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# When knowledge is insufficient: Wisdom in a complex world

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### ABSTRACT

How to manage uncertain and unpredictable situations has been a major challenge facing managers and academics for decades. The development of practice and theory in knowledge management has been one important response. In this paper, however, we argue that knowledge and knowledge management may not be sufficient when dealing with emergent and unforeseen situations as knowledge tends to be past-oriented in terms of its formative components, while emergent situations are future-oriented, which may or may not be rooted in the past. In this paper, therefore, we explore this past-present-future conundrum by explaining how mere reliance on the past may restrict organizations' ability to deal with emergent situations in the future. Finally, the role of innovation and wisdom will be introduced as a bridge connecting current past-oriented knowledge to unknown and unpredictable future-oriented events.

### Keywords

Wisdom, knowledge, knowledge management, complexity, quantum theory, innovation.

### INTRODUCTION

Environmental stability in the past created a world of relatively simple systems where Newtonian perspectives could be applied to organizational decision making. Events were predictable, organizations had mechanical characteristics, expectations of regularity were achievable, causal relationships and limitations were well-defined, and 'tried and true' principles, rules and policies controlled behaviors (Stumpf, 1995). Nowadays, however, volatility and instability, products of time compressed and information-rich environments, cause high levels of uncertainty and are regarded as distinctive characteristics of the current world (Buckley and Carter, 2004). The future is no longer seen as a relatively certain continuance of the past and present. Tremendous and ever-increasing rates of technology advancement as well as increasing uncertainty spurred on by an interconnected global environment make the future unpredictable. Simple actions or decisions no longer seem appropriate and may lead to uncertain and unplanned results. To cope with continual changes in global markets, organizations must also be willing and able to continually change (Cash, 1997).

To cope in emerging business circumstances, traditional approaches will need to be reviewed and new perspectives considered. Without a doubt, knowledge is a valuable and vital organizational asset. As Peter Drucker (1995, p. 271) put it: "Knowledge has become the key economic resource and the dominant – and perhaps even the only – source of competitive advantage". Success is not achieved, however, necessarily by the organizations that know the most, but by the ones that can best use what they know (Bierly, Kessler and Christensen, 2000). Moreover, the nature of knowledge, including its sources and uses, must be carefully considered. A clear understanding of what knowledge is and of its potential is essential to use and

manage this resource, particularly in times of emergence resulting from the rapid technological development and the emergence of new business challenges (e.g. virtual global interactions).

The challenge of managing knowledge in a turbulent business world centers around how organizations can trust their information, experience and their previous knowledge to prepare for future circumstances they may have never seen, experienced or possibly imagined. The only thing known about the future is that it is uncertain, unknown, and unpredictable.

This paper is organized into four main sections. In the first section, knowledge, the source of knowledge and applying knowledge are discussed. The second section briefly introduces unpredictability from the perspective of complexity and quantum theory. Then the role of knowledge and managing knowledge in emergent business environments are examined. Finally, it will be proposed that knowledge and wisdom must be integrated together as the crucial parts of an organizational learning system that can lead to innovation. Innovation and wisdom are presented as possible ways to overcome a lack of appropriate knowledge when confronting uncertain and unpredictable situations.

## **KNOWLEDGE**

There are a number of conceptual perspectives relating to knowledge, so it is difficult to find a definition of ‘knowledge’ globally agreed upon. Providing a clear picture of the concept, however, is necessary to provide a conceptual foundation for this paper.

Philosophically, knowledge is defined as a justified true belief (Nonaka, 1994). That is to say, our belief is knowledge if we have a true justification for it. Although this understanding of ‘knowledge’ has endured over centuries, there are numerous debates in philosophy about whether or not such a definition of knowledge accurately describes the concept of knowledge. Providing some examples, Gettier (1963, p. 122), a critic, shows that a justified true belief may not be knowledge. Rather than engaging in an extensive philosophical debate we examine knowledge from a managerial perspective.

