Tacit Knowledge and Strategic Decision Making

ERICH N. BROCKMANN
University of New Orleans

WILLIAM P. ANTHONY
Florida State University

Tacit knowledge is not easily recognized or acknowledged, but it can be a key factor in enhancing the quality of strategic decisions made by the top management team. A working definition of tacit knowledge is the work-related practical know-how that is acquired through direct experience and instrumental in achieving goals important to the holder. The study provides an integration of the cognitive and strategic literatures to show that tacit knowledge is accessible and how it plays an integral role in the context of strategic decision making. The authors propose that better decisions will occur when tacit knowledge is employed overtly during strategy sessions. Among other methods, the use of guided mental imagery seems to provide the simultaneous benefits of explicating tacit knowledge as well as enhancing the socialization process necessary for its transfer among team members.

Why can some managers sift through vast quantities of complex information and come up with the best course of action? Why is strategic management plagued by a perception that it lacks systematic reasoning (Ansoff, 1988)? Are successful managers simply "smarter" than those less successful? If so, then why does intelligence, as measured by IQ, fail as a proxy for predicting managerial success? Sternberg (1997) suggests that the link missing for relating success to intelligence is one's hidden or tacit knowledge. In the following discourse, we build on this relationship for illustrating the positive contribution of tacit knowledge in the context of strategic planning.

According to Wagner and Sternberg (1985), tacit knowledge is defined as work-related practical knowledge learned informally through experience on the job. It is an intellectual and cognitive process that is neither expressed nor declared openly but rather implied or simply understood. It is intimately related to action such that it reflects knowing *how* as contrasted with knowing *what*. It is normally procedural in nature and acquired without direct instruction or help from others.[1] And of critical importance in our context, it is

practically useful and instrumental in the attainment of goals that the user values; that is, it can be associated with achieving strategic goals and objectives that are part of the larger organizational strategic plan.

Our context is that of strategic decision making (SDM) by the top management team (TMT). The senior managers comprising the TMT, led by the chief executive officer (CEO), strive to position the organization with some advantage over its competitors. Those factors under consideration during strategic planning are often abstract, ill-defined, unstructured, and lacking in precedence. Coincidentally, such characteristics are also those most suited for applying one's tacit knowledge. What we need is an awareness of, and a method to better tap, this innate and invaluable resource.

First, we must emphasize that our focus is on the individual manager's tacit knowledge as a cognitive construct. Regardless of the many metaphors, thinking is a uniquely human activity (Kim, 1993; Nonaka, 1994; Simon, 1991; Walsh, 1995). Second, we must consider the collective or aggregate level because organization members adapt their body of knowledge through sharing (Brown & Duguid, 1991; Kim, 1993; Nonaka, 1994) on both the explicit and tacit levels (Spender, 1996).

We begin our discussion of tacit knowledge at the individual level. The psychological literature provides for the general nature of knowledge and its components of tacit and explicit knowledge. We then show how strategic decisions are quite compatible with the application of tacit knowledge. We then aggregate the individual level into the TMT level because the collective environment affects our individual knowledge—both explicit and tacit (Brown & Duguid, 1991; Gioia & Sims, 1986; Nonaka, 1994; Weick, 1995). Also at the TMT level, we incorporate findings from the strategic management literature on TMT dynamics and composition with the influence of tacit knowledge. Finally, we touch on the linkage between the actual strategic decisions and their potential influence on organizational performance. We round out our discussion of tacit knowledge by presenting a pragmatic approach to how managers can better benefit from their tacit knowledge proactively.

