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The Adaptive Organization and Fast-Slow Systems

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Summary and Keywords

Contemporary organizations operate under turbulent business conditions and must adapt their strategies to ongoing changes. Sustainable performance can be achieved when the organization engages in interactive processes that link emerging opportunities to forward-looking analytics. But few organizations are able to practice this consistently. Fast processes performed by managers at the frontline respond to ongoing environmental stimuli and slow processes initiated by managers at the center interpret events and reasons about updated strategic actions. Current experiential insights from the fast processes can be aggregated systematically to inform the slow processes of reasoning. When the fast and slow processes interact they can form a dynamic system that adapts organizational activities to changing conditions.

Keywords: adaptation, collaborative learning, dynamic systems, fast and slow processes, strategic response capabilities

Introduction

The post-crisis environment has challenged conventional views on managerial rationality leaving more clout to market-based adaptation as an enabler of creative transformation under turbulent business conditions (Cheney, Lair, & Kendall, 2012). This repeats the conundrum of choosing between planned rationality and autonomous initiatives that respond to emerging market changes. However, this is a false dichotomy since slow central reasoning based on analytical rationality and autonomous responsive initiatives triggered by environmental changes should interact to form a dynamic adaptive system as a sustainable organizational response mechanism.

Sustainable performance can be derived from an effective strategy-making process orchestrated within an organizational structure that is conducive to dynamic adaptive responses as a way to retain competitive advantage under turbulence (e.g., Chakravarthy, 1982; Teece, Pisano, & Shuen, 1997; Teece, 2007). However, it is notoriously difficult for most organizations to achieve this on a permanent basis. This calls for proactive response behaviors combined with direction and economic optimization consistent with concurrent calls for exploration and exploitation (March, 1991). The need for effective response capabilities is accentuated by business contexts characterized by major technology shifts and ongoing innovation (Bettis & Hitt, 1995; Teece et al., 1997; Volberda, 1996). Response capabilities are viewed as a stimulus-response paradigm applied in biology where an organism's ability to respond to environmental stimuli determines its fitness for survival (Bettis & Hitt, 1995; Day, 1994).

Organization theoretical rationales typically promote a decentralized decision structure to accommodate better responses (Galbraith, 1994, 1995; Heydebrand, 1989; Nault, 1998; Zenger & Hesterly, 1997). All the while, the strategy literature has pointed to central planning as the means to search for innovative solutions while gaining economies from common direction and coordinated actions (Ansoff, 1988; Lorange & Vancil, 1995; Simons, 1990, 2000). Hence, the ability to respond to emerging opportunities while at the same time pursuing a planned strategic intent is an important underpinning of the complex strategy-making process and its ability to generate superior outcomes (Mintzberg, 1978, 1990; Mintzberg & Waters, 1985).

Organizations must cope with increasing information intensity, knowledge exchanges, and dependence on diverse intangible assets (Child & McGrath, 2001). Here the proposed design solution is to move decisions down to where the relevant operating information and expertise is located in the organization (Daft & Lewin, 1993; Volberda, 1996). This resonates with a broad literature advocating decentralization under environmental uncertainty (Bigley & Roberts, 2001; Child, 1997; Galbraith, 1994). At the same time, there is a realization that central integrative processes where managerial decisions are embedded in more rigid structures are important for effective business execution (Hill, Martin, & Harris, 2000; Jellinek & Schoonhoven, 1990). Therefore the challenge is to combine low-level experimentation with the rationality of high-level analytics-based planning. Here communication and information technology (CIT) can support the intermediating information processing needs between responsive decision-makers at decentralized units and top management at the center (Andersen, 2001; Galbraith, 1977, 1994).

In contrast to traditional views where change is driven by preplanned activities (e.g., Hayes, 2007), we conceive of adaptation as deriving from decentralized responses

attempting to exploit emerging opportunities and generating updated experiential insights. This perspective resonates with Tsoukas and Chia's (2002) referral to "organizational becoming" where responsive actions are taken to make sense of the changing conditions and institutionalize a particular cognitive representation of the business environment. Whitley (2003) refers to a move in organizational studies towards institutional frames for coordination, joint problem-solving, and delegated authority away from formal hierarchies. We adopt this perspective and argue for a dynamic adaptive model characterized by the structural features of integrative strategy-making.

In the following, the article first adopts the idea of combined fast and slow processing as a foundation for integrative strategy-making and the adaptive organization. It argues for the importance of updated experiential insights from managers at the frontline of the firm as a basis for collaborative learning that supports analytical reasoning conducted by the strategic leadership. The integrative strategy-making approach is described and used to outline the contours of the adaptive organization. Finally, we discuss the implications for organizational studies in general, and management practice in particular.

