

THEORIZING AROUND MUSHINESS AND EPHEMERALITY: THE CASE OF EMERGING TECHNOLOGIES AND BUSINESS STRATEGY¹

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Abstract

This paper attempts to provide a researcher-friendly approach for building theories to better understand how emerging technologies are shaping and are shaped by business strategy in enterprises. Mushiness connotes being soft, squashy, slushy, and elusive to having fixed boundaries and separability -- as the interaction between IT and strategy is. Ephemerality connotes being fleeting, short-lived and transient as emerging technologies in their continuous morphing appear to be. Hence the title of the paper.

The paper first attempts to frame the issue in a way that is conducive to better theory building when concepts are mushy (as strategy in turbulent environments is) and ephemeral (as the half-lives of emerging technologies are). The paper proposes that the relationship between emerging technologies and strategy cannot be well examined without taking into account a critical third constellation of variables related to the business environment. The paper then explains how each of these three constellations when viewed in turbulent environments, is replete with elements of mushiness and ephemerality. The paper illustrates how each of those phenomena are more like “clouds” than “clocks” in the parlance of Karl Popper. Based on that, the paper then argues that the theoretical examination of the relationship between these constellations is best examined through a conceptualization that is grounded in organizational actions and decisions faced by enterprises (and expressed as active verbs in the style of Karl Weick): strategy formation, emerging technology adoption, and environmental sensing.

Based on the conceptualization of the three constellations, the second part of the paper provides a “mindful” theorizing process for the researcher that manages this complexity. It draws on the notion of Rittel’s “wicked problems” and Checkland’s Soft Systems methodology to come up with a process and decision pathway that includes four sets of activities that we have named: Enactment, Engaged Instancing, Elaboration, and Exposition. Conceptual templates for guiding each of those activities are provided.

The paper ends by examining the merits, perils, and promise of this mindful groundedness theorizing approach to the study of strategy and emerging technologies.

I FRAMING THE RESEARCH ISSUE

There has been much interest in the IS community in the use of IT for strategic advantage since the early 1980s exemplified by the early work at Harvard Business School (cf. McFarlan & McKenney, 1983; Parsons, 1983;1984; McLoughlin et. al. 1983) as well as work disseminated from marketing to the IS and computing communities (cf. Ives & Learmonth, 1984). The broader work to examine the interaction between strategy and IT has continued in the scholarly community. *JSIS* has been one of the international journals that has focused on this topic for the last 15 years, and has captured the efforts of the North American, the European, and to a certain extent, the Asian schools of thought on strategic information systems. The strategy-IT interaction paradigms and models in *JSIS* have been come increasingly nuanced and multi-faceted (cf. Hidding, 2001) and increasingly empirically tested (cf. Rivard et. al., 2006). Work has continued on the topic in the other IS academic flagship journals such as *MIS Quarterly* (cf. Piccoli and Ives, 2006; Oh and Pinsonneault, 2007) and *Information Systems Research* (cf. Pavlou and El Sawy, 2006). However, we have all acknowledged that there is so much we do not yet know about the nature and dynamics of the strategy-IT interaction relationship, and its numerous contingencies and influencers.

This is especially true when the nuances of emerging technologies are brought into the foreground. Berthon et. al (2007) elegantly point out --- by investigating its etymological roots -- that technology is a mode of revelation and is what they call an emergent image-in-action, rather than just an instrumental means to an end. Thus in their definition, all technologies transmutate and morph, not just emerging technologies – thus all technologies needed to be treated as emergent. Furthermore, we contend that emerging technologies also exhibit ephemerality as they continuously morph. Ephemerality connotes being fleeting, short-lived and transient. Emerging technologies exhibit properties and impacts that appear for short windows of time and then wane into the background. For example, the adoption of virtual world technologies such as Second Life made a short adoption blip into the enterprise space in 2007 as a strategic move (cf. Ives & Piccoli, 2007) and at this writing have waned into the background with enterprises focusing their strategic attention and resources elsewhere. For the researcher who wanted to study the phenomenon to better understand its nature and impacts as they unfolded, that first “blip window” appears to have come and passed. Thus, the half-life of emerging technologies in the context of strategy can be viewed as ephemeral.

It is not difficult to realize that any attempt to examine the general relationship between emerging technologies and business strategy is replete with possibilities of mediating and moderating variables that can quickly complicate and overload the examination. However, that relationship is most relevant and critical in practice in organizational settings in which the business environment is turbulent and dynamic. The adoption of emerging technologies in enterprises is often associated with first-mover competitive advantage in fast-moving environments, with taking risk in conditions of high uncertainty, and with an attitude to embrace -- rather than avoid -- innovation and change (cf. Swanson & Ramiller, 2004). We have thus quickly concluded that it would be distorting and unrealistic to not explicitly include a constellation of variables related to some form of conceptualization of the business environment in examining the relationship between emerging technologies and strategy. Thus, even in the most rudimentary and minimally specified examination, we need to look at the interactions between at least a trio of sets of variables: technology, strategy, and environment. The conceptualization of a critical third constellation of variables related to the business environment cannot be ignored in this examination of how emerging technologies shape or are shaped by strategy.

It is also not difficult to realize that both the concepts of strategy and environment and their constellations of variables are multi-faceted and fluid, especially in conditions of turbulence. We term those as “mushy.” Mushiness connotes being soft, squashy, slushy, and elusive to having fixed boundaries and separability -- as each of these constellations of variables are. As we show below, the theoretical definitions and dimensionalities of those concepts are varied and controversial, as the phenomena that surround them are not well understood and murky.