In the management literature, a recent approach to understanding knowledge is the hierarchical view. In this approach, knowledge is defined by differentiating between knowledge, information and data (Davenport and Prusak, 1998). That is to say, information becomes knowledge when it is combined with an individual’s experience and interpretation in a particular context (Harris, 2005; Nonaka, 1994).

Having considered a number of theoretical perspectives, Schon (1987) defines knowledge as “accumulated external and explicit information belonging to the community, being leveraged by tacit intrinsic insights which originate within individuals who then may act alone or cooperatively in order to control or integrate with their environment” (as cited in (Ahmad, Abiddin, Badusah and Wai, 2009, p. 3). This pragmatic definition points out key qualities of knowledge: explicit and tacit individual and social participation, and its use in light of the wider environment. This definition shows genuine promise as a starting point in understanding the role of knowledge in managing in unstable business environments. But where does knowledge come from and how specifically can it be used?

### **Sources of Knowledge**

Finding the real and exact source of knowledge is an ‘Arthurian’ quest. Nevertheless, there may be value in looking at the simplistic hierarchical model where knowledge rests on a foundation of data and information. The definition provided in the previous section explains knowledge as information leveraged by individual insight; i.e. when information is combined with people’s experience and interpretations, and when individuals tailor and mobilize information, it becomes a knowledge source (Kreiner, 2002). For this reason, prior knowledge is considered one of the main sources of knowledge (Nielsen, 2006; Armistead, 1999). Other factors relating to knowledge creation are human perception, discovery and learning, which are regarded as sources of knowledge (Harris, 2005). Clearly individuals play a crucial role in the process of transforming information into knowledge. We agree that the sources of knowledge, as Ray (2008) says, are people and information.

Knowledge, as Roberts and Armitage (2008) express, is one’s understanding obtained through experience. Hence, another view as to the sources of knowledge pertains to the relationship between knowledge and experience. One of the philosophically influential perspectives on this issue belongs to Kant. Kant differentiated between a priori knowledge – independent of experience – and a posteriori knowledge – derived from experience (Trusted, 1997). There are three schools of thought arguing whether or not knowledge is gained from experience:

- Empiricism: knowledge is acquired from experience. The main instruments are experiments and observation. Empiricists believe that our knowledge of the world is formed based on experience as a substantive source (Kurtus, 2002; Nagel, 2000).
- Positivism (logical positivism or scientific empiricism): this school is the extended form of empiricism. The methodology and precision of mathematics and natural science are used. Nothing is innate, verification is essential, and a proposition is meaningful if its truth is determined by some sense-experience (Kurtus, 2002).
- Apriorism: according to the school, knowledge is innate and can be acquired from a particular sort, called ‘a priori knowledge’ through non-inductive means. The followers of this school are divided into two groups: Impositionists and Reflectionists. The former say that “a priori knowledge reflects the logical structures of the mind”, and the latter believe that “we can have a priori knowledge of what exists as a result of the knowing subject and the objects of knowledge being in some sense and to some degree pre-tuned to each other” (Kurtus, 2002, par. 13-14).

When it comes to the turbulent business world replete with emergent phenomena, the source of knowledge becomes a fundamental concern. Even if we accept that the sources of knowledge are to at least some degree based on *information*, *experience*, and *previous knowledge*, we are still faced with the question of just how useful previous knowledge is when confronted with unpredictable and emergent future events and situations. Quite aside from the effects the sources of knowledge have on managing knowledge, philosophies of knowledge can have immense impact on knowledge management, and so it is important to understand what knowledge implementation is and what it is used for.

### Applying Knowledge

While knowledge for the sake of knowledge may be virtuous (Trusted, 1997), the worth of knowledge is in its implementation and the subsequent value accrued. Martensson (2000) states that transforming information into knowledge would be in vain if it did not lead to an “informed decision or action” (p. 208).

