Engaging Tacit Knowledge
in Support of Organizational Learning

by David Bennet and Alex Bennet[1]

Abstract

Purpose—To identify and develop an understanding of the aspects of tacit knowledge that play a significant role in enabling organizational learning.
Design/methodology/approach—Taking a multi-dimensional approach, this paper moves toward an understanding of tacit knowledge through the lens of neuroscience, evolutionary biology, psychology, competency theory and knowledge management. We begin with the definition of knowledge, then discuss explicit, implicit and tacit knowledge and their relationships. We then explore individual learning through the four aspects of tacit knowledge (embodied, affective, intuitive and spiritual). Next we develop the concept of extraordinary consciousness and propose a four-fold action model for working with tacit knowledge to improve organizational learning. Finally, we engage this model to begin the exploration of the role of leadership with respect to tacit knowledge and organizational learning.
Findings—The recognition that tacit knowledge resides beyond ordinary consciousness leads to the search to develop greater sensitivity to information stored in the unconscious to facilitate the management and use of tacit knowledge. Surfacing, embedding and sharing tacit knowledge are approaches for mobilizing tacit knowledge in support of individual and organizational objectives. In addition, it was forwarded that participating in or exposing ourselves to situations that induce resonance engages our personal passion in developing deeper knowledge and expanded awareness of that knowledge, that is, moving us toward extraordinary consciousness.
Originality/value—This paper is a new treatment of tacit knowledge that is consistent with recent findings in neuroscience and evolutionary biology. Further, it begins the exploration of ways to achieve extraordinary consciousness, thereby enhancing the capacity of an organization to learn.
Keywords: tacit knowledge, organizational learning, extraordinary consciousness, embodied tacit knowledge, affective tacit knowledge, intuitive tacit knowledge, spiritual tacit knowledge, associative patterning
Paper type Research and Conceptual

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Introduction

Knowledge and its management continue to increase in importance throughout society. As CUCA[2] accelerates and global relationships multiply, making good decisions and taking effective actions become crucial elements in the survival and sustained performance of our organizations. Whether in corporations, not-for-profits or government entities, functioning well and meeting the demands of an unpredictable and precarious world are the major challenges to leaders and managers. The way ahead is one of learning, adapting, taking risks, collaborating and creating organizations where employees are willing and competent to deal with complexity and uncertainty. That means they have the knowledge and freedom to take both action and responsibility. This environment demands deep knowledge, which comes primarily from tacit knowledge (Goldberg, 2005), that is, knowledge that cannot be fully shared through communication and is not part of one's ordinary consciousness (Polanyi, 1958). How do we get the knowledge needed to deal with complex problems, dynamic systems or unpredictable events?

The deeper we go into the meaning and characteristics of the concept of tacit knowledge, the more complex it becomes. Nevertheless, as the importance of tacit knowledge grows in support of organizational performance, so must our depth of understanding and the articulation of that understanding. Taking a functional definition of knowledge, this paper looks carefully at the four aspects of tacit knowledge: embodied, affective, intuitive and spiritual. Each of these has its own unique characteristics and plays a different role in learning and the implementation of tacit knowledge within individuals and organizations. As our understanding of these aspects grows, techniques for working with tacit knowledge suggest themselves and potential leadership/management actions are suggested.

Although there is much that is not understood about the mind/brain from a scientific viewpoint, the explosion of new measurement technology coupled with neuroscience research is providing significant insights into the operation of the mind/brain/body. When considering learning and knowledge, neuronal patterns offer a useful perspective (Stonier, 1997). Taking a multi-disciplined approach, this paper will move toward an understanding of tacit knowledge through the lens of neuroscience, evolutionary biology, psychology, competency theory and knowledge management. Each of these domains offer ideas, perspectives and insights that help build a holistic understanding of the nature, challenge and efficacy of knowledge concepts.

Background

Embracing Stonier's description of information as a basic property of the Universe—as fundamental as matter and energy (Stonier, 1990; Stonier, 1997)—we take information to be the result of organization expressed by any non-random pattern or set of patterns. Data (a form of information) would then be simple patterns, and data

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[2] Increasing **C**hange, rising **U**ncertainty, growing **C**omplexity and widespread **A**nxiety, an apt description of our world today.

and information would both be patterns but they would have no meaning until some organism recognized and interpreted the patterns (Bennet and Bennet, 2008). Thus knowledge exists in the human brain in the form of stored or expressed neural patterns that may be activated and reflected upon through conscious thought. This is a high-level description of the creation of knowledge that is consistent with the neural operation of the brain and is applicable in varying degrees to all living organisms. From this process new patterns are created that may represent understanding, meaning and the capacity to anticipate (to various degrees) the results of potential actions. Through this process the mind is continuously growing, restructuring and creating increased organization (information).

Taking a functional approach, our definition of knowledge then becomes: *knowledge is the capacity (potential or actual) to take effective action in varied and uncertain situations* (Bennet & Bennet, 2004). This definition highlights knowledge as a creation of the human mind. The term knowledge is often used in organizations, popular literature, and technology solutions as a descriptor of "information." Recognizing that knowledge is the result of associative patterning in the brain, we choose to consider knowledge as composed of two parts: Knowledge (Informing) and Knowledge (Proceeding). This builds on the distinction made by Ryle (1949) between "knowing that" and "knowing how".

Knowledge (Informing), or Kn_I, is the *information* part of Knowledge; it could be implicit, explicit, tacit or any combination of these. Kn_I represents insights, meaning, understanding, expectations, theories and principles that support or lead to effective action. When viewed separately this is information that *may* lead to effective action. However, it is considered knowledge when it is used as *part of the knowledge process*. Note that when "knowledge" is described and stored in a database or book, only the information part of that knowledge is stored (often considered knowledge artifacts).

Knowledge (Proceeding), Kn_P, represents the *process and action* part of knowledge. Kn_P is the process of selecting and associating the relevant information (Kn_I) from which specific actions can be identified and implemented, that is, actions that result in the desired outcome. There is considerable precedence for considering knowledge as a process versus an outcome. As Kolb (1983) forwards in his theory of experiential learning, knowledge retrieval, creation and application requires engaging knowledge as a process, not a product. A part of Kn_P, will almost always include implicit or tacit knowledge. The process we use to find, create and semantically mix the information needed to take effective action is often difficult to communicate to someone else. The more complex the situation, the more difficult the solution, and the larger the role of tacit knowledge.