KNOWLEDGE—A PROCESS MODEL

Although the construct of knowledge is difficult to describe, for our purposes it is unnecessary to delve into a philosophical discourse on the numerous definitions of knowledge. We choose to follow Grant's (1996) pragmatic and tautological view of knowledge by defining it simply as "that which is known" (p. 110).
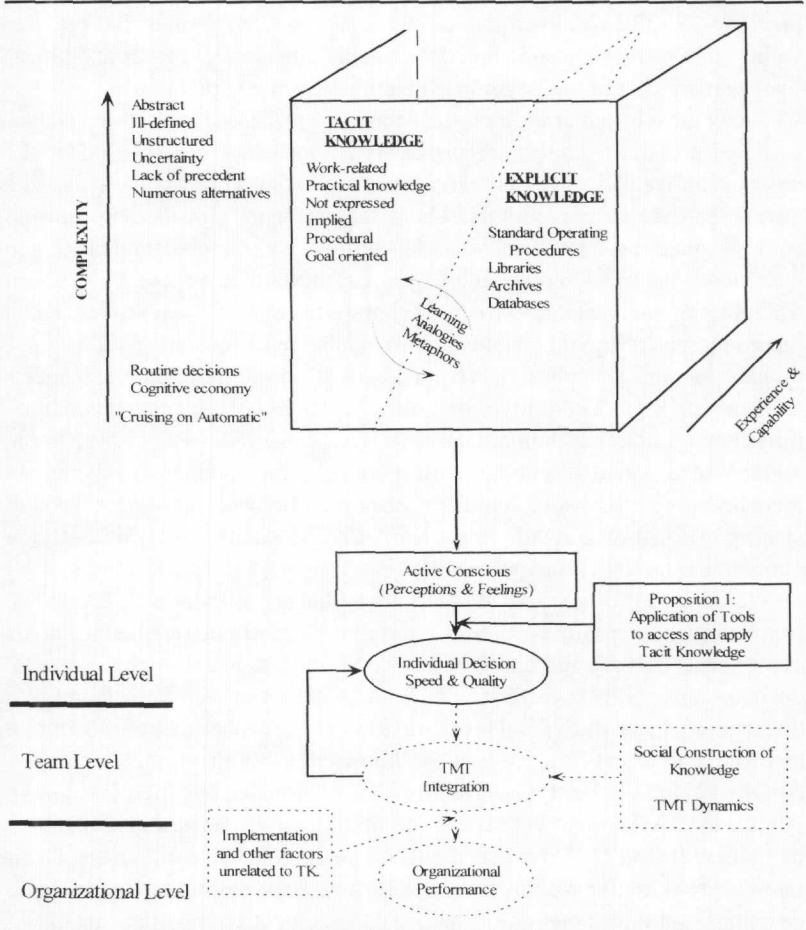
Figure 1: Tacit Versus Explicit Knowledge
NOTE: TK = tacit knowledge; TMT = top management team.

Less philosophical and more recent discussions of knowledge have used taxonomies and analogies (for a review, see, e.g., Miller, 1996; Walsh, 1995). Without denigrating other views, we follow one of the more popular views that knowledge can be segregated into two types, explicit and tacit (Nonaka, 1994; Nonaka & Takeuchi, 1995; Polanyi, 1966; Sternberg, Wagner, Williams, & Horvath, 1995; Tsoukas, 1996; Wagner, 1987). Because they are complementary (Brown & Duguid, 1991; Nonaka, 1994; Tsoukas, 1996), we separate them only for discussion and thus show the segregation on Figure 1 with a dotted line.

WHY TACIT KNOWLEDGE?

Although we are concerned most with the application of tacit knowledge, we must also acknowledge the bidirectional enabling characteristics of knowledge in general. That is, existing knowledge allows us to increase our level of knowledge. From this perspective, existing knowledge serves as a "goes-in," which then permits the decision maker to apply that knowledge to a given situation to make decisions, a "goes-out." Because our focus is on the application of tacit knowledge, we will only touch on knowledge creation and will have a primary focus on its application.

Looking at knowledge creation, we can only make sense of an experience by viewing it in relation to what we already know (Gioia & Ford, 1996), through retrospection (Weick, 1979), or after the fact (Polanyi, 1966). Any new knowledge can come only through new data combining with existing knowledge (Gioia, 1986; Simon, 1991). In other words, the more we know, the more we can learn.

From a psychological perspective, tacit knowledge resides just outside of our active conscious (Gioia & Ford, 1996). For our purposes, the conscious is that knowledge of which we are aware and the subconscious holds that of which we are unaware (Hogarth, 1987; Parikh, Neubauer, & Lank, 1994). The active conscious is that portion of the conscious that is storing data currently being perceived by our senses. The label active conscious means that the perceptions (e.g., see, feel, hear, smell) stored there are those that can be applied in addressing a current decision (Gioia & Ford, 1996).

In addition to being a gateway to the decision-making environment, the active conscious is also a gateway to the rest of the mind. That is, after initial capture, data are stored elsewhere in the mind—some to tacit knowledge, the rest to the subconscious. Afterward, the data no longer exist in a perceptual format and thus cannot be applied consciously. The active conscious must be used to back translate stored knowledge into a perceptual format before it can be applied (Gioia & Ford, 1996). As our experiences get stored, they are no longer in an explicit format and thus cannot be easily accessed. Therefore, the knowledge gains the tacit label.

However, because we are cognitive misers, we reserve the active conscious to address those decisions that are novel, abstract, complex, ill-defined, unstructured, and have little or no set precedence (Taylor, 1981). Those decisions not requiring much thought tend to be ready-made and referred to as "cruising on automatic" (Gioia, 1986). Such ready-made decisions rely on explicit knowledge or well-developed action routines triggered after recognition of similar experience stored in the subconscious (Parikh

et al., 1994) or through "leakage" from our tacit knowledge (Gioia & Ford, 1996).

On the other hand, successful managers often claim that it was simply common sense or street smarts that led them to their decisions (Sternberg et al., 1995; Wagner & Sternberg, 1990). This is particularly apparent after seemingly automatic decisions that differ from "the way we've always done it." Such is the application of tacit knowledge; when applied, it is helpful but neither expressed nor declared openly. We rarely recognize when we are using tacit knowledge.