We examined the various paradigms and models of strategy formation in the strategic management literature. We noticed that it was only as recently as 1999 that one of the more insightful and veteran thinkers of the strategic management literature, Henry Mintzberg, attempted to articulate the different schools of strategy formation in a way that was understandable to practice in the *Sloan Management Review* (Mintzberg and Lampel, 1999). He likened strategy researchers to blind people grabbing some part of the strategy formation elephant in trying to unlock the mysteries of the beast. He and his co-author also facetiously noted that it was more of a photo safari in which researchers kept a safe distance from the animal, while managers had no choice but to cope with the entire beast.

They concluded that they needed better practice, not neater theory. Certainly, the increasing turbulence of the business environment has added to the complexity of providing advice to practice. Even the quintessentially confident strategy consulting firm McKinsey & Co. acknowledges the difficulty of deciding how to make shape-or-adapt choices in uncertain business environments in an article aptly titled “Making the Most of Uncertainty” (Courtney, 2001). Even practitioner-reassuring publications such as the *Harvard Business Review* acknowledge that strategy should be treated as a “wicked problem” (Camillus, 2008).

We propose that in the case of mushy phenomena, one way to get a handle on the phenomenon that is linked to reality and practical relevance is to adopt a perspective that is grounded in organizational actions. We thus suggest that the initial perspective around which theorizing occurs is one that is grounded in the decisions and actions faced by enterprises. Thus, the constellation of each of these three sets of variables are best conceived as verbs in the tradition advocated by Weick (1969). This kind of theory is characterized by generalization-in-context, providing enough abstraction that researchers can adapt the theoretical ideas to other problems, enough context that we can apply insights from the findings to the world of practice (Dey, 1999). We thus propose that the three constellations of variables are labelled and conceived in terms of organizational actions: *emerging technology adoption*, *strategy formation*, and *environment sensing*. We examine each of these constellations in turn for the remainder of this section.

Grounded Action Constellation #1: Emerging Technology Adoption

As IT artifacts shift towards explicit understanding about specific functions with distinctive cultural and computational capabilities existing in various social, historical and institutional contexts, it would hard to capture with single, one-size-fit-all conceptualizations of technology. Given the context-specificity of IT artifacts, as Orlikowski and Iacono point out, IS researchers develop a multitude of types of investigations, varying question, focus, methodology, and unit of analysis.

Emerging IT artifacts and the way of its usage in adoption or diffusion processes are deeply fused and actively interact with organizational factors, in turn, influence individual cognitive processes. After TAM, alternative theories struggle to provide endogenous basis in studying bidirectional relationship between emerging technology and variety of users which constantly evolve over changing context, purposes, and environments. Indeed,

emerging IT or IT innovations can be analyzed in multiple-layered units; individuals, working units, organizations and community. To examine the phenomenon of emerging IT penetration, mindful researchers need to clarify what actions of interests at which unit of analysis among specified users for what purposeful goals under what situation would be interpreted. Lacking awareness of analyzing various interactions with artifact under specific types of users, strategic goals, and situation might mislead researchers own interpretation on the phenomenon.

According to Weick (1990), IT innovations are often subject to “several possible or plausible interpretations and therefore can be esoteric, subject to misunderstandings, uncertain, complex, and recondite”. Organization or enterprise itself, consists of multiple strategic goals, functional divisions, and complex processes. A researcher, who started to examine emerging IT adoption, might confront ambiguous and disruptive issues of organizational transformation according to strategic planning or environmental change. Not only in the organization itself, but also larger communities face upscale escalation or downscale disruption in their experience of practice from emerging technology, such as Web 2.0.

While all these users- voluntary or required individuals, functional groups, enterprises, and communities-experience interaction with emerging IT, understanding and clarifying each activities of interaction might be not obvious. Swanson et al. (2004) identified four processes of organizational innovation by combining elements of Rogers’ (1995) innovation-decision process model as comprehension, adoption, implementation, and assimilation. Based on Swanson et al. (2004), the firm’s innovation journey begins with comprehension through the sense-making efforts of its members. If adoption is entertained, a deeper consideration of the IT innovation follows in which the firm typically develops a supportive rationale, or business case. The implementation process that follows then calls for a myriad of considerations, choices, and actions that will shape the transition. Assimilation commences as the IT innovation begins to be absorbed into the work-life of the firm and to demonstrate its usefulness. In time, the innovation may come to be infused, and routinized (Cooper and Zmud, 1990) woven in to the fabric of the organization’s work systems, even as the latter undergo their own adaptive change.

Researchers can understand IT as having higher-order capabilities, as Winter (2003) points out, which enable it to adapt to new uses or conditions by acquiring or releasing

resources, creating knowledge, forging alliances and making acquisitions. IT can be studied not only in terms of implementation of intended functions, but also in how it shapes the scope of possible abilities, actions or directions. Pavlou & El Sawy (2006)'s notion of IT capability, for example, involves helping business units to acquire, assimilate, transform and exploit existing resources to generate new knowledge. It also helps to create market orientation by implementing new ways of performing services and responding to market intelligence to capture changing customer needs.

Mindful researchers need to be able to understand interacting actions with emerging IT artifact based on individual, organizational and society level. He/she can distinguish actions related to comprehension vs. adoption or adoption vs. implementation of IT effects in different levels. Most of all, making grounded interpretation of each action will be fruitful if he/she is based on grounded theory. Grounded theory will further enable researchers to identify and explore new phenomenon or characteristics in the inter-relationship between IT artifact and organizations.

