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Enhancing the ability to think strategically: A learning model

Andrea J. Casey
Graduate School of Education and Human Development, George Washington University, Washington, DC

Ellen F. Goldman*
Graduate School of Education and Human Development, George Washington University, Washington, DC

Abstract

The ability to think strategically is critical for managers at multiple organizational levels, yet we know little about how this ability develops in individuals. Drawing on literature in strategy, cognitive science and adult learning, we propose a model of learning to think strategically that follows the 'learning school' of strategy making (Mintzberg et al., 1998). The model depicts a dynamic, interactive, and iterative experiential learning process. It identifies individual factors, work experiences and organizational factors that contribute knowledge and act together to develop the ability to think strategically. Areas for research are suggested to better understand the learning process.

Keywords

leadership development; management learning; strategic thinking

Introduction

Studies across industries and countries have identified top management's absence of strategic thinking as a major detractor of firm performance (Bonn, 2001; Mason, 1986; Zabriskie and Huellmantel, 1991). Recent theories of strategy making focusing on organizations' processes and routines indicate strategic thinking is also useful to those working close to the customer (Floyd and Wooldridge, 2000; Johnson et al., 2003). Despite the importance of strategic thinking to managers at multiple organizational levels, we know little about its development.

Firms have attempted to enhance their managers' strategic thinking ability through work and classroom experiences (Vicere, 1998). In both settings, strategy research has focused on collective versus individual processes, such as methods to teach strategy concepts (e.g. case study, scenario building), or on understanding group decision making (Bates and Dillard, 1993; Easterby-Smith and Davies, 1983;

*Authors are listed alphabetically; they contributed equally to the manuscript.

Corresponding author:
Dr Andrea Casey, Graduate School of Education and Human Development, The George Washington University, 2134 G Street NW, Washington, DC 20052
Email: acasey@gwu.edu

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Liedtka and Rosenblum, 1996; Porac and Thomas, 2002; Senge, 1994; Stumpf, 1989). The literature is descriptive, not prescriptive, and focused on singular events versus longitudinal learning.

The other likely source for understanding how the ability to think strategically develops, the leadership literature, identifies strategic thinking-related skills important to organizational leaders but offers few specifics to guide their development (Barnard, 1938; Jaques and Clement, 1991). The largest study on management work experiences indicated that doing staff work related to corporate planning is helpful to strategic thinking (McCall et al., 1988). Not specified was how this work contributes or what aspects of strategic thinking it aids. Learning from participation in corporate planning may be difficult for managers: enterprise-wide strategy does not change frequently, limiting the experience, and the results may not occur for some time, limiting feedback (Crouch and Basch, 1997; Garratt, 1995; Hanford, 1995; Steiner et al., 1982; Zabriskie and Huellmantel, 1991). Other empirical work indicated that a broad array of work experiences is valuable to developing strategic thinking ability; additional research is needed to confirm the generalizability of these findings (Goldman, 2007).

The three major components of adult learning theory—the learner, the learning process and the context (Merriam et al., 2007)—are underdeveloped in relation to strategic thinking. Learners (strategic thinkers) are identified in the literature solely by organizational role (leader, manager), without considering their history or learning preferences—factors important to how, what, when and where individuals learn. The process of learning to think strategically is described as chaotic, experiential and informal (Mintzberg, 1994a). These characteristics apply to management learning generally, not just to learning to think strategically. The components of the learning process and what supports it are not identified. The context in which strategic thinking takes place is organizational by definition (Liedtka, 1998). Context is the area where the most research about strategy has been completed; however, the literature concerns detractors from thorough decision making (e.g. perceptual filtering) rather than developers of strategic thinking (Porac and Thomas, 2002). Given these limitations in our knowledge, it is difficult to comprehend how the three major components of theory related to learning (the learner, the process and the context) interact to foster the development of an individual's ability to think strategically.

This article fills a gap in the literature by describing and relating theoretical concepts and empirical work to comprise a model of the development of an individual's strategic thinking ability. We are concerned here with how individuals learn to think strategically over time—not how they craft strategy in a given situation, although that experience may contribute. To acquaint the reader with the direction of our theoretical arguments, we first provide a general overview of the model. We then describe the theoretical foundations. At that point, the model is reviewed in further detail and the interactivity between its components explained. We close by discussing the practical uses of the model and suggesting areas for future research.

Overview of the model

The immediate challenge is defining the concept. The term 'strategic thinking' is often used interchangeably with 'strategy', 'strategic management' and 'strategic planning' (Bonn, 2001; Liedtka, 1998). Steiner et al. (1982: 14) noted 'serious semantic problems' with the aforementioned terms and their use as substitutes, and also as both nouns and verbs. Attempts to understand strategic thinking are further thwarted by its distinctiveness as 'an immensely complex process, which involves the most sophisticated, subtle, and at times, subconscious elements of human thinking' (Mintzberg, 1994a: 111).