This recognition is a major point of debate about tacit knowledge—its capacity for conscious access. Polanyi (1966) espouses one perspective, centered on the claim that people cannot describe their use of tacit knowledge; we simply know more than we can tell. Sternberg et al. (1995) counter with the position that individuals, if so tasked, can recall their use of tacit knowledge. We embrace the latter perspective and base the remainder of our discussion on the assumption that under proper conditions, tacit knowledge can be accessed consciously.

Finally, although we do not dwell on explicit knowledge, it is impossible to consider tacit knowledge without its dialectic, explicit knowledge. The knowledge included under the explicit label is often referred to with such labels as conscious (Spender, 1996), declarative (Cohen & Bacdayan, 1994; Nonaka, 1994), or codified (Kogut & Zander, 1993; Liebeskind, 1996). Such knowledge is routinely captured in records of past learning, such as standard procedures, libraries, archives, or databases.

THE USE OF TACIT KNOWLEDGE DURING SDM

We now narrow our discussion from a general consideration of tacit knowledge to that of our specific context of the SDM environment. Our goal here is to illustrate how tacit knowledge is particularly valuable and fitting in this context. For instance, the descriptors of the environment in which tacit knowledge shines mirror those of the environment confronting strategic decision makers. That is, tacit knowledge is used to fill in gaps of missing information, make sense of the complex and abstract, distill numerous alternatives, and provide structure.

We will also extend the level of analysis from the individual to the TMT as a collective. For instance, most organizations use a team format for making strategic decisions (D'Aveni & Gunther, 1994; Hambrick, 1981, 1994; Hambrick & Mason, 1984; Thompson, 1967; Wiersema & Bantel, 1992). Therefore, incorporating the team format is intended to make our discussion

more generalizable. Also, tacit knowledge, by its very nature, is difficult to share without significant personal interactions (Nonaka, 1994). The combination of these two ideas provides the specific context of our discussion—the TMT relying on tacit knowledge while making strategic decisions.

STRATEGIC DECISIONS AND TACIT KNOWLEDGE

One of the tasks in SDM is matching organizational resources to the competitive environment (Ansoff, 1988). These environments can vary drastically in levels of complexity and turbulence. Complex environments often have forces that are vague, ambiguous, and ill-defined with accompanying interrelations having similarly confusing characteristics. Turbulent environments have elements that change often and in ways that are difficult to forecast (Ansoff, 1988; Mintzberg, 1994).

In our context, strategic decisions are defined as those TMT decisions that commit significant organizational resources, have significant implications on the long-term viability of the organization, and are difficult to reverse once implemented. The process of making such decisions includes evaluating current and future actions along with the capabilities and resources of our organization as well as those of all of its competitors.

In addition to forecasting, or learning, a new environment, strategic planning also involves second-guessing competitor actions. There is no way we can know for certain what the future will hold or what actions our competitors are contemplating. We would, therefore, expect large gaps in the information on which we are relying to make our decisions. Tacit knowledge serves to fill in the gaps of what we can see (Gioia, 1986) much in the same way that we are able to recognize words with missing letters during games such as hangman. It therefore provides us with a more complete picture of the future, which should set the stage for making higher quality decisions (Shina, 1990).

To summarize our context, strategic planning requires learning a new environment, forecasting competitor actions, and making educated guesses. Our intent is to show how tacit knowledge can be beneficial in helping make sense of the complex and fill in the missing gaps. Next we will focus on the individual as the decision maker and suggest how tacit knowledge can be used to improve decision quality.

DECISION QUALITY BASED ON
TACIT KNOWLEDGE AT THE INDIVIDUAL LEVEL

Extant research (Wagner, 1987; Wagner & Sternberg, 1985, 1990) shows a positive and significant relationship between one's tacit knowledge and

performance in managing oneself, managing tasks, and managing others. Research using constructs closely related to tacit knowledge shows similar influences. For instance, faster and higher quality decisions are made when managers rely on their intuition. These results were applicable both at the group (e.g., Bourgeois & Eisenhardt, 1988; Eisenhardt, 1989, 1990) and the individual (e.g., Agor, 1984, 1985b, 1989a; Parikh et al., 1994) levels. Although intuition was the independent construct and not tacit knowledge, intuition may be considered a vehicle for accessing tacit knowledge (Parikh et al., 1994). Therefore, we can infer that if the vehicle (i.e., intuition) had a larger inventory of tacit knowledge to select from, then even faster and higher quality decisions should develop.

The participants of the experiments in the above research were concerned with committing significant personal resources toward their personal future. We contend that these successes fit the criteria for strategic decision making. In other words, strategic decisions commit significant organizational resources to affect the organization's future. There should therefore be a positive correlation between a manager's tacit knowledge and the quality of her or his strategic decisions.

Next, we incorporate the dynamics of the team and extrapolate the organizational performance relationship. Because of space constraints, we are unable to do justice to all the factors affecting individual and organizational performances. Therefore, the relationships are depicted on Figure 1 with dotted lines.

