The importance of individual mental models for strategic thinking in organisations.

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ABSTRACT:

This paper addresses the gap between mental model theory and strategic thinking theory. It presents a framework of core elements of strategic thinking to explore the link between these elements and mental models. The paper proposes that mental models could have a shaping effect on strategic thinking. It suggests that individual mental models can be developed and strategic thinking can be enhanced through organisational communication and organisational learning principles.

Keywords: Strategic management, strategy and cognition, strategic thinking, mental models, strategic decision-making.

BACKGROUND

There have been many studies on strategic thinking (as part of strategic management) and mental models (as part of cognitive psychology) but there is a dearth of research on how mental models influence strategic thinking. Strategic management has been studied for a number of decades. During the early 1960's, researchers became interested in corporate planning of organisations and this developed during the 1970's into an examination of diversification and portfolio planning. Research continued into the 1980's focusing on core business planning (Kay, McKiernan, & Faulkner, 2006; Rumelt, Schendel, & Teece, 1995). During the 1990's, Mintzberg brought to the forefront the concept of strategic thinking, arguing that strategic planning is not synonymous to strategic thinking (Mintzberg, 1994). Bonn (2005) posits that most studies on strategic management in the 1970's and '80's failed to investigate how strategy makers think about strategy and thereby ignored the cognitive aspects of strategists. Today, strategic thinking is considered an important part of strategic management (Bonn, 2005; Graetz, 2002; Mintzberg, 1994).

In the field of cognitive psychology, the mental models concept has grown significantly over the last twenty years (Porac & Thomas, 2002). Mental models are also described by alternative terms such as 'cognitive structures' (Langfield-Smith, 1989), 'knowledge structures' (Walsh, 1995), 'cognitive or mental maps' (Harris, 1996; Langfield-Smith, 1992; Laukkanen, 1996) and 'schemas' (Harris, 1996). The focus on individual mental models has been extended to studies on the mental models that groups of people share and this became important for researchers studying group dynamics in business research. For example, Lane and Sirmon (2003) studied an organisation's macro and micro mental

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models to improve performance. Lyles and Schwenk (1992) investigated top management's knowledge structures. Mathieu, Goodwin, Heffner, Salas and Cannon-Bowers(2000) explored the influence of shared mental models on team process and performance and McNamara, Luce and Tompson (2002) examined the effect of group knowledge structures on firm performance.

Strategic thinking and mental models have been well researched separately but there is a gap in the literature in connecting mental model research to strategic thinking research. In this vein, Stubbart (1989) found that managerial cognition is seldom mentioned explicitly in strategic management literature. Hambrick (2004) argues that the development of an academic research field, such as strategic management, leads to specialisation in specific areas and fragmentation of the field follows. This results in a field that lacks a coherent identity (Nag, Hambrick, & Ming-Jer, 2007). To overcome the fragmentation that is evident in the field of strategic management and build a logical identity, one of the thrusts that Hambrick suggests is to build a philosophy of consolidation by reintroducing 'the human element' in strategy research (Hambrick, 2004 p.94). He posits that 'it will always be people-complete with biases, hopes, fears, fatigue, jealousy and other human foibles – who make strategy something other than a calculative, techno-economic endeavour.' (2004 p.94).

Acknowledging the dearth of research on the role of managerial cognition in strategic management literature and following Hambrick's argument of reintroducing the human element in strategic thinking, the main aim of this paper is to investigate the link between mental models and strategic thinking. The objectives of this paper are threefold: firstly, to formulate a framework of core elements of strategic thinking. Secondly, to explore the links between mental models and strategic thinking elements in organisations and thirdly, to formulate propositions about the effect of individual mental models on strategic thinking that needs to be investigated in future research.

This paper contributes towards bridging the gap between strategic management literature and literature on managerial cognition by exploring the effect of mental models on strategic thinking as part of the strategic management process. In terms of contributing to literature this paper provides a framework of core elements of strategic thinking through a finer grained analysis of strategic thinking elements. It provides a key to better understand how strategists' thinking about strategy is influenced by their individual mental models and how this, as part of strategy development, may ultimately contribute to

successful and sustainable organisations. In terms of contributing to practice, it draws the attention to the importance of individual mental models in the strategy groups in organisations and fosters awareness that strategic thinking is influenced by each strategic thinker's previous experiences and exposure. It highlights the importance of shared mental model alignment within and among strategy groups in organisations and the need for development of organisational interventions focused on building shared mental models.

