Knowledge strategy planning: an integrated approach to manage uncertainty, turbulence, and dynamics

Ettore Bolisani and Constantin Bratianu

Abstract

Purpose – *Knowledge strategy and its planning are affected by uncertainty and environmental turbulence. This paper aims to discuss these issues and present knowledge strategy planning as an integrated approach for facing these conditions.*

Design/methodology/approach – *Based on an extensive survey and an original re-elaboration of the literature, the paper addresses these research questions: What is the meaning of knowledge strategy, and how can it be related to concepts such as strategic thinking, business strategy and knowledge management (KM) in organizations? What are the limitations of a pure rational approach to knowledge strategy in turbulent environments and under uncertainty? and What approaches can be consequently proposed to formulate knowledge strategies?*

Findings – *The study provides a critical reading of the current literature. Also, it proposes an integrated approach that sees planning as a continuous effort of learning and adaptation to needs and opportunities that dynamically emerge from daily practices.*

Research limitations/implications – *The proposed framework can inspire a new research agenda to detect how knowledge strategies are planned in companies and how they are continuously adapted on the basis of a dialog between rational contributions and perceptions of reality, practical views, intuitions and emotions. This can also inspire a new agenda for company strategists and KM professionals.*

Originality/value – *In the literature, little attention has been devoted to knowledge strategy planning. The paper contributes to fill this gap and proposes a new way to see knowledge strategy as an integration of rational thinking and dynamic learning.*

Keywords *Strategic management, Knowledge strategy, Planning, KM strategy, Integrated approach, Knowledge dynamics*

Paper type *Conceptual paper*

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1. Introduction

"Knowledge strategy" is a new semantic construct, reflecting the integration of "Knowledge Management" (KM) and "Strategic Management". It aims at the creation of new value by considering knowledge as a strategic resource in decision-making for achieving competitive advantage.

The relationship between "strategy" and "knowledge" appeared in managerial literature decades ago. The idea that knowledge should be explicitly seen as a critical resource for competitiveness is not new. Many studies – such as Nonaka and Takeuchi (1995) and Davenport and Prusak (2000), often cited as foundations of KM – have long emphasized the role of knowledge in developing the company's capability for improving business performance. Some scholars have also attempted to set the grounds of a "new theory of the firm ", where knowledge becomes one of its core constituents (Grant, 1996; Spender and Grant, 1996; Barney, 1991; Nonaka, 1994).

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Being aware that we live in an increasingly turbulent environment, where uncertainty dominates (Chen *et al.*, 2013; Lopolito *et al.*, 2015; Kaplan, 2008; Spender, 2014), it is the knowledge of the world that one possesses and the capability to learn that can make a difference. In the knowledge economy, the urge to manage knowledge as a key resource of a company implies the need for "new metaphors, new models, new organizations" (Edvinsson, 2002, p. 106).

Particularly, the necessity of managing knowledge as a strategic weapon requires the formulation of long-term plans of development and exploitation of a company's knowledge assets. Strategic management must extend its coverage well beyond its typical targets (i.e. physical and financial assets, operations, markets). In addition, KM has an increasingly important place in management (Becerra-Fernandez and Sabherwal, 2010; Bolisani and Handzic, 2015; Dalkir, 2005; Jashapara, 2011). KM programs require a strategic vision of knowledge needs, sources and processes to be implemented operatively, in a specific social and organizational context. Strategy-as-Practice constitutes such a framework because "individual behavior is always embedded within a web of social practices: praxis relies on practice. The practice perspective thus confronts one of the central issues in social studies: how social structures and human agency link together in the explanation of action" (Vaara and Whittington, 2012, p. 288). Knowledge strategy is associated with these aspects: on the one hand, it recalls the necessity to include a company's knowledge as one of the objects of strategic planning; on the other hand, it represents the formulation of long-term plans for KM programs and activities.

While recent literature has thoroughly investigated the notion of knowledge strategy and its possible categorization into generic ideal types (Argote, 2013;Bratianu, 2015b; Kumar and Ganesh, 2011; Nielsen, 2005; Nonaka and Takeuchi, 1995; Nonaka *et al.*, 2008; O'Dell and Hubert, 2011;Shannak *et al.* 2012; Sveiby, 2001; Zack, 1999), less attention has been devoted to knowledge strategy planning, i.e. the processes and approaches that can lead to the development of a knowledge strategy in a company.

Knowledge strategy planning poses original challenges to strategic thinking. It implies a vision of future uses of not only what "we already know", but also an anticipation of what "we still do not know, but we may have to know". It requires a detection of "the sources of this required knowledge" and appropriate plans and methods to "learn what we should learn". "What we have to do is get a perspective on the evolving future, see the different opportunities and then put our brain potential into immediate action – internally as well as externally" (Edvinsson, 2002, p. 79) In this regard, a knowledge strategy becomes an essential ingredient of innovation, a leap toward an unknown future (Donate and Canales, 2012; Duggan, 2007; Horaguchi, 2014; Kodama, 2014).

As a consequence, the way knowledge strategy (De Toni *et al.*, 2011; Edvinsson, 2002; Ichijo, 2007; López-Nicolás and Meroño-Cerdán, 2011; Nielsen, 2005; Nonaka and Takeuchi, 1995; Kim *et al.*, 2014; Spender, 2014; Sveiby, 2001) and its planning (Bolisani and Scarso, 2015; Mintzberg, 2000) can be seen is affected by the consideration of "uncertainty", environmental "turbulence" and "dynamics". Uncertainty implies there is unclear knowledge of the future and its implications. Turbulence means companies can neither fully control nor predict all external variables that may influence their business. Knowledge dynamics implies the consideration that the notion of knowledge that an individual or an organization possesses is elusive (Bolisani, 2008) and requires continuous adjustment in relation to the results of an on-going learning process.

Under these conditions, an approach to knowledge strategy, purely based on traditional strategic planning, i.e. grounded on ex-ante, rational, deterministic and linear thinking (Bratianu, 2007; Ohmae, 1982; Nonaka and Zhu, 2012), becomes problematic. When it comes to knowledge strategy planning, there is the need to reflect on new approaches that combine the rational needs of planning with the necessity to cope with uncertainty and turbulence.

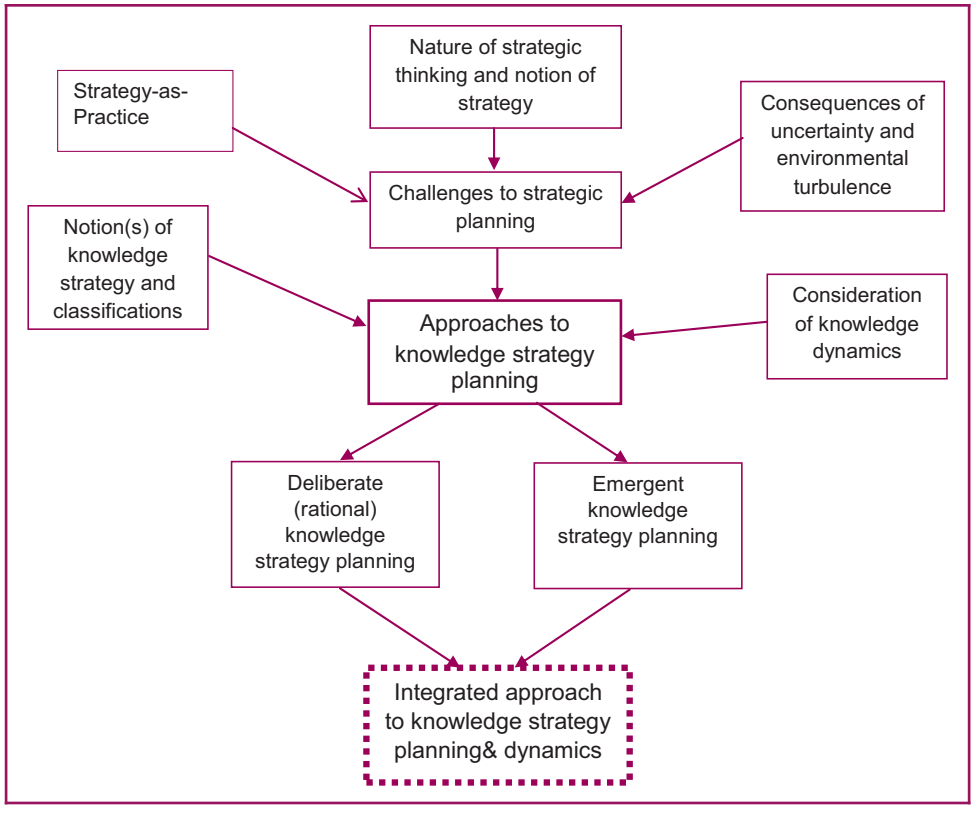
The objective of this conceptual paper is to provide a fresh view on knowledge strategy planning. After a discussion of the origin of this concept in the extant literature and an overview of the definitions, terms and classifications, an integrated view of rational and emerging planning of knowledge strategy is presented, as a result of searching for possible answers to the following questions:

1. What is the meaning of knowledge strategy, and how can it be related to the more general issues of strategic thinking, business strategy and knowledge management in organizations?
2. What are the limitations of a pure rational approach to knowledge strategy in turbulent environments and under uncertainty?
3. What approaches and process dynamics can be proposed to formulate knowledge strategies? What is the interdependency between strategic management and strategic knowledge management?