Building on our definition of knowledge, learning is considered the creation or acquisition of the ability (potential and actual) for people to take effective action. From a neuroscientific perspective, this means that learning is the identification, selection and mixing of the relevant neural patterns (information) within the learner's mind with the information from the environment to create understanding, meaning and anticipation of

the results of selected actions. Organizational learning is the sum of all learning processes within an organization. This includes not only individual learning, but also social learning from conversations to team dialogues to community meetings. In other words, organizational learning represents the processes throughout the organization that create or acquire the knowledge necessary to survive, compete and grow in a changing environment. Learning is a dynamic process that manifests itself in the continuously changing nature of organizations, exemplified by innovation, collaboration, and culture shifts.

Differentiating Tacit Knowledge[3]

Recognizing that all models are artificial constructs, in order to focus on tacit knowledge we develop a common understanding of what it is and what it isn't. By the latter part of the 20th century the push to understand knowledge and its value to organizations had spread across a number of disciplines with the result that concepts of explicit, implicit and tacit knowledge began to emerge in both the academic organizational literature and the popular press. Our interpretation of each of these concepts is described briefly below.

Explicit knowledge (Kn_e) is the process of calling up information (patterns) and processes (patterns in time) from memory that can be described accurately in words and/or visuals (representations) such that another person can comprehend the knowledge that is expressed through this exchange of information. This has historically been called declarative knowledge (Anderson, 1983). Emotions can be expressed as explicit knowledge in terms of changes in body state. As Damasio notes, "Many of the changes in body state—those in skin color, body posture, and facial expression, for instance—are actually perceptible to an external observer" (Damasio, 1994, p. 139). Often these changes to the body state represent part of an explicit knowledge exchange (Bennet and Bennet, 2007c). Examples would be turning red with embarrassment or blushing in response to a insensitive remark.

Implicit knowledge (Kn_i) is a more complicated concept, and a term not unanimously agreed-upon in the literature. This is understandable since even simple dictionary definitions—which are generally unbiased and powerful indicators of collective preference and understanding—show a considerable overlap between the terms "implicit" and "tacit," making it difficult to differentiate the two. We propose that a useful interpretation of *implicit knowledge* is knowledge stored in memory of which the individual is *not immediately aware.* While this information is *not readily accessible*, it may be pulled up when triggered (associated). Triggering might occur through questions, dialogue or reflective thought, or happen as a result of an external event. In other words, implicit knowledge is knowledge that the individual *does not know* they have, but is self-discoverable! However, once this knowledge is surfaced, the individual *may or may not* have the ability to adequately describe it such that another individual could create the same knowledge; and the "why and how" may remain tacit knowledge.

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[3]This text was introduced in Bennet, David and Bennet, Alex (2008), "Associative Patterning: The Unconscious Life of an Organization" in Girard, J.P. (Ed.), *Organizational Memory*, ICI Global: Hershey, PA.

A number of published psychologists have used the term implicit interchangeably with our usage of tacit, that is, with implicit representing knowledge that once acquired can be shown to effect behavior but is not available for conscious retrieval (Reber, 1993; Kirsner, et al, 1998). As described in our above discussion of implicit knowledge, what is forwarded here is that the concept of implicit knowledge serves a middle ground between that which can be made explicit and that which cannot easily (if at all) be made explicit. By moving beyond the dualistic approach of explicit and tacit—that which can be declared versus that which can't be declared, and that which can be remembered versus that which can't be remembered—we posit implicit as representing the knowledge spectrum between explicit and tacit. While explicit refers to easily available, some knowledge requires a higher stimulus for association to occur but is not buried so deeply as to prevent access. This understanding opens the domain of implicit knowledge.

Calling them interactive components of cooperative processes, Reber agrees that there is no clear boundary between that which is explicit and that which is implicit (our tacit): "There is ... no reason for presuming that there exists a clean boundary between conscious and unconscious processes or a sharp division between implicit and explicit epistemic systems ..." (Reber, 1993, p. 23). Reber describes the urge to treat explicit and implicit (our tacit) as altogether different processes the "polarity fallacy" (Reber, 1993). Similarly, Matthews says that the unconscious and conscious processes are engaged in what he likes to call a "synergistic" relationship (Matthews, 1991). What this means is that the boundary between the conscious and the unconscious is somewhat porous and flexible. Given that caveat, how do we describe tacit knowledge?

Tacit knowledge (Kn_t) is the descriptive term for those connections among thoughts that cannot be pulled up in words, a knowing of *what* decision to make or *how* to do something that cannot be clearly voiced in a manner such that another person could extract and re-create that knowledge (understanding, meaning, etc.). An individual *may or may not* know they have tacit knowledge in relationship to something or someone. But even when it *is known*, the individual is unable to put it into words or visuals that can convey that knowledge. We all know things, or know what to do, yet may be unable to articulate *why* we know them, *why* they are true, or even exactly *what they are*. To "convey" is to cause something to be known or understood or, in this usage, to transfer information from which the receiver is able to create knowledge.

Knowledge starts as tacit knowledge, that is, the initial movement of knowledge is from its origins within individuals (in the unconscious) to an outward expression (howbeit driving effective action). What does that mean? Michael Polanyi, a professor of both chemistry and the social sciences, wrote in *The Tacit Dimension* that, "We start from the fact that we can know more than we can tell" (Polanyi, 1967, p. 108). He called this pre-logical phase of knowing tacit knowledge, that is, knowledge that cannot be articulated (Polanyi, 1958).

Tacit and explicit knowledge can be thought of as residing in "places," specifically, the unconscious and conscious, respectively, although both Kn_l and Kn_P (whether tacit or explicit) are differentiated patterns spread throughout the neuronal system, that is, the volume of the brain and other parts of the central nervous system). On the other hand, implicit knowledge may reside in either the unconscious (prior to triggering, or tacit) or the conscious (when triggered, or explicit). See the continuum of awareness of knowledge source/content represented in Figure 1. Note that there is no clean break between these three types of knowledge.