DECISION QUALITY BASED ON
TACIT KNOWLEDGE AT THE TEAM LEVEL

Any performance impact, individual or otherwise, from tacit knowledge hinges on the TMT both as a group of individuals and as a team. This dual consideration is necessary, because the human mind is useful as an analogy to describe collective thinking as a way to tap the collective resources of the individuals. However, teams do not have collective cognitive powers as the collective mind may imply (Walsh, 1995); it is the individuals who possess the necessary knowledge (Kim, 1993; Nonaka, 1994; Simon, 1991). Therefore, we need a bridge between the advantages available from team decision making and the tacit knowledge of the individual.

Tacit knowledge is not readily accessible and therefore is difficult to share (Grant, 1996; Kogut & Zander, 1993; Nonaka, 1994). One method for overcoming this difficulty in sharing is through socialization (Brown & Duguid, 1991; Eisenhardt, 1989; Nonaka, 1994). Socialization involves the interpersonal interactions of individuals, where experiences can be shared via both

the verbal and nonverbal means.[2] Such socialization develops a community-of-practice necessary for the social construction of learning (Brown & Duguid, 1991) and facilitates the sharing of tacit knowledge among the team members (Brown & Duguid, 1991; Nonaka, 1994). We therefore have an increase in individual as well as the aggregate tacit knowledge caused by social interaction.

Specific to our SDM context, we consider the TMT as the collective or community of interest. The TMT is that group of senior level managers who aid the CEO in deciding the strategic course of the organization (Hambrick, 1994; Hambrick & Mason, 1984; Hickson, 1986; Wiersema & Bantel, 1992). Because of their seniority and therefore presumed breadth of experiences, these managers should possess more tacit knowledge than others in the rest of the organization. This assumption is consistent with the definition of tacit knowledge—work-related practical know-how learned on the job. This experience dimension could come from either tenure in the current organization or experience in other related organizations (Brockmann & Simmonds, 1997).

The influence on the organization of the TMT is complex and has impacts far beyond our current context (for a review, see, e.g., Hambrick, 1994; Hambrick & Mason, 1984; Thompson, 1967; Wiersema & Bantel, 1992). Still, many of the findings from extant research can be applicable to our context. In particular, we rely on some of the implications of previous studies that have focused on TMT composition and dynamics. For instance, TMT composition affects the collective mental model the team uses to describe the strategic environment (Wiersema & Bantel, 1992). Likewise, composition also influences the socialization process, which affects the sharing of tacit knowledge (Grant, 1996; Kogut & Zander, 1993; Nonaka, 1994). Therefore, in the following discussion we diverge briefly from our original focus of showing the influence of tacit knowledge and consider our secondary goal of showing how tacit knowledge is affected by team dynamics.

TMT Dynamics and Tacit Knowledge

When examining TMT dynamics and its impact on tacit knowledge, we must consider the conflict inherent in socialization. However, it is a particular type of conflict that is of interest. Amason (1996) segregated conflict into two kinds—functional and dysfunctional. The functional conflict consists of questioning the underlying assumptions managers use in their decision making. Dysfunctional conflict is what we normally think of as conflict, consisting of personal attacks and an undermining of team effectiveness. The benefits from socialization we refer to are similar to those available through the

use of functional conflict. It is obvious that dysfunctional conflict is detrimental from any perspective.

Research on the effect of conflict in team decision making on the quality of a resulting decision is mixed (Amason, 1996). However, to take advantage of any positive contribution, conflict is induced purposely through methods such as devil's advocacy or dialectical inquiry. As long as the induced conflict is functional, it should lead to a higher quality decision (Schweiger, Sandberg, & Rechner, 1989). This improvement in decision quality is due, at least in part, to the increased team knowledge and a shared understanding (Amason, 1996).

That is, as socialization progresses, TMT members share their explicit knowledge through personal interactions. As these "war stories" and narratives are extended and shared, numerous metaphors and analogies are interjected to construct a shared meaning (Smircich, 1983). These same metaphors and analogies assist in transforming explicit knowledge into tacit knowledge (Brown & Duguid, 1991; Nonaka, 1994). Therefore, each team member's tacit knowledge is increased through the socialization process. The net outcome is that both the level as well as the quality of the team's collective knowledge increases through the socialization process (Brown & Duguid, 1991; Nonaka, 1994).

TMT Composition and Tacit Knowledge

Another popular focus of TMT research has been focused on the makeup of the team. Team member demographics have been used to infer a team's homogeneity or heterogeneity (Finkelstein & Hambrick, 1990; Hambrick, 1994; Hambrick & Mason, 1984). In our context, if a TMT is homogeneous, then little conflict exists and the members have a common understanding through their prior socialization. If the TMT is heterogeneous, then functional conflict is probable and will aid in developing a common understanding. Regardless of composition, then, strategic planning sessions should result in an interconnected, finite, and largely implicit mental model of how the organization fits in its environment (Hambrick & Fukutomi, 1991). A pseudo-collective mental picture is formed that should have a favorable impact on the implementation of the decision (Amason, 1996; Fama & Jensen, 1983).