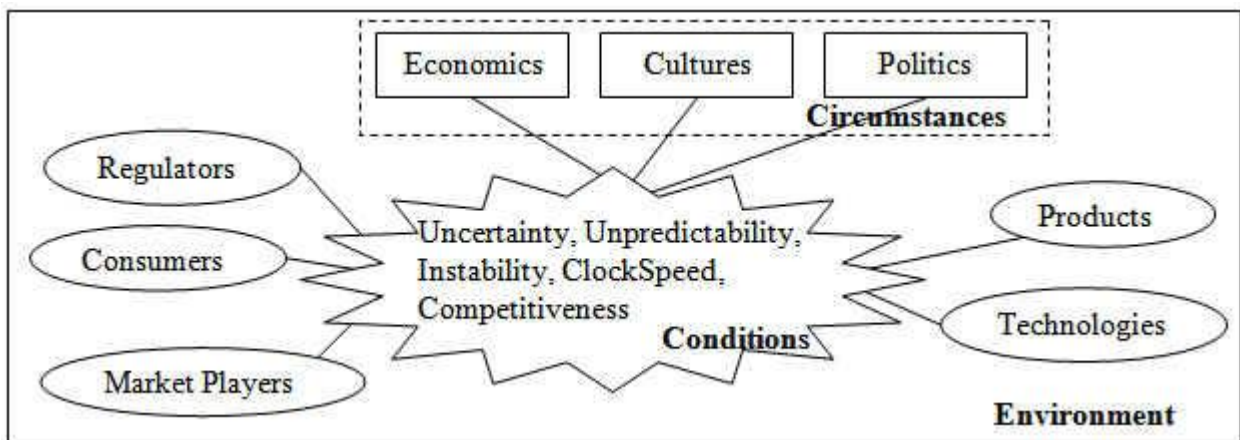
Among all the characteristics of an IT artifact as a living creature, there may exist a peculiarity of its evolutionary process that captures the attention of researchers. It can be a unique pattern or routine which leverages participation, collaborative learning, communication, and entertainment interaction, or a higher-order capability which explodes onto the market. The case of "Web 2.0," for example, has drawn a spotlight onto viral technology for personalization, collaboration and participation, leveraging the viral environment to grow and unleash the creativity of the community through combination and mashups. Based on service creation framework with user-friendly standards-based drop and play tools, it creates new value-added blended applications and collaborative natures. However, many of its features emerged in products like Lotus Notes and Lotus Domino long before the term "Web 2.0" was coined. Understanding how people engage with technological artifacts in a co-evolving process, or understanding specific internal structures of artifacts can be a better source that helps codify the uniqueness of emerging technology.

Even after a technological artifact appears to be fixed and complete, its stability is conditional because different features are developed, existing functionalities extended, new business structure evolves, and environment changes. Understanding the embedded

structure of the IT artifact and its alignment with business strategy and environmental conditions illuminate how and why IT artifacts come to be stabilized in certain contexts.

Grounded Action Constellation #2: Environment Sensing

The dictionary definition of environment is “the circumstances, objects, or conditions by which one is surrounded, or the aggregate of social and cultural conditions that influence the life of an individual or community,” Merriam-Webster (2007). Under certain circumstances with an economics status, political situation, and culture, multiple objects like market players, regulators, consumers, technologies, and products together make an environment where they interact with each other and thus create multiple conditions such as uncertainty, unpredictability, clockspeed, instability, competitiveness (Figure 1). All these together define environment.



[Figure 1] What Defines Environment

Environment has been considered the source of uncertainty for managers who are responsible for strategy formulation and organization structuring. It also has been thought of as the most influential factor for internal processes and strategic decision making (Daft et al., 1988; Duncan, 1972; Pfeffer and Salancik, 1978). Therefore, environment sensing, which can be defined as “scanning and interpreting environmental changes relatively important to focal organizations”, is the first step in organizational adaptation to environmental changes, and plays a key role in achieving high performance and in the long run surviving. Much research on contingency theory has proved that the alignment of organizational strategy, structure, and resources to environment results in high performance and high survival rate.

However, environment sensing is very mushy because of several factors such as environmental complexity (the heterogeneity of external events (Child, 1972)), top managers' bounded rationality (Cyert and March, 1963), fast clockspeed (Mendelson and Pillai, 1998; Fine, 1998), or limited resources like time and information sources. Top managers' perceived environmental uncertainty means either the absence of information about environmental events or the difference between available information and derived information (Daft et al., 1988; Huber and Daft, 1987). Managers selectively scan the environment to acquire only relevant information to reduce their perceived uncertainty. Hambrick and Mason (1984) have shown how top managers scan environment events in such situations that they cannot fully comprehend. The managers select only some of events relevant to their focused areas. Then the selected events are interpreted through a filter made by their cognitive base and values. Finally they perceive environmental changes and make strategic choices.

As seen through Figure 1, economic, cultural, and political circumstances are also important for explaining organizational environmental sensing. For example, Sawyerr (1993) compared environment sensing patterns between developed countries and developing countries. Due to the relatively unstable political and economic circumstances in developing countries, the environment sensing process is much more complex and mushier.

The interactions that occur with the environment are also mushy. Researchers have considered different ways in which firms interact with elements of the environment, for example, adaptation by the firm to environmental conditions versus shaping, changing, or driving environmental conditions. This "adapt or shape" strategic choice has been an important issue in the strategy research area (Nadkarni and Narayanan, 2007; Courtney, 2001). For example, Courtney (2001) shows how Qualcomm executes its power to build a coalition of supporters around its CDMA technology and at the same time adapts to economic, regulatory, and market trends to manage uncertainty and instability --- and have a stronger control over the speed of change, competition, and market size.

Grounded Action Constellation #3: Strategy Formation

There are many definitions of strategy; the common thread that runs through all of them is that strategy is an aspect of firm uniqueness. Under the assumptions of microeconomics, any market that offers potential profits will attract new entrants until no profit is possible for any firm. Strategy is the exception to these assumptions; an individual firm's strategy

explains how it differentiates itself in order to earn profits despite free competition. Popular definitions of strategy fall into two general categories: the first holds that strategy is something a firm has or can do that other firms do not; the second defines strategy as who or where the firm is (Bartlett, 2004).

