Perceived Environmental Uncertainty, Strategy-Making and Organization Performance: What Does Theory Tell Us and Where Can It Take Us?

Dr Tim O’Shannassy
Graduate School of Business, RMIT University, Melbourne Victoria, Australia
E-mail: tim.oshannassy@rmit.edu.au

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Profile:
Tim O’Shannassy (PhD, Monash University) is a Senior Lecturer in the Graduate School of Business, RMIT University, Melbourne, Australia. In 2007 he was Visiting Scholar at the Robert H. Smith School of Business at University of Maryland. His research interests are perceived environmental uncertainty, strategy process, organization performance, corporate governance and management consulting. He teaches strategic management, entrepreneurship and research methods in graduate courses at RMIT University.
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ABSTRACT:
Henry Mintzberg has had high impact in the strategic management discipline with his classic text titled The Rise and Fall of Strategic Planning. Though the book is now 13 years old it remains highly regarded for its core message that there is increasing environmental uncertainty for business placing greater pressure on organizations to improve their strategy process, with implications for organization performance. This paper prepares the theoretical foundation for a focused empirical test - reviewing the literature, developing a new model of strategy-making, and setting out a number of hypotheses to examine certain relationships between the research constructs perceived environmental uncertainty, strategy-making and organization performance.

KEY WORDS: Strategy formulation/content, Strategy practice, Strategic planning systems (mission/vision), Strategy implementation/process

REFEREED PAPER
INTRODUCTION
Henry Mintzberg has had high impact in the strategic management discipline with his classic text *The Rise and Fall of Strategic Planning*. Though the book is now 13 years old it remains highly regarded for its core message that there is increasing environmental uncertainty for business placing greater pressure on organizations to improve their strategy process with implications for organization performance. Mintzberg (1994a, 1994b) argued the need for an intuitive emphasis to strategy-making blending vision and learning followed then by strategic planning or ‘programming’. Mintzberg’s (1994a, 1994b) insights were based on literature review and observations from a long and distinguished research career including a longitudinal study of strategy-making in Steinberg Inc (Mintzberg and Waters (1982). He emphasized that the chief executive officer (CEO), top managers, internal strategists and line managers need to work together and he explained how they can do that.

There have been further useful contributions to the literature on strategy-making which have expanded our strategy knowledge and vocabulary in recent years from writers including Liedtka (1998a, 1998b) with her innovative five element model of strategic thinking linked to strategy-making, Heracleous (1998) and his discussion of the interaction of strategic thinking and planning, and Hill and Stephens (2003) talking about the challenges of managing Generation X and Generation Y employees and the practice of strategic thinking. Better understanding of strategy-making in an industry setting helps strategists have insight into the dynamic capabilities firms can use to achieve ‘new and innovative forms of competitive advantage’ (Teece, Pisano and Shuen, 1997: 516). The purpose of this paper is to leverage insight from the literature into preparing the basis for an empirical examination of the interaction of the constructs perceived environmental uncertainty, strategy-making and organization performance. Definition of constructs and preparation of hypotheses for future research will be made to achieve this outcome.

LITERATURE REVIEW
Pascale (1999: 83) in *Sloan Management Review* observed: ‘The decade after World War II gave birth to the “strategy era”.’ Evidenced by the contributions of Sun Tzu, Sun Pin, Frontinus and Xenophan understanding of military strategy had been developing for centuries prior to the late 1940s. Pascale (1999: 83) notes that: ‘After the war, faculty of the Harvard Business School (soon joined by swelling ranks of consultants) began to take the discipline of strategy seriously.’ Gluck, Kaufman and Walleck (1980: 155) describe the evolution of the strategic management process in four phases since World War II. Phase 1 in the 1950s was the era of ‘basic financial planning’, phase 2 in the 1960s is ‘forecast-based planning’, phase 3 in the 1970s incorporates strategic planning and phase 4 in the 1980s strategic management. A fifth phase was evident in the 1990s with the evolution of the discipline from the strategic
management phase of the 1980s to a more flexible form of strategic thinking in the 1990s (Stacey 1993; Heracleous 1998).