From the managerial perspective, applying knowledge is a major source of competitiveness (Grant, 1996), and the ultimate goal of knowledge management is to help people to put knowledge into action in order to improve organizational performance and maximize profit (Huseby and Chou, 2003).

In management, knowledge implementation is explained in different ways depending on organizational goals, research purposes, and theorists’ perspectives. Most research, nonetheless, similarly concludes that knowledge is implemented to increase organizational effectiveness, efficiency and, in turn, to improve competitiveness (Schultze and Leidner, 2002). While some scholars (Srinivasan, 2004; Iftikhar, Ericsson and Dickson, 2003) generally define knowledge implementation as the connection between knowledge and business to gain competitive advantage, others (Nielsen, 2006; Armistead, 1999; Shariq, 1997) explain it operationally as an embedding process through which knowledge is incorporated into products and services. At any rate, almost all theorists have the same approach to the philosophy of knowledge at the organizational level and for this paper’s purposes can be summed up thus: *knowledge is used for accurate decision making and, in turn, for promoting organization performance* (Walczak, 2005; Martensson, 2000).

We will return to this in the final paragraphs. But first, we turn our attention to better understand the emergent future and the unpredictability of the business world.

### EMERGENCE AND UNPREDICTABILITY: A GLIMPSE INTO COMPLEXITY AND QUANTUM THEORY

Emergence in this paper refers to the manifestation of new phenomena that are impossible to predict. Understanding such phenomena in order to prepare oneself to deal with them is a great challenge. So where an organization or a manager is faced with an emergent phenomenon or situation, it refers to the circumstances that the organization or the manager has never experienced before for which their knowledge may be irrelevant or inadequate. In these circumstances they may or may not be able to make appropriate decisions and take proper actions.

Our emphasis however, in this paper is on the ‘unpredictable’ characteristic of emergence rather than emergence itself. Although not necessarily as the main objective, unpredictability has been investigated by two theories: complexity and quantum. In the following paragraphs we examine unpredictability from the perspective of these theories.

### Complexity Theory

A definition provided by the Santa Fe Group clearly explains the complexity of the world we (as individuals or organizations) face (Batttram, 1998):

*“Complexity refers to the condition of the universe which is integrated and yet too rich and varied for us to understand in simple common mechanistic or linear ways. We can understand many parts of the universe in these ways but the larger and more intricately related phenomena can only be understood by principles and patterns – not in detail. Complexity deals with the nature of emergence, innovation, learning and adaption.”* (p. v).

The key point of this definition of complexity, which makes it appropriate for this paper, is the part that indicates “simple common mechanistic or linear ways” may not be able to help us understand the complex “intricately related” world in which we live. Consequently, even widely accepted empirical, positivist methods are likely to fall short in understanding complex problems.

Complex systems have innumerable possible states; interactions among agents are not structured; and the behavior of individual elements and the system as a whole is not predictable (Batttram, 1998). Thus the future is an inherently unpredictable and unstable entity (Smith, 2005). Tetenbaum (1998) characterizes the 21<sup>st</sup> century with several factors including technology, globalization, competition, change, speed, and complexity and paradox, and argues that the future is unpredictable, and Newtonian-based organizational approaches that posit the future to be a predictable entity will no longer be applicable to organizations.

Associated with complexity, quantum theory is another theory which studies unpredictability and uncertainty as the main characteristics of the world. This theory, first introduced in physics, explains that there might be no significant rule(s) behind the scene of events. Quantum theory and how it has been applied in current management studies is discussed in the following section.