Background

Human cognition is affected by fast multifaceted response processes of actions and reactions against the surrounding world combined with slow analytical processes that assess the experiential insights obtained from the many fast encounters with the environment (Andersen & Fredens, 2013; Kahneman, 2011). The combination of fast and slow processes is needed to understand how the surroundings evolve and change over time in ways that can be given meaning and purpose as a yardstick for long-term outcomes. Emerging events are observed in the fast processes as they happen and various impressions from new situations are interpreted in analytical processes by projecting planned actions forward in slow, time-consuming reasoning. The intermediation between fast responses and slow analytical processing capabilities constitutes a dynamic system of ongoing learning and strategic adaptation (Thompson, 2010).

We use this fast-slow processing dynamic to understand the intermediating information exchanges that take place between individuals located in different parts of the organization and at different hierarchical levels. It is the local managers that execute the daily business transactions on behalf of the firm that will observe the subtle emerging environmental changes as first-hand experiences when people inside and outside the organization react to their responsive moves (Hallin, 2012, 2015; Hallin, Andersen, &

Tveterås, 2012). These insights can be collected to inform periodic forward-looking deliberations about direction and updated strategic actions. We refer to this dynamic combination of central planning and decentralized responses as integrative strategy-making (Andersen, 2004, 2013).

Integrative Strategy-Making

The conventional view of strategy is a periodic planning process where plans are executed subsequently and outcomes monitored (Ansoff, 1965, 1980; Anthony, 1965). The cycle is typically repeated once a year with outcomes considered multiple years forward in time and with regular management reporting. Strategic management is projected as a rational approach analyzing the business environment to identify strategic opportunities and set a direction for future activities (e.g., Schendel & Hofer, 1979). It implies a number of sequential process elements including development of mission statement, setting long-term goals, conducting environmental analysis, developing strategic action plans, and monitoring outcomes through strategic controls (Boyd & Reunning-Elliott, 1998). The analytical deliberations performed to update action plans and adjust the strategic course normally cater to organizational members around top management at corporate headquarters.

Some of the input to the strategy process may derive from initial business plans developed by line and operational managers as they develop divisional and departmental plans as part of the corporate strategy process (Richards, 1986; Schendel & Hofer, 1979). Yet, the strategy process is central in the sense that it is instigated by top management for long-term forward-looking reasoning to determine the future strategic direction. The implied planning activities analyze many aspects of the competitive environment and evaluate alternative options in a comprehensive, time-consuming, and consequently slow process referred to as strategic thinking.

An alternative view looks at strategy as deriving from initiatives taken by individual decision-makers throughout the organization. In a decentralized decision, structure power is moved down in the organization so low-level managers and employees can voice opinions and respond in their areas of responsibility without having to ask for permission. This means that individuals located closer to the relevant information and operational expertise can take independent initiatives in response to unforeseen circumstances (e.g., Child & McGrath, 2001; Daft & Lewin, 1993; Volberda, 1996). In decentralized organizations, local managers can respond quickly when circumstances change and thereby gain information from fast initiatives and reactions to them. The fast responsive initiatives

generate experiential insights as the local actors observe what happens within a relatively short period of time due to the quick feedback loop. Hence, the local decision-makers receive feedback from the core stakeholders they work with including colleagues, employees, customers, suppliers, business partners, etc. This creates a good sense of how the business environment is changing and how core stakeholders react, which normally remains invisible to top management. The experiential insights of local managers and frontline employees represent updated information about ongoing environmental changes (Hallin, 2012; Hallin; 2016; Hallin, Andersen, & Tveterås, 2012).

The fast experiential insights obtained by local managers at the frontline can be collected systematically and brought forward as updated information for the slow analytics-based planning activities conducted at the corporate center (for an overview of information aggregation methods, see Hallin, Andersen, Levine, & Tveterås, 2015). This provides an opportunity to make updated information about subtle environmental changes available to top managers for consideration in the long-term strategy deliberations. Top managers typically get their information from colleagues and peers in the industry and from internal management reports that may enforce existing environmental perceptions (Mintzberg, 2009). As a consequence, top managers can develop an increasingly biased conceptual understanding of the competitive environment based on their own past experiences that become outdated unless they are exposed to direct experiences from real business encounters at the frontline. The cognitive biases can escalate among executives as they become more distant from the day-to-day operations (e.g., Bazerman & Moore, 2009; Bettis & Prahalad, 1995). Confirmation bias is a widely accepted notion of inferential error derived from psychology (Evans, 1989, p. 41). Confirmation bias connotes "the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand" (Nickerson, 1998, p. 175). It usually refers to unconscious selectivity in the acquisition and use of evidence.