This first view, which may be called the “resources” or “capabilities” view of strategy, suggests that firms can distinguish themselves by acquiring or developing assets, technologies, human resources, knowledge, or capabilities that enable them to produce differentiated products, deliver greater quality and service, or save more time and money than other similar firms (Wade & Hulland, 2004). Prescriptions for managers may recommend that they identify and focus on their firm’s “core competency” and outsource those functions that they have no advantage in. A firm with better capabilities does not always outperform the competitor who has a reputational or relationship advantage with customers.

The second view of strategy can be called a “positioning” view, focuses on the relationships between firms and other market players (Porter, 1991). Some proponents of this view draw on military metaphors to describe how firms stake out “territory” and build “barriers” to attain market power. Closely related are biological metaphors about how firms try to find “niches” in their industrial “ecologies” (Iansiti & Levien, 2004). This view highlights tactics like first-mover advantage, and reminds us that competition is not always fair.

In either model, managers and entrepreneurs seek strategies that confer “competitive advantage” that allows them to outperform other firms and earn profits. Key concerns are that competitive advantage be sustainable, and that it be difficult to imitate. If other firms can understand the strategy of a successful competitor, and are capable of replicating it, they can be expected to do so. Formulating strategies that work is a complex process and, because researchers do not even agree on what strategy itself is, theories about strategy formulation are quite diverse, each capturing only a part of the whole (Mintzberg & Lampel, 1999).

A fundamental debate about strategy formulation is whether it is an intentional, conscious process directed by executives and professional planners, or an organic and emergent process that occurs without conscious direction (Mintzberg & Waters, 1985). Managers and planning departments certainly do try their best to develop strategies and plans: they

set goals and targets, gather and analyze competitive information, make forecasts, devise budgets, and make strategic decisions. One school of thought contends that this formal process is at the heart of strategy formulation, but another holds that strategy “design” is the less formal, more creative process enacted by organization leaders (Mintzberg & Lampel, 1999). The design metaphor shows strategy-making to be an iterative and adductive process of negotiation and learning, rather than an analytical process (Liedtka, 2000). The design view is grounded in rich understanding of the complex human processes that constitute strategy formulation, such as learning, experimentation, dialogue, and conflict; it is likely a fruitful view for further research.

An opposing paradigm, however, holds that top-down directives are not the most important process in strategy formulation. Called the “learning” school of thought (Mintzberg & Lampel, 1999), these theories explain that a firm’s unique capabilities and patterns of actions are the result of a multitude of individual decisions made by people at all levels of the organization over time (e.g., Cyert & March, 1963; Weick, 1969). Individuals at all levels of the organization are gathering information from the environment, making decisions, and developing their knowledge; and each organization’s history is unique.

The learning school of strategy formulation is an important part of the picture that researchers must take into consideration. In fact, both processes occur: executives do make plans and promote strategies, but what becomes of them depends on how they are understood and implemented by people throughout the organization as they react to changing circumstances. Mintzberg and Waters (1985) describe a number of ways that management can guide strategy formulation in an environment that does not allow them to control it, such as setting a vision statement, offering an interpretable “umbrella” strategy, or designing the business processes that influence strategy formulation. Strategies are not always realized as they are originally intended; perhaps researchers should be concerned with the relationship between the intentional and realized strategies.

Theorists have often suggested that practicing managers balance the “design” and “learning” aspects of strategy formulation. March (1991) argued that firms balance “exploitation”, the refinement and focusing of current activities, with “exploration”, or sensing and reaction to changing circumstances in the environment. The theory of dynamic capabilities (Eisenhardt & Martin, 2000) states that among the assets and

competencies firms must acquire or develop are a set of capabilities that drive the firm's own evolution, such as product development capabilities. Brown and Eisenhardt (1997) describe the most effective strategic management style as using "semisttructures" that allow improvisation within a general strategic direction, striking a balance between order and chaos.

An example may be seen in (Rivard et.al., 2006) a study which contrasts the contribution of IT to firm performance as it is seen through two lenses, the "strategy as positioning" and "bundle of unique resources" frameworks. Two Monolithic frameworks are fused into a new model that shows their complementarity. Other studies at this level add new variables and relationships to existing models, or alter the unit of analysis to show additional slices of phenomena (e.g., Piccoli & Ives 2005). Unique cases may reveal nuances of relationships that were seen as clear-cut, and exceptions to widely-accepted rules push researchers to dig deeper and develop theories that explain differences.

An example of such an attempt is Hidding's (2001) article which uses the framework of "ecologies" to identify the different drivers of strategic advantage in industries of different speeds, and show the role of IT in each ecology. A goal that researchers may strive for is theory that explains these inconsistencies by looking at the speed of strategic change (a "derivative") or even strategic acceleration ("second derivative") to provide insight into why different effects hold under different conditions.

Each stream of research on strategy formulation captures a part of the puzzle. Mintzberg and Lampel (1999) liken the research process to blind people examining an elephant, each examining a different side. Managers in the business world have no choice but to deal with the whole animal. To them, strategy is not only about the resources and capabilities they must develop, but also about the tactical moves they must make to keep up with competitors. Their problems are the design of strategies and plans, the challenge of implementing them in a turbulent business environment, and the task of gathering feedback and learning to guide the next iteration of the process.

Characterizing Mushiness and Ephemerality in Strategic Contexts

These three grounded action constellations: emerging technology adoption, environment sensing, and strategy formulation in combination exhibit all the elements of mushiness and ephemerality. Take for example the case of STA Travel mentioned earlier (Ives and Piccoli, 2007) which had decided to adopt virtual worlds as an emerging technology. They established a presence in Second Life in 2007 and created a number of destination islands and events in that virtual world platform in order to attract prospective travelers and use it as a marketing vehicle. The presence lasted for about a year and then they decided to abort the project. A researcher wanting to study the interaction between strategy formulation and the adoption of virtual worlds would only have had a limited window to study this adoption, and virtual worlds exhibit the properties of ephemerality. Strategy formulation around that technology was an iterative and incremental process and fraught with ambiguity and mushiness.