The bottom line for the collective influence of the TMT is that each team member will have increased knowledge, tacit and explicit, and that there will be a collective understanding of and ownership in the decision outcome (Amason, 1996; Andrews, 1971; Dess & Origer, 1987; Priem, 1990). From an organizational performance perspective, these outcomes should improve
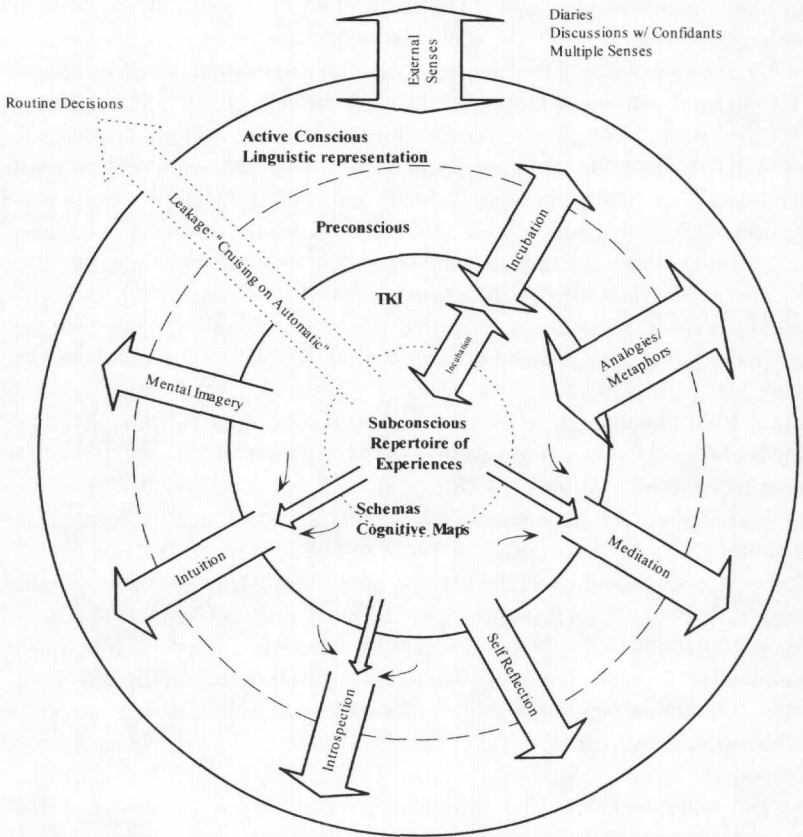
Figure 2:   Accessing Tacit Knowledge
NOTE: TKI = tacit knowledge inventory.

both the quality of the strategic decision and also the probability of its suc-
cessful implementation. Everything else remaining equal, we should then
expect a positive effect on organizational performance.

EXPRESSING AND BENEFITING
FROM TACIT KNOWLEDGE

The following provides several methods, which can be used to permit
individual managers[3] to benefit proactively from their tacit knowledge. Fig-
ure 2 is an illustration of the various ways that tacit knowledge can be made

available for making decisions. The theme of the methods is one of self-communication as a proxy for the socialization process of a group.

One popular method for eliciting tacit knowledge is that of self-reflection. This normally involves introspection, meditation, relaxation techniques, or "kicking back." The goal of these techniques involves communicating with oneself to transfer the tacit knowledge into the active conscious in a perceptible form. The actual process is not clearly understood but has proven successful in experiments (Agor, 1984, 1986; Gioia & Ford, 1996).

A similar technique involves putting a problem aside and not working on it consciously, thus allowing it time to incubate (Sternberg, 1996). This technique seems to remove any cognitive "interference" allowing the subconscious to work on a problem unencumbered. It also lets the mind wander, which may help provide some access to stored tacit knowledge (Gioia & Ford, 1996). Incubation seems to work best if we first invest enough time in the problem to explore it in several aspects and then allow enough time for tacit recognition (Sternberg, 1996).

One method to both enhance one's ability to access tacit knowledge and actually access the knowledge is that of reinforcement. Two forms of reinforcement are recommended. One is to seek out trusted confidants and discuss with them personal successes in making decisions (Agor, 1984). Similarly, explaining one's thought process to someone else with a similar tacit knowledge structure may help articulate such knowledge (Gioia & Ford, 1996). A similar tacit knowledge structure should be available in someone with a similar professional background inasmuch as the knowledge is work related.

The second method of reinforcement is to keep a diary of how one responds to problems. On reflection of past decisions, the structure of one's if-then statements and thought processes can be inferred. This method uses multiple senses much in the same way as talking to and listening to a confidant and should aid in accessing tacit knowledge (Gioia & Ford, 1996).