Hence, we argue that top management must be conscious about the experiential learning generated within the organization among local managers at the frontline as they engage in fast operational responses to changing circumstances (Hallin et al., 2012; 2014). By considering these updated insights in the forward- looking strategic thinking, top management can avoid being blindsided by confirmation biases. Therefore, the central planning analyses should be fueled by updated information from decentralized operational initiatives taken by low-level managers in response to changing conditions (e.g., Andersen, 2004; Andersen & Nielsen, 2009; Brews & Hunt, 1999). In short, the strategic thinking of top management must be connected to the ongoing experiential insights generated by local managers that work with the firm's core stakeholders in the daily business transactions.

Proposition 1: *Organizations that collect experiential insights systematically from local managers on an ongoing basis and make this information available to top management in the planning considerations will reduce incidents of confirmation biases*.

The planning process can develop a shared cognitive understanding of the competitive environment through informed discussions among key strategic decision-makers (e.g., Andrews, 1987; Ansoff, 1965; Hill et al., 2000). Involving local managers from different parts of the organization with different business responsibilities and functional experiences will broaden the discussions to a more diverse set of constituents with more nuanced views to bear in the strategic deliberations. The discussions performed during the planning process can uncover deeper understanding through the diversity of views that can be reconciled into a common interpretation of the competitive situation (Hendry, 2000; Page, 2007). The fast responsive decisions taken by empowered local managers and employees have the potential to explore alternative solutions to the changing conditions generating insights about what works in the emerging competitive environment. Autonomy and dispersed initiatives constitute a form of local experimentation that uncovers new business opportunities to be considered in the central planning process (Burgelman, 1996; Burgelman & Grove, 2007).

Relying on insights and observations from local managers in decision-making reduces confirmation biases and gains competitive information. For example, the executives of apparel company Lululemon explained in an article how they stoked demand for Wunder Under pants, Scuba hoodies, and racerback tanks. Unlike most retailers, Lululemon does not gather customer data, nor do they build lots of new stores, offer generous discounts, or purposely stock lower inventory. Lululemon trains its managers and workers to eavesdrop, listen to complaints, and share the information with top management. A large chalkboard lets customers write complaints and suggestions that are passed on to top management, giving executives a sense of current customer preferences (*The Wall Street Journal*, 2012).

The slow forward-looking planning process must consider current experiential insights from fast initiatives taken within the organization, so the executives' environmental knowledge is updated regularly. Here, the fast responses taken at low-level decision nodes can obtain needed information to coordinate initiatives through lateral communication between operational managers (Andersen, 2005; Galbraith, 1994; Heydebrand, 1989). Similarly, the interaction between individuals engaged in the slow planning activities and the fast responsive initiatives can be enhanced by horizontal communication between managers at different hierarchical layers from frontline employees and low-level managers to executives and top managers. Exchange of general information, updated insights, and specialized knowledge among individuals in all parts

of the organization is a prerequisite for collaborative learning and innovation that is enhanced by diverse knowledge and insights. This underlying exchange of information can include formal management reports and informal communication links among managers facilitated by information technology. This leads to the following proposition:

Proposition 2: *Organizations that encourage exchange of insights among individuals across different functions and management levels generate more creative solutions when dealing with uncertain conditions*.

A combination of fast and slow processes forms an underlying dynamic allowing organizations to take responsive initiatives, learn from them, and use these updated insights to generate adaptive strategic moves. The implied dynamic is a meta-stable system with no equilibria and fix-points, and constitutes an infinite set of environmental factors in continuous movement (Kelso & Engstrøm, 2006). The dynamic of combined fast and slow processes allows the organization to engage in non-linear adaptive moves over time. The dynamic systems in the environment are notoriously difficult to predict because it is impossible to "decompose the systems into subsystems, solve each subsystem individually, and then reassemble the system into complete solutions" as in analyses of linear systems (Pfeifer & Bongard, 2009, p. 93). Hence, an internal dynamic based on fast-slow interaction can structure organizational activities as immediate responses and insights from experiential insights gradually modify the strategy when the environment is unpredictable (e.g., Bettis & Hitt, 1995). That is, an integrative strategy-making process constituted by slow forward-looking strategic thinking and updated insights from dispersed operations forms a dynamic adaptive system that constitutes the response capabilities of the firm (Andersen & Fredens, 2013; Hallin & Andersen, 2014).