The initial contentions of the researchers about how mental models link to strategic thinking are as follows:

To be successful and sustainable, organisations need to create a vision of the future and develop strategies that are different, unique and better that their competitors in addressing the needs of core customers (Hamel & Prahalad, 1994). Strategic thinking is a precursor to developing competitive strategy (Sanders, 1998) and is shaped by individual mental models.

The first section of the paper provides a theoretical overview of strategic thinking and mental models, defining the constructs and formulating a framework of core elements of strategic thinking. This is followed by a section exploring the link between strategic thinking and mental models including propositions that need to be researched in future. The paper concludes by suggesting ways in which strategic thinking can be enhanced by acknowledging the impact of mental models on strategic thinking and considering ways in which mental models of strategic thinking can be developed.

THEORETICAL OVERVIEW

Strategic thinking

The concept of strategic thinking developed from strategic management theory when researchers started to recognise the significance of human thinking in the process (Mintzberg, 1994). Mintzberg's view of strategy making as 'a creative, dynamic, responsive, and often intuitive process … that fits more closely with the concept of strategic thinking' (Mintzberg, 1994 p.456) is supported by various researchers of strategic thinking (Bonn & Fisher, 2005; Graetz, 2002; Liedtka, 1998; O'Shannassy, 2003). Strategic thinking can be viewed as a combination of 'strategy' and 'thinking'. Within the context of organisations, strategy is described as an integrated and coordinated set of commitments

and actions (Hanson, Dowling, Hitt, Ireland, & Hoskisson, 2005) that have medium to long-term impacts on an organisation (Hubbard, Rice, & Beamish, 2008) seeking to exploit core competencies (Hanson et al., 2005) and aimed at achieving competitive advantage (Grant, 2005; Hanson et al., 2005; Hubbard et al., 2008). 'Thinking' is defined from a psychological perspective as a cognitive activity, including activities such as reasoning, decision-making and problem solving, aimed at creating productive ideas or conclusions about something (Ericksson & Hastie, 1994). When 'strategy' is connected to 'thinking' within the context of organisations, strategic thinking is defined as 'a particular way of solving strategic problems at the individual and institutional level combining rational and generative thought processes' (O'Shannassy, 2003 p.55). Strategic thinking entails the process of finding alternative ways of competing and providing customer value (Abraham, 2005) through a process of creative, intuitive, dynamic and responsive thinking (Graetz, 2002; Mintzberg, 1994) combined with rational, analytical and convergent approaches to problem solving (O'Shannassy, 2003).

Strategic thinking is part of the strategy development process and occurs before strategy formulation; it guides strategy formulation and implementation and it influences, and is influenced by, the strategic planning process (Bonn, 2001; Mintzberg, 1994). The long-term direction of an organisation needs to be considered before the planning process of identifying specific steps to accomplish the organisational goals and breaking down of organisational goals into tasks can commence (Graetz, 2002). The role of strategic thinking is 'to seek innovation and imagine new and very different futures that may lead a company to redefine its core strategies and even its industry' (Graetz, 2002 p.457). The importance of strategic thinking in the strategic management process is clear – the strategic plan is the result of an extensive and creative process of considering multiple options for the long-term direction of an organisation, that is, strategic thinking.

To explore the impact of mental models on strategic thinking, the nature of strategic thinking needs to be investigated to identify core elements of strategic thinking because individuals have mental models about different aspects of strategic thinking.

Research studies on strategic thinking reveal sets of key characteristics of strategic thinking. In this regard Table 1 provides an overview of the main elements of strategic thinking as presented

Venkatraman (1989), Liedtka (1998), Graetz (2002), O'Shannassy (2003) and Acur and Englyst (2006). Different terms are used by researchers to represent the essential characteristics of strategic thinking. These terms include 'dimensions' (Venkatraman), 'elements' (Liedtka and O'Shannassy), 'individual correlates' (Graetz), and 'success criteria (Acur and Englyst). When these sets of characteristics are compared and contrasted, a high level of overlap among these sets is found. From this overlap, a set of core characteristics, the elements of strategic thinking, are identified (see shaded column in Table 1) to provide a framework representing the core elements of strategic thinking that include:

- Thinking about sustainable competitive advantage

- Thinking holistically

- Thinking analytically and creatively

- Thinking long-term about the future.

Before these elements are discussed in more detail, it needs to be noted that these elements are not synonyms for strategy but represent specific characteristics of strategic thinking. The framework of four elements comprises strategic thinking and individual mental models of strategic thinking are built upon these elements. It is the objective of this paper to identify a framework of core elements of strategic thinking and to distinguish between these elements. This is required as a basis for further investigation into the influence of mental models on strategic thinking. The next step in future research is to investigate the interrelationships between these elements and explore ways in which they can be developed.