As we can see in the above case of STA travel agency in Second Life, the phenomenon that arises from the confluence among emerging technology adoption, strategy formulation, and environmental sensing is mushy and ephemeral. These mushy and ephemeral phenomena can be interpreted as “wicked” problem according to Camillus (2008). Using Rittel and Weber (1973)’s notion of wicked social problem, he described this kind of phenomenon as a wicked problem having innumerable causes and solutions that cannot be achievable from traditional processes. He noticed that conventional processes not only fail to tackle wicked problems, but also may exacerbate situations by generating undesirable consequences. The characteristics of mushiness and ephemerality can be explained in terms of the properties of wicked contexts.

It is difficult to define exactly what the problems are in a mushy context. The factors for defining a problem in a mushy context are not explicitly identified. Boundaries defining a wicked problem can change or be blurred. For example, people who are engaging in the problem can change according to the different stages of the problem solving. Or depending on their interests, energy, and available resources, people come in and out the problem solving processes. The meaning, outcome, objectives, and importance of the problem are also relevant to different people, groups, or organizations, because a problem in a mushy context involves many stakeholders over different levels of unit. The solutions of the problem in a mushy context cannot be evaluated as right or wrong, but as relatively good or bad to different stakeholders and over different times. Furthermore, emergent

characteristics of the wicked problem make it difficult to measure the effectiveness of the solution.

The phenomena in this context never stop changing, and thus we cannot have one fixed definition of the problem domain neither a set of solutions. The definition and its solutions should be changed as the context changes. While technology transmutes continuously, its benefits are realized as it aligns with strategic goals, emergent work processes, and environmental conditions. Pre-defining the role of emerging technology within a fixed way of usage can result in detrimental misunderstanding on the possible future state as we observe in SDA case. What we observe is a snapshot of transmuting process, but managers need to be mindful for the nature of evolution to achieve a long-term strategic goal. Because neither a pre-aligned exhaustive set of solutions nor a spectrum of operational alternatives exist, it is difficult to apply past experience or explicit knowledge for managing the ephemeral context. Managers often confront with unprecedented conflicts in opinions or disagreements among diverse participants. Individual experience heavily relies on trial-and-error in the first trial usage of emerging technology, which easily leads to frustration. Due to continuous transmuting characteristics, this trial-and-error practice can bring no learning effect. Explicit knowledge of training might not apply well. This complexity results in the wicked context.

When the context of theorizing is mushy and ephemeral, what can we do to help the theorizing process to make it more researcher-friendly ? That is what we describe in the next section.

II A MINDFUL GROUNDEDNESS THEORIZING APPROACH FOR MUSHY AND EPHEMERAL PHENOMENA

Researchers theorizing about strategy and emerging technologies need to look at the real-world phenomena represented by these terms, instead of, or in addition to, looking at abstractions and generalizations from prior theory. We argue for an approach to theory-building that is grounded in the decisions and actions faced by enterprises, and mindful of the processes that occur in research. Our approach, if done well, results in a type of theory that balances generalization and description. This kind of theory is characterized by generalization-in-context, providing enough abstraction that researchers can adapt the theoretical ideas to other problems, enough context that businesspeople and students can apply insights from the findings to the world of practice (Dey, 1999).

The pathway to theorizing articulated below posits that there are four stages to the theory-building process, and is built on the assumption that a researcher mindful of these stages is empowered to influence and improve them. Each stage requires an input of time and energy, and the output of each stage can be influenced by a researcher's interests and the decisions that he makes. The stages are enactment, engaged instancing, elaboration, and exposition.

Our pathway assumes that the researcher is constantly acquiring input from the real-world phenomena of study: data, experiences, ideas, etc. *Enactment* refers to the stage in which a researcher discovers, codes, and assimilates the mushiness and ephemerality of the real world as ideas and memories, the raw material of research questions. *Engaged instancing* is cognitive process by which the researcher organizes, assembles, and makes sense of this material to tell a "story" that inspires research. *Elaboration* refers to the process by which a researcher transforms a "story" into a formal theory. The inclusion here of the fourth stage, *exposition*, focuses attention on the social process of refinement and dissemination of theory, with a particular focus on the lively "*effervescent exposition*", wherein a theory may inspire a great deal of excitement and quick development.



<p>Enactment: A researcher engages with disorderly, indeterminate phenomena in the world through a process of inquiry, sorting items, events, and parts into semantic and episodic memory.</p>	<p>Engaged Instancing: A collection of activities for assembling “stories” which are serially ordered and related items, events, parts in semantic and episodic memories.</p>	<p>Elaboration: The motivated researcher chooses an approach, and applies the tools of theorizing, to transform a "story" into a complete, well-argued theory.</p>	<p>Exposition: Submission for publication or similar broad dissemination to others, which results in a wider critical and knowledgeable audience examining the theory and giving feedback in the form of questions and comments that the researcher subsequently acts upon.</p>
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Enactment:

Enactment occurs when a researcher engages with disorderly, indeterminate phenomena in the world through a process of inquiry, sorting items, events, and parts into semantic and episodic memory. Emerging technology adoption, strategy formulation, and environment sensing create enormous number of phenomena while they interact with each other. What characteristics of emerging technology are adopted is not predetermined, but determined while it interacts with other factors, such as tasks, people, and environment. The structure of emerging technology changes while it interacts with structures of other factors. Furthermore, through this adaptation process, new structures can emerge. Organizations find for what purposes they utilize emerging technology by trial and error learning. Organizations don't know exactly how environment objects, such as competitors, regulators and consumers, come to a play with different emerging technologies and different strategies.