Employees at a variety of businesses are often encouraged by their companies to "doodle" ideas and explain complicated concepts to colleagues. Whiteboards have long been standard conference room features incorporating chalkboards and writable glass to spark creativity. Organizations teach their employees to deal with uncertainty and complexity by taking visual notes. Other companies, such as vacation-rental company HomeAway, Inc. and retailer Zappos, hire graphic recorders to draw what is discussed at meetings in cartoon-style to engage employees and share insights. Doodling proponents say it can generate ideas as it fuels collaboration and communication. It is especially helpful among global colleagues who do not share a common first language (Silverman, 2012). Applying doodling is a digital culture that gets employees from various functions to look away from their devices and express emotions too complex for words. Research in neuroscience, psychology, and design shows that doodling can help people stay focused, grasp new concepts, and retain information (Andrade, 2010; Schellenbarger, 2014).

Internal Communication

The organizational decision structure and the associated communication and information processing systems constitute essential features of integrative strategy-making. Centralization confines decision-making to the top management echelons, whereas dispersion of decision rights allows low-level managers and employees to take immediate responsive actions in view of environmental changes within their areas of responsibility. Hence, turbulent environments increase the amount of available information from among multiple competence-rich and knowledgeable individuals (Child & McGrath, 2001). By moving immediate responsive decisions closer to where the operational insight and expertise is located, firms can gain access to a multiplicity of relevant and current information (Daft & Lewin, 1993; Volberda, 1996).

A decentralized decision structure can coordinate responsive initiatives through lateral (horizontal) communication links between operational managers and individual specialists in different parts of the firm (Achrol, 1997; Galbraith, 1995). Yet, these non-hierarchical and autonomous structures (Castells, 1996; Galbraith, 1994; Heydebrand, 1989) need central integrative processes to enhance strategic effectiveness and economic efficiency (e.g., Hill, Martin, & Harris, 2000). Despite its ability to foster immediate responses, decentralization does not represent a sufficient condition for sustainable competitive advantage. Here communication-enhanced intermediation between decentralized responsive initiatives and coordinated deliberations on planned interventions provide the foundation for more effective solutions. This leads to the following proposition:

Proposition 3:*Organizations that combine a decentralized decision structure with communication and information systems to exchange information between individuals across functions and management levels develop more effective solutions to deal with uncertain conditions and complex issues*.

Vertical communication channels and horizontal management information systems can bring current market observations and experiential insights with new business propositions to the attention of top management engaged in the planning of forward-looking strategic actions. Here the literature pinpoints how the fast decentralized information updating system is anchored around low-level actors and how the slow strategic reasoning system is anchored around top management at the corporate center.

Based on data from 50 public US-based firms, Andersen and Segars (2001) found that IT-enhanced internal communication supports a decentralized decision structure and

improves financial performance. The indirect performance effect of IT derives from the support of a decentralized structure that enables individuals to take responsive actions. IT can facilitate communication and foster organizational learning in decentralized organizational settings. Hence, communication among individuals across functional areas and hierarchical levels makes it possible to update the forward-looking planning assessments with current insights from decentralized initiatives as the basis for generating effective solutions to uncertain and complex issues.

Collaborative Learning

Creativity and innovation constitute evolving properties derived from the intermediation between the fast and slow processes where collective cognitive understanding is formed in combined processes of periodic reasoning and ongoing responses. Ideas arise from both processes although the final judgment is derived from the slow forward-looking reasoning. When activities are carried out by actors throughout the organization, the fast decentralized decision processes are at play where responsive initiatives are taken in view of faulty assumptions and accommodating emerging market developments. The intuitive sensing of the experiences obtained from the responsive initiatives is an essential part of the fast system and these insights can be passed on to the slow system as updated information to enlighten considerations about corrective strategic actions.

Individual local managers do not act completely out of their own volition but as social beings they conduct their daily transactions to pursue a common organizational purpose. They coordinate the responsive initiatives by communicating horizontally with various affected actors and specialists to make sense of the situation and coordinate immediate responses (Lieberman, 2007). The ability to engage in responsive initiatives when conditions change is important for the subsequent ability to adapt the strategy. As Andy Grove (1996) notes “the process of adapting to change starts with the employees, who through their daily work, adjust to the new outside forces.” The local managers that execute, perform, and oversee the day-to-day transactions on behalf of the organization face the new challenges head-on and respond immediately with initiatives that are tested through trial-and-error learning (Grove, 1996). The possibility to engage in dynamic interaction between knowledgeable and insightful individuals is important as the diverse experiences of many individuals in different parts of the organization enhance learning.