Mental Imagery

Mental imagery is the process of visualizing pictures, events, and scenarios in the "mind's eye." It has been used in such functions as representing of abstract concepts, surfacing of assumptions, clarifying of goals, and enhancing of creativity (Jarvinen & Gold, 1981; Kazdin, 1978; Simonton & Simonton, 1975). These functions all have characteristics closely related to the process of strategic planning and problem solving.

Such a process allows managers to think of abstractions, such as forecasting the future, in a realistic way (Anthony, Bennett, Maddox, & Wheatley,

1993). Mental imagery helps alter our tacit knowledge (Saint-Onge, 1996), as well as allow strategic planners to create, access, and change their visions of the future by opening tacit knowledge to examination. As the TMT members actually imagine themselves in a future scenario, they are able to observe, as well as mentally manipulate, conditions that may well exist in the imagined future.

Perhaps the best illustration of using mental imagery is in Anthony et al.'s (1993) example of a person trying to remember how many windows are in his or her house or apartment. Few can immediately remember the number of windows in their home, but the knowledge is buried in the subconscious. Therefore, most people envision themselves walking from room to room mentally counting the windows; and eventually the person doing the "counting" ends up with an accurate number. The mental imagery episode elicited knowledge that was already there but tacit (i.e., the number of windows in one's home).

Although the window illustration is individually oriented, the process is equally applicable to a group setting. For instance, a coach could guide TMT members to visualize a future competitor. After reflection, each individual describes his or her mental image of the competitor's profile. All of the individual definitions are shared with the group. The socialization process exposes why certain traits were included or excluded in any description until a predetermined level of group agreement is reached. The process yields an explicit model that externalizes the originally internal or tacit knowledge.

In a very practical example, Doug Ivester, CEO of Coca-Cola, used a helicopter metaphor. Here he has his employees picture themselves mentally rising above where they are to change their perspective of how they look at things (Morris, 1997). Ivester claimed that the process has allowed Coke to turn the mature local market into a growth opportunity.

RELATIONSHIP BETWEEN PERFORMANCE AND ACCESSING TACIT KNOWLEDGE

Returning again to Figure 1, we can now incorporate the influences of accessing tacit knowledge into the level of such knowledge. We would therefore expect any proposed relationships between level of knowledge and performance to be moderated by an individual's ability to access his or her tacit knowledge. Based on these potential performance implications we propose the following:

The influence of managers' tacit knowledge on the quality of their strategic decisions will be moderated by their application of the methods (self-reflection,

incubation, reinforcement, and mental imagery) necessary to access and apply their tacit knowledge.

IMPLICATIONS

ORGANIZATIONAL PERFORMANCE

As stated earlier, our goals are to expose how managers can access and employ tacit knowledge during the strategic decision process. As depicted in Figure 1, when the TMT members access their individual tacit knowledge and apply it in the SDM context, higher quality team decisions should emerge. The individual's cognition is then affected by but also affects the TMT members' interaction until a course of action is decided upon for the entire organization to implement. Because ultimate decision quality is enhanced, we should see a positive influence on organizational performance. Although managers should influence organizational performance (Andrews, 1971; Ansoff, 1988; Child, 1972; Thompson, 1967), such performance is affected by a convoluted collection of factors, which oftentimes conflict.

We contend that tacit knowledge may be the element missing in explaining, at least partially, how some strategic decisions work out even though they may not appear rational at the time they were made. Tacit knowledge can reveal as rational[4] that which may appear initially as nonrational. For instance, a decision considered nonrational because it lacked information might simply have been an application of tacit knowledge filling the gaps. Thus, by recognizing the potential influence of tacit knowledge, we may be better able to explain the effects of decisions on the organization.

MANAGERIAL IMPLICATIONS

In addition to the organizational performance implications, the influences from tacit knowledge have managerial implications. These implications involve striking a balance between the two types of decision making—intuitive and analytical. The spectrum of decision types can be viewed as a close parallel to the spectrum of knowledge—tacit and explicit. Considerations include deciding on TMT succession and the conduct of TMT meetings.

When forming a TMT or deciding on replacement members, a prudent CEO should include a prospect's values and thought process in the selection criteria. People carry with them traits that make them more inclined to be either intuitive or analytical (Myers, 1984). They bring with them their own values and beliefs (Cyert & March, 1963). Similar to Mosakowski's (1998) application of entrepreneurial resources, TMTs with an appropriate balance

of members inclined toward the analytical and the intuitive would be able to benefit from the combined talents. For instance, early in a strategic decision process, when alternatives are being identified, a subgroup of intuitive TMT members should lead to more creative and innovative alternatives. Likewise, toward the end of the process, a shift in focus toward selecting the best alternative is necessary. Those team members, inherently more analytical, may be best at selecting alternatives. Simply stated, TMT members should be placed where they can be of the greatest help in the chronology of the strategic planning process.

Of course, the rational decision-making process should be used wherever it can do the most good because it helps define a problem and guide further data collection (Isenberg, 1984). However, decision makers too often over-analyze a situation to the point of "analysis-paralysis" (Agor, 1989b; Eisenhardt, 1989; Fiol & Huff, 1992). Here, the process is slowed to the point where any forthcoming actions may be overtaken by events thus negating any benefit of such actions.