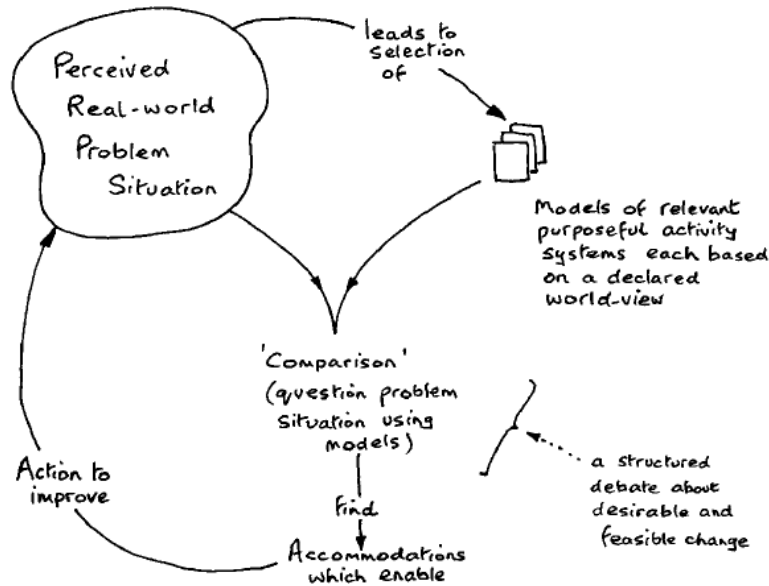
Grounded on Popper's notion, reality of problem domain that a researcher confront might be “cloud-like” phenomenon. Metaphor of “clouds” represents the commonsense notions of indeterminacy in systems. While the most regular, orderly, and predictable metaphor on the right limit conceived as “clock”, the left limit of this continuum stretching to the most irregular, disorderly, and unpredictable metaphor is “clouds”. Because of continuous

morphing and ontological properties of organization, technology and strategy, studying a phenomenon that locates on the confluence of these three can be understood only a limited part by examining exclusively as clock-like mechanisms. Theorizing on subjects that rise upon elements of human or organizational strategic actions, environmental chance, and complexity of technological systems involve reflection on searching both “hard” regularities in cloudy reality and interpreting “soft” regularities in clock-like monotone relationships for a mindful researcher.

The world offers such richness, multidimensionality, and “cloud-like” complexity that each researcher encounters a different fragment of the whole. Far from being a passive observer, each researcher is armed with a toolkit of paradigms, perspectives, and theories. By focusing attention and interest, selecting colleagues, and asking questions, and through the application of the toolkit, the researcher enacts the process of discovery. Types of individual knowledge include semantic memory and episodic memory. “Mushy” phenomena in the world are transformed into abstractions (semantic memory) and facts (episodic memory) through an active process of interaction between the researcher and the world. Semantic memory refers to generalized knowledge independent of specific event, which is believed to be stored in a network of concepts, while episodic memory refers individual experiences of events (Tulving, 1983). Decisions made consciously or unconsciously by the researcher greatly influence the way discovery is enacted, more so when the phenomena are emergent and chaotic; thus, mindfulness of these decisions is empowering. Generalized semantic knowledge can be acquired from the market or consulting firms, while implicit episodic knowledge is not likely to be imitable easily. Perceived reality in the confluence area of organizational activities engaging innovation, strategy formulation and environmental sensing is complex. Organization theorists struggle to provide endogenous basis of studying complex relationships between emerging technology and variety of organizational activities which constantly evolve over contexts, strategic goals, and environments. Indeed, emerging IT or IT innovations can be analyzed in multiple-layered units; within the changing context of individuals, working units, organization and their relationships. To examine the phenomenon of emerging IT penetration, a mindful researcher needs to clarify what area of interests at which unit of analysis for what purposeful goals under certain situation would be interpreted, and theorized. Understanding ambiguous real world where confluence arise among complex relationships create unique endogenous way of interpretation depending on the researcher’s semantic and episodic memory within real world. Lacking awareness of

unique way of internalization process within interactions between artifacts under specific goals and situations might mislead researchers own interpretation and externalization on the phenomenon.

[Figure 2: The inquiring cycle of Soft Systems Methodology (From Checkland, P. 2000)]



Engaged Instancing:

Engaged instancing is a collection of activities for assembling “stories” which are serially ordered and related items, events, parts in semantic and episodic memories. In this stage, discovered ideas and memories in the enactment stage about strategy formulation, emerging technology adoption, and environment sensing, are connected to produce “stories”. This process is essentially random, as the thinker reacts to the confluence of ideas, but is influenced by interests and perceptual filters that sensitize the researcher to certain types of ideas, driving them to select a specific interesting story, an instance.

Balancing the search for “hard” regularities with substantially “soft” causal relationships that are found at relatively low levels of generalization leads us to ground on the garbage can model for a theorizing process. The garbage can model conceives a phenomenon as an organized anarchy conjuring up the image of a system that manifests both order and disorder.

Researchers are a garbage can, the confluence of three elements, where environment sensing is looking for emerging technology adoption and strategy formulation, emerging

technology adoption is looking for strategic uses, and strategy formulation is looking for competitive advantage. What stories are created depends on chance. That is, the assembled stories are the results of a random confluence of these elements in researchers' mind. However, researchers cannot do research on all the stories created from the possible combinations of these three factors. But instead they choose a specific story depending on their energy, interests, and available time (Cohen et al., 1972). Not all emerging technologies and their characteristics come into researchers' mind. Similarly not all available strategies and environmental events come into play. Specific technology, strategy, and environment events come into researchers' mind depending on their interests and disposition. Interactions between these three elements are enacted and continued by researchers' energy, available time, their preparation, and people who can give comments to them. From these interactions, researchers find some specific stories. We call a specific interesting story as an "instance". It is not a phenomenon that is external to researchers but a structured phenomenon, which is made through researchers' internalization of an external phenomenon. That is, researchers perceive several emerging technologies, strategies, and environment events, and then make or find interesting stories about the possible interaction patterns among them. For example, researchers can perceive "web 2.0" as an alternative for adoption, formulate "knowledge management for creating competitive advantage" as a strategy, and sense "needs for new open communication channel between supply networks". These three things may not happen in the same time, but they come into researchers' mind in different time. By some internal and external stimuli, such as their interest, disposition, preparation, comments from others, or conference discussion, researchers may recognize that these three elements can be related with each other and make an interesting story. This is an "instance" grounded on researchers' mindfulness.