The challenges associated with new unpredicted and complex situations characterized by high uncertainty require the collaborative efforts among many individuals. The sheer amount of information needed to generate viable solutions to highly complex issues exceeds the capacity of any individual person (Antonenko, Paas, Grabner, & van Gog,

2010). That is, dealing effectively with uncertain and complex contexts calls for different types of knowledge to generate ideas and creative solutions based on diverse insights (Bransford, Brown, & Cocking, 1999). Collaborative learning among many individuals in a social context, such as an organization, is more effective developing solutions to highly complex strategic issues in turbulent environments. This leads to the following proposition:

Proposition 4: *Organizations that apply collaborative learning processes as intermediating interfaces between fast experiential insights derived from responsive actions and slow forward-looking reasoning develop better adaptive solutions under turbulent conditions*.

The cognitive limitations of humans can be circumvented by engaging in collaborative learning that draws on diverse knowledge and insights of multiple individuals (Kirschner, Paas, & Kirschner, 2009). This can be accomplished through intermediation between the fast responsive initiatives at the operational level and the slow forward-looking planning process at the executive level. Diverse information can be processed among many individuals located at different functional and managerial levels of the organization to facilitate collaborative learning and generate better solutions to complex strategic issues. This way, a multitude of individuals counting central decision-makers close to top management and low-level managers close to the daily operations can be engaged in the collaborative learning processes.

The multinational company LEGO Systems A/S practiced frequent intervening meetings resembling a “war room” setting (Shaker & Gembicki, 1999) for interaction between top management, regional managers, and functional experts to assess environmental changes and devise appropriate adaptive responses. These meetings systematically analyzed competitor moves, changes in customer needs, cost structures, etc. in the global markets and assessed possible responses through IT-enhanced interaction between regional and functional executives. The outcome of these meetings was concrete action plans to deal with the identified issues adapting the organization towards the emerging competitive reality (Andersen, 2013). Thus, collaborative learning processes across organizational functions can also be fostered in periodic interactive strategy follow-up meetings involving key decision-makers.

Organizational Features

The communication and information systems can support a decentralized organizational structure with important intermediating information links for integrative strategy-

making. The fast-slow processing system implicates interaction between essential stakeholders including the firm's own employees that perceive the stakeholders' experiences through direct contacts as an important source of strategic intelligence (Hallin, 2012; Hallin, 2015; Hallin, Andersen, & Tveterås, 2012). However, in the social context of organizations, it matters how the individuals perceive the environment they operate in and how they interact with each other influenced by structures, routines, rules, and norms that guide accepted behavior. This means that people interact in particular ways, influenced by prevailing values and beliefs and commonly accepted norms.

The way individuals interact in an organizational human network can "exhibit complicated, shared behaviors without explicit coordination or awareness" (Christakis & Fowler, 2009, p. 25). Hence, a network of individuals can form a collective intelligence without a formal control center and with non-linear emergent properties that defy simple aggregation (Kaufman, 1993). The underlying creative and innovative processes are not just constituted by individual mental activities but derive from the way people act and interact. Hence, it is argued that "the label 'creative' arises from the synergy of many sources and not only from the mind of a single person" (Csikszentmihalyi, 1996, p. 1). The innovative behavior depends on an organizational setting with creative surroundings with the right stimuli among interacting networked individuals. Innovation through collaborative learning requires a setting where individuals can share knowledge and updated insights and where prevailing beliefs, attitudes, and norms support the exchange of information in a social system (Richerson & Boyd, 2005). The socio-economic development of human innovation is typically characterized by the accumulation of smaller successive modifications that gradually increase efficiencies in small incremental steps rather than in the form of random mutations (Richerson & Boyd, 2005). Hence, successful innovation is often constituted as slight modifications to earlier approaches, or derives from recombined versions of prior innovations (Mesoudi, 2011). Fast responsive initiatives taken throughout the organization generate diverse experiential insights as the basis for developing adaptive solutions through collaborative learning that can be fed into the slow forward-looking considerations about updated intermediate action plans and adaptive strategic actions. This reasoning motivates the following proposition:

Proposition 5: *Organizational settings that value current experiential insights generated from decentralized initiatives and consider this updated information in the slow forward-looking planning discussions make better strategic decisions for ongoing adaptation to uncertain and complex conditions.*

The implied strategic adaptation mechanism whereby individuals in groups collaborate to exchange updated information that generate creative solutions and collectively consider

the implications for the whole organization is a unique human phenomenon. That is, collaborative learning is not merely a function of social behavior but derives from distinctly human mental processes (Richerson & Boyd, 2005). The ability to engage in responsive actions and sharing the ensuing experiential information through collaborative learning is an economizing way to deal with turbulent conditions. This dynamic system creates experiential insights and uncovers viable solutions to adapt the strategy in ways that can be applied more broadly across the entire organization through coordinated replication of tested solutions.