Knowledge (Proceeding), Kn_P, may be explicit, implicit or tacit. For anything except the simplest knowledge, the process we use to find, create and mix the information needed to take effective action is difficult, if at all possible, to communicate to someone else. Thus the expertise involved in deciding what actions to take in many situations will almost always be tacit. Team discussions, problem solving and decision-making, while helpful and necessary, must address the emotional, intuitive and embodied aspects as well as relevant data, information, and explicit knowledge of the participants.

As another point of comparison, explicit, implicit and tacit knowledge appear to almost always include both Kn_l and Kn_P. As an example of how these three aspects of knowledge can work together, consider the development that occurs as we learn to drive a car. When you first get behind the steering wheel of a car, each action comes slowly and is learned only through practice (trial and error). You are creating explicit knowledge, and able to talk about every action you take. As your experience increases, many things—such as how to brake evenly, how to turn corners in your lane, or how to accelerate smoothly—become automatic. Soon, with practice, many of the aspects of driving become natural, moving them into implicit knowledge. After driving to work for some length of time, you know the road, the car and the traffic patterns so well that you can think about other things and still drive safely. Much of your driving is now tacit knowledge, yet there is always an alert, implicit part a seasoned driver will immediately *know* when something ahead may become a problem. Implicit driving can quickly become explicit if someone in front of you slams on their brakes or a passing car swerves too close to you. Yet when nothing special happens during your trip, you may have no memory of driving the last ten miles!

Exploring individual learning through the aspects of tacit knowledge

Tacit knowledge—the focus area of this paper—can be thought of in terms of four aspects: embodied [$Kn_{t(e)}$], intuitive [$Kn_{t(i)}$], affective [$Kn_{t(a)}$] and spiritual [$Kn_{t(s)}$]. Each of these aspects represents different sources of tacit knowledge whose applicability, reliability and efficacy may vary greatly depending on the individual, the situation and the knowledge needed to take effective action. They are represented in Figure 1 along with explicit and implicit knowledge on the continuum of awareness.

Embodied tacit knowledge, $Kn_{t(e)}$, also referred to as somatic knowledge, can be represented in neuronal patterns stored within the body. It is both kinesthetic and

sensory. *Kinesthetic* is related to the movement of the body and, while important to every individual every single day of our lives, is a primary focus for athletes, artists, dancers, kids and assembly-line workers. A commonly used example is knowledge of riding a bicycle. *Sensory*, by definition, is related to the five human senses through which information enters the body (sight, smell, hearing, touch and taste). An example is the smell of burning metal from your car brakes while driving or the smell of hay in a barn. These smells can convey knowledge of whether the car brakes need replacing (get them checked immediately), or whether the hay is mildewing (dangerous to feed horses, but fine for cows). These responses would be overt, bringing to conscious awareness the need to take effective action and driving that action to occur.

Because embodied learning is often linked to experiential learning (Merriam, et al, 2006), embodied tacit knowledge can generally be learned by mimicry and behavior skill training. While deliberate learning through study, dialogue or practice occurs at the conscious level, when significant or repeated over time such learning often becomes tacit knowledge. Further, as individuals develop competence in a specific area, more of their knowledge in that area becomes tacit, making it difficult or impossible for them to explain how they know what they know. The neuronal patterns representing that knowledge become embedded within long-term working memory where they become automatic when needed, but lost to consciousness. Embodied tacit knowledge can be both preventative and developmental. For example, a physical response can warn *not* to do something or move an individual *to do something*. Both of these responses constitute the capacity to take effective action since *not taking an action is an action choice*.

Intuitive tacit knowledge is the sense of knowing coming from inside an individual that may influence decisions and actions; yet the decision-maker or actor cannot explain *how* or *why* the action taken is the right one. Damasio calls intuition, "the mysterious mechanism by which we arrive at the solution of a problem *without* reasoning toward it" (Damasio, 1994, p. 188). The unconscious works around the clock with a processing capability many times greater than that at the conscious level. This is why as the world grows more complex, decision-makers will depend more and more on their intuitive tacit knowledge. But in order to use it, decision-makers must first be able to tap into their unconscious.

Intuitive tacit knowledge can be both Kn_I and/or Kn_P, and it may reside in either the potential aspect of taking effective action (knowing how) or the actual aspect of taking effective action (acting). A form of knowing, deep tacit knowledge is created within our minds (or hearts or guts) over time through experience, contemplation, and unconscious processing such that it becomes a natural part of our being—not just something consciously learned, stored, and retrieved (Bennet & Bennet, 2007a). In other words, intuitive tacit knowledge is the result of continuous learning through experience. To develop intuitive skills requires making sure that your experiences are meaningful, that is, having specific objectives in mind such as how to size up situations quickly and develop a good sense of what will happen next (Klein, 2003). It is also important to get immediate and accurate feedback directly related to the context within

which a decision was made, thus developing patterns in the unconscious (intuition). According to Klein, to build up expertise requires: (1) feedback on decisions and actions, (2) active engagement in getting and interpreting this feedback (not passively allowing someone else to judge them); and (3) repetitions, which provide the opportunity to practice making decisions and getting feedback (Klein, 2003).

Affective tacit knowledge is connected to emotions and feelings, with emotions representing the external expression of some feelings. Feelings expressed as emotions become explicit (Damasio, 1994). Feelings that are not expressed—perhaps not even recognized—are those that fall into the area of affective tacit knowledge. From the viewpoint of neuroscience, information coming into the body moves through the amygdala, that part of the brain that is,

> "important both for the acquisition and for the on-line processing of emotional stimuli ... [with] Its processing encompassing both the elicitation of emotional responses in the body and changes in other cognitive processes, such as attention and memory (Adolphs, 2004, p. 1026).

It is as incoming information moves through the amygdala that an emotional "tag" is attached. If this information is perceived as life-threatening, then the amygdala takes control, making a decision and acting on that decision before conscious awareness of a threat! Haberlandt (1998) goes so far as to say that there is no such thing as a behavior or thought not impacted by emotions in some way. Even simple responses to information signals can be linked to multiple emotional neurotransmitters. Thus affective tacit knowledge is attached to other types or aspects of knowledge. For example, when an individual thinks about recent occurrences like an argument or a favorite sports team losing in the Rose Bowl, feelings are aroused. Or recall the internal responses to holding the hard copy of your first book, or your new born child. As Mulvihill states,

> Because the neurotransmitters which carry messages of emotion are integrally linked with the information during both the initial processing and the linking with information from the different senses, it becomes clear that there is no thought, memory, or knowledge which is 'objective,' or 'detached' from the personal experience of knowing (Mulvihill, 2003, p. 322).