### **Quantum Theory and Practice**

Quantum mechanics, introduced in the 1920s, is a theory that studies subatomic particles – everything smaller than an atom-in-motion (Shelton and Darling, 2001). The term ‘quantum’ refers to “a gross quantity or bulk, into which uncombined parts could now profitably be recombined into a whole that is more than the sum of its parts” (Pritscher, 2001, p. 4). Although quantum is still a relatively new perspective in management, a number of studies have taken this theory into account. Miller (1993) in quality management, Palmer and Parker (2001) in performance measurement management, and Druhl, Langstaff and Monson (2001) in organizational development have recognized the value of this paradigm in managerial issues. Shelton and Darling (2001) and Stumpf (1995) are some of those who have considered leadership from the perspective of the quantum paradigm. Shelton and Darling (2001) developed a ‘quantum skills’ model for enhancing leadership effectiveness, offering a new perspective to deal with the uncertainty and unpredictability of a complex world. These skills concentrate on personal skills and abilities which connect individuals to their surrounding environment (Mohamed and Pauleen, 2005).

According to this theory, things are not prefixed and isolated (Stumpf, 1995), but like an extensive network, everything is inter-connected (Piennar, Russell, Roets, Kriel and Grimbeek, 1999). Taking the main aspect of the theory into account, Lunca (2006) expresses that in quantum physics, uncertainty is not a momentary limitation, but a rule.

Through quantum and similar theories and efforts, academics try to give a picture of the unstable, unpredictable nature of the world and future events in order to find a way to cope with complexity and unpredictability by relying on knowledge. However, as we argue in the next section, the reliance on knowledge alone may not result in being able to effectively prepare for future contingencies.

### **Knowledge Management and Unpredictability**

While events may be predictable in mathematics and mathematics-based disciplines, the situation in social science is different. As we move from the hard sciences to the social sciences, knowledge moves from being objective to subjective (Brier, 2008). In social sciences, people are the subject of study and this moves us into the realm of complexity (Griffin and Stacey, 2005), as individuals’ unpredictability and intellect make it impossible to model human behavior (Snowden and Boone, 2007) and establish a universal rule predicting future behavior. Given unpredictable actors in uncertain systems, perhaps the only thing we can be sure of is that the future is unpredictable and unknowable (Uhl-Bien and Marion, 2008).

Tetenbaum (1998) put it: “The new world is full of unintended consequences and counterintuitive outcomes. In such a world, the map to the future cannot be drawn in advance. We cannot know enough to set forth a meaningful vision or to plan productively” (p. 24).

Complexity forces managers to look for assets and tools to protect their organizations from unpredictable future threats. Over the last decades knowledge has been deemed the most valuable and critically important organizational asset, one to be consciously and astutely managed. As a “strategic resource” (Roth, 2003, p. 32), one would expect knowledge to provide managers with the ability to prepare for an unpredictable complex future.

Our ability to apply the human mind to the future is limited (Shariq, 1997). Moreover, as long as our mind is utterly dependent on experience, information, and previous knowledge, organizations will always be surprised when facing the future. Our experiences do not remove uncertainty (Buckley and Carter, 2004), and the future as a complex nonlinear entity cannot be analyzed, as Gell-Mann (1990), the winner of the Nobel Prize in physics and one of the founders of Santa Fe Institute, argued.

Considering the sources and applications of knowledge, it is paradoxically past-oriented in terms of sources and future-oriented, in terms of implementation. The paradoxical dimensions of knowledge (past-basis versus future use) is based on two suppositions. First, knowledge is constructed based on data, information and experience, which are to a great extent impossible to acquire accurately prior to the occurrence of emergent situations and events. It must be also considered that even if one can tailor knowledge to an emergent event, that knowledge is first filtered through one’s perception of the events. That is, one applies knowledge to an event according to his or her perception of the situation. In addition, despite knowledge being rooted in the past, it aims to improve human life at a given time whether in the present or future.

In dealing with the future, these two natures of knowledge cause no problem insofar as circumstances are predictable and similar to the events experienced in the past. But the future, as seen before in complexity and quantum theories, is unpredictable and any simple action and decision may lead to unpredictable consequences.