It is argued that "organisms capable of imitation can afford to be choosy, learning when learning is cheap and accurate, and imitating when learning is likely to be costly or inaccurate" (Richerson & Boyd, 2005, p. 113). So, fast-slow processing is an effective way to deal with unexpected developments under uncertain conditions where interactive communication facilitates collaborative learning and intermediating discussions determine when to replicate activities. Hence, collaborative learning is superior both in terms of cost and adaptive capacity. The exchange of information between individuals with diverse operational and managerial insights and experiences lead to more creative, innovative, and thereby superior solutions to deal with highly ambiguous and complex strategic issues.

Intermediating Management Processes

The literature tells us little about how to organize the strategy process attended to the intermediation between the slow central planning and fast decentralized responses. Hence, the strategic controls implied by the conventional planning model depict a simple long-looped diagnostic top-down process where realized outcomes are reviewed against intensions at the end of each planning cycle (Ansoff, 1980; Schendel & Hofer, 1979; Simons, 1994). This is often pursued with the support of elaborated balanced scorecards with quarterly or monthly follow-up interventions (e.g., Kaplan & Norton, 2001). However, better methods may use communication and information systems to integrate individual decision-makers in horizontal and vertical links for such strategic updating purposes (e.g., Aldrich, 2008; Daft, 2010; Galbraith, 1977).

The strategy field has long acknowledged a need to monitor strategic outcomes frequently in dynamic environments to detect emerging events that can affect strategic objectives. The strategic control dilemma relates to uncertainty about competitive effects of intended strategies and uncertainty about means-ends relationships of planned activities (Goold & Quinn, 1990). Goold and Quinn (1990) suggested the use of qualitative

outcome indicators and many of them rather than adhering to few quantitative performance measures. However, these aspects are rarely addressed in strategy research and the dominant depiction of strategic control remains a diagnostic process conducted around top management at the strategic apex of the organization.

In view of this, Simons (1990, 1994) introduced the notion of interactive controls with four main characteristics of (1) regular use by top management, (2) interaction with low-level operating managers, (3) face-to-face discussions with subordinates, and (4) a platform for ongoing debate. This way an interactive control system can intermediate between the forward-looking planning considerations of top management and the experiential insights generated from responsive initiatives in the operating entities. Hence, the interactive control system "enables top-level managers to focus on strategic uncertainties, to learn about threats and opportunities as competitive conditions change, and to respond proactively" (Simons, 1994, p. 81). It may facilitate open dialog between top managers and subordinates exchanging insights about the effects of responsive initiatives and strategic considerations taken at the corporate headquarters in view of environmental trends. In other words, it represents a potential forum for collaborative learning that involves current experiences from fast responses taken by managers in operational entities and the slow forward-looking strategic reasoning considered around top management.

Dispersion of decision power allows local managers to take exploratory initiatives in response to emerging events that may uncover the effectiveness of new business opportunities. The planning process with related strategic control systems can complete forward-looking evaluations of alternative strategic options fostered by decentralized experimentation (Ansoff, 1980; Richards, 1986). The related management communication and information systems can be used to monitor organizational performance and generate understanding about deviating outcome effects that challenge prior assumptions (Simons, 1990, 2000). Hence, integrative strategy-making has the potential to learn and improve the understanding of the changing business environment and thinking about possible solutions inspired by updated experiential insights from the people engaged with the daily operations of the firm.

The immediate responses accorded by dispersed managerial decisions affect a multitude of individual stakeholders involved in complex and non-linear social interactions both within and outside the firm (e.g., Bower, 2005; Bower & Gilbert, 2007). Since the planning process tries to lay out a more certain strategic path through rational analytical deduction and linear computations, the combination with fast experiential insights from immediate responses creates a contrast between non-linear and linear processing. This contrast is reconciled by the complementary slow thinking process and fast responsive process where current insights update the forward-looking strategic thinking.

The logic of this intermediating dynamic is illustrated in Figure 1. Fast actions are taken at the operational level, where local managers take responsive initiatives in view of new developments in the surrounding business environment. They engage in experiential learning by observing the reactions of various stakeholders and achieve information about them from subordinates to perform responsive initiatives and thereby gain insights about what works under the new circumstances and what does not work. These frontline managers sense the effects of the responsive initiatives applied in their daily work situations, and form anticipations about the future performance implications of the initiatives. The slow planning process engaged in forward-looking reasoning takes place at the strategic level with top management and senior managers and administrative staff around them attempting to set a strategic direction based on rational analysis. They use recorded information and available data about environmental trends in demand, competitive, technological, and regulatory developments to inform the analyses. In essence they plan future activities in line with the general strategic direction by integrating different business activities to improve effectiveness and coordinate operations for economic efficiency.