Feelings as a form of knowledge have different characteristics than language or ideas, but they may lead to effective action because they can influence actions by their existence and connections with consciousness. When feelings come into conscious awareness they can play an informing role in decision-making, providing insights in a non-linguistic manner and thereby influencing decisions and actions. For example, a feeling (such as fear or an upset stomach) may occur every time a particular action is started which could prevent the decision-maker from taking that action.

Spiritual tacit knowledge can be described in terms of knowledge based on matters of the soul. The soul represents the animating principles of human life in terms

of thought and action, specifically focused on its moral aspects, the emotional part of human nature, and higher development of the mental faculties (Bennet & Bennet, 2007b). While there is a "knowing" related to spiritual knowledge similar to intuition, this knowing does not include the experiential base of intuition, and it may or may not have emotional tags. The current state of the evolution of our understanding of spiritual knowledge is such that there are insufficient words to relate its transcendent power, or to define the role it plays in relationship to other tacit knowledge. Nonetheless, this area represents a form of higher guidance with unknown origin.

In a study in early 2007, representative human characteristics spiritual in nature were identified that contribute to learning (Bennet & Bennet, 2007b). These characteristics were grouped into five general areas: *shifting frames of reference* (represented by abundance, awareness, caring, compassion, connectedness, empathy, openness); *animating for learning* (represented by aliveness, grace, harmony, joy, love, presence, wonder); *enriching relationships* (represented by authenticity, consistency, morality, respect, tolerance, values); *priming for learning* (represented by awareness, eagerness, expectancy, openness, presence, sensitivity, unfoldment, willingness); and *moving toward wisdom* (represented by caring, connectedness, love, morality, respect, service).

The general area of *shifting frames of reference* was intertwined with learning, thinking and acting (Bennet, 2006), covering the external approach (looking from an outside frame of reference) and the internal approach (taking an empathetic perspective which moves the viewpoint from the objective to the subjective). Frames of reference can be focusing and/or limiting, allowing the mind to go deeper in a bounded direction. Shifting frames of reference potentially offer the opportunity to take a multidimensional approach to exploring the world around us. *Animating for learning* speaks to the fundamental source of life—learning, the energy used for survival and growth. The area of *enriching relationships* is tied to competence theory (White, 1959), which assumes that it is natural for people to strive for effective interactions with their world. This brings in the two dimensions of spirituality that exist beyond ourselves (others and that which is beyond the human) with whom we can truly learn to grow in understanding (Nouwen, 1975). *Priming for learning* attributes are considered as those that actively prepare and move an individual toward learning. Wisdom, the highest part of the knowledge spectrum (see the organizational learning portfolio article in this issue of VINE), is considered as forwarding the goal of achieving the common or greater good (Sternberg, 2003). Reflecting on this short study, it would appear that spiritual knowledge would provide a transcendent frame of reference that puts things in relationship to a larger perspective while promoting self-knowledge and learning.

Spiritual knowledge may be the guiding purpose, vision and values behind the creation and application of tacit knowledge. It may also be the road to moving information to knowledge and knowledge to wisdom, i.e., purpose, vision and values are excellent guidelines. Zohar and Marshall describe spiritual tacit knowledge as,

... the intelligence with which we address and solve problems of meaning and value, ... place our actions and our lives in a wider-richer meaning-giving context, [and] ... can assess that one course of action or one life-path is more meaningful than another" (Zohar and Marshall, 2000, pp. 2-3).

In the context of this paper, spiritual tacit knowledge would be the source of higher learning, helping decision-makers create and implement knowledge that has greater meaning and value for the common good—wisdom.

An example of spiritual tacit knowledge that is primarily Kn_P might be Csikszentmihalyi's concept of flow (Csikszentmihalyi, 1990). Spiritual tacit knowledge that is primarily Kn_I is often referred to as streaming or channeling of information that is outside an individual's personal experience or awareness. An example would be the numerous recorded instances in times of warfare where military personnel under fire have known what actions to take without detailed knowledge of the terrain or enemy troop movement.

Similar to the possible interactions among tacit, implicit and explicit knowledge, the four aspects of tacit knowledge can experience considerable interconnections and overlaps. For example, referring to a somatic learning model by Amann, Merriam says that "the spiritual aspect of somatic learning is meaning-making through music, art, imagery, symbols, and rituals and overlaps or intersects with the other three dimensions" (Merriam, et al, 2006, p. 195), which are described as kinesthetic learning, sensory learning and affective learning. While organized differently than the knowledge model presented here, the Amann somatic learning model includes four elements—kinesthetic, sensory, affective and spiritual—as tacit knowledge (Amann, 2003).

As a second example of overlap, affective and embodied somatic states can operate both inside and outside an individual's awareness or consciousness; however, if overlap occurs in the unconscious the results may surface as intuition. Conversely, affective and embodied somatic states are often accompanied by overt somatic markers; for example, a "gut feel." In contrast, intuition comes from the neural network of the reticular activating system. Instead of producing a body-state change (sematic marker), it inhibits the regulatory neural circuits located in the brain core, which can influence behaviors (Damasio, 1994).

Building extraordinary consciousness

It has only been in the past few decades that cognitive psychology and neuroscience have begun to seriously explore unconscious mental life. This includes the recognition that conscious experience, thought and action are influenced by unconscious concepts, memories and other mental constructs inaccessible to conscious awareness and somehow independent of voluntary control (Eich, et al., 2000). At the same time, research in neuroscience is also digging deeper into the understanding of the emotions, working memory and the unconscious processing that occur within the mind, and to some extent throughout the body.

Polanyi felt that tacit knowledge consisted of *a range* of conceptual and sensory information and images that could be used to make sense of a situation or event (Hodgkin, 1991). We agree. Two observations that have emerged in the discussion above are: (1) While the terms explicit, implicit and tacit may be useful in clarifying and understanding knowledge, these terms describe aspects of a fluctuating continuum (a range) rather than a rigid classification schema. (2) In the unconscious mind the association of incoming information with internal information is a powerful form of continuous learning. Significant gains can be made in the effectiveness of problem solving and decision-making through understanding and stimulating this process. *So how do we make best use of this process for our own and our organization's competence?* The search for an answer leads to thinking beyond what is described as ordinary consciousness towards what we will call extraordinary consciousness.