This paper suggests an alternative explanation of the evolution of the strategic management literature – an evolution of the literature spanning two generations. The first generation of literature from the 1950s through to around 1980 had a distinct planning focus. American experts including Andrews (1965), Ansoff (1965) and Porter (1980) focused their writing on the use of planning tools and techniques. Data and analysis had a prominent role in the development of organization strategy as business strategists sought to converge on a solution to the problems and opportunities confronting them. The contribution of Porter (1980) remains highly regarded today for helping strategists understand what is taking place outside the firm which was a real gap in our knowledge at that time.

The second phase in generational evolution of the strategy literature from the early 1980s to the present has seen emerge a tension between strategic planning and strategic thinking. Prescriptive, planning approaches to strategy formulation and implementation were demonstrated to be inadequate in the face of an uncertain business environment (exemplified by significant external economic shocks such as OPEC I and II) illustrating the shortcomings of the Andrews (1965) and Ansoff (1965) approaches. The term strategic thinking emerged in the literature from the writing of the McKinsey and Company consultants around this time as some scepticism on the value of planning emerged. Peters and Waterman (1982) and Ohmae (1982) each published their insights on the practice of strategic thinking and what they thought exceptional strategists did or should do. Planning departments were scaled down in size and strategy resources were more often focused in the business units of organizations (Stacey, 1993). A group of writers emerged who argued the need to balance the use of intuition and analysis in the practice of strategic thinking in strategy-making (Wilson 1994; Raimond 1996; Liedtka 1998a, 1998b) while some writers preferred a stronger creative orientation (Heracleous, 1998; Bonn, 2001). Here Liedtka (1998a: 121) makes a meaningful observation: ‘…the literature draws a sharp dichotomy between the creative and analytic aspects of strategy-making, when both are clearly needed in any thoughtful strategy-making process.’ Mintzberg et al. (1998) updating Mintzberg’s (1990) contribution on planning schools recognized a new ‘eclecticism’ in the discipline in the light of these developments as the strategy process evolved in organizations trying to cope with the demands of an uncertain business environment (Courtney, Kirkland and Viguerie, 1997). There is awareness now that there is more to strategy than just planning, there is a range of dimensions of strategy-making as organizations seek to balance the tension between strategic thinking and strategic planning.
The evolution of ideas in the last 25 years on how we can manage this tension between strategic thinking and strategic planning has been of interest. Mintzberg and Waters (1982) in their longitudinal study of the development of Steinberg Inc. identified an entrepreneurial mode and a planning mode in strategy-making. Mintzberg’s (1994a, 1994b) views evolved over the next 12 years and in *The Rise and Fall of Strategic Planning* argued the need for an intuitive emphasis to strategy-making blending vision and learning followed then by strategic planning or ‘programming’. Liedtka (1998: 122) following on a few years later from Mintzberg’s (1994a; 1994b) contribution sees strategic thinking as a ‘particular way of thinking, with specific attributes’ and developed a model with five elements in her theoretical conceptualization of strategic thinking. First, strategic thinking is based on a systems perspective - a holistic view of the organization. The strategic thinker has a mental picture of a complete system of value creation in the firm and his or her own small role within the larger system (Liedtka 1998). Second, strategic thinking is driven by the strategic intent of the firm providing focus and energy to the staff and the organization to achieve goals (Liedtka 1998). As Boisot (1995: 36) explains strategic intent is ‘...an intuitively formed pattern...or vision...to give...orientation ...in...the presence of turbulence.’ Third, strategists need to ‘think in time’ (Liedtka 1998: 123) linking the firm’s past, present and future in their thought processes. There are three components:

- the predictive value of the past for the future;
- departures from the past which divert the firm from familiar patterns;
- the need for continuous comparison ‘an almost constant oscillation from the present to the future to past and back’ (Neustadt & May 1986: 251).