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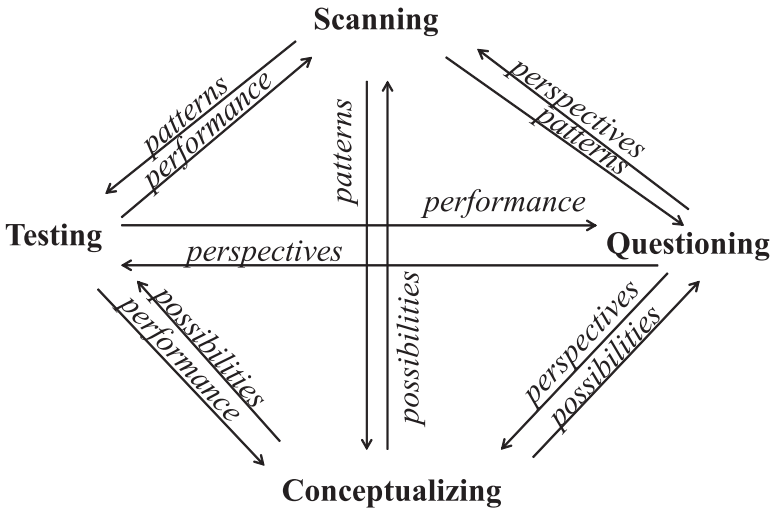

Figure 1. Strategic thinking in action

Our model is based on a definition of strategic thinking as conceptual, systems-oriented, directional and opportunistic thinking (Hanford, 1995; Liedtka, 1998; Mintzberg, 1978) leading to the discovery of novel, imaginative organizational strategies (Heracleous, 1998). The model generally follows an emergent view of strategy identification (Mintzberg, 1994b), in which strategy is made as it is implemented. Thus, it is difficult to separate strategic thinking from the implementation of strategy. We depict this as 'strategic thinking in action' (see Figure 1).

The components of Figure 1—scanning, questioning, conceptualizing and testing—are well documented in the strategy literature (Liedtka, 1998; Mintzberg, 1995; Mintzberg et al., 1998). These components are also consonant with the core elements of experiential learning theory (ELT) and informal learning theory (ILT) (Kolb, 1984; Marsick and Watkins, 2001). Scanning parallels both taking in of experience (ELT) and deconstructing the context (ILT). Questioning is key to problem identification (ILT) and reflective observation (ELT). Conceptualizing is akin to theorizing in ELT, and testing is an important consideration in both ILT and ELT. The interaction of the components is, however, much more dynamic than either ILT or ELT indicates. In the emergent view of strategy identification, these components occur as a continuous, nonlinear process.

In the emergent view of strategy, learning to think strategically takes place over time as patterns of decision making become strategies (Mintzberg, 1994b). The term 'learning school' describes this view (Mintzberg et al., 1998), although no adult learning theory is attached to it, nor are any requirements specified except experience-making strategy.

Elsewhere, Mintzberg (1994a: 108) described learning to think strategically as a 'messy process of informal learning'. However, models of informal learning (e.g. Marsick and Watkins, 2001) are not sufficient to depict how the ability to think strategically is learned. Informal learning is sometimes equated with unintentional learning (Garrick, 1998). This may describe how the learning takes place, but it does not match empirical findings that learning to think strategically requires certain features of work experiences to be deliberately in place (Goldman, 2008b). Even the most critical opponents of rational models of strategy development (the opposite of the emergent view) agree that strategic thinking can result from participation in organized planning processes and written plan

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development (Mintzberg, 1994a; Quinn, 1981; van der Heijden and Eden, 1998). In addition, informal learning situations are applicable to only some types of strategy making: short-term problem solving using deductive reasoning and little external facilitation (Marsick and Watkins, 2001).

Since experience is key to developing strategic thinking in the learning school (Mintzberg et al., 1998), we consider experienced-based theories of learning. Of these, Kolb (1984) linked his ELT to learning processes similar to those characteristic of strategic thinking. However, the ELT is also incomplete as a learning theory for strategic thinking. Common criticisms include that it does not connect the person to the process, is linear, and does not clearly define what constitutes experience (Jarvis, 1987; Reynolds, 1997; Usher et al., 1997; Vince, 1998). Kolb's theory has also been criticized because it does not consider the context, the conditions of learning and how these conditions affect the 'choice of learning approach' (Reynolds, 1997: 120). More critical perspectives suggest that as a psychology-grounded perspective, ELT fails to confront the issues of power, privilege and social class resident in the learning context (Reynolds, 1997).

To address these issues, we used a framework that integrates the interaction of individual differences, defined experiences and organizational influencers. Our model (see Figure 2) includes our definition of strategic thinking and the work experiences, individual and organizational factors, and types of knowledge shown in the strategy, cognition and adult learning literatures to be relevant to developing the ability to think strategically. Learning to think strategically is presented as a dynamic, interactive and iterative experiential learning process with individual and organizational factors as equally interactive model parts. This is consistent with the emergent view of strategy identification: thinking and doing cannot be separated as activities or from the individual and the context in which they are taking place (Mintzberg, 1994b).

Theoretical foundations of the model

The model is grounded in theory and research from three literatures: strategy, cognition and adult learning. The strategy literature identifies strategic thinking as an individual ability and categorizes