The unpredictability of the world means the acquisition of knowledge – whether through gathering data and information, or by experience – prior to the occurrence of an emergent event is impossible for managers. The situations a decision-maker confronts in the future may or may not be a continuance of a trend. It may be, however, something completely new with surprising emergent characteristics and dimensions. While it is possible to some degree to predict the former and to cope with it accordingly using one’s knowledge, the latter is more likely to go beyond one’s knowledge and experience and therefore be difficult to deal with.

The subjectivity of knowledge (Kramer, 1990), and the relativity and fragility of human perception (Rooney, McKenna and Liesch, 2010) are the other reasons for not depending solely on knowledge. The concurrence of the fallibility of the knowledge at hand and the fragility of humans’ perception to capture real key aspects of a given emergent event makes it a challenging task for managers to make decisions that are appropriate for the circumstance at hand, especially in the sense of making quick effective decisions. So how can we make sure that our past knowledge will be useful when facing emergent events? What is the role of knowledge in a complex world for coping with emergent phenomena? As argued in the next section, maybe we have to look beyond knowledge to wisdom. It will be discussed that wisely made decisions can lead to innovative outcomes in emergent situations that may enhance the chance of success in unpredictable business circumstances.

## **THE ROLE OF WISDOM AND INNOVATION IN A COMPLEX WORLD**

*“A better future [than the one resulted from relying completely on limited cognition, relative knowledge, perception and truth] is possible if we look beyond the accumulative assumptions about knowledge (and technology) to wisdom” (Rooney et al., 2010, p. 17).*

As we have seen, complexity and unpredictability are key issues that managers face. Good judgment, effective decision making, and innovative and proper action are important to all organizations. What should be of great concern to organizational leaders is that concentrating on managing knowledge only, as is currently the fashion, may not necessarily lead them to wise judgment, good decisions and appropriate actions (Figure 1).

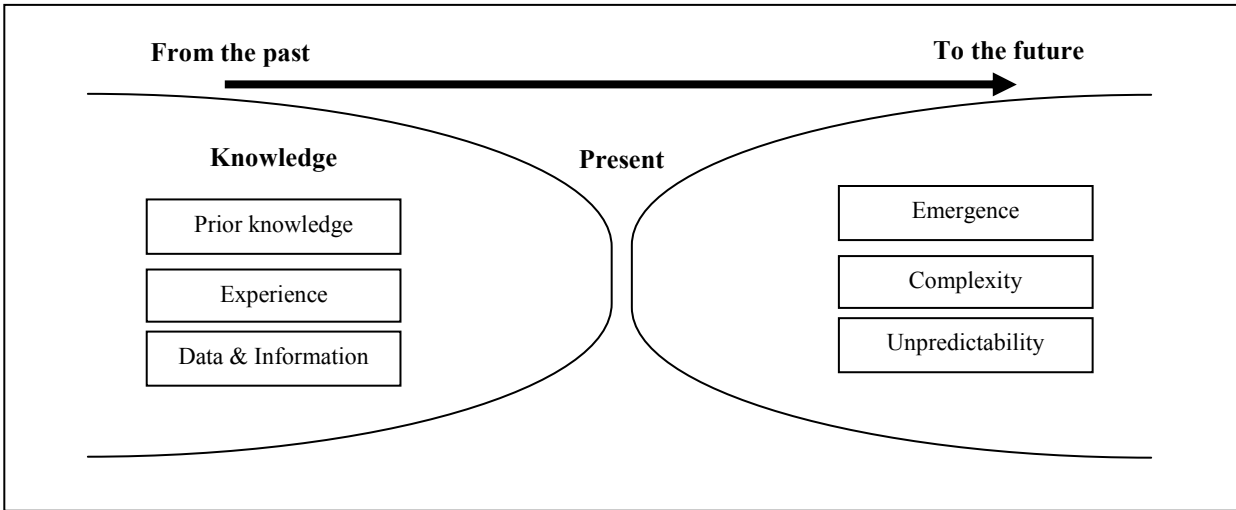


Figure 1: The inadequacy of knowledge in complex and emergent environments

Knowledge management needs to shift from focusing only on information and knowledge to an integrated approach of both knowledge and wisdom (Figure 2). This integrated approach will bring such factors as judgment ability, ethics, and cognitive abilities into the equation.