Ordinary consciousness represents the customary or typical state of consciousness, that which is common to everyday usage, or of the usual kind. Polanyi sees tacit knowledge as *not part* of one's ordinary consciousness (Polanyi, 1958); thus, tacit knowledge resides in the unconscious. To access tacit knowledge an individual needs to move from ordinary consciousness to extraordinary consciousness, acquiring a greater sensitivity to information stored in the unconscious. Extraordinary consciousness would be considered special, exceptional, and outside of the usual or regular state of consciousness. This means a heightened sensitivity to, awareness of and connection with our unconscious mind, together with its memory and thought processes.

The challenge is to make better use of our tacit knowledge through creating greater connections with the unconscious, building and expanding the resources stored in the unconscious, deepening areas of resonance, and sharing tacit resources among individuals. We propose a four-fold action model with nominal curves for building extraordinary consciousness within individuals that includes surfacing tacit knowledge, embedding tacit knowledge, sharing tacit knowledge, and inducing resonance (see Figure 2).

The first approach toward building extraordinary consciousness is *surfacing tacit knowledge*. As individuals observe, experience, study and learn throughout life they generate a huge amount of information and knowledge that becomes stored in their unconscious mind. Even though an individual may have difficulty pulling it up when needed, learning how to access their unconscious—and listen to it—can become a valuable learning resource. Surfacing tacit knowledge is focused on accessing the benefit of that which is tacit by moving knowledge from the unconscious to conscious awareness. Three ways that tacit knowledge can be surfaced are through external triggering, self-collaboration and nurturing.

As represented in Figure 2, the process of triggering is primarily externally driven with internal participation. For example, conversation, dialogue, questions, or an external situation with specific incoming information may trigger the surfacing of tacit

knowledge needed to respond. The unconscious is aware of the flow of consciousness, available to affect decisions as incoming information is associated with internal information. In these cases we would describe the knowledge surfaced from the unconscious as implicit, with externally-generated information mixing with tacit knowledge in order to create that surfaced implicit knowledge. (See the earlier discussion on implicit knowledge.) Triggering is often the phenomenon that occurs in "sink or swim" situations, where an immediate decision must be made that will have significant consequences.

Although collaboration is generally thought about as interactions among individuals and/or groups, there is another collaboration that is less understood. This is the process of individuals consciously collaborating with themselves. What this means is the conscious mind learning to communicate with, listen to, and trust its own unconscious. In order to build this trust, it is necessary for individuals to first recognize where their tacit knowledge is coming from. Recall that Kn_t is created from continuous mixing of external information with internal information. This means that when you trust your unconscious you are trusting yourself, and the semantic complexing of all the experiences, learning, thoughts and feelings throughout your life. Thus the process of associating (learning) in your unconscious is related to life-long conscious learning experiences (see the section below on embedding tacit knowledge).

One way to collaborate with yourself is through creating an internal dialogue. For example, accepting the authenticity of and listening deeply to a continuous stream of conscious thought while following the tenets of dialogue. Those tenets would include: withholding quick judgment, not demanding quick answers, and exploring underlying assumptions (Ellinor and Gerard, 1998, p. 26), *then* looking for collaborative meaning between what you consciously think and what you feel. A second approach is to ask yourself a lot of questions related to the task at hand. Even if you don't think you know the answers, reflect carefully on the questions, and be patient. Sleeping on a question will often yield an answer the following morning. Your unconscious mind processes information 24/7 and exists to help you survive. It is not a figment of your imagination, nor your enemy.

Although requiring time, openness and commitment, there are a number of approaches readily available for those who choose to nurture their sensitivity to tacit knowledge. These include (among others) meditation, inner tasking, lucid dreaming, and hemispheric synchronization. Meditation practices have the ability to quiet the conscious mind, thus allowing greater access to the unconscious (Rock, 2004). Inner tasking is a wide-spread and often used approach to engaging your unconscious. Tell yourself, as you fall asleep at night, to work on a problem or question. The next morning when you wake up, but before you get up, lie in bed and listen to your own, quiet, passive thoughts. Frequently, but not always, the answer will appear, although it must be written down quickly before it is lost from the conscious mind. Like meditation, the efficacy of this approach takes time and practice to develop (Bennet and Bennet, 2007).

Lucid dreaming is a particularly powerful way to access tacit knowledge. The psychotherapist Kenneth Kelzer wrote of one of his lucid dreams:

In this dream I experienced a lucidity that was so vastly different and beyond the range of anything I had previously encountered. At this point I prefer to apply the concept of the spectrum of consciousness to the lucid dream and assert that within the lucid state a person may have access to a spectrum or range of psychic energy that is so vast, so broad and so unique as to defy classification. (Kelzer, 1987)

Another way to achieve sensitivity to the unconscious is through the use of sound. For example, listening to a special song in your life can draw out deep feelings and memories buried in your unconscious. Sound and its relationship to humans has been studied by philosophers throughout recorded history; extensive treatments appear in the work of Plato, Kant and Nietzsche. Through the last century scientists have delved into studies focused on acoustics (the science of sound itself), psychoacoustics (the study of how our minds perceive sound) and musical psychoacoustics (the discipline that involves every aspect of musical perception and performance). Sound (as do all patterns in the mind) has the ability to change and shape the physiological structure of the brain. Neuroscience has slowly begun to recognize the capability of both internal thoughts and external incoming information (including sound) to affect the physical structure of the brain—its synaptic connection strength, its neuronal connections and the growth of additional neurons (Pinker, 2007; Nelson, et al, 2006; Gazzaniga, 2004). This phenomenon called plasticity is independent of an individual's age.

Hemispheric synchronization (bringing both hemispheres of the brain into coherence) can be accomplished through the use of sound coupled with a binaural beat. Inter-hemispheric communication is the setting for brain-wave coherence which facilitates whole-brain cognition, assuming an elevated status in subjective experience (Ritchey, 2003). What can occur during hemispheric synchronization is a physiologically reduced state of arousal, quieting the body *while maintaining conscious awareness* (Mavromatis, 1991; Atwater, 2004; Fischer, 1971; West, 1980; Delmonte, 1984; Goleman, 1988; Jevning, et al., 1992), thus providing a doorway into the unconscious. It is difficult to imagine the amount of learning and insights that might reside therein—and the expanded mental capabilities such access may provide—much less the depth and breadth of experience and emotion that has been hidden there, perhaps making such access a mixed blessing.