Thinking about sustainable competitive advantage

Sustainable competitive advantage occurs when an organisation is able to sustain competitive advantage over the long-term and surpass its competitors (Hubbard et al., 2008 p.41). Because strategic thinking aims at developing options for the long-term direction of the organisation, sustainable competitive advantage is one of the most important elements of strategic thinking. Such strategic thinking can help an organisation identify, respond to and influence changes in the environment by finding information and creating options to ensure ongoing competitive advantage for the organisation (Hamel & Prahalad, 1994).

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The element identified by Liedtka (1998 p.122) that is applicable here is 'Intent-focused'; referring to an intent-driven focus for the organisation, expressing a sense of direction and destiny whereto all energies are directed in achieving a competitive position. This relates to Hamel and Prahalad's (2005) work on *strategic intent* as part of strategic management. Graetz (2002 p.458) explains this as seeing external opportunities and integrating them back to the business to enable the development of multiple, simultaneous alternatives. The success criteria developed by Acur and Englyst (2006 p.74) related to this element include understanding the industry and competitors; awareness of strengths, weaknesses and opportunities and how to exploit them; and a confidence that the organisation will be more successful if these opportunities are utilised. The dimensions developed by Venkatraman (1989 p.959) that corresponds to this element are 'Aggressiveness' and 'Proactiveness'. 'Aggressiveness' refers to the stance adopted by the organisation in applying resources to improve market position at a faster pace than its competitors in the market. 'Proactiveness' entails a constant search for new market opportunities and experimentation with potential responses to the changing environmental trends.

Thinking holistically

Thinking holistically about strategy refers to dealing with the organisation as a holistic system that integrates each part in relationship to the whole (Hanford, 1995). It addresses systems thinking, to see the synergy of whole systems rather than focusing on individual parts and learning how to strengthen or change whole system patterns (Daft & Pirola-Merlo, 2009 p.135). It also spreads wider than the organisation including external stakeholders as portrayed in the value network, the inter-organisational links and relationships that impact on developing products and services (Johnson, Scholes, & Whittington, 2008). This links to boundary-spanning theory where groups that are practicing boundary-spanning are perceived as more effective and more likely to achieve their goals (Ancona & Caldwell, 1992). When strategic thinking is applied, the organisation as a whole should be considered. The way in which long-term options will impact on the organisation as a system needs to be taken into account. Liedtka (1998) uses the term 'a systems perspective' to refer to thinking holistically. O'Shannassy (2003 p.55) refers to a 'clear mental picture of the complete system of value creation within the organisation and the individual's role within the larger system'. He acknowledges the importance of participation of internal and external stakeholders in strategic thinking. Success criteria

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applicable in thinking holistically include understanding the influence of changes in organisational processes and procedures and following an adaptive process in decision-making (Acur & Englyst, 2006 p.74). Venkatraman's (1989 p.959) 'Analysis' dimension is applicable here; focusing on searching for the roots of problems by investigating different functional areas, using information systems and control systems.

Thinking analytically and creatively

Strategic management relies on analytical approaches to provide information for understanding the strategic position of the organisation. The strategic position provides a representation of the impact of the external environment on the organisation, the internal capabilities of resources and competences within the organisation and also a view of the expectations and influences of stakeholders (Johnson et al., 2008 p.13). Strategic thinking also requires synthesis and involves intuition and creativity (Mintzberg, 1994). Strategic thinking is hypothesis driven, focused on generating ideas and testing options, it spans the analytic-intuitive dichotomy that Mintzberg refers to (Liedtka, 1998). It is not a linear step-by-step process because it requires nonlinear thinking (Ohmae, 1982). It is also not a process that stakes everything on intuition, excluding real breakdown or analysis (Hussey, 2001). The analysis involves breaking a situation or issue down to elements to reach a full understanding of the character or each element and then, using human brainpower, restructure the elements in the most advantageous way (Ohmae, 1982). Without thorough analysis and creative strategic thinking, successful strategies are difficult to construe. Creativity involves insight, imagination and adaptability which are human thinking qualities (Hussey, 2001). Ohmae (1982) refers to 'mental elasticity'; an intellectual flexibility to come up with realistic responses to changing situations. Analysis guides creativity to the right problem and is used to make sure that ideas make business sense (Hussey, 2001). The element of strategic thinking that Liedtka (1998 p.123-4) identifies as 'Hypothesis-driven' is connected to thinking analytically and creatively. She argues that strategic thinking is not a question of 'either/or' analysis versus intuition as both are required.   Graetz (2002) supports this view and adds thinking laterally in dealing with innovation and uncertainty to interpret, evaluate and deal with environmental changes. This is in line with O'Shannassy's (2003) view that the challenge lies in problem solving; and the way to deal with it is to follow a systems perspective, develop hypotheses or