The integrated approach to knowledge strategy planning, presented in the paper, can provide inspiration to practitioners – as new ways of planning their knowledge and KM strategies, and the managerial capabilities that can be required – and researchers regarding new directions of research in KM planning.

The paper is based on a critical analysis of the literature in fields of KM and strategic management, and on a combination of those ideas, which can better describe the concept of "knowledge strategy" (Figure 1). Also, a large perspective of analysis was considered, including older views on strategic thinking to more recent approaches, e.g. the framework of "microfoundations" (Felin *et al.*, 2015; Foss and Lindberg, 2013; Greve, 2013; Barney

Figure 1 Rationale of the paper



and Felin, 2013) and "strategy-as-practice" (Carter *et al.*, 2008; Mantere and Vaara, 2008; Moisander and Stenfors, 2009; Vaara and Whittington, 2012; Whittington, 1996).

First (Section 2), the nature of strategic thinking and the notion of strategy are discussed. The section shows how the notion of strategy and its practical application imply an anticipatory vision of the future. This requires awareness of the effect of uncertainty and environmental turbulence on the way the future can be realistically imagined. Also, how this challenges the approach used to formulate and plan a strategy is discussed. Next (Section 3), the state of the art of the notion of knowledge strategy is examined. Although its definition is still "unstable", this notion is increasingly seen as an important element of strategic thinking, especially in a context where learning capabilities are essential.

It is then illustrated (Section 4) that several classifications of "generic" knowledge strategies have been proposed in the literature, but their application, although useful as a general reference, may become problematic when the intrinsic dynamic nature of knowledge in organizations is considered. Later (Section 5), the problem of how a knowledge strategy can be planned is examined, in particular, two opposite approaches – one called "deliberate knowledge strategy planning", referring to a rational approach, and the other called "emergent", which is associated to the case where knowledge strategies result from a company's learning activity. It is argued that companies may require an integration of both approaches, where the necessity of a rational foundation and flexibility to follow learning capabilities are functionally combined. Next (Section 6), strategic thinking, strategy design and strategy implementation are integrated in the process of strategizing, and its application to knowledge and KM strategy. The concluding Section 7 summarizes implications for research and practice and suggests new lines of research.

2. Evolution of strategic thinking and implications of uncertainty and turbulence

2.1 Strategic thinking

In business management, a classic definition of "strategy" that ties its business and military use is that of Chandler (1962), where strategy is intended as the determination of long-term goals and objectives of a company, appropriate courses of action and the allocation of resources necessary for carrying out these goals. Strategic thinking is, therefore, about creating and implementing strategies to win in a competition, from a battlefield to a business environment.

The notion of strategy implies several "assumptions" about the nature and characteristics of business and companies. A first element is "heterogeneity". If, as is assumed in (neo)classical economics, companies and markets were characterized by transparent information and identical goals (i.e. maximization of profits), entrepreneurial decisions in all companies would be aligned (in practice, an automatic reaction to changes in factor prices and market quantities). Formulation and implementation of a strategy would have no meaning, because every company would instantly adopt the same course of action (Davenport and Harris, 2007; Johnson *et al.*, 2011; Porter, 1985). The idea of a strategy implies an attempt to exploit the peculiar characteristics and unique or rare resources of a company, compared with competitors, in the perspective of achieving a competitive advantage.

A second element is the orientation toward the "future". Strategic thinking is a mental process, oriented toward the future, which expresses our philosophy about life, work, competition and winning. Especially today, in a fast-changing business environment and when future comes to us in an accelerated way, operational thinking, based on a short-term view, is not enough. "Top management and its corporate planners cannot sensibly base day-to-day work on blind optimism and apply strategic thinking only when confronted by unexpected obstacles. They must develop the habit of thinking strategically, and they must do it as a matter of course" (Ohmae, 1982, p. 78).

A third element is that formulating a strategy involves and challenges all the "cognitive capabilities" (McKenzie *et al.*, 2009; Hodgkinson *et al.*, 1999; Wootton and Horne, 2010) of the people who have the responsibility for that. "Strategizing [is] the judgment or imaginative response to what is NOT known, to the surprising, unexpected, incomplete, or illogical nature of what arises through our practice" (Spender, 2014, p. 21). A strategy means projecting a company into a plausible future, which requires the capability to "see beyond".

Finally, under a perspective that considers "microfoundations", a strategy can be seen to be not an outcome of a single mastermind from the top of the managerial hierarchy, but an "integrated result of many people" working at different managerial levels and interacting in a dynamic social structure (Barney and Felin, 2013; Felin *et al.*, 2015; Foss and Lindberg, 2013). The dynamics of human and social interaction become essential in determining the aggregated outcomes as dynamic capabilities of the firm (Teece, 2009).

The way strategists can use and apply these capabilities varies, depending on the circumstances. Generally, in a static or highly predictable environment, it may become possible to transpose the past into the future and, therefore, to apply a "formalized procedure to produce an articulated result, in the form of an integrated system of decisions" (Mintzberg, 2000, p. 12). Here, the formulation of a strategy can be based on rational, deterministic and linear thinking (Bratianu, 2007, 2015a) that comprises a decomposition of the whole objective into its components and allocating resources to achieve each of them sequentially. This requires both internal and external business environments to be in a dynamic equilibrium, based on relative stable states. In this perspective, classical managerial planning has been extrapolated to define strategy: "In sum, the classical approach to strategy places great confidence in the readiness and capacity of managers to adopt profit-maximization strategies through rational long-term planning" (Whittington, 2001, p. 15).

What can impede this rational approach is the intrinsic presence of "uncertainty" and environmental "turbulence" that affect managerial decisions. With an unclear perception of the future and its implications, a company can neither fully control nor predict all external variables that may influence the business. The work of strategists cannot be reduced to the automatic application of formal schemes. Rather, it can be framed within a space of at least four dimensions: time, complexity, uncertainty and innovation (Bratianu, 2015a). "Time" implies that strategic thinking targets future goals (as already mentioned), and these goals represent the "strategic willing" in terms of the vision and desired mission of a company. The future must be not only predicted, but also "anticipated" proactively. "Complexity" refers to the new and complex problems in the future that cannot be reduced to old schemes or formulas (Stacey, 2001). "Uncertainty" means the future does not exist as a physical period of time (like present), but exists only in our minds as a field of uncertainty, characterized by likely or expected events. Finally, "innovation" is connected with the necessity to "break the schemes" of a static equilibrium, but this brings about new problems that cannot be solved by old methods and their successful formulas.

As the famous Japanese strategist Ohmae (1982, p. 79) emphasizes, strategic thinking "is a matter of a long-term philosophy, not of short-term expedient thinking. In a very real sense, it represents the expression of an attitude to life". Now, it is almost axiomatic that it is possible to understand the complexity of the external world, using "thinking or mental models" (Bratianu, 2007; Ohmae, 1982; Senge, 1999; Stacey, 2001). According to Senge (1999, p. 8), "Mental models are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action". Consequently "Strategic thinking can [. . .] be intended as integrating entropic, nonlinear, probabilistic, and creative thinking models and producing solutions for complex, dynamic, and fuzzy problems, generated in uncertain environments" (Bratianu, 2007).

"The entropic thinking model" is the most developed model on the "time" dimension. It is characterized by its power to understand irreversible processes and their orientation in time from the past toward the future: past ≫ present ≫ future. The model allows us to direct our thinking toward the future and to define important objectives. Entropic thinking is a key success factor in developing strategic leadership, which implies a vision for the company and its sustainable competitive advantage. According to Daft (2008, p. 388), "Strategic leadership means the ability to anticipate and envision the future, maintain flexibility, think strategically, and work with others to initiate changes that will create a competitive advantage for the organization in the future".

"The nonlinear thinking model" refers to the "complexity" dimension. To understand it, linear thinking must be first defined. Linear thinking is when the mind uses linear correlations between outputs and inputs of a transformation process. Instead, life, biology, psychology, sociology, management and leadership are full of examples of nonlinear processes. Knowledge dynamics is also based on nonlinear thinking (Bratianu, 2015b), and the main challenge for managers is finding adequate systems of evaluating and managing knowledge and intellectual capital.