The second approach toward building extraordinary consciousness is *embedding tacit knowledge*. Although information is continuously going into our unconscious all of the time, only significant things stay in memory—often without our conscious awareness. Said another way, every experience and conversation is *embedding* potential knowledge in the unconscious as it is associated with previously stored information to create new patterns. Thinking about embedding as a process for improving our tacit knowledge can lead to new approaches to learning. In Figure 2, we

see that embedding is both externally and internally driven, with knowledge moving from the conscious to the unconscious. Embedding knowledge in the unconscious can occur through exposure or immersion, by accident or by choice. Examples would include travel, regularly attending church on Sunday, or listening to opera and imitating what you've heard in the shower every day. Practice moves beyond exposure to include repeated participation in some skill or process, thus strengthening the patterns in the mind. For example, after many years of imitation (practice) look at what Paul Potts, Britain's newest opera singer, accomplished![4]

Creating Kn_t occurs naturally and quietly as an individual lives through diverse experiences and becomes more proficient at some activity (such as public speaking) or cognitive competency (such as problem solving). As their scope of experience widens, the number of relevant neuronal patterns increases. As an individual becomes more proficient in a specific area through effortful practice, the number of neurons needed to perform the task decreases and the remaining pattern gradually becomes embedded in the unconscious, ergo it becomes Kn_t. When this happens, the reasons and context within which the knowledge was created often become hidden from consciousness.

Recognizing the differences among the four aspects of tacit knowledge suggests specific ways to embed knowledge. Embodied tacit knowledge requires new pattern embedding for change to occur. This might take the form of repetition in physical training or in mental thinking. For example, $Kn_{t(e)}$ might be embedded through mimicry, practice, competence development or visual imagery coupled with practice. An example of this would be when an athlete training to become a pole vaulter reviews a video of his perfect pole vault to increase his athletic capability. This is a result of the fact that when the pole vaulter performs his perfect vault, the patterns going through his brain while he is doing it are the same patterns that go through his brain when he is watching himself do it. When he is watching the video he is repeating the desired brain patterns and this repetition strengthens these patterns in unconscious memory. When "doing" the pole vault, he cannot think about his action, nor try to control them. Doing so would degrade his performance because his conscious thoughts would interfere with his tacit ability.

In the late 1990's, neuroscience research identified what are referred to as mirror neurons. As Dobb's explains,

> These neurons are scattered throughout key parts of the brain—the premotor cortex and centers for language, empathy and pain—and fire not only as we perform a certain action, but also when we watch someone else perform that action (Dobbs, 2006, p. 22).

Watching a video is a cognitive form of mimicry that transfers actions, behaviors and most likely other cultural norms. Thus when we *see* something being enacted, our mind

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[4] Paul Potts was the winner of the Britain's Got Talent competition. See *Paul Potts One Chance* music CD (SYCOmusic, 2007); also see http://www.youtube.com/watch?v=9hlq_GGi1n4 for his incredible performance in the finals.

creates the same patterns that we would use to enact that "something" ourselves. As these patterns fade into long-term memory, they would represent tacit knowledge (both Kn_I and Kn_P). While mirror neurons are a subject of current research, it would appear that they represent a mechanism for the transfer of tacit knowledge between individuals or throughout a culture. For more information on mirror neurons, see Gazzaniga, 2004.

Intuitive tacit knowledge can be nurtured and developed through exposure, learning, and practice. $Kn_{t(i)}$ might be embedded through experience, contemplation, developing a case history for learning purposes, developing a sensitivity to your own intuition, and effortful practice. Effortful study moves beyond practice to include identifying challenges just beyond an individual's competence and focusing on meeting those challenges one at a time (Ericsson, 2006). The way people become experts involves the chunking of ideas and concepts and creating understanding through the development of significant patterns useful for solving problems and anticipating future behavior within their area of focus. A recent study of chess players concluded that "effortful practice" was the difference between people who played chess for many years while maintaining an average skill and those who became master players in shorter periods of time. The master players, or experts, examined the chessboard patterns over and over again, studying them, looking at nuances, trying small changes to perturb the outcome (sense and response), generally "playing with" and studying these *patterns* (Ross, 2006). In other words, they use long-term working memory, pattern recognition and chunking rather than logic as a means of understanding and decision-making. This indicates that by exerting mental effort and emotion while exploring complex situations, knowledge—often problem-solving expertise and what some call wisdom—becomes embedded in the unconscious mind. For additional information on the development of expertise see Ericsson (2006). An important insight from this discussion is the recognition that when facing complex problems which do not allow reasoning or cause and effect analysis because of their complexity, the solution will most likely lie in studying patterns and chunking those patterns to enable a tacit capacity to anticipate and develop solutions. For more on the reference to wisdom see Goldberg (2005).

Affective tacit knowledge requires nurturing and the development of emotional intelligence. $Kn_{t(a)}$ might be embedded through digging deeply into a situation—building self-awareness and developing a sensitivity to your own emotions—and having intense emotional experiences. How much of an experience is kept as tacit knowledge depends upon the mode of incoming information and the emotional tag we (unconsciously) put on it. The stronger the emotion attached to the experience, the longer it will be remembered and the easier it will be to recall. Subtle patterns that occur during any experience may slip quietly into our unconscious and become $Kn_{t(a)}$. For a good explanation of Emotional Intelligence see Goleman (1998).

Spiritual tacit knowledge can be facilitated by encouraging holistic representation of the individual and respect for a higher purpose. $Kn_{t(s)}$ might be embedded through dialogue, learning from practice and reflection, and developing a sensitivity to your own spirit, living with it over time and exploring your feelings regarding the larger aspects of values, purpose and meaning. Any individual or organization who demonstrates—and

15

acts upon—their deep concerns for humanity and the planet is embedding spiritual tacit knowledge.