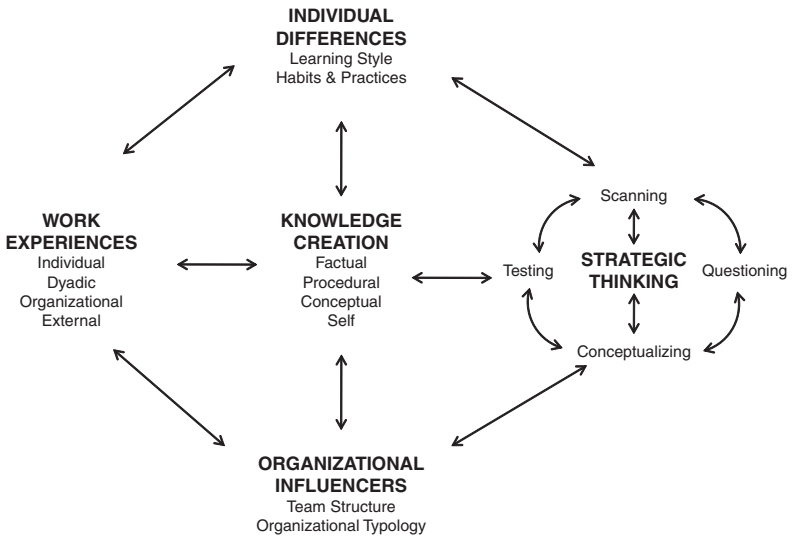

Figure 2. Model of learning to think strategically

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the knowledge required to think strategically. The cognition literature and extensive empirical work on expertise development frame an 'acquirable' view of the ability to think strategically, one fuelled by experience yet still subject to individual differences. The adult learning literature, and ELT in particular, provides a theoretical framework for exploring what experiences are salient and how they contribute to the development of individual strategic thinking ability. Situated cognition enhances our understanding of the learning process as integrated with the organizational context and the interpersonal interactions within it.

Strategy

Strategy, a concept derived from the Greek *strategos*, indicates a set of manoeuvres to overcome an enemy (Eden and Ackermann, 1998). In organizations, strategy can be applied at various levels, pertaining to an entire enterprise or relating to a specific product (Andrews, 1980).

Strategic thinking fosters the identification of strategy: 'The purpose of strategic thinking is to discover novel, imaginative strategies which can re-write the rules of the competitive game; and to envision potential futures significantly different from the present' (Heracleous, 1998: 485).

Strategy identification. Theorists differ as to how strategies are discovered and, thus, where and how strategic thinking is used. In the rational view, strategy is made via a logical, linear process of formulation, planning and implementation (Hatch, 1997; Porter, 1998). Planning can lead to further strategic thinking; strategic thinking and planning can occur in a repetitive sequence (Heracleous, 1998; Shoemaker, 1995). In contrast, advocates of the emergent view see strategic thinking as a fluid phenomenon not dependent on a rational process. Strategy surfaces by considering patterns in actions taken over time (Mintzberg et al., 1998). Strategic thinking discovers these patterns, which are then realized as strategies. The process is ongoing, occurring concurrently with taking action (Steiner et al., 1982). Empirical studies have supported this more incremental view of making strategy, describing activities that are fragmented, evolutionary and taking place in many parts of an organization simultaneously (Mintzberg, 1978; Quinn, 1981).

The rational versus emergent view of strategy identification is often presented as a polarization (van der Heijden and Eden, 1998). However, the emergent view does not preclude participation in planning processes as an experience that might lead to pattern discovery (Mintzberg, 1994a; Quinn, 1981). The emergent view includes both rational and evolutionary strategy identification, offering the broadest possibilities for understanding the concept of strategic thinking. We have adopted the emergent view in this model.

Strategy as learning. Mintzberg et al. (1998) codified the emergent view as the 'learning school' of strategy, where strategy making is the process of learning over time. Process participants come to understand strategy by taking action. The actions can favour a specific customer group or include a highly complex process of innovation across the organization.

Numerous theories of organizational learning (Crossan et al., 1999; Easterby-Smith et al., 1998; Schwandt, 1997) and related constructs such as sensemaking (Weick, 1995) are described as helpful to the learning school. However, the lack of applicable individual learning theory leaves us without an understanding of how individuals develop their ability to think strategically. This is a critical gap, as strategic thinking, while aiming to benefit organizations, is recognized as an individual activity (Liedtka, 1998; 1999).

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Recognizing strategic thinking. Compared with operations thinking, strategic thinking is longer term, more abstract, oriented more towards issues than problems and done by reflective learning rather than by taking action (Hanford, 1995).

The model of strategic thinking in action is nonlinear and continuous (see Figure 1). The process can start anywhere; we describe it in clockwise order. Four activities represent what people do when they are thinking strategically: scanning, questioning, conceptualizing and testing. The environment is scanned to identify patterns in actions (Mintzberg et al., 1998). Questioning is used to understand different vantage points and develop different perspectives on issues (Mintzberg, 1995). Scanning and questioning lead to divergent thinking, which brings new insights (Pieterson, 2002). The key to developing these insights is asking the right questions, which may involve querying many individuals. Linkages between organizational levels and the external context relate information into broader concepts and identify possibilities for the future (Liedtka, 1998). Hypotheses are developed and tested to see how alternative concepts might play out. The testing considers not only the impact of the strategy but also what needs to change to align the organization for successful implementation (Pieterson, 2002). As new information becomes available, the process is repeated, continuing the strategic thinking. Figure 1 is an integral part of Figure 2, where it is the culmination of certain interrelated activities and the catalysts to new ones. To further describe the concept, we combine the perspectives, actions and outcomes of strategic thinking to define it as thinking that is (1) conceptual, in that the content is at an abstract level; (2) systems oriented, in that the thinking involves the whole organization and its relationship with the external environment; (3) directional, in that the concepts relate to an aimed-for future state; and (4) opportunistic, in that the environment and competitive characteristics provide a basis for the desired direction (Hanford, 1995; Liedtka, 1998; Mintzberg, 1978).