The "probabilistic thinking model" refers to the "uncertainty" dimension, based on future events that are, by definition, uncertain. It is a naïve approach to extrapolate the present using deterministic thinking. Strategists must be able to develop their skill of working with probabilities and uncertainties (Spender, 2014; Taleb, 2007; Kahneman, 2011). Uncertainty reflects a spectrum of knowledge absence, both in business and in time. In business, we deal with uncertainties generated by the internal business environment, because of information asymmetry concerning internal resources and capabilities (Barney, 1991; Teece, 2009), and by the external business environment, because of absence of knowledge concerning markets and competition (Porter, 1985). To reduce these types of uncertainties, strategists use methods based on probabilities and huge bases of statistical data (Davenport and Harris, 2007; Viedma and Cabrita, 2012). However, the real challenge of strategizing (Spender, 2014) is to reduce uncertainties related to the future and its absence of knowledge.

All this means that it is necessary to develop "a creative thinking model" that can generate knowledge and reduce organizational entropy. Strategists create scenarios as possible futures and develop "blue ocean" strategies (Kim and Mauborgne, 2005; van der Heijden *et al.*, 2002). A "blue ocean strategy" is a knowledge construct for a possible, yet unknown future. Therefore, it is a creative approach to the "known-unknown" matrix (Bratianu, 2015b – see below). It is important to understand the dynamic approach toward an unpredictable future: "We believe that the next era of strategy knowledge and practice will focus on real-time strategy-making. We call it the dynamic strategy system phase to emphasize both the changing and systemic nature of strategy-making in fast-paced environments" (Greiner and Cummings, 2009, p. 38).

2.2 Strategy-as-practice

Another perspective that emphasizes the importance of creativity in strategic thinking is "strategy-as-practice" (SAP), a new approach in strategy research domain which is especially based on sociology, organization theory and systems thinking. "The focus of this approach is on strategy as a social 'practice', on how the practitioners of strategy really act and interact. From the perspective of strategy as practice, the key question is: what does it take to be an effective strategy practitioner?" (Whittington, 1996, p. 731). Practice is concerned with the process of strategizing (Spender, 2014), which is an interactive and iterative process between strategic thinking, strategy elaboration and strategy implementation. It is an accelerating convergence between the desirable future and the entropic present, i.e. between the framework of what one rationally chooses and what comes from real-life experience. In companies, this means integrating these two views

across all levels of the organizational structure, from individuals and micro activities to middle and top management of the company.

In this new perspective, it is also important to distinguish between "praxis" and "practice". According to Spender (2014, p. 139), "In SAP language 'praxis' is the actual doing or instantiation, while 'practices' are the ongoing patterns, the inventory of potential praxes the interacting practitioners might draw on to actualize a 'praxis' (what happened)".

SAP focuses on what strategists do, within a specific social and cultural environment. The key concept of this approach is not the noun "strategy", but the verb "strategizing", which is context-dependent and sensitive to cultural values. That makes SAP display high ambiguity (Carter *et al.*, 2008; Vaara and Whittington, 2012), which can create difficulties for managers with linear and deterministic mental models, but proves to be stimulating for managers with creative minds. In Eastern cultures, ambiguity is a way of thinking and working because "The highest virtue is not to reveal the concrete or detail, but to nurture fuzziness, emptiness and chaos from which imagination and creativity can emerge" (Nonaka and Zhu, 2012, p. 86). No wonder, in the Chinese and Japanese companies, the tolerance for ambiguity is much higher than in Western companies (Nonaka and Takeuchi, 1995; Nonaka and Zhu, 2012). SAP shows, in this way, why strategies, especially knowledge strategies, developed in American companies cannot be applied successfully in Japanese companies and vice versa. Strategizing becomes, in such situations, a creative process of adaptation to different epistemic cultures (Moisander and Stenfors, 2009) because individual behavior is always embedded within a cluster of social practices, as "praxis relies on practices" (Vaara and Whittington, 2012, p. 288).

It is also interesting to make the link between SAP and the "wuli-shili-renli" approach, based on the Confucian wisdom. According to Nonaka and Zhu (2012, p. 171), wuli, shili and renli means, respectively: "to study the 'objective' world, to reflect on our 'subjective' mind, to care for 'intersubjective' human relations". In this way, these authors emphasize the condition under which strategy-as-practice meets the needs of a certain business context, which reflects not only economic criteria, but also the dynamics of social relations.

2.3 Implications for strategic planning

What has been previously argued also reflects the way strategic planning can be approached. Strategic planning is the process through which a company's strategy is decided and applied by declaring its goals, the modality to achieve them and the other implementation details. The literature has long emphasized how the awareness of uncertainty and environmental turbulence has progressively changed the way strategic planning is approached in companies.

Particularly important is the distinction between a "deliberate" vs "emergent" approach to strategic planning (Balogun and Johnson, 2005; Bodwell and Chermack, 2010; Mintzberg and Waters, 1985). As a concept, "strategic planning" was originally introduced by authors such as Ansoff (1965). Companies can and should set their long-term goals rationally and deliberately: based on that, resources and plans to pursue these goals are defined. This "deliberate" or "rational" approach to strategic planning implies an explicit and rational formulation of goals, plans and means that originate from precise intentions of the company and a well-known external environment, which is seen to be predictable, at least, within some limits. All is decided by central leadership, progressively articulated in more detailed tasks that involve different parts of the organization, backed up by formal controls in a top-down logic. Essential pre-conditions are that the internal and external environments can be benign, controllable and foreseeable, and there is full understanding, adhesion and acceptance of the different parts of the organization to the tasks and processes that goals and plans require.

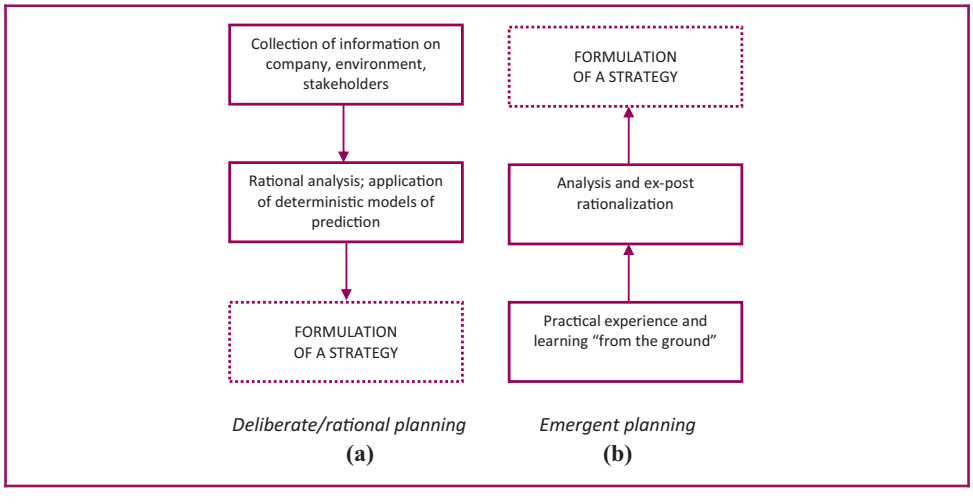
Since these early studies, the dynamics of markets and technologies have challenged the possibility to develop strategic planning rationally. Later, some studies have proposed to consider the effects of uncertainty and dynamic changes on managerial decisions: companies never have all the information required to set plans in advance, and new scenarios may emerge. The notion of emergent strategy was consequently developed by authors like Mintzberg and Waters (1985), Mintzberg (1988), Balogun and Johnson (2005), Bodwell and Chermack (2010), Nonaka and Zhu (2012), and Spender (2014).

A perfectly emergent approach to strategic planning is one where actions result over time, but in the absence of intentions, clear leadership and complete definition of goals. So, plans of a company result from an ex-post formalization and co-ordination of actions, decisions and tasks that prove to be effective and beneficial to the organization. In substance, emergent decision-making is based on reactive organizational behavior and adaptive organizational learning (Senge, 1999). As Mintzberg and Waters (1985) highlight, although a pure emergent approach may be impossible in real life, situations are (more or less) close to that abstract definition.

There is a radical change of perspective between the two approaches. Deliberate planning assumes a three-step process: first, a collection of information (on the company, the environment, the stakeholders); second, a rational analysis of this information and third, the formulation of strategic goals and plans to pursue them [Figure 2(a)]. This also implies that strategists use predictive models of the company's functioning and the external context (markets, competitors, etc.). Emergent planning assumes little information can be available in advance, and market behavior is unpredictable. In the best case, strategists can learn by experience, in a trial-and-error process, where the courses of action that appear to provide better results are selected and, maybe, later declared as "the company strategy" [Figure 2(b)].

If we make an analogy with deterministic and random phenomena in physics, we learn that the deterministic hypothesis makes a rational planning of future actions possible once enough information of the system under control is collected. A quantum-mechanics-like perspective, instead, leads to accepting the unavoidable insufficiency of information, so that rational planning becomes impossible (Mintzberg, 1988; Nonaka and Zhu, 2012; Spender, 2014). Analogies with this perspective can be found in the behavior of companies (Miller and Friesen, 1984) in a context affected by uncertainty and turbulence: companies may seem to follow different strategies to face dynamic variations or insufficient information, or while they, sometimes, appear to proceed by taking incremental steps in their course of

Figure 2 Deliberate/rational vs emergent strategy planning



action, in other cases, they change their plans to seek new stability. In addition, it is not possible to have complete and measurable information of the company or of the competitive environment. This may force strategies to give importance to learning processes and lessons from experience.