The third approach toward building extraordinary consciousness is *sharing tacit knowledge*. In our discussion above on surfacing tacit knowledge, it became clear that surfaced knowledge is new knowledge, a different shading of that which was in the unconscious. If knowledge can be described in words and visuals then this would be by definition explicit. Yet the subject of this paragraph is sharing tacit knowledge. The key is that it is not necessary to make knowledge explicit in order to share it. In Figure 2, sharing tacit knowledge occurs both consciously and unconsciously, although the knowledge shared remains tacit in nature. The power of this process has been recognized in organizations for years, and tapped into through the use of mentoring and shadowing programs to facilitate imitation and mimicry. More recently, it has become the focus of group learning, where communities and teams engage in dialogue focused on specific issues and, over time, develop a common frame of reference, language and understanding that can create solutions to complex problems. These solutions may retain "tacitness" in terms of understanding the complexity of the issues (where it is impossible to identify all the contributing factors much less a cause and effect relationship among them). Hence these solutions would not be explainable in words and visuals to individuals outside the team or community. When this occurs, the team (having arrived at the "tacit" decision) will often create a rational explanation of why the decision makes sense to communicate to outside individuals.

The fourth approach toward building extraordinary consciousness is *inducing resonance*. Through exposure to diverse, and specifically opposing, concepts that are well-grounded, it is possible to create a resonance within the receiver's mind that amplifies the meaning of the incoming information, increasing its emotional content and receptivity. In Figure 2, inducing resonance is a result of external stimuli resonating with internal information to bring into conscious awareness. When resonance occurs, the incoming information is consistent with the frame of reference and belief systems within the receiving individual. This resonance amplifies feelings connected to the incoming information while also validating the re-creation of this external knowledge in the receiver. Further, this process results in the amplification and transformation of internal affective, embodied, intuitive or spiritual knowledge from tacit to implicit (or explicit). Since deep knowledge is now accessible at the conscious level, this process also creates a sense of ownership within the listener. The speakers are not telling the listener what to believe; rather, when the tacit knowledge of the receiver resonates with what the speaker is saying (and how it is said), a natural reinforcement and expansion of understanding occurs within the listener. This accelerates the creation of deeper Kn_t and a stronger affection associated with this area of focus.

An example of inducing resonance can be seen in the recent movie, *The Debaters*. We would even go so far as to say that the purpose of a debate is to transfer tacit knowledge. Well-researched and well-grounded external information is communicated (explicit knowledge) tied to emotional tags (explicitly expressed). The beauty of this process is that this occurs on *both sides* of a question such that the active

listener who has an interest in the area of the debate is pulled into one side or another. An eloquent speaker will try to speak from the audience's frame of reference to tap into their intuition. She will come across as confident, likeable and positive to transfer embodied tacit knowledge, and may well refer to higher order purpose, etc. to connect with the listener's spiritual tacit knowledge. A strong example of this occurs in the Presidential debates. This also occurs in litigation, particularly in the closing arguments, where for opposing sides of an issue emotional tags are tied to a specific frame of reference regarding what has been presented.

Leadership and tacit knowledge

Given the above definitions, descriptions and characteristics of tacit knowledge and considering their value in an organization, we now turn to the role of leadership in managing the organizational environment for, and nurturing the creation and utilization of, tacit knowledge in support of sustainable high performance. Most organizations face a two-fold problem with Kn_t. First, it must be recognized and its value to organizations understood and appreciated. Once this occurs, Kn_t can then be managed to various degrees depending on the knowledge, its context and the organization's culture and leadership. In this context, management does not mean control, rather it refers to taking actions and creating environments in which desirable results will be achieved.

The value of any specific Kn_t may be positive or negative. For example, where Kn_t is the capability to maintain a quick response, flexible and high quality assembly line such as Dell Computer had for a number of years, or Wallmart's nation-wide distribution capacity, such tacit knowledge is extremely valuable and very difficult to replicate. However, where certain fixed beliefs and habits of decision-making have become so internalized that they are unrecognized by their owners and perpetuate decisions that no longer relate to a changing world, such knowledge forecasts the decay and possible disappearance of the organization.

Thus leaders and managers need to create an environment that maximizes the creation and contribution of employee tacit knowledge. This environment would facilitate the recognition and removal of outdated Kn_t while creating, modulating and adapting tacit knowledge that can respond to opportunities and demands of an unpredictable market. The role of leaders and managers begins with recognizing, respecting and rewarding productive Kn_t, then supporting the surfacing of this knowledge where it makes sense, and encouraging open communications among knowledge workers.

A significant strength of tacit knowledge is in its efficiency and efficacy as internal patterns are combined with incoming information to develop situation-focused responses that are context sensitive. The costs are in the difficulty of sharing such knowledge with others. Since tacit knowledge is usually deeper than explicit knowledge, it can be more powerful; but when outdated it is much harder to change, usually requiring a transformational learning experience. See Mezirow (2000) for a thorough discussion of this phenomenon.

From a leadership perspective, techniques for *surfacing tacit knowledge* include observing and discussing the role of emotions in decision-making, actions and dialogue; and practicing reflection and self-questioning by individuals when they are using feelings, intuition, or gut feel as guides for decisions or actions. Where embodied sensations arise during an experience, the individual can seek to understand this internal effect, and explore the situation in terms of their own history, frame of reference and the sources of their reactions. In addition, individuals who have developed Kn_t through experience can sometimes surface the thinking and understanding underlying that knowledge by getting in touch with their unconscious through self-reflection and inner tasking, questioning their own thinking and looking for underlying patterns in their actions.

Embedding tacit knowledge in an organizational setting serves a number of significant purposes for an organization. In a changing and surprise-prone environment, individuals who have deep knowledge and wide experience related to an area of focus—rich sources of tacit knowledge—are able to quickly respond to a variety of emerging challenges. Another example would be the embedding of tacit knowledge in complex areas vital to corporate survival; for instance, a series of highly efficient processes that give the organization competitive advantage. It is difficult if not impossible for competitors to copy or reproduce complex processes, particularly those that have tacit knowledge embedded within them. Such tacit knowledge is often the sum of the separate (and different) tacit knowledge of many individuals.

From a leader's perspective, ways to embed tacit knowledge include encouraging employees to become aware of what tacit knowledge is and its importance to the organization; and encouraging all employees to improve their competency through the techniques of effortful practice, repetition, and experience that develops a high level of expertise.

