human resources and organizational and institutional capabilities (Coff, 1997; Oliver, 1997)—that may find a variety of end uses in changing circumstances. The concept of strategic flexibility provides a resolution to the dilemma of strategic theorizing under uncertainty by integrating substantive and procedural rationalities. With significant and irreducible uncertainty, the substantively rational strategy may be the one that creates the greatest flexibility for progressive use of procedural rationality (e.g., incremental choice processes) (Bowman & Hurry, 1993) that can operate successfully over a wider range of future possibilities (Sanchez, 1993).

In studying the contextual strategy theorizing of managers, competence-based researchers are seeking insights both into the flexibilities of various kinds of resources that an organization might acquire and into the flexibilities of an organization's processes for coordinating the uses of resources (Sanchez, 1995). Understanding how to achieve strategic flexibility in organizational processes for changing and for rearranging resources requires developing new insights into ways organizations can identify and change their theories in use in deploying resources. This process of learning at the strategic level is now being researched jointly by researchers and by managers in a process of double-loop learning that promotes informed reflection by both groups of strategists on the fundamental properties and on sources of organizational flexibilities and competences (e.g., Leonard-Barton, 1992).

Here we offer Penrose (1959) and Leonard-Barton (1995) as exemplars of the approach we advocate. By

the time *The Theory of the Growth of the Firm* was published in 1959, Penrose had been informed by an interactive learning process that included (a) interviews with managers pragmatically rooted in real-world problems, (b) conversations with students and with colleagues, (c) research on deductive economic theories of growth, (d) studies of business history, (e) research on business literature and on annual reports, and (f) extended company visits and observations.

Leonard-Barton (1995) notes the contributions of managers in dozens of companies that generously allowed her to blend their ideas with hers. The book focuses on managing the interaction between activities pursued in the course of developing new products and processes and the organization's core technological capabilities and knowledge-based resources at 3M, Motorola, Hewlett-Packard, General Electric, and Chaparral Steel, among others. This research, conducted over a decade, provides a wealth of insights concerning capabilities development, problem solving, experimentation and prototyping, absorbing technological knowledge-based resources from outside the firm, and transferring product-development capabilities internally.

Clarifying an epistemology for theory building in strategic management. In the effort to build an integrative competence-based theory of strategy, both researchers and managers must stay open to questions that may challenge their basic assumptions. As Schön (1983) observes,

Reflection-in-action is essential to the process by which individuals function as agents of significant organizational learning, and it is at the same time a threat to organizational stability. An organization capable of examining and restructuring its central principles and values demands a learning system capable of sustaining this tension and converting it to productive public inquiry. (p. 338)

Schön's (1983) observations apply as forcefully to a community of researchers as they do to an organization of business managers. The pragmatic approach to competence-based theory building is challenging strategic-management researchers to examine and to restructure their central principles and values by challenging some of the assumptions and norms of conventional strategy research.

Godfrey and Hill (1995) argue that strategy theory will "stand or fall not on the basis of whether its key

constructs can be verified, but upon whether its predictions correspond to reality observed for populations of firms" (p. 530). Although predictive power is no doubt the goal of much scientific theory, the effort to reinvent strategic management through competence-based theory building is reminding strategy researchers that accurate predictions are not the only test of the validity of a theory. The organization and classification of knowledge on the basis of explanatory principles (deductive, probabilistic, functional, teleological, or genetic) are goals of the sciences, in general (Nagel, 1961) and should also be goals of theorizing in strategic management. As a major effort to develop new theory for strategic management, the pragmatic approach to competence-based theory is reminding strategy researchers that developing theory must describe well before it can explain phenomena, must typically explain well before it can predict, and must predict well before it can be used to control phenomena. These tasks are progressively more difficult to accomplish (Bowman, 1995, p. 26).

Building competence-based theory requires joining the "process and product of thought" (Simon, 1978) and to understand their complex interrelationships. The double-loop learning process that engages strategy theoreticians both in academia and in practice provides a new model for research that more systematically integrates the process and the product of thought (i.e., that integrates strategy implementation and strategy formulation).

CONCLUSIONS

A major concern for strategy theory building, and indeed for the continued relevance of business school research in an environment of globalized competition, that is identified in this article is the dissociative patterns of thought that have come to characterize discourse in the strategic-management field. The entrenched dissociations within academe, within organizations, and between managers and academics inhibit the development of better strategic management theory (Bowman, 1995). In keeping with the pragmatic philosophy that the validity of an argument depends on the consequences of acting on it, we define better theories as those theories that produce useful (i.e., executable, operational) guidance for behavior that is testable in the world of experience. In essence, following Simon (1982), we argue that results from

models based on dissociated theory that are not backed by executable algorithms are of limited relevance to strategic management.

This article suggests that theory building in strategic management should also recognize that inquiry from the inside is vital in developing integrative capabilities and a more integrated strategy theory. In the context of strategic-management research, positivist and pragmatic philosophies are best understood as complementary aspects of the same dialectical whole (Evered & Louis, 1981).

Although double-loop learning models have typically been thought of as models of learning for managers, one of the contributions of this article is to suggest that double-loop learning can also be applied by reflective researchers. The model for interactive double-loop learning proposed here may offer academic researchers and business managers a means for achieving a shared goal of joining concepts for integrating strategy formulation and strategy implementation. In this way, this article provides a process to implement Huff's (2000) call for a "1.5 mode" of production of knowledge, which essentially calls for a partnership between academic researchers and a variety of practitioners. As with any ecological system, the evolution of strategy management theory may benefit greatly from having a more diverse group of participants engaged in theory building, including more researchers using the methodology of double-loop learning.

NOTE

1. In the knowledge-management literature, it is widely recognized that the utility of connecting know-how and know-why has wide applicability. For example, although it is the case that a swimmer may learn the know-how of swimming without possessing the know-why, our argument is that improved performance will occur more efficiently if the swimmer also is informed of the know-why. That is, the performance of the swimmer will occur more efficiently if the swimmer understands the following:

The decisive factor by which the swimmer keeps himself afloat is the manner by which he regulates his respiration; he keeps his buoyancy at an increased level by refraining from emptying his lungs when breathing out and by inflating them more than usual when breathing in. (Polanyi, 1962, p. 49)

In a business context, such as franchising, greater learning-curve advantages can be achieved when know-how and know-why are combined (Argote, 1999).

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