This also implies a change in mental capacities and cognitive attitudes (McKenzie *et al.*, 2009): a capability to manage conflicting factors and to bear the uncertainty and indeterminateness of ambiguous situations. The willingness to learn from experience (Beer *et al.*, 2005), the openness to combine elements coming from the practice at a micro-level (Whittington, 1996) and a consideration of the role of creativity (Bratianu, 2007) become essential ingredients of strategic planning.

3. Strategy and knowledge strategy

Compared to the notion of strategy, knowledge strategy is more recent. The relationship between the two terms, "knowledge" and "strategy", has been long stressed in the literature (Kogut and Zander, 1992) because knowledge has been increasingly seen as a strategic weapon and a competitive factor (Kasten, 2007). The so-called "knowledge-based view of the firm" (Grant 1996; Nissen, 2006; Nonaka, 1994; Nonaka and Takeuchi, 1995; Sveiby 2001) and the growing interest in KM have made "knowledge strategy" a key topic of analysis.

There is still no consensus on what a "knowledge strategy" is, but there is some agreement about its essential traits. An often cited definition is Zack's (1999), who sees knowledge strategy as the overall approach that an organization takes to align its knowledge resources and capabilities to the intellectual requirements of its business strategy. Similarly, for von Krogh *et al.* (2001), a knowledge strategy denotes the application of "knowledge processes" to an existing or new knowledge domain to achieve a strategic goal. Bierly and Chakrabarti (1996) see a knowledge strategy as the set of choices and plans that regard the firm's knowledge base, which affects its competitive capability. To summarize, a knowledge strategy can be referred to as the "general guidelines that shape the organization's capability to manipulate its cognitive resources" (Kasten, 2007), "with the ultimate goal to make the best use of these assets for competitive advantage" (Holsapple and Jones, 2006). Therefore, the formulation of a knowledge strategy cannot be disjointed from the firm's general strategy (Eisenhardt and Santos, 2002).

Knowledge is also the "object" of KM practices, so it may be wondered if there is a need for a special and different definition of "KM strategy". Generally, a KM strategy refers to the "guidelines, goals, resources and long-term plans" of KM programs in a company. However, like knowledge strategy, scholars do not agree on its definition (Shannak *et al.*, 2012). At least two views can be singled out: KM strategy as "knowledge strategy" and as "KM implementation strategy".

In the first meaning, KM strategy and knowledge strategy are considered synonyms (Shannak *et al.*, 2012) of each other. The implicit assumption is that companies that implement KM programs automatically adopt a knowledge strategy. Conversely, some authors argue that companies, aware of the importance of their knowledge base and the need to improve it (i.e. know they require a knowledge strategy), implicitly adopt a KM strategy, without declaring that explicitly.

In the second meaning, it is underlined that a KM strategy is the attempt to formulate intentional plans for explicitly managing knowledge (Sveiby, 2001; Wenger, 2004) as a roadmap for the KM department in a company (Halawi *et al.*, 2006). A KM strategy mainly deals with specific organizational, managerial and technical issues that a company adopts for its KM programs. In this view, KM strategy differs from knowledge strategy because the latter deals with the way knowledge can support competitive advantage (Denford and Chan, 2011), while the former focuses on specific implementation details (deViron *et al.*,

2014). The definition of a company's knowledge strategy should, therefore, come prior to any KM plan.

The recalled distinction remains useful. A knowledge strategy refers to a company's general vision of its knowledge as an economic resource, its importance for the business and the competitive environment, the organizational attitude toward the sources of knowledge and the methods to manage them. A knowledge strategy is, therefore, strictly connected to the general or corporate strategy of a company, and in practice, it can be even incorporated in it, explicitly or not. As underlined by Snyman and Kruger (2004, p. 5), "knowledge (as a strategic resource) has an enabling role to play in the formulation of winning strategies. The true power of knowledge lies in its ability to positively influence, and enable, the business strategy. Synergy between the business strategy and the knowledge management strategy is thus essential".

Conversely, the notion of KM strategy refers to the planning and implementation of tools and operative methods for managing knowledge as economic resource, namely: identification of key KM processes and assignment of related tasks to employees, selection of practices and computer tools. A KM strategy recalls a direct and explicit attitude of a company to adopt KM practices and systems.

It is however clear that knowledge strategy and KM strategy are connected to one another. Formulating a knowledge strategy – i.e. the overall vision of a company about its knowledge resources and their importance for competitiveness – is a necessary ingredient for implementing practical tools and methods to manage knowledge – i.e. the KM strategy. Using the synthetic formulation of Tiwana (2000, p. 103), we may conclude "knowledge drives strategy and strategy drives knowledge management".

4. Generic knowledge strategies

As is well known, classifications of generic typologies of strategy are popular in the strategic management literature. Similarly, the KM literature has developed taxonomies of basic knowledge strategies (Denford and Chan, 2011).

"Generic knowledge strategies" are those strategies that can be developed in any organization in concordance with the organization's vision and the organizational knowledge dynamics. They represent a useful reference for a company and provide inspiration to executives for formulating or simply recognizing the specific knowledge strategy of their company, for denominating it in a standard way and communicating its meaning and contents across the organization.

A popular classification distinguishes between codification and personalization KM strategy (Greiner *et al.*, 2007; Kumar and Ganesh 2011; De Toni *et al.*, 2011): "codification" (also named "system-oriented" KM strategy) focuses on capturing, codifying, storing and using explicit knowledge in a form compatible with a company's organizational objectives; "personalization" or "personification" (i.e. "human-oriented" KM strategy) has the goal of improving knowledge flows through networking and interactions and mainly focuses on tacit knowledge and individual processes, like knowledge sharing and knowledge creation.

Another popular categorization refers to the distinction between "exploration" and "exploitation" knowledge strategies (March, 1991), where the former means using the components of knowledge the organization already possesses, while the latter refers to the attempt to expand the organizational knowledge base by searching well beyond the space of the "old certainties". von Krogh *et al.* (2001) extends and specifies this classification by defining four strategies in relation to the market positioning and the technological knowledge of a company, namely: "consolidation", which implies maintaining the boundaries of the current cognitive positioning of the company; "expansion", when a company attempts to develop its pool of technological knowledge, but remains in the same

market; "exploitation", where the same "old" knowledge pools are exploited to serve new markets and "exploration", which means to modify radically the knowledge possessed, with the purpose to explore new technologies or markets.

A company's strategy can also depend on the knowledge sources exploited. Sometimes, it may not be enough to exploit internal learning and knowledge creation. Therefore, a distinction (Kim *et al.*, 2003; Choi *et al.*, 2008; Bolisani *et al.*, 2013) can be made between knowledge strategies, based on the exploitation of "external" knowledge sources (i.e. suppliers, customers, Universities and public laboratories, services providers, etc). rather than "internal" sources (namely, employees' creativity, R&D departments, etc.).

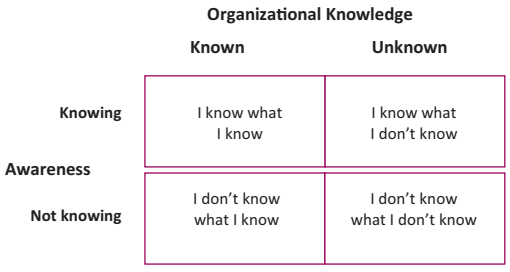
Managers can also increase the average level of organizational knowledge by adopting a "knowledge sharing strategy" (Bratianu, 2015b; Dalkir, 2005; Nonaka and Takeuchi, 1995; Nonaka and Zhu, 2012), where employees are stimulated to put in common their experience and expertise. For organizations that want to increase their intangible resources, but do not have enough creativity, "knowledge acquisition" from external sources can be a good strategy: practical implementations are the purchase of intellectual property rights of the knowledge stored in books, scientific journals, computer databases, software programs, or even hiring qualified professionals. For a company willing to achieve a sustainable competitive advantage in a turbulent environment, a strategy of "knowledge creation" for developing innovations can be adopted. Knowledge creation aims to reduce the effects of uncertainty and counteracts the absence of knowledge (Knight, 2006; Leonard-Barton, 1995; López-Nicolás and Meroño-Cerdán, 2011; Nonaka and Takeuchi, 1995; Parnell *et al.*, 2000; Spender, 2014). However, knowledge creation is learning whose costs are difficult to predict and whose outcomes may be known a little in advance.

Clearly, a company may combine the aforementioned strategies such that there will be a balance between various goals and perspectives (De Toni *et al.*, 2011; March, 1991). These strategies can be aggregated in a meta-strategy of developing organizational learning and transforming the company into a learning organization (Argote, 2013; Armstrong and Foley, 2003; Elkin *et al.*, 2009; Kimmerle *et al.*, 2010; Naeve *et al.*, 2008; Ortenblad, 2011; Senge, 1999). Organizational learning integrates knowledge processes across all levels of the organizational structure, within the framework of strategy-as-practice (Vaara and Whittington, 2012).