Characteristics involved in strategic thinking. Theorists (Bates and Dillard, 1993; Bonn, 2001; Graetz, 2002; Liedtka, 1998; Mason, 1986; Mintzberg, 1995; Stumpf, 1989; Zabriskie and Huellmantel, 1991) and practitioners (Ohmae, 1982; Sloan, 2006) have identified many individual characteristics as important to thinking strategically. These include other types of thinking, such as critical, inductive, lateral and logical thinking.

Similarly, strategic thinkers have been described as analytical, intuitive, reflective and creative. These characteristics are believed to be important to developing new perspectives and identifying new possibilities. These observations help to create a picture of strategic thinking as requiring many different types of mental processing, but the characteristics named are used for multiple purposes, not just strategic thinking. More specificity is needed regarding what the strategic thinker is being analytical and reflective about: What are they really developing?

Knowledge required to think strategically. The above definition of strategic thinking suggests four categories of knowledge required to think strategically. First, a significant amount of factual knowledge is required. The 'systems-oriented' and 'opportunistic' dimensions of the definition indicate that the strategic thinker must understand the whole organization as well as its parts, the competition and the external environment. Mintzberg (1987: 74) characterized this as 'an intimate understanding of the business'; the factual knowledge required is more than an accumulation of information, it is understanding how the knowledge interrelates.

Procedural and conceptual knowledge are required for the 'directional' and 'conceptual' orientations of strategic thinking. Procedural knowledge informs the strategic thinker about how to develop ideas, concepts, and frameworks: how to practise different ways of seeing issues (Mintzberg, 1995), how to identify opportunities (Hanford, 1995) and how to test hypotheses (Liedtka, 1998). Conceptual knowledge used in strategic thinking includes ideas resulting from

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taking different perspectives (Mintzberg, 1995) and frameworks for integrating system inputs and the environment and for directing the enterprise as a whole (Steiner et al., 1982).

Finally, strategic thinkers must have knowledge of their own thinking. Strategic thinking is done in the context of organizational work and undertaken as a process—formal or informal, planned or emergent (Mintzberg, 1994b; Porter, 1998). As such, individual strategic thinkers become social learners (Bandura, 1977), seeing their own strategic thinking strengths and weaknesses, as well as those of others. These insights offer individuals opportunities to best focus the development of their factual, procedural and conceptual knowledge (Dechant, 1990).

The four categories of knowledge required for strategic thinking—factual, conceptual, procedural and self–concern what needs to be learned to develop the ability to think strategically. These categories form the centre of our model.

This categorization of knowledge offers a new lens for interpreting learning experiences, moving beyond the traditional characterization of the nature of the knowledge (e.g. tacit or explicit) and how knowledge is gained (formally or informally; cognitively or socially) to interpreting learning experiences through the lens of knowing what, why, how to and about oneself.

Cognitive science

The cognitive science literature has two different views about the emergence of capabilities such as strategic thinking. The 'inherent' view focuses on limitations imposed by an individual's cognitive capacity (Jaques and Clement, 1991). The 'acquirable' view focuses on the acquisition of abilities as a journey from novice to expert (Ericsson, 1996). In both views, education and experience are needed for individuals to function at their maximum level. Perhaps the views are more complementary than contradictory: the inherent view requires developmental activity; the acquirable view does not contradict the idea of cognitive limitations.

Several theorists and practitioners indicate that strategic thinking can be learned as a skill and become a habit (Hanford, 1995; Liedtka, 1998; Ohmae, 1982; Pearson, 1990). We have adopted the acquirable view in this model; it is consistent with the learning school of strategy (Mintzberg et al., 1998).

Abilities as developing expertise. The acquirable view of cognitive capabilities considers the development of ability to be 'an ongoing process of the acquisition and consolidation of a set of skills needed for high level mastery in one or more domains of life performance' (Sternberg, 1999: 359). Cognitive science, through applied information processing theory (Newell and Simon, 1972), has looked carefully at the development of skilled performance. Thirty years of empirical studies have probed the cognitive aspects of expert versus novice abilities (Ericsson et al., 2007). Findings indicated not only experts' extensive domain-specific knowledge, but also differences in knowledge content, organization and operations between experts and novices (Chi et al., 1988). Expertise in a given domain may involve relational and emotional competencies as well as cognitive competencies (Skovholt et al., 1997). In addition, since expertise is domain specific, there is little evidence of transferability (Chi et al., 1988).

Many theorists have noted that expertise development never ends; however, there is little explanation as to how expertise is maintained (Campbell et al., 1992; Sternberg, 1999). There is also little agreement about specific stages to expertise development, although experience is considered the catalyst.

The importance of experience. The journey to expertise is a lengthy trip of 10 or more years of experience (Ericsson, 1996; Ericsson et al., 1993; Ericsson et al., 2007; Skovholt et al., 1997). In many professional fields 10 years has also been used as a demarcation line of 'experienced' professionals.

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Ericsson (1996) identified expertise development as a cycle of defining challenging tasks, engaging in intensive practice, receiving feedback and having the opportunity for correction and repetition. Other theorists have pointed to different types of experiences as being important, such as experiences with novel situations or situations with certain social role expectations (Barnett and Koslowski, 2002; Cheetham and Chivers, 2001). Which of these aspects of experience affect performance is unclear, as is why some experienced people fail to become experts.

Adult learning

Adult learning, the third body of literature supporting our model, considers the role of experience in what, when, how and why adults learn (Knowles et al., 1998). How experience affects the learning process varies across the major theoretical orientations to learning (Merriam et al., 2007). The constructivist approach—focused on the individual's creation of meaning from experience—is particularly suited to the ill-defined nature of situations managers face in strategic thinking (Livingston, 1971; Mackworth, 1965; Mintzberg, 1994a).