propositions for investigation and use either, or both, intuition and analysis to solve the problems. In terms of success criteria for strategic thinking, Acur and Englyst (2006 p.74) identify awareness of key problem areas through self-criticism regarding strengths, weaknesses, opportunities and threats. The nature of exploring these issues is based on analysis and creativity. For Venkatraman (1989 p.959), the 'Defensiveness' dimension applies. Where the focus is on cost reduction and efficiency seeking methods, both analysis and creativity are required.

Thinking long-term about the future

One of the key issues related to strategic thinking is 'long-term'. Strategy is about the future and the long-term effects of decisions made in the organisation. The duration of 'long-term' depends on the character of the industry, for high-tech industries, two years may be considered long-term whereas in other more stable industries, up to ten years may be viewed as long-term. As a rule of thumb, three years normally qualifies as long-term for most organisations (Hubbard et al., 2008 p.3). Two of Liedtka's elements relate to thinking long-term about the future; they are 'Intelligent opportunism' and 'Thinking in time' (1998 p.123). Intelligent opportunism addresses recognising new opportunities and accommodating possibilities for new strategies arising. 'Thinking in time' deals with thinking about the future by connecting the future to the present and the past. Liedtka concurs with Mintzberg (1994) and argues that the future can only be created in the present when it is recognised that it departed from the past, and the past has predictive value for the future. The past, present and future are connected by strategic thinking.   O'Shannassy (2003) supports the view that strategic thinking requires consideration of the past, present and future of the organisation and explain this as thinking in time. He includes the need for clear, direct and intuitive understanding among employees of the strategic intent of the organisation, the futuristic vision. Venkatraman's (1989 p.959) 'Futurity Dimension' addresses the notion of the 'desired future' that include the processes organisations go through in attaining the desired state. With regard to the success criteria for strategic thinking (Acur & Englyst, 2006 p.75), 'learning from experience' connects the past and the future through the present and is relevant to this element. Also, 'understanding of the strategic priorities of top-management' relates to this element as strategic priorities have a futuristic and long-term focus.

The framework of core elements derived from the literature describes the nature of strategic thinking and this is important when mental models of strategic thinking are investigated. An important contribution of this paper is the identification of this framework of core strategic thinking elements for application in future research on mental models of strategic thinking. The elements define aspects of the domain of interest. Thus, strategic thinking is defined as a cognitive process of considering multiple options for the future direction of an organisation and is made up of elements representing its characteristics. Before the impact of mental models on strategic thinking is explored, mental models are now explained from a theory perspective.

Mental models

Mental models are the mental frameworks that influence people's thinking processes in understanding, interpreting and predicting the domain of interest. Mental models are based upon core beliefs and values, also relevant experiences and exposure (Denzau & North, 1994; Fiske & Taylor, 1991; Gentner & Stevens, 1983; Jacobs & Heracleous, 2005; Langfield-Smith, 1989; Mathieu et al., 2000). The characteristics of mental models can be summarised as follows:

- Individual thinking processes are influenced by mental models (Senge, Roberts, Ross, Smith, & Kleiner, 1994).

- Mental models represent a set of assumptions and generalisations that influence how the world is interpreted and what action is taken (Fitzroy & Hulbert, 2005).

- Mental models are typically tacit (Fitzroy & Hulbert, 2005), represent simplifications and are influenced by leaps of abstraction where the leap is made by jumping from concrete data to generalisations (Senge, 1992).

- Mental models develop over time and through experience (Fiske & Taylor, 1991; Langfield-Smith, 1989).

- Individuals use mental models to understand and predict the behaviour of the world happening around them by applying mental models to simplify complex issues thereby helping individuals to process incoming information (Davison & Blackman, 2005; Fitzroy & Hulbert, 2005; Mathieu et al., 2000).

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- Mental models influence what individuals see and how they react to issues (Day & Lord, 1992; Johnson-Laird, 1983; Knight et al., 1999; Markides, 1997; Mathieu et al., 2000; Rouse & Morris, 1986) and are shaped by their role requirements, experience, interests and individual goals (Jacobs & Heracleous, 2005; Senge, 1992).