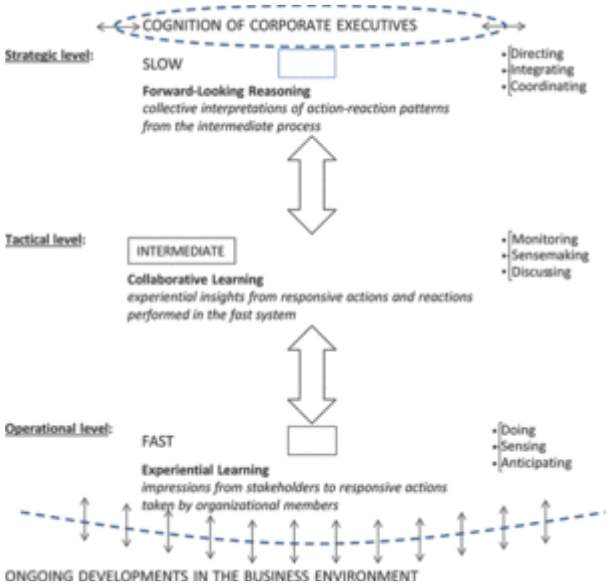

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Figure 1. The Intermediating Role of Collaborative Learning.

The question is what information top management has access to when they conduct their forward- looking analyses. Much of the information is transferred to top management through outside contacts with other executives and industry specialists as well as internal management reports from corporate informants. However, the updated experiential insights gathered among low-level managers are rarely made available to top management. In line with the slow-fast processing rationale, we therefore suggest that corporate executives should consider the current insights that reside at the organization’s operational level generated by managers. This kind of updated information can be channeled to executives informally by engaged middle managers. In most organizations this is a somewhat unusual and unreliable communication channel with

little assurance that important environmental information actually gets communicated, which calls for more systematic intermediation mechanisms to exchange tactical information.

The current experiences and insights among operational managers and employees can be collected systematically using different information aggregation and crowdsourcing techniques and furnished to the strategic thinking of top management as updated information (Hallin, 2012, 2015; Hallin, Andersen, & Tveterås, 2012). This can inform top managers and central analysts with current insights about ongoing changes in the competitive environment that may serve as a basis to engage in direct discussions between low-level employees and top managers. This can possibly be accomplished in frequent war room sessions or in interactive control processes to uncover environmental uncertainties (Simons, 1994). Hence, there is a need for these types of collaborative learning mechanisms to exchange diverse insights and make sense of environmental developments to enrich the slow forward-looking reasoning (Figure 1). While this sounds like a fairly obvious reasoning it is not pursued by many organizations in practice.

The ideal interactive approach depicts a dynamic system where fast, slow, and intermediate processes operate interchangeably, linked together in a flexible manner through management practices, communication and information systems. The fast responsive initiatives taken at the operational level constitute relatively short learning cycles with fast experiential feedback loops. The slow forward-looking reasoning at the strategic level reflects a longer learning cycle where feedback on realized versus intended outcomes takes a longer time and consequently is outpaced by current insights from the fast experiential feedback.

This depicts a relatively high-frequency dynamic system of intertwined processes of fast experimentation and updating, ongoing monitoring, on-line communicating, and collaborative learning around slow reasoning that effectively binds the slow-fast processing system together. The organization must find a balance between the periodicity of formal management reports, the frequency of frontline updating, the sequence of interactive control sessions, and the use of informal communication systems over time tailored to the firm-specific circumstances. Hence, effective organizational adaptation under turbulent conditions hinges upon settings that facilitate collaborative learning including cultural norms, attitudes, and expectations that encourage intermediating discussions and enable communication between individuals in specialized operating entities and the central planning function.

Discussion and Conclusion

Individual local managers and other core stakeholders around the firm like customers, suppliers, and various partners observe ongoing changes in the environment and gain insights from responsive initiatives taken to deal with these changes. When this updated experiential information is brought forward for consideration in the central planning deliberations it will support the sense making analysis and create a better understanding of the emerging conditions (Hallin & Andersen, 2014). Such a dynamic system of slow-fast processing creates a balance between ongoing identification of emerging contextual situations and central forward-looking reasoning that stipulates the potential consequences and thereby enhances the ability to adapt to emerging changes. Organizations that embrace collaborative learning by involving diverse perspectives of many individuals in internal discussions and deliberations deal better with unprecedented complex situations with stronger more durable outcomes.