Therefore, the mindfulness of researchers matters for determining the types and characteristics of the created theory. Using the instance, researchers start elaboration, which consists of theorizing activities, such as defining types of theory and developing constructs, variables and causal relationships between them.

Elaboration:

As a result of the ongoing process of enactment, active and mindful theorists will rapidly build up a collection of these stories, which can serve as the raw material of theorizing. The theory-development process begins when the discovery of a structured phenomenon

triggers a researcher to pursue one of the primary goals of theory: analysis, description, explanation, prediction, or prescription (Gregor, 2006). The confluence of a story and a theory goal results in the elaboration of a research question.

Elaboration is the process by which a serendipitous combination of ideas about strategy formulation, emerging technology, and environment sensing is transformed into theory, and ephemeral, “cloud-like” data observed in the world are ordered and structured into a “clock-like” and internally consistent model. When theorizing around “mushy” and emergent topics like these, it is appropriate to use adductive, grounded methodologies designed for lending structure to “wicked problems”. (e.g., Glaser & Strauss 1967) The desired end result is theory expressed, argued, and disseminated to others so that they may incorporate it into their own enactment of discovery.

This model places the focus on elaboration, as a theorizing process, rather than theory as a product (Weick, 1995). Researchers use many tools and approaches to inch toward theory; for example, Weick (1995) lists references, data sets, lists, diagrams, and hypotheses as artifacts of the theorizing process. Elaboration is an active process in which a motivated researcher uses the tools of the trade to actively build theory.

Mindful theorists approach elaboration with awareness of the decisions that must be made in the research process, and the trade-offs they entail. Gregor (2006) outlines five types of information systems theories: analysis, explanation, prediction, explanation-and-prediction, and design-and-action. Each type of theory requires a different type of structure and model, and the type to be developed should be clear from the moment a research question crystallizes. This decision is intimately tied up with decisions about the style of theory to be pursued:

Static or dynamic. Static theories model the phenomena as they are. They are valuable guides to action and prescription, but in the emergent world of strategy and information systems, they may describe ephemeral phenomena and become quickly obsolete. Dynamic theories explain why or how phenomena change. They can be illuminating but may be difficult to develop and to test. An example of a static model is found in Wade and Hulland (2004), who add “IS resources” to the well-known resource-based view of strategy. In contrast, the theory of “dynamic capabilities”, or higher-order capabilities that explain how firms develop their everyday capabilities (Eisenhardt & Martin, 2000; Winter, 2003), is

a dynamic theory that might be applied to show how strategy and emerging technology phenomena change.

Specific or general. Imposing “clock-like” order on complex and emergent systems means reducing and abstracting from what really occurs, in order to generalize to other, similar situations. An important trade-off is made by the mindful theorist: generalize too little, and a theory provides little benefit to practice or further research; generalize too far, and give up fidelity to the truth.

Simple or complex. The systems of meaning and interaction that occur around strategy and emerging technology are very complex. A researcher must decide how much, or how little, to theorize about. Parsimonious theory that explains complex phenomena based on a few simple propositions is ideal; if it cannot be obtained, though, the researcher must make a hard choice about how much complexity a theory may tolerate. This trade-off is seen in Rivard, et al (2006), a study that explains the effect of IT on strategic performance by combining two simpler theories, a “strategy as positioning” and a “bundle of unique resources” model. The outcome is a complex theory that explains the data well, but the resulting theory is more difficult for business practitioners to draw implications from than either of the foundational theories.

Exposition

When the theory development process has reached a natural conclusion for the researcher, it is necessary to reveal the theory to a wider audience for feedback and further development. This exposition to others is represented by submission for publication or similar broad dissemination, which results in a wider critical and knowledgeable audience examining the theory and giving feedback in the form of questions and comments that the researcher subsequently acts upon. Exposition can offer a number of critical benefits to the mindful researcher, such as refinement and increased robustness, and is an important final step in the process of developing theory. In some cases, effervescent theories can generate action and excitement around a subject that stimulates new theories and development in disciplines beyond the original. Additionally, the speed with which this process can be completed may help to overcome some of the pitfalls of mushy problems, and increase the theory being used in the enactment phase of other research.

While a small circle of people is necessary to support idea development during engaged instancing, the wider academic and professional communities will offer further insight and refinement for the mindful researcher. Their combined experience, personal narratives, and knowledge can be useful in generating undiscovered questions and new applications for the theory. This added insight creates an opportunity for the researcher to more robustly develop and refine their theories to incorporate these new viewpoints. In order to fully develop their theory, they must go through one or several of these review iterations before the research is considered vetted for a general audience.

In cases where the theory may have broad ranging excitement and impact, which we term “expositional effervescence”, this process helps to reveal the connections between the discipline in which the research is based and the disciplines in which this new theory may have an impact. Much like releasing the cap on a bubbling bottle of soda, some theories effervesce with a delightful energy, spawning a creative chain reaction that spills from the researchers own discipline into others. Without the exposition process, the theory would not have been revealed to a broad audience, which would preempt excitement and fail to inspire a cornucopia of effervescent new research. On the other hand, not all theories have this broad application potential. Some are necessarily limited in scope by design, and the specifics of one study may necessarily preclude other disciplines. This is not a failure on the part of the researcher, but a design choice, which can still inspire fruitful and creative work in their field.