These examples of generic knowledge strategy can be a useful reference for strategists, but a key question is how a company should select the particular knowledge strategy that best fits its case. The issues we examined in Section 2 in the general case of strategic thinking appears again here: the presence of irreducible uncertainty and turbulence unavoidably affects the selection of a strategy, and these factors act even more intensely with a knowledge strategy.

It is useful to refer to the "known-unknown" matrix (Dalkir, 2005) described in Figure 3. On the horizontal dimension, we consider organizational knowledge, and on the vertical dimension, the awareness of that knowledge. The matrix is also implicitly based on the iceberg metaphor of knowledge and the dyad of tacit and explicit knowledge (Nonaka and Takeuchi, 1995). The first line of the matrix represents the explicit knowledge field in a finite or rational interpretation. "I know what I know", as I am a cognitive agent in the organization, and I learn what happens there. "I know what I do not know", as I know of the complex field of organizational knowledge and my limited area of activity in that organization. The second line in the matrix represents both explicit and tacit knowledge of employees. I know of their experience and tacit knowledge, but I cannot know directly that tacit knowledge and I cannot evaluate it: so, "I do not know what I know" from the whole field of organizational knowledge. Finally, "I do not know what I do not know" represents a mental state, regarding all uncertainties related to an organization's business environment and its future.

Figure 3 The known-unknown matrix



Source: Adapted from Dalkir (2005)

The matrix can be used to highlight that the selection of a generic knowledge strategy is influenced by the context that characterizes a company. If the case depicted in the upper-left cell ("I know what I know") prevails, this may imply a "knowledge exploitation" strategy: the company decides that it is sufficient for the business to remain in a known context, which is rationally assessable. The case of the upper-right cell ("I know what I do not know") is still compatible with a rational strategy of "knowledge acquisition": the company is aware of what is needed to know, and how to search for it. The situation depicted in the bottom-left cell ("I do not know what I know") is more complex: the company may try to make the knowledge already possessed by the organization with a deliberate strategy of favoring "knowledge sharing" between individual employees.

The bottom-right cells are clearly the most critical: It is a situation, where there is not only uncertainty about the knowledge already possessed, but also the difficulty to anticipate what should be important to know in the future. What generic strategy should be adopted for that? Is it possible to follow a rational approach that makes it possible to forecast future knowledge needs and to plan the proper ways to satisfy them? Is it feasible to plan learning processes and to predict their cost and outcome? These are key challenges for knowledge strategy planning, as discussed in the next section.

5. Knowledge strategy planning

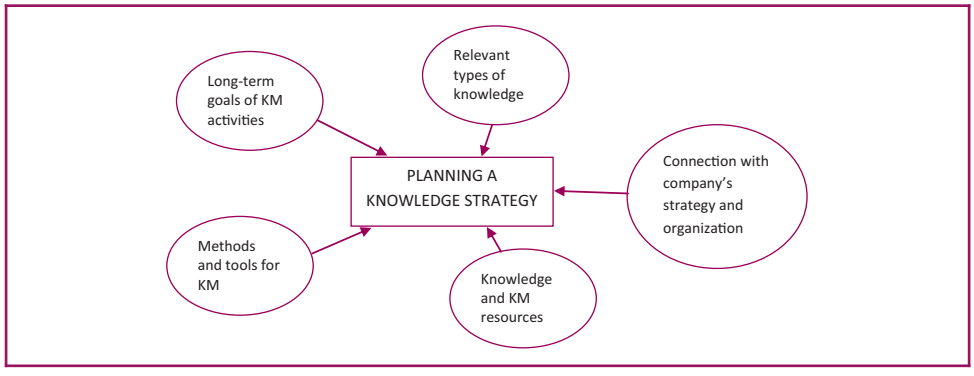
Knowledge strategy planning is the "approach adopted to formulate a knowledge strategy", just as it is done for the general strategy of a company. While the literature on knowledge strategy is rich, KM scholars have devoted little attention to the process of knowledge strategy planning (with few exceptions, see e.g. Holsapple and Jones, 2006).

Planning a knowledge strategy implies defining essential aspects (Kim *et al.*, 2003; Bolisani and Scarso, 2015): the connection between the way knowledge is seen in the company, the link with the corporate strategy and the organizational arrangement; the kind (and source) of knowledge required; the long-term goals of KM programs (i.e. how knowledge should be accessed, processed and exploited, what value can be extracted from knowledge, etc.); the methods and tools for achieving these goals and the resources that must be invested in KM programs (Figure 4).

Companies may adopt different approaches for deciding on these elements. Again, it is possible to refer to the distinction between deliberate/rational and emergent approach to planning (Donate and Canales, 2012; Ichijo, 2007; Snyman and Kruger, 2004).

As mentioned (see Section 2), the "deliberate or rational" approach to strategic planning is an explicit and rational formulation of goals, plans and means that originates from precise intentions of the company, while an "emergent" approach refers to a situation where a strategy, rather than being defined in advance, can be better seen as an "ex-post"

Figure 4 Elements of knowledge strategy planning



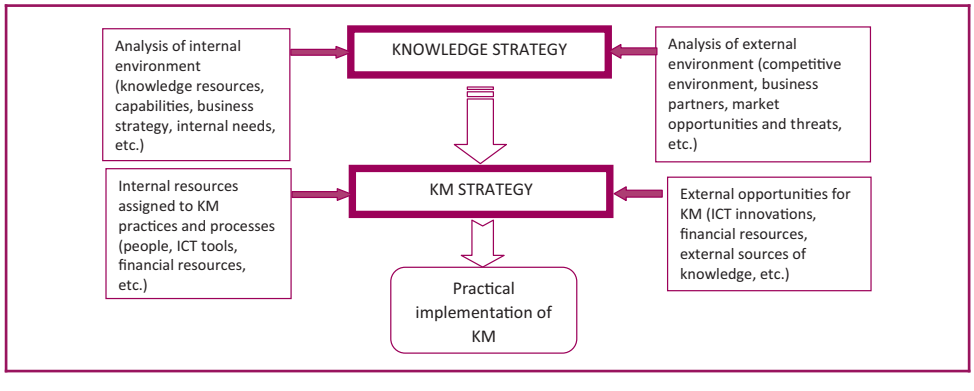
rationalization of a company's behavior. The main factor that can influence the position of a company is uncertainty: the more unpredictable and uncontrollable the internal or external environment, the more difficult the adoption of a rational strategic planning.

The point here is how these concepts can be applied to knowledge strategies. First, planning can be split into two steps:

1. formulation of a "knowledge strategy" in strict sense (i.e. definition of the general view of knowledge as competitive resource of a company); and
2. formulation of a "KM strategy" (namely, practical tools and methods through which knowledge is managed).

A rational approach to knowledge strategy planning can be intended as an approach, where the general orientation of the company and the views of knowledge as strategic resource are linked to the corporate strategy and deliberately designed at a top management level (Bolisani *et al.*, 2015). KM goals, methods and tools are then formulated on the basis of the knowledge strategy previously defined and on a rational analysis of company's needs, objectives and resources. Implementation and investment in detailed KM plans or methods consequently follow. Based on a rational analysis of internal resources and external competitive environment, the company decides which knowledge is important, what sources can be employed to develop this knowledge, etc. Here, schemes like those examined in Section 4 can be a reference. Later, the company decides and plans the practical methods and tools to implement that knowledge strategy, or the KM strategy is formulated on the basis of the goals and the framework defined by the knowledge strategy (Figure 5).

Figure 5 Rational view of knowledge strategy planning



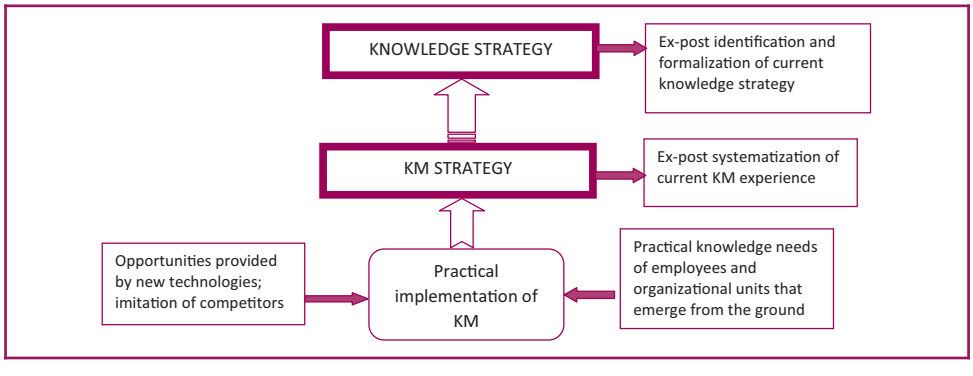
An opposite view is that of an "emergent" approach to knowledge strategy planning. Here, practices, tools and methods of KM originate from the daily practices and learning processes of company's employees. In substance, employees develop their own methods of learning, storing, retrieving and sharing knowledge in relation to their actual needs and practical problems to solve. The methods and tools that prove to be effective, useful and/or compatible with the daily business practice become established practices and can be later recognized as "The KM Approach" and "The Knowledge Strategy" of the company (Figure 6). The existence of both approaches of deliberate and emergent knowledge strategy planning have been recently recognized in the literature (Kotter, 2012; Nonaka and Zhu, 2012; Bolisani *et al.*, 2015).