The notion of *shared* mental models is discussed as part of mental model theory (Mathieu et al 2000). Although mental models are, to some degree, unique to an individual, mental models can also be shared. When people work together in a group, they share in group work, task work and belief structures through their experience in working together to accomplish the same goal (Cooke, Salas, Cannon-Bowers, & Stout, 2000; Mathieu et al., 2000; Mohammed & Dumville, 2001). Although the shared mental models construct is critical in studying mental models of strategic thinking in strategy groups; and links to aspects of group dynamics such as group development stages, groupthink and groupshift, it can only be studied after the foundations of individual mental models have been laid down. Therefore the aim of this paper is to focus on the impact of individual mental models on strategic thinking as the first paper in a research series.

The link between individual mental models and strategic thinking

From the discussion on mental models theory, it can be asserted that when people think about a certain issue, in this case, strategy, their thinking is influenced by their mental models and this affects how they see and react to issues (Senge et al., 1994). Mental models about strategy develop through an individual's previous experiences, role requirement and knowledge about strategy (Denzau & North, 1994; Fiske & Taylor, 1991; Gentner & Stevens, 1983; Jacobs & Heracleous, 2005; Langfield-Smith, 1989; Mathieu et al., 2000). The way in which strategy is individually perceived, understood and predicted is shaped by individual awareness of and experiences with strategy. By applying tacit mental models, complex issues are simplified and generalised which help the individual to process incoming information within the framework of his/her understanding (Davison & Blackman, 2005; Fitzroy & Hulbert, 2005; Mathieu et al., 2000). In this regard, it can be argued that mental models shape individuals' strategic thinking as it is bounded by individual knowledge and experiences. Hence, the first proposition based on the concept of bounded rationality is:

P1: Individual mental models have a shaping effect on individual strategic thinking.

When the elements of strategic thinking are considered, this proposition is further developed. If mental models confine thinking to individuals' previous experiences and knowledge, then 'thinking about sustainable competitive advantage', the first element, is also shaped by personal understanding of what sustainable competitive advantage means for the organisation. This leads to the next proposition:

P2: Individual mental models have a shaping effect on thinking about sustainable competitive advantage.

The next element, 'thinking holistically' is also influenced by individual mental models. To think holistically, 'systems thinking' is applied and within the context of an organisation it also links to the process of value creation, including the contributions of internal and external stakeholders. An individual's personal perceptions of how the organisation operates and who is involved, influence holistic thinking and therefore the following proposition is applicable:

P3: Individual mental models have a shaping effect on thinking holistically.

The same applies to the element 'thinking analytical and creatively'. For analytical thinking, the focus is on problem-solving. People tend to solve problems based on previous experiences with similar problems by applying cognitive simplification mechanisms (Day & Lord, 1992). These mechanisms are related to personal tried and tested methods of solving problems and are incorporated into mental models, attaching people to old patterns of thinking. Where creative thinking is needed to address strategic problems, these old patterns of thinking are challenged and people tend to avoid inconsistencies and fall back to thinking within the boundaries of their current mental models (De Wit & Meyer, 2005). This leads to the following proposition:

P4: Individual mental models have a shaping effect on analytical and creative thinking.

The final element, 'thinking long-term about the future' is also influenced by the mental models of the individual. The understanding of 'long-term' is linked to individual experiences and perceptions and is contained in individual mental models. Furthermore, conceptualisation of the 'future' is related to previous experiences, knowledge and personal understanding of the future that are engrained in individual mental models. Therefore the following proposition applies:

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P5: Individual mental models have a shaping effect on thinking long-term about the future.

CONCLUSION

By drawing on literatures of mental models and strategic thinking, this paper addresses the gap between these constructs and proposes that individual mental models have significant influences on strategic thinking. To explain these influences, a framework of core elements is developed that characterises strategic thinking and serve as first step in investigating mental models of strategic thinking. This provides a basis for future investigation of the influence of mental models on strategic thinking. Follow-up research needs to explore in greater depth the interrelationships between these elements. This paper draws the attention to the importance of individual mental models in strategy groups in organisations and fosters awareness that strategic thinking is influenced by each strategic thinker's previous experiences and exposure to strategy development. To enhance strategic thinking in organisations, strategists' individual mental models needs to be developed to better understand the organisation and organisational environment. The paper also highlights the importance of shared mental model alignment within and among strategy groups in organisations and the need for development of organisational interventions focused on building shared mental models. These interventions need to focus on improving communication channels within and between strategy groups and the development of organisational learning principles. Effective communication about strategic issues combined with creating a culture of learning, where employees are encouraged to share knowledge and experiences and learn from each other; will enhance and develop individuals' mental models of strategic thinking and cultivate shared mental models among strategy groups in organisations. This may ultimately lead to higher levels of strategic thinking and competitiveness.