Sharing tacit knowledge may occur in communities of practice, interest and learning that have emerged over the last decade as the significance of knowledge to organizational survival was recognized. Communities provide an excellent environment for questions, dialogues and information exchanges which can bring out the nuances, feelings and insights related to the tacit knowledge of participants. Von Krogh suggests that the best way to share tacit knowledge is through what is called micro communities of knowledge. These are small teams of five to seven members who are socialized through team projects and come to understand each other through a common language and purpose. This facilitates the surfacing and sharing of meaning and understanding, provided the participants are able to verbalize their unconscious knowledge (Von Krogh, et al., 2000). Such communication can never be perfect because tacit knowledge comes with emotions, memories and deeper meanings that may not be known to its owner, and may be truly inaccessible. What can happen is that the listener may receive sufficient information to re-create a significant part of the speaker's knowledge within their own cognitive reality. When this occurs, the listener's perceptions, understanding, and meaning may be close enough for an approximate re-creation of the speaker's tacit

knowledge. This learning process is contingent upon the listener being receptive to the information and finding the results compatible with their own knowledge, beliefs and assumptions (see the discussion on resonance above). If this does not occur, the listener may reject what is heard, misinterpret what was said, or have a "disorienting experience" that leads them to question their own beliefs and assumptions through critical analysis—perhaps leading to transformational learning. Clearly, the best transfer will occur if there is a compatible and reinforcing dialogue between the listener and the owner of tacit knowledge, with both parties coming from a common (or similar) frame of reference.

Other ways of sharing tacit knowledge include employees discussing and learning from their own and others experience, feelings and intuition. Leaders can facilitate learning through conversations, dialogues, after-action reviews, reflection and continuous questioning of policies, practices, and historical ways of doing things.

The process of mentoring can stimulate the surfacing, embedding and sharing of tacit knowledge of both individuals involved. Mentoring is most effective when the individuals have similar backgrounds, vocabulary and outlooks on the organization, particularly in their areas of expertise. If the groundwork for understanding has not been developed, deeper aspects of knowledge cannot connect and grow. It is helpful to provide the mentee with a good set of questions that encourage the expert to reflect on his/her own thinking, feeling and unconscious proclivities. Recall the previous discussion on getting in touch with your own unconscious, and being very sensitive to emotions, hunches, gut feelings, body tenseness, etc. In a healthy mentoring relationship it is important not to let the dialogue stay only on a logical, cognitive plane. While the rational approach is natural in a professional setting, it is the nonrational and non-vocal areas that may lie within the unconscious that are primary domains of interest. Each of us through experience and expertise develops an internal world that re-presents the history of our learning—although never precisely accurate. The map is not the territory. Nevertheless, it is just this autobiographical history, plus the situational inputs (as perceived by the mentor), that "wakes up" the non-vocal signs representing tacit knowledge.

For best understanding of a mentor's tacit knowledge, the mentee must try to "see" the same situation as the mentor. This is where good communication about the situation can become very helpful, but realize the mentor may not consciously know why he sees what he sees. Also, seeing the same situation differently may open the door to an understanding of differing frames of reference which can be the starting point for exploring why the mentor has the frame of reference she has. This in turn can lead to questions that help the mentee understand his own frame of reference and an exploration of why certain feelings occur and why certain actions are chosen over others. Since the unconscious mind can detect patterns and influence actions without the conscious mind being aware of it, the mentor may be unconsciously detecting patterns in the situation, and acting on his tacit knowledge without being aware of doing so. An alert mentee who is aware of this phenomenon can consciously look for those subtle patterns that the mentor uses to make decisions but does not see.

To establish a base for *inducing resonance* in an organization, leaders need to create a culture that recognizes, understands, appreciates and is aligned with the purpose, mission, vision and values of the organization. Such a culture is then open to resonance of information and knowledge generated by leadership, thought leaders or outside experts who can focus the meaning and intent of their knowledge so that it resonates with employees. When this occurs employee understanding, acceptance and enthusiasm for the knowledge will be significantly enhanced because it is consistent with, and greatly enhances, their personal competency and contribution to the organization. This relationship is the resonance phenomena.

Within the culture described above, ways of facilitating local resonances include setting up formal dialogues, conversations and brainstorming sessions. As a point of caution, too much resonance throughout the workplace may act as a narrow band filter causing the rejection of non-resonant or diverse ideas. This, of course, would stifle innovation, creativity and adaptability to changing world situations. The point made here is the importance of recognizing and honoring resonance on both sides of any issue or question.

Final Thoughts

Knowledge is often treated as a generic concept and has been given many interpretations. In this paper, we have offered a functional definition that—when coupled with learning theory and neuroscience—leads to a lexicon of types of knowledge, and specific aspects of tacit knowledge. For example, after identifying explicit, implicit and tacit knowledge as part of a fluctuating continuum, we have decomposed tacit knowledge into four aspects: embodied, affective, intuitive and spiritual. Recognizing that tacit knowledge is by definition not part of one's ordinary consciousness, we began to develop the understanding that since incoming information is continuously associated with internal information (referred to as semantic complexing—the creating of meaning), all knowledge coming into conscious awareness is new knowledge.

The recognition that tacit knowledge resides beyond ordinary consciousness led to the search for approaches to identifying extraordinary consciousness, that is, developing a greater sensitivity to information stored in the unconscious in order to facilitate the management and use of tacit knowledge. Surfacing, embedding and sharing tacit knowledge were discussed as approaches for mobilizing tacit knowledge in support of individual and organizational objectives. The importance of extraordinary consciousness became clear as we discussed these approaches. In addition, it was forwarded that participating in or exposing ourselves to situations that induce resonance engages our personal passion in developing deeper knowledge and expanded awareness of that knowledge. Finally, we suggested some actions that leaders and managers could take to maximize the value of tacit knowledge to their organizations.

Changing and uncertain times require new ways of thinking and new ways of acting. We can take good actions only if we can make good decisions. We can make good decisions only if we have good understanding. We can have good understanding only if we have good knowledge. We can have good knowledge only if we know how to learn. Since much of our information and knowledge is tacit, this needs to become the focus of our learning and decision-making. Our knowledge of tacit knowledge is crucial to our future. We all have much learning to do in this area. What better resource than our minds to co-evolve with and contribute to our world? This paper offers a single drop in an ocean of possibilities.

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