Figures 5 and 6 represent opposite ways to cope with uncertainty and turbulence. With a rational approach, it is assumed the company "can" decide and design what is best in terms of KM, based on an analysis of the situation and on a clear vision of future predictable scenarios. The feasibility of this view largely depends on predictability of the internal and external environments, or how much the situation of a company matches the upper cells of Figure 3.

An emergent approach assumes it is impossible to make a rational analysis because uncertainty is too high, and the environment is too turbulent and dynamic: "The basic argument here is that when humans must make decisions in situations in which causality is poorly understood, where there is considerable uncertainty, where people hold different beliefs, where they have personal biases, where they do not understand each other and where they lack all the required technical expertise, then decisions are made and actions taken on an irrational basis" (Stacey *et al.*, 2000, p. 169). The company can simply adapt its practices to the emerging needs and opportunities over time: formal definitions of these KM practices as a knowledge strategy become an ex-post exercise. Turbulences in the external environment may bring the company on the "edge of chaos". "In an intermediate state, between stability and instability, the dynamics known as 'the edge of chaos' occurs; namely, the paradox of stable instability. [. . .] At the edge of chaos, novelty emerges in a radically unpredictable way" (Stacey *et al.* 2000, p. 112). The concept of emergent strategy "opens the door to strategic learning, because it acknowledges the organization's capacity to experiment" (Mintzberg *et al.*, 1998, p. 189). It can be argued this fits the bottom cells in Figure 3.

The problem of an emergent approach is, at least in its extreme manifestations, apparently a pure "wait-and-see" behavior: the company simply adopts the practices that, occasionally and unpredictably, emerge from the ground and from the concrete experience of employees, but with no effort of anticipation. This can lead to the underestimation of what the company already knows (and is aware of), i.e. the upper parts of the matrix in Figure 3.

Figure 6 Emergent view of knowledge strategy planning



Consequently, a third possibility should be considered: an "integrated view" that sees planning as a continuous effort of "learning". The company combines a provisional formulation of a general vision of its knowledge strategy on the basis of "possible scenarios" that apparently fit the current understanding of the environment and the ideas of what the company may or should be. However, the definition of the knowledge strategy also comes from the needs and opportunities that dynamically emerge from the ground and the daily practices (Figure 7).

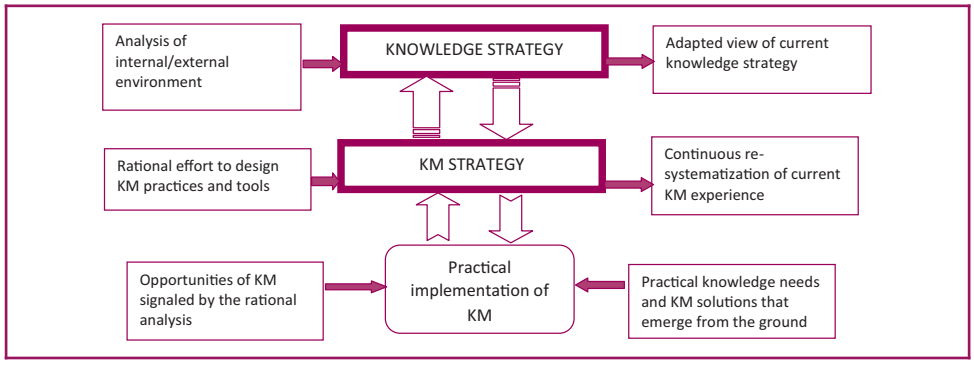
A dynamic interaction between the lower and upper part of the scheme has advantages. For a company, it is possible to formulate a "preliminary knowledge strategy" that, based on a rational analysis of the current and future situation, provides an initial reference for implementing KM practices and for setting up possible research paths of new knowledge and mechanisms of individual or organizational learning. Here, the reference to generic knowledge strategies can be of use. This prevents employees from simply "going blindly", or just adopting occasional KM practices. Strategy-making is a complex process of generative learning (Mintzberg *et al.*, 1998; Senge, 1999) able to cope with the emergent future (Stacey *et al.*, 2000; Stacey, 2001).

At the same time, top management must keep their antennas up to get everything useful that comes from the ground: the results of individual learning processes can provide novel ideas or solutions to unexpected problems. More precisely, in KM, this implies the capability to absorb, analyze and rationalize the interesting spontaneous practices of KM that are "invented" and applied by single employees and to modify the general knowledge strategy if so required.

To sum up, the decision-making process becomes an iterative and co-creating process that goes beyond the Newtonian logic. Senge *et al.* (2005, p. 90) use for such a complex mental process the concept of "presencing": "In effect, presencing constitutes a third type of seeing, beyond seeing external reality and beyond even seeing from within the living whole. It is seeing from within the source from which the future whole is emerging, peering back at the present from the future".

This integrated knowledge strategy planning may be not only a pure revision and adaptation of existing planning methods, but also may instead require new mental schemes and practical techniques. As suggested by Schiuma and Carlucci (2015), the "next generation of knowledge strategies" can make use of innovative mapping-based assessment models, which can integrate rational and emerging planning. "The rationale behind the use of mapping is related to the fact that making maps, especially with reference to complex phenomenon to deal with, improves the usability of information and knowledge – even uncodified – and also complements what the brain can do imperfectly" (Schiuma and Carlucci, 2015, p. 199).

Figure 7 An integrated view of rational and emerging planning dynamics



6. Conclusions

The purposes of this paper were to re-frame the notion of knowledge strategy into the broader context of strategic thinking and its evolution, to reflect on the existing taxonomies of knowledge strategy and their actual use, to investigate the possible models of knowledge strategy planning and to propose an integrated model for facing uncertainty and turbulence. The model of knowledge strategy planning described in the paper is an attempt to connect the challenges of strategic thinking in a turbulent environment with the practical goal of setting a company's KM programs.

6.1 Implications for research

The KM literature shows huge efforts of systematization that have led to the definition of useful schemes and classifications that can help the attempt to formulate knowledge and KM strategies. However, as was discussed in this paper, the real potential and usefulness of these schemes would be misunderstood without a reflection on the actual meaning of strategic thinking when applied to knowledge. The notions of strategy, knowledge strategy and KM strategy are different but integrated, and to understand the behavior of companies, it is necessary to examine these relations appropriately. Another central idea of this paper is that planning a knowledge strategy and a KM strategy requires a combination and a continuous dialog between different reasoning approaches. On the one hand, classic strategic thinking is based on the application of a rational analysis to the internal and external environment and knowledge needs for formulating long-term goals and identifying paths to achieve those goals. On the other hand, given the intrinsic uncertainty and dynamism that affects cognitive activities, the short-term problems and day-by-day situations often drive KM solutions used in the practical life of a company. For companies, a capability to catch the signals coming "from the ground" may require other cognitive components, also based on intuition and emotion, not only on rational analysis. The study emphasizes the importance of the skills and mental capabilities needed by managers (and the related investments to develop them in organizations) for facing the challenges of a knowledge strategy planning approach that combines elements of rationality and creative learning from practice.

6.2 Implications for management

For executives, the real challenge is how these different views can be associated. In an integrated view, planning is a "learning process" and a continuous "confrontation" between ideal formulations at a general level, resulting from an analysis based on rational schemes, and the concrete systematization of practical activities at a lower level. Knowledge and KM strategies are continuously adapted and corrected on the basis of a "dialog" between a rational contribution of reasoning and a perception of reality influenced by practical views, intuitions and emotions. This can inspire a new agenda for company strategists and KM professionals.

6.3 Limitations and areas of further research

Being a conceptual study, this paper is mainly based on a speculative analysis of the current literature. This analysis can, however, inspire a new agenda of empirical research. It may be useful to detect how knowledge and KM strategies are seen and planned in companies, what relationship exists between them and how companies adopt a deliberate or emergent approach to their KM practices. Also, while the emergent approach, as defined above, implies spontaneity and may even be intended as a non-planning approach, it would be interesting to check if the detection and ex-post rationalization of KM practices from the ground and their incorporation into a more general vision of a knowledge strategy can be somewhat "proceduralized" in companies and, therefore, become just another form of planning approach. A further point for managerial research is the

identification of new education programs for company managers that help exploit creativity and continuous learning in strategic decisions, and to combine them with classic approaches to planning.