Fourth, strategic thinking is ‘hypothesis-driven’ (Liedtka 1998: 123) and the ‘scientific method accommodates both creative and analytical thinking sequentially in its use of iterative cycles of hypothesis generating and testing.’ Here Liedtka (1998) uses the term ‘scientific’ in its truest sense in terms of the empirical and the abstract elements of this approach (Zikmund, 1997) as distinct from the strategy as science metaphor in the strategy literature (De Wit & Meyer, 2004). Finally, strategic thinking is intelligently opportunistic. Here Liedtka (1998) argues that the firm whilst following a particular strategy should not lose sight of alternative strategies or commercial opportunities that may be more appropriate for a changing environment. The strategic thinking activity then links with the planning activity in iterative cycles of strategy-making.

What is agreed is that these trends in the strategy literature have given greater focus to the *descriptive and configurational schools* identified in Mintzberg et al. (1998) and less emphasis to the *prescriptive schools*. This is consistent with a generational shift from the emphasis on planning from the 1950s to 1970s, then the emergence of a tension between strategic thinking and strategic planning in the 1980s, 1990s and
2000s. A number of European writers have contributed to the practice of strategy research stream in recent years discussing issues in relation to what strategists do in there ‘day-to-day’ strategy work and also the regular planning cycle (Jarzabkowski, Balogun and Seidl, 2007; Hodgkinson, Whittington, Johnson and Schwarz, 2006; Whittington, Molloy, Mayer and Smith, 2006). Strategy-making as a construct has also recently been of interest to leading American writers (Gavetti, Levinthal and Rivkin, 2005; Burgelman and Grove, 2007). This background ensures this paper is topical and that useful insights from the literature inform the choice and explanation of the research constructs and research hypotheses which follow.

DEFINITION OF RESEARCH CONSTRUCTS

Perceived Environmental Uncertainty

Milliken (1987: 136) defined environmental uncertainty as ‘an individual’s perceived inability to predict [an organization’s environment] accurately’ due to a ‘lack…of information’ or ‘an inability to discriminate between relevant and irrelevant data.’ Perceived environmental uncertainty is manifest when managers perceive the environment confronting the organization to be unpredictable (Milliken 1987; Kreiser and Marino 2002). Miles and Snow (1978: 195) observed that managerial perceptions of environmental uncertainty are determined by ‘the predictability of conditions in the environment’ which is consistent with Milliken (1987). Buchko (1994: 411) drawing on Milliken (1987) notes:

Perceptions of environmental uncertainty occur when executives are unable to predict future changes in components of the environment or possess an incomplete understanding of the relationships among components of the environment.

Appraisal of the contributions of Milliken (1987) and Buchko (1994) indicate that environmental uncertainty is a function of a range of factors including the environment confronting the manager and the organization, and the perceptual processes of the manager.

Miles and Snow’s (1978) measure of environmental uncertainty has been assessed in the quality literature as being preferred to the Duncan (1972) scale for empirical research (refer Buchko (1994) for a full discussion). The original Miles and Snow (1978) scale seeks executives perceptions of six key sectors of the external environment – suppliers, competitors, customers, financial markets, government and regulatory agencies, and unions. Several academics and consultants (Iansiti 1995; Don 1999; Beinhocker and Kaplan 2002; Hill and Stephens 2003) have referred to increasing complexity and rapid change in the world economy driven by a range of factors including advances in information technology, telecommunications and media (Iansiti, 1995; Porter, 2001), the impact of government regulation (Hrebiniaiak and Snow 1980; Hart 1992), the role of pressure groups (e.g. environmentalists), better economic policy management (Taniguchi and West 1997), social and demographic shifts (Wilson, 1994).
Strategy-Making

There is a need to revisit a model of strategy-making for this paper leveraging the learning from the literature review. This is done in the spirit of strategic thinking practice suggested by Kenichi Ohmae in his classic text *The Mind of the Strategist*, reassembling the elements of strategic thinking discussed in the literature into a new cohesive whole and linking this insight to recent observations on strategic planning.