To summarise, this paper should be viewed as a first study about the influence of individual mental models on strategic thinking and will be followed up by research on the influence of shared mental models of strategic thinking in strategy groups in organisations.

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References

Abraham, S. (2005). Stretching strategic thinking. *Strategy & Leadership, 33*(5), 5 - 12.

Acur, N., & Englyst, L. (2006). Assessment of strategy formulation: how to ensure quality in process and outcome. *International Journal of Operations & Production Management, 26*(1), 60 - 91.

Ancona, D. G., & Caldwell, D. F. (1992). Bridging the boundary: External activity and performance in organizational teams. *Administrative Science Quarterly, 37*(4), 634-665.

Bonn, I. (2001). Developing strategic thinking as a core competency. *Management Decision, 39*(1), 63 -71.

Bonn, I. (2005). Improving strategic thinking: a multilevel approach. *Leadership & Organization Development Journal, 26*(5), 336 - 354.

Bonn, I., & Fisher, J. (2005). Corporate Governance and Business Ethics: insights from the strategic planning experience. *Corporate Governance: An International Review, 13*(6), 730-738.

Cooke, N. J., Salas, E., Cannon-Bowers, J., & Stout, R. J. (2000). Measuring team knowledge. *Human Factors, 42*, 151 - 173.

Daft, R. L., & Pirola-Merlo, A. (2009). *The leadership experience* (1 ed.). Melbourne, Victoria: Cengage Learning Australia.

Davison, G., & Blackman, D. (2005). The role of mental models in innovative teams. *European Journal of Innovation, 8*(4), 409 - 423.

Day, D. V., & Lord, R. G. (1992). Expertise and problem categorization: the role of expert processing in organizational sense-making. *Journal of Management Studies, 29*(1), 35-47.

De Wit, B., & Meyer, R. (2005). *Strategy synthesis: resolving strategy paradoxes to create competitive advantage* (2nd ed.). London: Thomson Learning.

Denzau, A. T., & North, D. C. (1994). Shared mental models: ideologies and institutions. *Kyklos, 47*(1), 3 - 32.

Ericksson, A. K., & Hastie, R. (1994). Contemporary approaches to the study of thinking and problem solving. In R. J. Sternberg (Ed.), *Thinking and problem solving* (2nd ed.). California: Academic Press Limited.

Fiske, S. T., & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York: McGraw-Hill, Inc.

Fitzroy, P., & Hulbert, J. M. (2005). *Strategic management, creating value in a turbulent world*. London: John Wiley & Sons, Inc.

Gentner, D., & Stevens, A. L. (1983). *Mental models*. London: Lawrence Erlbaum Associates.

Graetz, F. (2002). Strategic thinking versus strategic planning: towards understanding the complementarities. *Management Decision, 40*(5/6), 456.

Grant, R. M. (2005). *Contemporary strategy analysis* (5th ed.). Carlton Australia: Blackwell Publishing.

Hambrick, D. C. (2004). The disintegration of strategic management: it's time to consolidate our gains. *Strategic Organization, 2*(1), 91 -98.

Hamel, G., & Prahalad, C. K. (1994). *Competing for the future*. Boston, Massachusetts: Harvard Business School Press.

Hamel, G., & Prahalad, C. K. (2005). Strategic Intent. (cover story). *Harvard Business Review, 83*(7/8), 148-161.

Hanford, P. (1995). Developing director and executive competencies in strategic thinking. In B. Garratt (Ed.), *Developing Strategic Thought: rediscovering the art of direction-giving*. London: McGraw-Hill Book Co.

Hanson, D., Dowling, P., J, Hitt, M., A, Ireland, D., R, & Hoskisson, R., E. (2005). *Strategic Management: Competitiveness and globalisation* (2nd ed.). Victoria, Australia: Thomson Learning Australia.

Harris, S. G. (1996). Organizational Culture and Individual Sensemaking. In J. F. Porac, J. R. Meindl & C. Stubbart (Eds.), *Cognition within and between organizations* (pp. 283 - 305). California: SAGE Publications Inc.