References

Ansoff, H.I. (1965), *Corporate Strategy: An Analytic Approach to Business Policy for Growth and Expansion*, McGraw-Hill, New York, NY.

Argote, L. (2013), *Organizational Learning: Creating, Retaining and Transferring Knowledge*, 2nd ed., Springer, New York, NY.

Armstrong, A. and Foley, P. (2003), "Foundations for a learning organization: organization learning mechanisms", *The Learning Organization*, Vol. 10 No. 2, pp. 74-82.

Balogun, J. and Johnson, G. (2005), "From intended strategies to unintended outcomes: the impact of change recipient sensemaking", *Organization Studies*, Vol. 26 No. 11, pp. 1573-1601.

Barney, J.B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.

Barney, J.B. and Felin, T. (2013), "What are microfoundations?", *Academy of Management Perspectives*, Vol. 27 No. 2, pp. 138-155.

Becerra-Fernandez, I. and Sabherwal, R. (2010), *Knowledge Management: Systems and Processes*, M.E.Sharpe, Armonk.

Beer, M., Voelpel, S.C., Leibold, M. and Tekie, E.B. (2005), "Strategic management as organizational learning: developing fit and alignment through a disciplined process", *Long Range Planning*, Vol. 38 No. 5, pp. 445-465.

Bierly, P. and Chakrabarti, A. (1996), "Generic knowledge strategies in the US pharmaceutical industry", *Strategic Management Journal*, Vol. 17, pp. 123-135.

Bodwell, W. and Chermack, T.J. (2010), "Organizational ambidexterity: integrating deliberate and emergent strategy with scenario planning", *Technological Forecasting & Social Change*, Vol. 77, pp. 193-202.

Bolisani, E. (2008), *Building the Knowledge Society on the Internet: Sharing and Exchanging Knowledge in Networked Environments*, IGI Global, Hershey.

Bolisani, E. and Handzic, E. (Eds) (2015), *Advances in Knowledge Management: Celebrating Twenty Years of Research and Practice*, Springer, Heidelberg.

Bolisani, E. and Scarso, E. (2015), "Strategic planning approaches to knowledge management: a taxonomy", *Vine – Journal of Information and Knowledge Management Systems*, Vol. 45 No. 4, pp. 495-508.

Bolisani, E., Paiola, M. and Scarso, E. (2013), "Knowledge protection in knowledge-intensive business services", *Journal of Intellectual Capital*, Vol. 14 No. 2, pp. 192-211.

Bolisani, E., Scarso, E. and Giuman, L. (2015), "Knowledge management in client–supplier relationship: emergent vs deliberate approach in small KIBS", *Knowledge Management Research & Practice*, Vol. 14 No. 2, pp. 178-185.

Bratianu, C. (2007), "Thinking patterns and knowledge dynamics", *Proceedings of the 8th European Conference on Knowledge Management*, *Barcelona*, *6-7 September*, Academic Conferences, Reading, MA, pp. 152-157.

Bratianu, C. (2015a), "Developing strategic thinking in business education", *Management Dynamics in the Knowledge Economy*, Vol. 3 No. 3, pp. 409-429.

Bratianu, C. (2015b), *Organizational Knowledge Dynamics: Managing Knowledge Creation, Acquisition, Sharing, and Transformation*, IGI Global, Hershey.

Carter, C., Clegg, S.R. and Kornberger, M. (2008), "Strategy as practice?", *Strategic Organization*, Vol. 6 No. 1, pp. 83-99.

Chandler, A.D. (1962), *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*, Harvard University Press, Cambridge, MA.

Chen, A.H., Fabozzi, F.J. and Huang, D. (2013), "Optimal corporate strategy under uncertainty", *Applied Economics*, Vol. 45 No. 20, pp. 2877-2882.

Choi, B., Poon, S.K. and Davis, J.G. (2008), "Effects of knowledge management strategy on organizationalperformance: a complementarity theory-based approach", *Omega*, Vol. 36 No. 2, pp. 235-251.

Daft, R.L. (2008), *The Leadership Experience*, 4th ed., Thomson South-Western, Mason.

Dalkir, K. (2005), *Knowledge Management in Theory and Practice*, Elsevier, Amsterdam.

Davenport, T.H. and Harris, J.G. (2007), *Competing on Analytics: The New Science of Winning*, Harvard Business School Press, Boston, MA.

Davenport, T.H. and Prusak, L. (2000), *Working Knowledge: How Organizations Manage What They Know*, Harvard Business School, Boston, MA.

De Toni, A.F., Nonino, F. and Pivetta, M. (2011), "A model for assessing the coherence of companies' knowledge strategy", *Knowledge Management Research & Practice*, Vol. 9, pp. 327-341.

Denford, J.S. and Chan, Y.E. (2011), "Knowledge strategy typologies: defining dimensions and relationships", *Knowledge Management Research & Practice*, Vol. 9 No. 2, pp. 102-119.

deViron, F., De Jaegere, T., Lederer, T. and Vas, A. (2014), "Exploring knowledge strategy within a knowledge-intensive organisation: a case study approach", *International Journal of Information Technology and Management*, Vol. 13 No. 4, pp. 264-284.

Donate, M.J. and Canales, J.I. (2012), "A new approach to the concept of knowledge strategy", *Journal of Knowledge Management*, Vol. 16 No. 1, pp. 22-44.

Duggan, W. (2007), *Strategic Intuition: The Creative Spark in Human Achievement*, Columbia Business School, New York, NY.

Edvinsson, L. (2002), *Corporate Longitude: What You Need to Know to Navigate the Knowledge Economy*, Financial Times/Prentice Hall, London.

Eisenhardt, K.M. and Santos, F.M. (2002), "Knowledge-based view: a new theory of strategy?", in Pettigrew, A., Howard, T. and Whittington, R. (Eds), *Handbook of Strategy and Management*, Sage Publications, London, pp. 139-164.

Elkin, G., Cone, M.H. and Liao, J.J. (2009), "Chinese pragmatism and the learning organization", *The Learning Organization*, Vol. 16 No. 1, pp. 69-83.

Felin, T., Foss, N.J. and Ployhart, R.E. (2015), "The microfoundations movement in strategy and organization theory", *The Academy of Management Annals*, Vol. 9 No. 1, pp. 575-632.

Foss, J.N. and Lindberg, S. (2013), "Microfoundations for strategy: a goal-framing perspective on the drivers of value creation", *Academy of Management Perspectives*, Vol. 27 No. 2, pp. 85-102.

Grant, R.M. (1996), "Toward a knowledge-based theory of the firm", *Strategic Management Journal*, Vol. 17, pp. 109-122.

Greiner, L.E. and Cummings, T.G. (2009), *Dynamic Strategy-making. A Real-time Approach for the 21st Century Leader*, Jossey-Bass, San Francisco, CA.

Greiner, M.E., Böhmann, T. and Krcmar, H. (2007), "A strategy for knowledge management", *Journal of Knowledge Management*, Vol. 11 No. 6, pp. 3-15.

Greve, H.R. (2013), "Microfoundations of management: behavioral strategies and levels of rationality in organizational action", *Academy of Management Perspectives*, Vol. 27 No. 2, pp. 103-119.

Halawi, L.A., McCarthy, R.V. and Aronson, J.E. (2006), "Knowledge management and the competitive strategy of the firm", *The Learning Organization*, Vol. 13 No. 4, pp. 384-397.

Hodgkinson, G.P., Bown, N.J., Maule, A.J., Glaister, K.W. and Pearman, A.D. (1999), "Breaking the frame: an analysis of strategic cognition and decision making under uncertainty", *Strategic Management Journal*, Vol. 20, pp. 977-985.

Holsapple, C.W. and Jones, K. (2006), "Knowledge management strategy formation", in Schwartz, D.G. (Ed.), *Encyclopedia of Knowledge Management*, Idea Group, Hershey, pp. 419-428.

Horaguchi, H.H. (2014), *Collective Knowledge Management: Foundations of International Business in the Age of Intellectual Capitalism*, Edward Elgar, Cheltenham.

Ichijo, K. (2007), "The strategic management of knowledge", in Ichijo, K. and Nonaka, I. (Eds), *Knowledge Creation and Management: New Challenges for Managers*, Oxford University Press, Oxford, pp. 121-145.

Jashapara, A. (2011), *Knowledge Management: An Integrated Approach*, 2nd ed., Financial Times/ Prentice Hall, London.

Johnson, G., Whittington, R. and Scholes, K. (2011), *Exploring Strategy*, 9th ed., Financial Times/ Prentice Hall, London.

Kahneman, D. (2011), *Thinking Fast and Slow*, Farrar, Straus and Giroux, New York, NY.

Kaplan, S. (2008), "Framing contests: strategy-making under uncertainty", *Organization Science*, Vol. 19 No. 5, pp. 729-752.

Kasten, J. (2007), "Knowledge strategy and its influence on knowledge organization", *Proceedings ofNorth American Symposium onKnowledge Organization*, available at: http://dlist.sir.arizona.edu/1907

Kim, T.H., Lee, J.N., Chun, J.U. and Benbasat, I. (2014), "Understanding the effect of knowledge management strategies on knowledge management performance: a contingency perspective", *Information & Management*, Vol. 51, pp. 398-416.