*Strategic thinking* is defined for this paper as a particular way of solving strategic problems and opportunities at the individual and institutional level combining generative and rational thought processes. Thought and action can be intertwined or linear or something in between depending on the strategy context confronting the organization. The activity is participative in that it can involve both internal and external stakeholders depending on this context. Pragmatically there is no single formula to strategic thinking for the individual or organization and it is evident from the lessons of the evolution of strategy that practicing managers need some flexibility in problem solving style.

Liedtka (1998) draws attention to the need for a systems perspective and this can be developed further drawing on Ahmed, Hardaker and Carpenter (1996) with their emphasis on flexible inputs to organization strategy. It is argued in this paper then that *flexible inputs* combining the ‘soft’ resource elements of leadership style, staff, skills, systems and shared values with ‘hard’ resource elements including capital equipment, technology and structure provides this systems perspective and enhances organizational change capability. *Entrepreneurial* risk taking, experimentation and innovation should be encouraged with implications for patterns of resource allocation (Moss Kanter, 2006), and the capacity of individuals and the organization for evolutionary and revolutionary change (Mintzberg and Waters, 1982; Hart, 1992). *Strategic intent* is required where the CEO and top managers provide a direct, intuitive understanding of future direction of the organization from the top down that gives focus to strategic thinking (Prahalad and Hamel, 1990). A *participative* element allowing interaction of the board, the CEO, top managers and line managers with external stakeholders in an inclusive process with learning, dialogue and feedback is a helpful component, especially as the organization grows (Mason and Mittrof, 1981; Frooman, 1998; Collier, Fishwick and Floyd, 2004). Finally Liedtka (1998) introduced the element *thinking in time* combining understanding of the past, present and future of the organization and examining scenarios (Abraham, 2005) to determine a feasible future direction. *Strategic planning* is undertaken as a rational, programming activity (Mintzberg, 1994a, 1994b) usually in a regular cycle focusing on the formalization, operationalization, justification and documentation (Heracleous, 1998) of the outcome of the informal ‘day-to-day’ problem solving or strategic thinking activities. This insight gives the six element model of strategy-making in Figure 1 below, well grounded in the evolution of the strategy discipline with modern
strategy terminology. In this model there is an increasing role for line managers across the different elements of strategic intent, planning, thinking in time, participative and entrepreneurial.

**Organization Performance**

Chakravarthy (1986) demonstrated that measuring strategic performance using firm profit was inadequate. Ruekert Walker and Roering (1985: 15) in the marketing discipline noted: ‘…performance is…a multidimensional construct’ and their three dimensional conceptualization of performance has been adopted for this research: ‘Effectiveness involves the degree to which organizational goals are reached, efficiency considers the relationship between organizational outputs and the inputs required to reach those outputs, and adaptiveness reflects the ability of the organization to adapt to changes in its environment.’ Homberg, Krohmer and Workman (1999) in the strategic management field observe that in the field application of this construct efficiency is associated with financial or shareholder outcomes, effectiveness with non-financial or broader stakeholder outcomes and adaptiveness to change capability.

**RESEARCH HYPOTHESES**

We have seen that Mintzberg (1994a, 1994b) argued that greater environmental uncertainty resulted in greater emphasis on strategy-making. Organizations with better strategy-making capability resources (Hart, 1992) had a better probability of organization performance. Effectively Mintzberg (1994a, 1994b) has argued there is both a mediation and moderation role for strategy-making in its interaction with perceived environmental uncertainty and organization performance though his writing is based on literature review (Andersen, 2000) and does not provide the empirical proof of this. The main purpose of this paper is to provide the theoretical foundation for this empirical proof with the development of hypotheses 2, 3, 4 and 5 below related to Figure 2 and Figure 3. Figure 2 is adapted from Baron and Kenny (1986) and depicts the relationships that need to be proven to demonstrate the mediation role for strategy-making in its relationships with perceived environmental uncertainty and organization performance. Figure 3 is also adapted from Baron and Kenny (1986) and depicts the relationships that need to be proven to demonstrate the moderation role.