Instead of any one method, TMTs should incorporate available decision support systems and other artificial intelligence for the purely rational portion of the decision process and let the human mind handle those contextually specific, ill-defined, ambiguous aspects for which the mind has been so uniquely designed (Isenberg, 1984). The collective tacit knowledge of the TMT could then be brought to bear on the more ambiguous aspects of a situation where it is most beneficial. In addition to enhancing the decision outcome, tacit knowledge can also signal to the team leader when it is time to end the analyses and make a decision (Schoemaker & Russo, 1993). Such a signal is especially critical in turbulent environments where decisions are often required very quickly and analysis-paralysis cannot be tolerated (Eisenhardt, 1989).

We can therefore see the benefits of tacit knowledge throughout the SDM process. It is beneficial in the early stages when identifying alternatives as well as aiding in the acceleration of the whole process. Ultimately, through the use of a combination of tools incorporating the analysis referred to as rational with tacit knowledge, decision making can become more potent and lead to more effective implementation and better firm performance.

RESEARCH IMPLICATIONS

The strategic literature is lacking in empirical studies addressing tacit knowledge and intuition. One reason may be that the very nature of tacit knowledge makes the variables difficult to operationalize. For example, both the use of tacit knowledge and an individual's ability to use tacit knowledge

are hard to measure but not impossible. The Myers-Briggs Type Indicator (MBTI) test is readily accepted in addressing intuition (Agor, 1985a, 1985b, 1989a; Behling & Eckel, 1991; Myers, 1984). However, it only measures a person's thought style and is not designed to measure intuitive ability (Agor, 1986; Behling & Eckel, 1991). Even still, Agor (1986) contends that the test provides a valid measure of an individual's ability to use intuition. He found that the ability to use intuition and its actual use were positively related to managerial and firm performance.

Likewise, the question of valid measures of practical knowledge was raised more than 30 years ago in the psychological literature (McClelland, 1973). Subsequently, Wagner and Sternberg, along with their colleagues, have conducted significant research into the area of tacit knowledge. In a recent article (Sternberg et al., 1995), they review the existing tests for practical knowledge and substantiate their own methods for eliciting a tacit knowledge inventory (TKI). The TKI measure has been shown to be both valid and reliable (Sternberg, 1997).

Another research venue related to tacit knowledge is an examination of the balance among the three factors of intelligence: analytical, creative, and practical. As with benefiting from TMT members who have a relative propensity toward intuition or thinking, some benefit may be forthcoming from members more inclined toward one or the other factors of intelligence. So far, the only research in this area has shown that a balance of all three is necessary for managerial success (Sternberg, 1997). However, if an appropriate balance could be struck among the TMT members, the team, as a community of intelligence, may create a synergy or surpass any individual shortcomings.

SUMMARY

Numerous and often contradictory factors impinge on the TMT's decision-making process. These factors range from different values and beliefs, different cultures, different functional responsibilities, and different demographic variables. Although it has been shown that people tend to get along better with others who are seemingly alike (Lott & Lott, 1965), we propose that the commonalties include deeper dimensions. It is the TMT's common tacit knowledge base that needs to be understood. By finding differences and similarities in tacit knowledge during the decision-making process of TMTs, it may be possible to better understand the variance in decision processes among teams—apart from the analytical and information-based decision process.

Although the very nature of tacit knowledge makes it implicit and unspoken, the use of mental imagery, and other factors shown in Figure 2, may aid in helping express that which is difficult to express. Mental imagery appears to be unique in its ability to simultaneously explicate individual tacit knowledge and enhance the socialization process. Once openly acknowledged and expressed, the implications from knowledge, previously tacit, may prove to be of significant value when examining the decision-making process.

NOTES

1. Sternberg also proposes that tacit knowledge can be taught, referring to his teaching classes in "how to apply for jobs, how to write resumes, how to do job interviews, how to give talks, what to do if you're fired, and so on" (1996, p. 246). Although this may appear contradictory to the definition, it is in fact congruent. These skills are practical and important in obtaining real world goals to the students he was referring to—they all want to get jobs when they graduate. The knowledge is acquired via direct instruction but retained at the tacit level.

2. Nonverbal acquisition of tacit knowledge is apparent in the mentor-apprentice relationship and on-the-job training. Apprentices work with their mentors and learn the craft through observation, imitation, and practice (Nonaka, 1994).

3. Actually, these processes can benefit anyone. We focus on top managers to remain consistent with our context of strategic decision making.

4. The use of "rational" here is in the context of Simon's (1946) concept of the administrative man. Taken to the extreme, a purely rational decision would require an infinite search for every possible alternative and then a selection of the alternative having the highest payback using a method such as net present value. Obviously, this is not a clearly rational behavior because no one has the resources for an infinite search. The classic text on rational management was proposed by Kepner and Tregoe (1965).