The final element of exposition concerns the rapidity of dissemination and the subsequent use of the theory by others. It is important to evaluate emergent and mushy problems in a rapid manner, because the rate of change that they display renders slow analysis moot. Rapid examination and exposition of these ephemeral mushy problems will lead to better theory development for the researcher and greater incorporation of the theory by future researchers. Expositional effervescence is clearly representative of the rush of theories that spawn and build on each other, and the lively rush of research that follows such theories in a short amount of time. Theories that are not rapidly iterated on during exposition may find that their usefulness and application has expired before their publication. In this instance, it is unlikely that the theory will be new or interesting, and the future applications of this theory will be negatively impacted.

III ASSESSING THE APPROACH: MERITS, PERILS, & PROMISE

Merits

The Mindful Groundedness theoretical approach offers a number of significant merits for the mindful researcher while they ponder mushy problems. First, the approach fits well with ephemeral and mushy phenomena, emphasizing a grounded, relevant approach to the assist in the researchers enactment of cloudy phenomena. By constantly grounding the researchers attention to what is happening, they will catch the phenomena as they emerge and will become aware of the changes they undergo. On the other hand, by paying attention to the formal process of theorizing, researchers can avoid being caught up in the fine details, and generalize to the broader phenomena at hand. This balance between rigor and relevance is a significant merit of a grounded theoretical process.

The mindfull researcher should be aware that their subsequent selection of an engaged instance for further elaboration and exposition is likely based on a garbage can model, and that selection is a result of many factors, including energy, interest, and time. The approach also helps to remind the researcher that the cloudy phenomena that they seek to explain are composed of many chaotic elements, and that the interaction between the three constellation variables, emerging technology adoption, environment sensing, and strategy formation, are a valuable way to examine the rich complexities present in the cloud.

Researchers can also benefit from the simplifying nature of the model, which helps develop understanding about the implicit and iterative nature of the theory development process and the stages that a nacent theory moves through on the way to becoming a refined theory. The phases we have identified help to articulate choices that the researcher has at various stages of development, and provides a pathway that shows where those choices lead. While we urge researchers to be mindful of the phases that a theory moves through, we understand that recognizing the phases is less important than being mindful of their interactions, and knowing when to “go back to the drawing board”, or reiterate on a problem in the theory, is a significant step to developing quality theory.

Perils

We assumed the grounded theory method perspective to suggest insightful detailed descriptions of theorizing, which can be especially useful for developing a theory about mushy and ephemeral phenomena. Even though its strengths for making a theory for these conditions, the grounded theory method has also several limitations that need to be considered when researchers use our theorizing approach. First of all, the grounded theory method implies that researchers don't need to look at existing literature, that is, they don't need to start theorizing based on existing theories that could be very relevant for tackling phenomena under the study. When there is a large body of existing theory, ignoring it creates a risk of losing valuable insight or the research could become disjointed from the general scientific community at large. Thus, the suggested theorizing approach in this paper that were made based on the grounded theory method have this limitation. However, we tried to overcome it by adopting the arguments of the garbage can model for developing our theoretical rationale for the theorizing approach.

Another peril of our approach is that it was not tested in terms of its effectiveness for theorizing the mushy and ephemeral phenomena using some cases or examples. It may be the natural result of using the grounded theory method, a qualitative, inductive study method of which main outputs are usually propositions. Actually, our approach is not made by our imagination but from grounded observations and literature review. Therefore, we argue that it has a high analytic generalizability. Furthermore, the aim of grounded theory is to generate or discover a theory. So, it is an especially good method for tackling new phenomena, for example, a phenomenon around emerging technology adoption and strategic formulation. We recommend other researchers to use our approach as a theoretical framework, and find and complement its possible weaknesses with empirical data analysis.

Promise

There are at least four ways that an IS researcher can use a Mindful Groundedness Theorizing (MGT) approach in studying the relationship between strategy and emerging technologies. It is also applicable to other areas of study.

The MGT Approach as a Creativity Aid

The MGT approach can be used as a creative boundary busting aid by switching across different steps, styles or types when researchers are "stuck". The MGT approach can help

researchers being aware of their own preferences, experiences, backgrounds and environment that traps theorizing process and provide general framework of other possibilities in the pathway.

The MGT Approach as a Research Training Tool

The MGT approach can be used as a tool for helping nascent researchers better understand the different steps, styles and types of theorizing. It provides a systematic way for understanding the tradeoffs across theorizing styles, i.e., static vs. dynamic, specific vs. general, simple vs. complex, and also understanding each procedure of theorizing pathway.

The MGT Approach as a Publication Focusing Tool

When targeting a research study for publication in a particular style of publishing outlet, the appropriate elements and types of theorizing suits that publication can be selected. The lower levels of mindfulness resulted in engaged instancing and elaboration process in the pathway may be suitable for targeting more practice oriented publications, while the higher levels of all steps of theorizing pathway may be more suitable for targeting more reflective academic publications.

The MGT Approach as a Researcher Identity Location Device

“Different strokes for different folks” applies to the MGT approach as well. Different researchers have different preferences in terms of where they focus their energy in the MGT process. Some researchers may be more comfortable with complexity and ambiguity and may be more effective in the elaboration steps, while others may prefer simple and specific styles of theorizing to be able to drive rigor in a more focused and manageable way. Less experienced researchers may also be more comfortable in the less complex styles until they gain more mastery of the methods and topics.

Conclusion

This paper has tried to provide a theorizing approach that is better suited to understanding how emerging technologies and shaped and being shaped by business strategy in enterprises. We hope it sensitizes IS researcher that phenomena that are mushy and ephemeral will require different theorizing approaches. We also hope it provides some guidelines and help to make the process more reseracher-friendly.

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