Hubbard, G., Rice, J., & Beamish, P. (2008). *Strategic management: thinking, analysis, action*. Frenchs Forest: Pearson Education Australia.

Hussey, D. (2001). Creative strategic thinking and the analytical process: critical factors for strategic success. *Strategic Change, 10*(Jun-Jul 2001), 201 - 213.

Jacobs, C. D., & Heracleous, L. T. (2005). Answers for questions to come: reflective dialogue as an enabler of strategic innovation. *Journal of Organizational Change Management, 18*(4), 338 - 352.

Johnson-Laird, P. N. (1983). Thinking as a skill. In J. S. B. T. Evans (Ed.), *Thinking and reasoning: Psychological approaches* (pp. 164 -196). London: Routledge & Kegan Paul.

Johnson, G., Scholes, K., & Whittington, R. (2008). *Exploring corporate strategy* (8th ed.). England: Pearson Education Limited.

Kay, J., McKiernan, P., & Faulkner, D. O. (2006). The history of strategy and some thoughts about the future. In D. O. Faulkner & A. Campbell (Eds.), *The Oxford Handbook of Strategy* (pp. 27 - 53). Oxford, New York: Oxford University Press.

Knight, D., Pearce, C. L., Smith, K. G., Olian, J. D., Sims, H. P., Smith, K. A., et al. (1999). Top management team diversity, group process, and strategic consensus. *Strategic Management Journal, 20*(5), 445 - 465.

Lane, P., & Sirmon, D. (2003). *Meso-logic: reconciling a firm's macro and micro mental models to improve performance.* Paper presented at the Academy of Management.

Langfield-Smith, K. (1989). *Mapping cognitive structures: a pilot study to develop a research method* (Vol. 14). Parkville, Victoria: Graduate School of Management.

Langfield-Smith, K. (1992). Exploring the need for a shared cognitive map. *Journal of Management Studies, 29*(3), 349 - 368.

Laukkanen, M. (1996). Comparative Cause Mapping of Organisational Cognitions. In J. R. Meindl, C. Stubbart & J. F. Porac (Eds.), *Cognition within and between organizations* (pp. 3 - 43). California: SAGE Publications, Inc.

Liedtka, J. M. (1998). Strategic Thinking: Can it be Taught? *Long Range Planning, 31*(1), 120 - 129.

Lyles, M. A., & Schwenk, C. R. (1992). Top management strategy and organisational knowledge structures. *Journal of Management Studies, 29*(2), 155 - 174.

Markides, C. (1997). Strategic innovation. *Sloan Management Review, 38*(3), 9 - 15.

Mathieu, J. E., Goodwin, G. F., Heffner, T. S., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology, 85*(2).

McNamara, G. M., Luce, R. A., & Tompson, G. H. (2002). Examining the effect of complexity in strategic group knowledge structures on firm performance. *Strategic Management Journal, 23*, 153 - 170.

Mintzberg, H. (1994). The fall and rise of strategic planning. *Harvard Business Review, January - February 1994*, 107 - 114.

Mohammed, S., & Dumville, B. C. (2001). Team mental models in a team knowledge framework: expanding theory and measurement across disciplinary boundaries. *Journal of Organizational Behaviour, 22*(2), 89 - 106.

Nag, R., Hambrick, D. C., & Ming-Jer, C. (2007). What is strategic management, really? Inductive derivation of a consensus definition of the field. *Strategic Management Journal, 28*, 935 - 955.

O'Shannassy, T. (2003). Modern strategic management: balancing strategic thinking and strategic planning for internal and external stakeholders. *Singapore Management Review, 25*(1), 53.

Ohmae, K. (1982). *The Mind of the Strategist*. New York: McGraw-Hill Book Company.

Porac, J. F., & Thomas, H. (2002). Managing cognition and strategy: issues, trends and future directions. In A. Pettigrew, H. Thomas & R. Whittington (Eds.), *Handbook of strategy and management* (pp. 165 - 181). London: SAGE Publications Ltd.

Rouse, W., & Morris, N. (1986). On looking into the black box: prospects and limits in the search for mental models. *Psychological Bulletin, 0033 -2909Vol. 100*(3).

Rumelt, R. P., Schendel, D. E., & Teece, D. J. (1995). Fundamental issues in strategy. In R. P. Rumelt, D. E. Schendel & D. J. Teece (Eds.), *Fundamental issues in strategy: a research agenda* (pp. 9 - 55). Boston, Massachusetts: Harvard Business School Press.

Sanders, I. T. (1998). *Strategic thinking and the new science*. New York: The Free Press.