The link between innovation and wisdom in dealing with uncertain and turbulent business circumstances is the *cognitive process*. According to Csikszentmihalyi and Rathunde (1990), wisdom as a cognitive process refers to “attempts at understanding the world in a disinterested way, seeking the ultimate consequences of events as well as ultimate causes while preserving the integration of knowledge” (p. 48). Both the process and the result of being wise in facing a complex and unpredictable future are likely to be *innovative*. Innovation is about “introducing something different from current norms” (Beckett, 2004, p. 325). Innovation as the process of interaction between individuals and groups (Weisenfeld, 2003), refers to “Innovation is a process, involving multiple activities, performed by multiple actors from one or several organizations, during which new combinations of means and/or ends, which are new for a creating and/or adopting unit, are developed and/or produced and/or implemented and/or transferred to old and/or new market-partners” (Gemueden, 2009). Innovation aims at introducing changes in the organization to create and exploit new and existing opportunities (Drucker, 1985) in order to be effective in handling emergent situations in the turbulent business world.

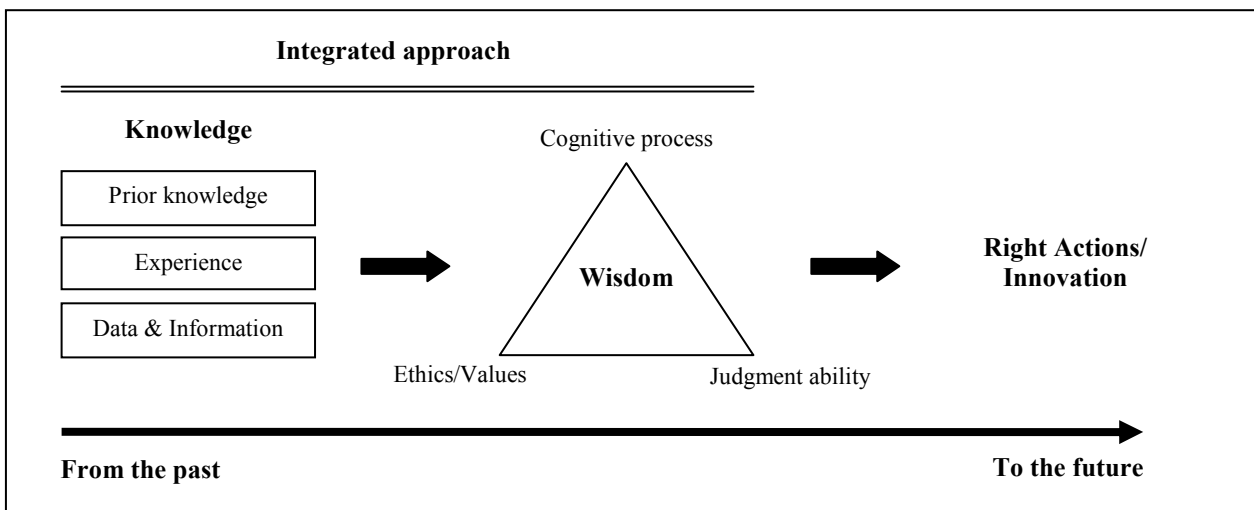


Figure 2: The integrated approach of wisdom and knowledge

Developing innovative ideas and solutions is what ‘*coping with unpredictability*’ is about. Uncertainty bounds rationality (Potts, 2010) and previous knowledge, experiences, and solutions may be insufficient for handling emergent situations; innovative ideas, through a practical wisdom-based cognitive process, enable business people to deal with complexity. As illustrated in Figure 2, innovative outcomes result from a process that begins with preexisting knowledge; which is created based on experience, data, information, and prior knowledge. Through a cognitive process, wisdom helps individuals to get closer to the truth<sup>1</sup>, and brings both individual and organizational beliefs and values into consideration to make sound judgments. This capacity for creativity and generating new insights by reformulating and re-conceptualizing what is already known is, according to Rooney and McKenna (2010), a fundamental part of wisdom.