Miller and Cardinal (1994) and Hart and Banbury (1994) also highlighted the importance of the influence of the contingency organization size on the constructs strategic planning and strategy-making processes respectively in their writing. As firms increase in size the pressure and demands on executives and managers to think through strategy issues increases, resulting in the development of capability in a range of strategy-making elements. Hart and Banbury (1994) argue that firms that develop capability in several different elements of strategy-making processes are more likely to perform strongly. The strategy-making
capability of such firms becomes a highly complex and difficult to imitate resource. In statistical analysis a dummy variable can be used to identify firms which have high strategy-making capability. For instance Hart and Banbury (1994) in their empirical research sought to identify firms in the top one-third of their sample on all elements of strategy-making processes. Dummy variable analysis was used to identify high firm capability or otherwise on each element of their strategy-making processes model for each firm. This allowed identification of firms with high capability in five elements (i.e. high capability in command, symbolic, transactive, generative and rational elements), fours elements, threes and so on. In this paper testing firstly the linear relationship of size with strategy-making elements and second the association of size with high strategy-making capability in organizations - using a similar analytical approach to that used by Hart and Banbury (1994) for the second approach - allows the following interesting hypotheses:

- **Hypothesis 1a (H1a):** Greater organization size is associated with greater emphasis on strategy-making.
- **H1b:** Greater organization size is associated with high strategy-making capability.

The literature is ambiguous on the direction of the relationship between perceived environmental uncertainty and organization performance. In the entrepreneurship literature greater perceived environmental uncertainty is perceived as an opportunity to achieve change thereby improving organization performance (McGrath and MacMillan, 2000). Alternately, Hart and Banbury (1994) argue less uncertain environments should be a predictor of better performance. McCabe (1990) argued there is a direct relationship between these constructs but was unable to prove this empirically. Improvements in our understanding of both constructs justifies further investigation:

- **H2:** Perceived environmental uncertainty is associated with better organization performance

Miller and Cardinal (1994) observe that a popular view in the strategy discipline is that firms confronted by greater environmental uncertainty do more planning so that they understand the external context better. Peters and Waterman (1982) and Mintzberg (1994a, 1994b) contend managers should be encouraged to mainly think creatively and balance this with some analysis and planning in strategy-making, to find novel solutions to uncertainty and ambiguity. Blending these insights with the new strategy-making model developed here, and also understanding of high strategy-making capability:

- **H3a:** The greater the perceived environmental uncertainty confronting the organization, the greater the emphasis on strategy-making.
- **H3b:** Greater perceived environmental uncertainty confronting the organization is associated with high strategy-making capability.
Figure 1  Strategy-Making and Organization Roles

Adapted from Hart (1992)

Role of Top Management

Perceived Environmental Uncertainty

Role of Organizational Members

Flexible Inputs

Intent Planning Thinking in Time Participative Entrepreneurial

Low Balance High Balance and High Performance Low Balance

‘Sense of strategic direction, direct intuitive understanding of future communicated plus formalization’

‘Active players, strategic conversations’

‘Liberate organizational members to experiment, take risks, innovate…’

Wild Ducks’

Organization Performance

Adaptiveness, Effectiveness, Efficiency

Adapted from Hart (1992)
There is a significant body of research that explores the relationship between strategic planning and/or process and performance. There is some controversy in the strategy discipline in relation to inconsistent findings in the literature, however, Miller and Cardinal (1994) and Andersen (2000) reviewed the planning-performance research and found support for this relationship. Inconsistencies were found to be due to methodological differences between studies (Miller and Cardinal 1994). With the new conceptualization of strategy-making in this paper this traditional relationship and also the association with high strategy-making capability merits investigation:

\[ H_{4a}: \text{Greater emphasis on strategy-making is associated with better organization performance.} \]

\[ H_{4b}: \text{High strategy-making capability is associated with better organization performance.} \]

To facilitate the test for moderation in relation to strategy-making, the variable which is the independent variable perceived environmental uncertainty and also strategy-making must jointly be associated with the dependent variable organization performance (Baron and Kenny, 1986). Hence:
\textit{H_5: Greater perceived environmental uncertainty and greater emphasis on strategy-making jointly predict better organization performance.}