The superiority of interacting fast and slow organizational processes is supported by the rationales of individual motivation, collaborative learning, and social networking benefits. Decentralization, autonomous initiatives, and individual engagement is conducive to innovation and generate more creative responses to the environmental changes. The responsive initiatives taken by individuals at lower levels of the organization are experiments that generate updated insights about the changing conditions and constitutes highly relevant current information for the central forward-looking strategic thinking. Collaborative learning efforts among individuals with different functional backgrounds and experiences can deal more effectively with the challenges imposed by turbulent conditions. Hence, knowledge creation among individuals in a group will thrive on intension, autonomy, and fluctuation (Nonaka, 1994). Intension provides a sense of direction with aspirations to guide autonomous initiatives. A certain level of autonomy gives personal freedom to act and absorbs new knowledge that fosters creativity. Uncertain conditions impose fluctuation that forms a stimulating creative tension. Local managers and employees will always try to take initiatives within their means in response to observed changes and thereby explore alternative ways to deal with the changing surroundings while sensing the reactions among the firm’s core stakeholders. This means that creative, innovative, responsive individuals in organizations will require a certain level of autonomy and slack combined with aspiring long-term goals to drive the necessary creative tensions.

The human mind operates through fast and slow processing systems where the interacting processes combine current experiential updates from the environment with interpretations of their longer-term strategic consequences as a basis for informing

updated forward-looking decisions. The individually observed experiences with responsive actions around organizational sub-units combined with central evaluations of diverse insights provide a strong foundation for updated cognition about the environmental changes. Hence, effective organizations enable ongoing observations from responsive actions that experiment with new ways to do things where intense internal communication feeds these insights into the forward-looking strategy considerations.

This requires proper structure, processes, systems, and an organizational culture that is conducive to a dynamic adaptive system based on interacting fast and slow processes that combine experimentation from dispersed responsive actions with collective learning to generate viable solutions through forward-looking analyses. It takes leadership to instill and enable such a dynamic interactive system in an appropriate organizational structure with supportive communication and information systems to facilitate the needed interaction. The strategic leadership role becomes that of an enabler for effective fast-slow processing capabilities within an organizational setting that is conducive to individual interaction and collaborative learning. The implication for management practice is that individual cognition matters and there is a need to involve local managers actively to facilitate interactive information exchanges across functions and hierarchies. This implies a leadership priority to instill responsive entrepreneurial behaviors among people in the organization supported by organizational structures and systems that facilitate local experimentation and collective learning across a broad set of actors while submitting potential solutions to the forward-looking scrutiny of central planning.

However, while this depiction of the dynamic adaptive organization circumscribed within an integrative strategy-making processing approach sounds very plausible and within the confines of generally accepted views across the strategy and management literatures, few organizations live by these deeds. In short, it is easier to describe than to demonstrate in practice. Nonetheless, the awareness of this type of idealized prescription may serve its purpose by increasing general awareness about the essential leadership traits required to make the adaptive organization come true.

Effective organizational adaptation thrives on a setting of collaborative learning with organizational norms, attitudes, and expectations that encourage experimentation and ongoing discourse in all parts of the firm. It implies discussions around responsiveness to emerging changes and actions in different operating entities that create specific insights related to the local entities and their immediate task environments. These insights can be exchanged with individuals in other parts of the organization, collected, and communicated to central decision-makers as updated information for their strategic planning considerations. Hence, both the local experiential discourse with enabling knowledge connections between specialized communities and informed forward-looking

reasoning in the central planning function is important when organizations try to deal with complex strategic issues.

The proposed organizational setting is consistent with empirical studies of corporate entrepreneurship where strategy making is characterized as environmental scanning, planning flexibility, deep involvement (locus), and interactive strategic control systems (Barringer & Bluedorn, 1999; Simons, 1994). These structural elements also conform to the premises of the Bower-Burgelman model (Bower, 2005; Burgelman, 1996) where top management forms the corporate structure and direction where responsive initiatives taken by lower-level managers are the sources of strategic opportunities. This emphasizes the important leadership role of driving the full entrepreneurial potential searching for viable future business activities (Sathe, 2003).

The proposed fast-slow systems thinking is a useful frame to identify and understand the important interaction between organizational processes that constitute the dynamic capabilities of a firm. The fast probing processes and their interactions with slow reasoning processes provide the means to evaluate small adaptive moves, select solutions that work, and convert them to institutionalized activities where planned coordination enhances the economic efficiencies. The decentralized experimenting initiatives are de facto small probes testing the viability of alternative solutions to the changing competitive context. Hence, collective learning and interactive control processes with supportive communication and management information systems can facilitate the development of good solutions to deal with environmental changes. In short, the intermediation between fast responses and slow thinking processes constitute an effective way to adapt to highly dynamic and complex environments.

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