Senge, P. M. (1992). *The fifth discipline*. Adelaide, NSW: Random House Australia Pty Ltd.

Senge, P. M., Roberts, C., Ross, R. B., Smith, B. J., & Kleiner, A. (1994). *The fifth discipline fieldbook*. New York: Currency Doubleday.

Stubbart, C. I. (1989). Managerial cognition: a missing link in strategic management research. *Journal of Management Studies, 26*, 325 - 347.

Venkatraman, N. (1989). Strategic orientation of business enterprises: the construct, dimensionality and measurement. *Management Science, 35*(8), 942-962.

Walsh, J. (1995). Managerial and organizational cognition: a trip down memory lane. *Organization Science, 6*(May-June), 280 - 319.

Table 1: Elements of strategic thinking

Venkatraman's six dimensions of the strategy construct (Venkatraman, 1989)	Liedtka's elements of strategic thinking (Liedtka, 1998)	Graetz's individual correlates of strategic thinking (Graetz, 2002) based on Liedtka's work	O'Shannassy's key elements (O'Shannassy, 2003) drawing on the work of Liedka	Success criteria for strategy formulation (Acur & Englyst, 2006)	Proposed set of elements of strategic thinking
Aggressiveness : the posture adopted by a business in its allocation of resources for improving market positions at a relatively faster rated than the competitors in the chosen market. Proactiveness: proactive behaviour in relation to participation in emerging industries, continuous search for market opportunities and experimentation with potential responses to the changing environmental trends.	Intent-driven focus of the organisation; conveying a sense of direction, destiny and directed energy towards competitive position.	See external opportunities and integrate these back to the business. Build multiple, simultaneous alternatives – be comfortable working with a large range of options.		• Develop awareness of industry and competitors • Awareness of strengths and opportunities and how to exploit them • Confidence that the business is more successful as a result	**Thinking about sustainable competitive advantage** • Customer value • Efficiency measures – cheaper, faster, smarter • Flexibility – adapt to changes quickly • Seek new opportunities
Analysis: the extent of tendency to search deeper for the roots of problems and to generate the best possible solution alternatives.	Holistic view, systems perspective.		• The strategic thinker requires a clear mental picture of the complete system of value creation within the org and the individual's role with the larger system • Encourages the participation of internal and external stakeholders – employees given greater autonomy and responsibility	• Decision-making through effective and adaptive process • The maintenance and understanding of changing organisational processes and procedures	**Thinking holistically** • Systems thinking – how change in one component affects other • Understand process of value creation • Coordinated action

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Venkatraman's six dimensions of the strategy construct (Venkatraman, 1989)	Liedtka's elements of strategic thinking (Liedtka, 1998)	Graetz's individual correlates of strategic thinking (Graetz, 2002) based on Liedtka's work	O'Shannassy's key elements (O'Shannassy, 2003) drawing on the work of Liedka	Success criteria for strategy formulation (Acur & Englyst, 2006)	Proposed set of elements of strategic thinking
Defensiveness: emphasis on cost reduction and efficiency seeking methods.	Hypothesis-driven: strategic thinking is both creative and analytical. Hypothesis generation entails the creative question: "What if…?" and the hypothesis testing bears on the analysis of the "If…, then…?" question.	Think laterally and intuitively. Deal with novelty and ambiguity, to interpret and evaluate events and determine what action needs to be taken.	• Core focus is problem solving – systems perspective – all organisational levels- identifying problems, hypotheses or propositions for investigation within an understanding of the wider business context – using either or both intuition or analysis depending on needs	• Self-criticism regarding strengths, weaknesses, opportunities and threats • Awareness of key problem areas	**Thinking analytical and creatively** • Developing new strategies rather than building on previous • Develop alternative ways of competing – options for the long-term • Focus on problem-solving through analysis of problem and developing creative solutions •
Futurity: refers to the notion of 'desired future' and the process through which a business plans to reach the desired state.	Intelligent opportunism: within the intent-driven focus, new opportunities must be recognised and possibilities for new strategies emerging must be accommodated. Thinking in time: recognition that the future departed from the past, the past has predictive value for the future. Strategic thinking about the future also considers the history of the organisation.		• Requires consideration of the past, present and future of the organisation, thinking in time • A need for clear, direct intuitive understanding among employees of the future direction of the org, the strategic intent	• Understanding of the strategic priorities of top-management • Learning from experience	**Thinking long-term about the future** • Connecting past, present & future • Develop a vision of where the organisation will be in the future –desired future

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