Odom and Boxx (1988) demonstrated a relationship between greater perceived environmental uncertainty and planning sophistication. Miller and Cardinal (1994) confirmed a direct, positive relationship between strategic planning and performance. Miller and Schrader (1995) reviewed environmental uncertainty and strategic planning and highlighted examination of the relationship between environmental uncertainty, a strategic planning and/or process construct and performance as an opportunity for future research. Analysis of strategy-making elements and high strategy-making capability merits investigation:

\textit{H_{6a}: The greater the perceived environmental uncertainty confronting the organization, the greater the emphasis on strategy-making, the better organization performance.}

\textit{H_{6b}: The greater the perceived environmental uncertainty confronting the organization, the higher the strategy-making capability of organizations, the better organization performance.}

\textbf{DISCUSSION}

The literature review, definition of constructs, Figure 1, Figure 2, Figure 3 and several of the proposed hypotheses have been prepared to provide the basis for development of empirical proof of strategy-making as a mediator and as a moderator and to demonstrate the value to an organization of building strategy-making capability resources. Industry is often used as a control variable in these studies (Miller and Cardinal, 1994). Baron and Kenny (1986: 1176) set out a number of further statistical conditions for the analysis of the role of the mediator and moderator variable that is beyond the scope of this paper. Future research will prepare a manuscript reporting the empirical results of this study.

The key starting points for this paper have been the important Henry Mintzberg research legacy on strategy-making and the theoretical conceptualization of strategic thinking and its interplay with planning in strategy-making from Liedtka (1998a, 1998b). Whittington (2004) has flagged the need for more empirical research in this area where there is a significant gap. The theoretical and empirical writing in this area has its strengths and weaknesses and these have been highlighted in the literature survey.

A rare definition of strategic thinking and a new model of strategy-making has been developed and described in this paper leveraging this earlier insight. This is done in the spirit of strategic thinking practice suggested by Kenichi Ohmae in his classic text \textit{The Mind of the Strategist}, reassembling the
elements of strategic thinking discussed in the strategy literature into a new cohesive whole and linking this insight to recent observations on strategic planning.

The model developed in Figure 1 provides guidance on the different roles of top managers and line managers in strategy-making, and how different elements of strategy-making require different management inputs of time, communication, data analysis and creativity. The days of the CEO and a few top managers leading by command and their analysis of the business situation are less and less in 2007. The challenges of managing Generation X and Generation Y employees require greater management emphasis on 'soft' skills and people working together. The model of strategy-making developed here gives insight on how this can be done, with the command approach described by Hart (1992) at times showing its date – hence the greater emphasis on strategic intent.

Is the innovation to our understanding of strategy-making incremental or revolutionary from this paper? The vocabulary used in the model is not new but the selection and arrangement of elements in the model is. The vocabulary has been talked about by Mintzberg (1998a, 1998b), Hamel and Prahalad (1989) and Liedtka (1998a, 1998b) for some years now. The model of strategy-making proposed in this paper builds on previous research and extends knowledge in that:

- it is a pragmatic model informed by the evolution of the strategy discipline and explains what strategic thinking is and does not dwell excessively on what it is not (Liedtka 1998a);
- key terminology is clarified – specifically the terms strategic thinking, strategic planning;
- it has a stronger systems thinking component than preceding contributions, leveraging flexible inputs as an enabler of other strategy-making elements (e.g. Liedtka 1998a, 1998b);
- in contrast to Mintzberg (1994a, 1994b) this model encourages the influence of internal and external stakeholders (Hart 1992), including external management consultants; and,
- it accommodates the resource based view of the firm (Barney, 1991).

CONCLUSION
This paper presents an innovative new model of strategy-making well grounded in the received literature. The paper argues that greater perceived environmental uncertainty leads to greater emphasis on strategy-making for organizations, with the outcome of better organization performance. Research hypotheses are developed which would facilitate hypothesis tests for strategy-making as a mediator and moderator. Strategy-making has been a topical area in the strategy field in Europe and the USA, making an Australian study timely.
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