Following an accurate judgment, wise action would be more likely to lead individuals and organizations to have more control over the consequences of their actions. Individuals are at the coalface, closest to the action. Being able to make accurate judgments and decisions and to take wise actions will allow the organization to have a considerable level of control over the consequences of its decisions and to achieve innovative results when faced with complexity and emergence.

Emergent situations, at the level of the individual, are defined as being the circumstances in which individuals have to make the right decisions in real time using their cognitive abilities and judgment skills independently, to some extent, of their supervisors to handle uncertain and unforeseen situations. At this level, wisdom mediates between beliefs, values, knowledge, information, abilities, and skills (Sternberg, 1990). At the organizational level, an emergent situation can be a financial crisis that requires a quick yet proper organizational reaction.

Knowledge is connected to judgment and ethics (Strati, 2007), qualities that are extensively dealt with in the realm of wisdom. Knowledge judges information and refines itself in new situations (Davenport and Prusak, 1998) and wisdom helps individuals find out how appropriate knowledge can be effectively chosen and applied in specific situations (Bierly et al., 2000), as well as how new ideas are developed and used wisely. In this sense, wisdom reconciles what is in the mind with what emerges in action. As Rooney et al. (2010) put it, “wisdom is concerned less with how much we know and more with what we do and how we act” (p. 17). This means that through applying wisdom at this level, both one’s explicit and implicit knowledge will come together.

At the individual level, wisdom relies on personal abilities and skills to make sound judgments and right decisions. Although it is individuals who comprise teams and groups, groups are wiser than their collective individual members (Mannes, 2009), and new ideas need to be adopted by others to become an innovation (Potts, 2010). This way, groups and their interactions, playing an important role in promoting wisdom from the individual level to the organizational level, lead organizations to innovative thinking and wise action.

A wise organization cannot exist without wise individuals and an organization requires wise people at all organizational levels. Wisdom, derived from wise members and wise groups, encouraged, collected, collated, and directed by the organization will result in appropriate organizational action and innovative outcomes in the face of emergent and complex situations.

## CONCLUSION

In sum, we conclude that when faced with a complex situation where emergence and unpredictability is the main challenge, what may matter more than the amount of knowledge one has at one’s disposal, or even how well one manages that knowledge, is the way that situations are judged, decisions are made, and actions taken. Much recent managerial and leadership literature has addressed this personal and organizational ‘quality’ as wisdom or practical wisdom (Rooney et al., 2010; Küpers and Statler, 2008). Having “the ability to identify the salient features of complex and particular situations” as Roca (2008, p. 610) defines Aristotle’s concept of *phronesis*, is crucial for individuals, groups, and organizations. They need to be capable of going beyond experience and knowledge to perceive the volatile world as it is and to introduce innovative ideas according to the reality of the environment if they are to survive in situations where events occur only once or for the first time.

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<sup>1</sup> Respecting the relativist thinking and the position that truth is not absolutely knowable at any given time; we hold that there is and should be a level of understanding of what is happening in the real world and external to the person, which by transcending individual inclinations best conforms to actuality and fact.



With this paper, we point the way toward both better practice and further research. For organizations our paper argues that the value of knowledge and knowledge management, while critical to organizations, must be understood as only a partial response to future operational and strategic planning. In addition, leaders and managers must be able to tap into and further develop a ‘wisdom’ response at all levels of the organization to satisfactorily manage complex environments and future contingencies. For researchers, we need to locate and document those individuals and organizations that have not shied away from applying wisdom and innovative thinking in the day to day management and leadership of their organizations. The more cases we can expose the more likely these qualities will become a routine part of ‘doing business’.

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