Kayes (2002) noted four general agendas across the constructivist literature that were specific to management learning: (1) action, emphasizing behaviour changes to achieve goals; (2) cognition, emphasizing changes in thinking and memory processes; (3) reflection, focusing on self-discovery and questioning to break through assumptions; and (4) experience, focusing on individual involvement. Kayes noted ELT (Kolb, 1984) as a means of integrating the four agendas.

The cycle of learning from experience. Kolb's (1984) four-step learning cycle is formed by crossing sets of two dialectically opposed orientations related to the grasping and transforming of experience. The extremes of these two orientations—experience, reflection, assimilation and action—create the cycle of learning from experience. To illustrate the applicability of his theory, Kolb (1984) likened the cycle to the processes of problem solving, decision making, creativity and scientific inquiry.

The components of scientific inquiry contain elements similar to those of strategic thinking. According to Kolb (1984), the scientific inquiry process begins with problem finding, involving externally oriented exploration. This is consistent with unique and ill-defined situations requiring strategic thinking: the problems are unclear and no right answer exists (Livingston, 1971; Mackworth, 1965). The process is also consistent with the activities of environmental scanning, identified earlier as a major activity in strategic thinking (Mintzberg et al., 1998). Scientific inquiry then includes questioning, development of answers and their verification and communication.

Given the aim of strategic thinking—to discover novel, imaginative organizational strategies (Heracleous, 1998)—the questioning needs to go beyond simple 'reflection' as identified by Kolb (1984) to include critical reflection where assumptions are challenged and beliefs are tested (Mezirow, 1991). Accordingly, dialogue with others and the cyclical process of double-loop learning (Argyris, 1982) are necessary to understand and then alter existing mental frames so new strategies can be imagined.

The general process similarities of ELT provide some comfort that the theory offers value to understanding how the ability to think strategically develops. One benefit of ELT (Kolb, 1984) is its explanation of individual differences in learning based on learning style preferences and their relationship to the steps in the learning cycle. We have adopted the importance of individual learning styles into our model.

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Learning requirements and styles. For learners to be effective in constructing knowledge, abilities related to all four of the steps in ELT are required: open involvement in concrete experiences; reflection and observation of such experiences from a variety of perspectives; creation of abstract concepts integrating observations into sound theories; and active experimentation to test the theories in decision making (Kolb, 1984).

However, individuals' preferred approach to learning, or their learning style, favours certain steps and may vary with different situations. Kolb's research indicated that general managers exhibit an accommodative learning style, favouring action. Those involved in information-rich tasks like strategic thinking exhibit an assimilative learning style, favouring analytics. This distinction is consistent with the differences between strategic and operational thinking (Hanford, 1995).

To develop assimilative aspects of their learning style, managers need to build their perceptual and symbolic complexities, associated respectively with reflective observation and abstract conceptualization (Kolb, 1984). Building perceptual complexity requires learning environments that are non-evaluative, are process oriented and emphasize appreciation from different points of view. Building symbolic complexity requires learning environments in which a plethora of information is provided in various formats to be synthesized and measured against an expert response. ELT gives some consideration to the importance of the learning context but does not define what specific experiences initiate the learning. For that, we need to consider other adult learning theories such as situated learning theories (Handley et al., 2007; Lave and Wenger, 1991).

Experiences that initiate the learning process. Experiences that lead to learning include planned and unplanned events in both formal and informal situations (Tennant and Pogson, 1995). For managers, most of these events occur in the workplace (Dechant, 1990; McCall et al., 1988). Work experiences generally considered conducive to managers' learning include job rotations, scope expansions, special projects or challenging assignments, leading start-ups, leading turnarounds, working with outside experts and line-staff switches. Not all work experiences result in learning; rather, several factors are required for learning to take place.

The first factor is the ability of individuals to absorb new knowledge. Described as concepts, factual information, and procedural skills, new knowledge needs to be related to existing knowledge (Cohen and Levinthal, 1990) and needs to contain an element of diversity, something that is different from existing knowledge. The combination of the familiar and the novel allows the new knowledge to get noticed. Even when noticed, however, learning still may not occur.

Merriam and Clark (1993) identified two additional factors required for an experience to result in learning: it must be valued by the learners and it must significantly affect them. More specifically, the learners have to identify the experience as important and then gain new skills, perspectives or a changed sense of self. Based on this, models of the strategic thinking learning process should consider experiences self-identified as contributing to strategic thinking and imparting new knowledge.

Work experiences that contribute to the development of strategic thinking ability. Experts have identified nine categories of work experiences related to the development of their ability to think strategically:

- General work experience: performing a variety of tasks with substantial decision-making freedom.
- Becoming CEO: being hired or promoted to CEO and thus having access to new people and information that provide a sense of the whole organization and its environment.

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- Being mentored: receiving regular feedback from an experienced executive early in one's career.
- Being challenged by a key colleague: having one's thinking questioned or focused by a deeply trusted other.
- Monitoring results/benchmarking: frequently assessing the organization's operations using numerous measures and comparative indicators.
- Doing strategic planning: being active in a regular process of strategizing on specific topics for which there is significant prediscussion preparation.
- Spearheading a major growth initiative: being responsible for a large capital and labor-intensive project for which one has substantial decision-making freedom.
- Dealing with a threat to organizational survival: being responsible for the organization's response to a significant external challenge.
- Vicarious experiences: learning from colleagues in similar positions with whom there is regular contact (Goldman, 2007, 2008b).