Kim, W.C. and Mauborgne, R. (2005), *Blue Ocean Strategy. How to Create Uncontested Market Space and Make the Competition Irrelevant*, Harvard Business School Press, Boston, MA.

Kim, Y.G., Yu, S.H. and Lee, J.H. (2003), "Knowledge strategy planning: methodology and case", *Expert Systems with Applications*, Vol. 24 No. 3, pp. 295-307.

Kimmerle, J., Cress, U. and Held, C. (2010), "The interplay between individual and collective knowledge: technologies for organizationallearning and knowledge building", *Knowledge Management Research & Practice*, Vol. 8, pp. 33-44.

Knight, F.H. (2006), *Risk, Uncertainty and Profit*, Dover Publications, Mineola.

Kodama, M. (2014), *Knowledge Integration Dynamics: Developing Strategic Innovation Capability*, World Scientific, London.

Kogut, B. and Zander, U. (1992), "Knowledge of the firm, combinative capabilities, and the replication of technology", *Organization Science*, Vol. 3 No. 3, pp. 383-397.

Kotter, J.P. (2012), "Accelerate", *Harvard Business Review*, pp. 45-58.

Kumar, J.A. and Ganesh, L.S. (2011), "Balancing knowledge strategy: codification and personalization during product development", *Journal of Knowledge Management*, Vol. 15 No. 1, pp. 118-135.

Leonard-Barton, D. (1995), *Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation*, Harvard Business School Press, Boston, MA.

López-Nicolás, C. and Meroño-Cerdán, A.L. (2011), "Strategic knowledge management, innovation and performance", *International Journal of Information Management*, Vol. 31, pp. 502-509.

Lopolito, A., Prosperi, M., Sisto, R. and De Meo, E. (2015), "Translating local stakeholders' perception in rural development strategies under uncertainty conditions: an application to the case of the bio-based economy in the area of Foggia (South Italy)", *Journal of Rural Studies*, Vol. 37, pp. 61-74.

McKenzie, J., Woolf, N. and van Winkelen, C. (2009), "Cognition in strategic decision making: a model of non-conventional thinking capacities for complex situations", *Management Decision*, Vol. 47 No. 2, pp. 209-232.

Mantere, S. and Vaara, E. (2008), "On the problem of participation in strategy: a critical discursive perspective", *Organization Science*, Vol. 19 No. 2, pp. 341-358.

March, J.G. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, Vol. 2 No. 1, pp. 71-87.

Miller, D. and Friesen, P.H. (1984), *Organizations: A Quantum View*, Prentice-Hall, Englewood Cliffs, NJ.

Mintzberg, H. (1988), "Crafting strategy", *McKinsey Quarterly*, pp. 71-90.

Mintzberg, H. (2000), *The Rise and Fall of Strategic Planning*, Pearson Education, London.

Mintzberg, H. and Waters, J.A. (1985), "Of strategies, deliberate and emergent", *Strategic Management Journal*, Vol. 6 No. 3, pp. 257-272.

Mintzberg, H., Ahlstrand, B. and Lampel, J. (1998), *Strategy Safari: The Complete Guide Through the Wilds of Strategic Management*, Financial Times/Prentice Hall, London.

Moisander, J. and Stenfors, S. (2009), "Exploring the edges of theory-practice gap: epistemic cultures in strategy-tool development and use", *Organization*, Vol. 16 No. 2, pp. 227-247.

Naeve, A., Sicilia, M.A. and Lytras, M.D. (2008), "Learning processes and processing learning: from organizational needs to learning design", *Journal of Knowledge Management*, Vol. 12 No. 6, pp. 5-14.

Nielsen, B.B. (2005), "Strategic knowledge management research: tracing the co-evolution of strategic management and knowledge management perspectives", *Competitiveness Review: An International Business Journal*, Vol. 15 No. 1, pp. 1-13.

Nissen, M.E. (2006), *Harnessing Knowledge Dynamics*, IRM Press, Hershey.

Nonaka, I. (1994), "A dynamic theory of organizational knowledge creation", *Organization Science*, Vol. 5 No. 1, pp. 14-37.

Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-creating Company. How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, Oxford.

Nonaka, I. and Zhu, Z. (2012), *Pragmatic Strategy: Eastern Wisdom, Global Success*, Cambridge University Press, Cambridge, MA.

Nonaka, I., Toyama, R. and Hirata, T. (2008), *Managing Flow: A Process Theory of the Knowledge-based Firm*, Palgrave Macmillan, Houndmills.

O'Dell, C. and Hubert, C. (2011), *The New Edge in Knowledge: How Knowledge Management is Changing the Way We Do Business*, John Wiley & Sons, Hoboken.

Ohmae, K. (1982), *The Mind of the Strategist: The Art of Japanese Business*, McGraw-Hill, New York, NY.

Ortenblad, A. (2011), *Making Sense of the Learning Organization: What is it and Who Needs it?*, YayasanIlmuwan, Kuala Lumpur.

Parnell, J.A., Lester, D.L. and Menefee, M.L. (2000), "Strategy as a response to organizational uncertainty: an alternative to perspective on the strategy-performance relationship", *Management Decision*, Vol. 38 No. 8, pp. 520-530.

Porter, M.E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*, The Free Press, New York, NY.

Schiuma, G. and Carlucci, D. (2015), "The next generation of knowledge management: mapping-based assessment models", in Bolisani, E. and Handzic, M. (Eds), *Advances in Knowledge Management*, Springer, Heidelberg, pp. 197-214.

Senge, P. (1999), *The Fifth Discipline: The Art & Practice of the Learning Organization*, Random House, London.

Senge, P., Scharmer, C.O., Jaworski, J. and Flowers, B.S. (2005), *Presence: Exploring Profound Change in People, Organizations, and Society*, Currency, New York, NY.

Shannak, R.O., Ra'ed, M. and Ali, M. (2012), "Knowledge management strategy building: literature review", *European Scientific Journal*, Vol. 8 No. 15.

Snyman, R. and Kruger, C.J. (2004), "The interdependency between strategic management and strategic knowledge management", *Journal of Knowledge Management*, Vol. 8 No. 1, pp. 5-19.

Spender, J.C. (2014), *Business Strategy: Managing Uncertainty, Opportunity, & Enterprise*, Oxford University Press, Oxford.

Spender, J.C. and Grant, R.M. (1996), "Knowledge and the firm: overview", *Strategic Management Journal*, Vol. 17, pp. 5-9.

Stacey, R.D. (2001), *Complex Responsive Processes in Organizations: Learning and Knowledge Creation*, Routledge, London.

Stacey, R.D., Griffin, D. and Shaw, P. (2000), *Complexity and Management: Fad or Radical Challenge to Systems Thinking?*, Routledge, London.

Sveiby, K.E. (2001), "A knowledge-based theory of the firm to guide in strategy formulation", *Journal of Intellectual Capital*, Vol. 2 No. 4, pp. 344-358.

Taleb, N.N. (2007), *The Black Swan: The Impact of the Highly Improbable*, Penguin Books, London.

Teece, D.J. (2009), *Dynamic Capabilities & Strategic Management: Organizing for Innovation and Growth*, Oxford University Press, Oxford.

Tiwana, A. (2000), *The Knowledge Management Toolkit: Practical Techniques for Building A Knowledge Management System*, Prentice Hall, Upper Saddle River, NJ.

Vaara, E. and Whittington, J. (2012), "Strategy-as-practice: taking social practices seriously", *The Academy of Management Annals*, Vol. 6 No. 1, pp. 285-336.

van der Heijden, K., Bradfield, R., Burt, G., Cairns, G. and Wright, G. (2002), *Accelerating Organizational Learning With Scenarios*, John Wiley & Sons, New York, NY.

Viedma, J.M. and Cabrita, M.R. (2012), *Entrepreneurial Excellence in the Knowledge Economy: Intellectual Capital Benchmarking Systems*, Palgrave Macmillan, London.

von Krogh, G., Nonaka, I. and Aben, M. (2001), "Making the most of your company's knowledge: a strategic framework", *Long Range Planning*, Vol. 34, pp. 421-439.

Wenger, E. (2004),"Knowledge management as a doughnut: shaping your knowledge strategy through communities of practice", *Ivey Business Journal Online*.

Whittington, R. (1996), "Strategy as practice", *Long Range Planning*, Vol. 29 No. 5, pp. 731-735.

Whittington, R. (2001), *What is Strategy – and Does it Matter?*, Thomson Learning, London.

Wootton, S. and Horne, T. (2010), *Strategic Thinking: A Nine Step Approach to Strategy and Leadership for Managers and Marketers*, Kogan Page, London.

Zack, M.H. (1999), "Developing a knowledge strategy", *California Management Review*, Vol. 41 No. 3, pp. 125-145.

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