These experiences contributed to individuals' procedural knowledge of how to do strategic thinking, provided new perspectives and helped individuals develop a focus for their organization or provided them with self-knowledge regarding their own practices of strategic thinking (Goldman, 2008a). The contributions made by these experiences match the factors identified by Merriam and Clark (1993) as requirements for experiences to result in learning. Although there was no order to the experiences, each expert identified at least one experience that was personal (e.g. general work experience); one that was interpersonal (e.g. being mentored); one that was organizational (e.g. monitoring results); and one that was external (e.g. dealing with a threat to organizational survival) (Goldman, 2008b).

The experiences are consistent with the literature on expertise development, in that they involve active participation and are challenging tasks. Contrary to the expertise literature, there is no constant 'coach' providing feedback but instead a mentor or trusted colleague to turn to. This puts more of a burden on managers to identify their need for feedback and seek it out. It also indicates the need for formal organizational learning processes (e.g. mid-course reviews) to fill this possible feedback gap.

The presence of experiences across four levels of analysis—personal, interpersonal, organizational and external—is consistent with the nature of strategic thinking as an individual activity done on behalf of organizations but also shaped by organizational contexts and conversations (Liedtka, 1998, 1999). Accordingly, we have adopted the importance of work experiences across all four levels of analysis into our model.

Contextual relevance. The empirical finding that value is provided to developing strategic thinking ability from work experiences at all levels of analysis depicts strategic thinking as a form of both experiential learning (doing in order to learn) and situated cognition (interacting in a socio-cultural context) (Hansman, 2001). The context and tools used in the situation are shaping the learning as the learner is performing the tasks: it is difficult to divorce the work experience from its organizational context. The importance of context in our model is supported by other learning theories, in particular, situated learning theories that posit that learning cannot be separated from practice (Lave and Wenger, 1991; Handley et al., 2007) and that knowledge is socially constructed. Knowledge is embedded in routines developed from practice (Huzzard, 2004).

Antonacopoulou (2006) identified two levels of learning historically considered particularly important to the individual: practices at the community group level (Brown and Duguid, 1991; Lave and Wenger, 1991) and organizational level support (Hedberg, 1981; Simon, 1991).

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Both group and organizational factors are helpful to individuals' development of the ability to think strategically (Goldman, 2005). At the group level, a management team that can handle operations, which frees up CEO time for strategic thinking, but also thinks differently than the CEO and feels free to challenge his or her thinking contributes to the development of the ability to think strategically. This is confirmed in the literature on group and team learning: diversity (of age, gender, education, experience, organizational tenure, knowledge and skills) enhances team creativity, judgmental quality and overall outcomes (Levi, 2007). Diversity increases the perspectives brought to bear on a situation and expands the network used to gather factual, procedural and conceptual information. However, teams benefit from diversity only if power is shared; if not, members play it safe and agree with the leader. Accordingly, we have adopted these two elements of team structure as organizational influencers in our model.

At the organizational level, board leadership attitudes regarding risk taking and learning from failures or mistakes are helpful to individuals' development of the ability to think strategically (Goldman, 2005). These attitudes are honed over time and become part of the operating culture. In addition, an organizational culture that encourages novel insights, differing opinions and the use of a plethora of data and information supports strategic thinking (Sloan, 2006). Organizations exhibit these behaviours to differing degrees.

Miles and Snow (2003) identified four typologies representing patterns of organizational adaptation to environmental change: (1) 'prospectors' that scan constantly and develop new concepts and approaches; (2) 'defenders' that focus internally and use a plethora of analytical tools for precise planning and cost estimation; (3) 'analyzers', hybrids that follow prospectors when they are successful but use many of the same analytical tools as defenders; and (4) 'reactors' that are not strategically active. The typologies take into account behaviours related to strategic thinking: scanning, questioning (analyzing), conceptualizing and testing; the various typologies are indicative of different emphases and amounts of the behaviours. For example, prospectors scan and test more than other typologies; analyzers question more. Accordingly, we have adopted organizational typology as a broad indicator of organizational influence in our model.

Learning over time

Both the learning school of strategy (Mintzberg et al., 1998) and the 'acquirable' view of cognitive capabilities (Ericsson, 1996) define a process of learning that takes place over time and never ends. Accordingly, our model is depicted as a dynamic, interactive and iterative experiential learning process.

The research that identified nine categories of work experiences that contribute to strategic thinking ability also identified how the experiences combine into a longitudinal developmental process (Goldman, 2007). Over time, individuals developed their own particular habits and practices in considering strategic issues. Three major practices were identified: (1) asking questions about the issue from various points of view to gain perspectives, (2) applying a rational planning framework to determine actions to take and (3) reflecting after acting to determine what could be done better in the future.

Other habits and practices have been identified as beneficial to developing individual strategic thinking ability (i.e. risk tolerance, intuition, creativity), but none have been empirically supported (Bonn, 2001; Graetz, 2002; Mason, 1986; Ohmae, 1982; Stumpf, 1989). It has not been indicated that extraordinary levels of these characteristics are required for strategic thinking, or that individuals without these characteristics cannot think strategically. The research highlights the interactivity between the work experiences and the individuals' habits and practices in approaching those

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experiences (Goldman, 2007). This provides an additional individual factor for our model and further supports its interdependent nature.

Summary

Strategic thinking is an individual activity undertaken to benefit organizations. We have adopted an emergent view of strategy and identified four major activities as strategic thinking in action: scanning, questioning, conceptualizing and testing. The knowledge required to perform effective strategic thinking is factual, procedural, conceptual and self-knowledge.

The literature on cognition allows for an acquirable view of strategic thinking, fuelled by years of experience. Based on the adult learning literature, developmental experiences are those building on existing knowledge, adding new knowledge and being valued by and significantly impacting the learner. Research specific to strategic thinking has defined nine categories of work experiences that meet these requirements and indicated that experiences at all four levels of interaction are required.

The literature also highlights individual differences in learning styles and individual habits and practices, the importance of team structure (particularly diversity and power sharing), and organizational typology as influencing the ability to think strategically.

Review of the model

By bringing together the literature on strategy, cognition and adult learning, we are able to theorize the development of the ability to think strategically based on five elements: the process of strategic thinking, individual differences, work experiences, organizational influencers and knowledge creation. Strategic thinking is a dynamic, interactive, and iterative experiential learning process fuelled by the other four model elements and also further developing them.

The contribution of individuals' strategic thinking (right side of the model) to the other model elements is instructive. As individuals practise thinking strategically, they enhance their creation of factual, procedural, conceptual and self-knowledge (Bandura, 1977; Dechant, 1990; Mintzberg, 1994a). In addition, they develop certain individual differences, habits and practices in dealing with strategic issues (Goldman, 2007). Individuals' strategic thinking also influences the organization. As they participate in teams, the perspectives they develop from questioning and the information they gain from scanning add to the quality of team judgements (Levi, 2007). Finally, individuals' future work experiences may be influenced by their strategic thinking—at least by their participation in organizational strategic planning as well as the thinking they bring to new work experiences (Heracleous, 1998, Mintzberg, 1994a).

The two individual differences supported in the literature as impacting learning to think strategically are learning style and habits/practices, as shown at the top centre of the model. We have explained how Kolb's ELT (1984) has been likened to the strategic thinking process; each learning style favours a particular aspect of the process. These preferences also lead individuals to favour certain work experiences. For example, the vast amount of benchmarking information appeals to assimilators, while the action orientation of leading growth initiatives appeals to accommodators. The activity preferences related to learning styles also impact the type of knowledge individuals prefer to create (e.g. convergers favouring procedures) and bring to their work teams.

Individuals' habits and practices lead them to favour certain work experiences. For example, those who apply the rational planning framework to their challenges enjoy participating in strategic planning. Habits and practices also impact team structure. Individuals who enjoy looking at issues

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from various perspectives may add diversity to their work teams and impact their organization's typology by reinforcing the specific strategic thinking activities the organization excels at—e.g. the scanning of prospector organizations.

Work experiences (left side of the model) that contribute to the development of the ability to think strategically span nine categories and cross four levels of interaction (Goldman, 2007, 2008b). The categories of the work experiences contribute to the four types of knowledge identified in the model (Goldman, 2008a). Work experiences influence individuals' learning style by either furthering already preferred activities or providing exposure to new ones. For example, doing strategic planning furthers assimilation. Finally, individuals' work experience can influence team structure. For example, spearheading a major growth initiative is likely to require a diverse team that shares power.

The two organizational influencers of individuals' strategic thinking supported in the literature are the team structure and the organizational typology, as shown at the bottom centre of the model. In terms of team structure, member diversity and power-sharing enhance judgment and creativity in strategic thinking (Levi, 2007). Diversity also impacts what work experiences individuals have. For example, if their team does not have the requisite diversity to deal with a threat to survival, they may miss the learning opportunity. Similarly, a lack of power sharing on the team may hinder the development of individual habits and practices in favour of the team leader's preferences. Organizational typology impacts work experiences. For example, individuals in prospector and analyzer organizations are more likely than those in defender and reactor organizations to spearhead growth initiatives.

Analyzer and defender organizations are likely to develop individuals' factual and procedural knowledge, given their concern with analytical tools; whereas prospector organizations are more concerned with developing new concepts and ideas (Miles and Snow, 2003). These orientations impact individuals' style development, with analyzer organizations providing practice in assimilative skills and prospectors in divergence skills. Similarly, organizational typology impacts the strategic thinking process. Those working in prospector organizations are encouraged to scan and test; those in analyzer organizations are encouraged to question.

Knowledge creation is at the centre of the model. We have discussed how strategic thinking uses all four categories of knowledge and how each element in the model contributes to the various categories of knowledge. The knowledge created also furthers the other model elements, per the following examples. Factual and procedural knowledge gained in prior work experience is used in future work experiences. Procedural knowledge helps individuals hone their habits and practices. Conceptual knowledge is useful in work experiences involving strategic planning. Self-knowledge helps individuals identify their learning style gaps. All four categories of knowledge are useful in determining membership on a team where diversity of thought is desired.

The model is purposefully depicted as dynamic, interactive and iterative, per our theoretical basis in an emergent view of strategy identification. All elements of the model are interactive to recognize the personal and contextual elements that impact the development of individuals' ability to think strategically and the messiness of the learning process (Mintzberg, 1994a). By producing a model of learning to think strategically, we extend the knowledge of expertise development and experiential learning to a specific ability and overcome the common criticisms of adult learning theories as processes independent of the person as an individual and of the context in which the learning takes place.

The importance of context in our model is supported by situated learning theories that assume that learning cannot be separated from practice and its associated social dynamics (Handley et al., 2007; Lave and Wenger, 1991). The role of power in the social dynamics of

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practice and its influence on participation have been explored by Contu and Willmott (2003), Huzzard (2004) and Handley et al. (2007). For the purposes of this model we recognize context or practice but do not explore in depth the role of power in these settings but instead reference it as one of the two components of team structure. The focus of this model is on strategic thinking, i.e. a type of cognition, and therefore we cannot ignore cognitively based learning theories and adopt situated learning theories, even though we are aware that the former do not sufficiently address context. Neither set of theories is sufficient alone; we need both to understand the phenomenon.

The model does not have an identified endpoint. We have assumed that the ability to think strategically is acquirable, consistent with the learning school of strategy (Mintzberg et al., 1998). The unanswered question is if there is a limit to learning—to how 'expert' a strategic thinker one can learn to be. Currently, we know more about the catalysts, supports and barriers to strategic thinking than we know about limitations to learning to do it.

Use of the model

This model unites literatures that have not traditionally been combined. In so doing, value is provided to both the practitioner and academic audiences.

Implications for practitioners

With individuals, the model can be used to develop an understanding of how strategic thinking ability is being developed or thwarted. What activities of strategic thinking do the individuals do well or need assistance with? What knowledge do they need to overcome their weaknesses? How does their learning style impact areas of needed improvement? Is their team sufficiently diverse and power sharing such that missing elements can be learned from others? What work experiences will contribute to the required knowledge?

At the organizational level, the model can be used diagnostically. Is there ample diversity on current strategically focused teams? What aspects of strategic thinking does the organization's typology favour/overlook? What types of knowledge are lacking? Using the model to identify potential areas for improvement can bring focus to organizational development efforts to enhance collective strategic thinking. Consider a situation in which strategic planning provides less than optimal value. The model can help specify why that may be occurring: what elements of strategic thinking are lacking and how team structure and organizational typology may be contributing.

Implications for teaching

The model is also useful for helping teachers of strategic thinking concepts. It reinforces the notion that the development of this ability requires time and practice, helping educators set appropriate expectations. Educators can use individual differences in learning styles to identify what aspects of strategic thinking students may have difficulty with and then determine teaching strategies that address those areas. The model can also help educators identify students' work experiences that may be used as the basis for class assignments, based on their contributions to the specific type of knowledge being taught.

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Implications for research

The components of the model integrate current theory and research regarding learning to think strategically. We have discussed the interactions in the model as they relate to the directional arrows between each pair of components; we have not made any attempt to quantify the magnitude of those relationships. To better understand management learning from its main catalyst, work experiences, we suggest several interesting questions for future research:

1. Does the match between individuals' learning style and their work experiences increase the knowledge related to strategic thinking that is gained from those experiences? For example, compared with those with different learning styles, do individuals with divergent or assimilative learning styles gain more knowledge from the work experience 'being challenged by a key colleague'? Do individuals with assimilative and convergent learning styles gain more knowledge from 'doing strategic planning'? Do individuals with convergent and accommodative learning styles gain more knowledge from 'spearheading a major growth initiative'? Do individuals with accommodative and divergent learning styles gain more knowledge from 'vicarious experiences'?
2. Does the match between specific habits and practices and individuals' work experiences increase the knowledge related to strategic thinking that is gained from those experiences? For example, do individuals who habitually apply the rational planning framework to their challenges gain more knowledge from 'doing strategic planning' and 'monitoring results/benchmarking' than those with other habits or undeveloped habits?
3. Does the match between individuals' work experience and their team structure increase the knowledge related to strategic thinking that is gained from those experiences? For example, do individuals on highly diverse teams where power is shared gain more knowledge from the group activities of 'spearheading a major growth initiative' or 'doing strategic planning' or 'dealing with a threat to organizational survival' than those on less diverse, less egalitarian teams?
4. Does the match between individuals' work experiences and the organization's typology increase the knowledge related to strategic thinking that is gained from those experiences? For example, compared with individuals working in other organizational typologies, do individuals working in 'prospector' organizations get more benefit from 'spearheading a major growth initiative'? Do individuals working in 'analyzer' organizations get more benefit from 'doing strategic planning'? Do individuals in 'defender' organizations get more benefit from 'monitoring results/benchmarking'?
5. Is the increase in individuals' strategic thinking ability greatest when all four of the above situations occur? Are certain matches of work experiences with individual differences and/or organizational typologies more valuable than others?

These questions can be explored using both qualitative and quantitative methods. Research to date has involved various forms of interviewing; however, large group settings such as industry meetings can be used to obtain samples that provide data related to two aspects of the model, for example, a learning style inventory and a questionnaire on work experiences (No. 1 above). A more challenging research issue is capturing changes to strategic thinking over time. This may call for a combination of techniques such as observation and peer, superior and subordinate interviewing using a grounded theory approach.

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Conclusions

Developing the ability to think strategically is one of the most needed yet least understood areas of management. Strategy theorists have just begun to recognize a possible connection with the adult learning literature to better understand the learning process. Using theoretical concepts and empirical findings, we have proposed a model of learning to think strategically that is consistent with the emergent view of strategy identification (Mintzberg, 1994b). The model suggests a dynamic, interactive and iterative experiential learning process consisting of individual factors, work experiences and organizational factors that develop the ability to think strategically. The linkages between each of the model components leave ample room for further theoretical and empirical contributions.

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