REFERENCES

Agor, W. H. (1984). *Intuitive management: Integrating left and right brain management skills.* Englewood Cliffs, NJ: Prentice Hall.

Agor, W. H. (1985a). Intuition as a brain skill in management. *Public Personnel Management, 14,* 15-25.

Agor, W. H. (1985b). Managing brain skills to increase productivity. *Public Administration Review, 45,* 864-868.

Agor, W. H. (1986). The logic of intuition: How top executives make important decisions. *Organizational Dynamics, 14,* 5-19.

Agor, W. H. (1989a). Intrapreneurship and productivity. *Bureaucrat Summer, 18,* 41-44.

Agor, W. H. (1989b). Intuition and strategic planning: How organizations can make productive decisions. *Futurist, 23,* 20-23.

Amason, A. C. (1996). Distinguishing the effect of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *Academy of Management Journal, 39,* 123-148.

Andrews, K. R. (1971). *The concept of corporate strategy.* Homewood, IL: Dow Jones–Irwin.

Ansoff, H. I. (1988). *The new corporate strategy*. New York: John Wiley.

Anthony, W. P., Bennett, R. H. I., Maddox, E. N., & Wheatley, W. J. (1993). Picturing the future: Using mental imagery to enrich strategic environmental assessment. *Academy of Management Executive*, 7, 43-57.

Behling, O., & Eckel, N. L. (1991). Making sense out of intuition. *Academy of Management Executive*, 5, 46-54.

Bourgeois, L. J., III, & Eisenhardt, K. M. (1988). Strategic decision processes in high velocity environments: Four cases in the microcomputer industry. *Management Science*, 34, 816-835.

Brockmann, E. N., & Simmonds, P. G. (1997). Strategic decision-making: The influence of CEO experience and use of tacit knowledge. *Journal of Managerial Issues*, 9, 454-467.

Brown, J. S., & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization Science*, 2, 40-57.

Child, J. (1972). Organization structure, environment, and performance: The role of strategic choice. *Sociology*, 6, 2-22.

Cohen, M. D., & Bacdayan, P. (1994). Organizational routines are stored as procedural memory: Evidence from a laboratory study. *Organization Science*, 5, 554-568.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice Hall.

D'Aveni, R. A., & Gunther, R. (1994). *Hypercompetition: Managing the dynamics of strategic maneuvering*. New York: Free Press.

Dess, G. G., & Origer, N. K. (1987). Environment, structure, and consensus in strategy formulation: A conceptual integration. *Strategic Management Journal*, 12, 313-330.

Eisenhardt, K. M. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management Journal*, 32, 543-587.

Eisenhardt, K. M. (1990). Speed and strategic choice: How managers accelerate decision making. *California Management Review*, 32, 39-54.

Fama, E. F., & Jensen, M. C. (1983, Jun). Agency problems and residual claims. *Journal of Law and Economics*, 26, 327-349.

Finkelstein, S., & Hambrick, D. C. (1990). Top-management-team tenure and organizational outcomes: The moderating role of managerial discretion. *Administrative Science Quarterly*, 35, 484-503.

Fiol, C. M., & Huff, A. S. (1992). Maps for managers: Where are we? Where do we go from here? *Journal of Management Studies*, 29, 267-286.

Gioia, D. A. (1986). Symbols, scripts, and sensemaking: Creating meaning in the organizational experience. In J. H. P. Sims & D. A. Gioia (Eds.), *The thinking organization* (pp. 49-74). San Francisco: Jossey-Bass.

Gioia, D. A., & Ford, C. M. (1996). Tacit knowledge, self-communications, and sensemaking in organizations. In L. Thayer (Ed.), *Organization communication: Emerging perspectives* (pp. 83-102). Norwood, NJ: Ablex.

Gioia, D. A., & Sims, H. P. (1986). Introduction: Social cognition in organizations. In J. H. P. Sims & D. A. Gioia (Eds.), *The thinking organization* (pp. 1-19). San Francisco: Jossey-Bass.

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

Hambrick, D. C. (1981). Environment, strategy, and power within top-management teams. *Administrative Science Quarterly*, 26, 252-275.

Hambrick, D. C. (1994). Top management groups: A conceptual integration and reconsideration of the "team" label. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 16, pp. 171-213). Greenwich, CT: JAI.

Hambrick, D. C., & Fukutomi, G. D. S. (1991). The seasons of a CEO's tenure. *Academy of Management Review, 16*, 719-742.

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*, 193-206.

Hickson, D. J. (1986). *Top decisions: Strategic decision-making in organizations.* San Francisco: Jossey-Bass.

Hogarth, R. M. (1987). *Judgment and choice: The psychology of decision* (2nd ed.). New York: John Wiley.

Isenberg, D. J. (1984). How senior managers think. (Intuition in managerial decision making.) *Harvard Business Review, 62*, 80-91.

Jarvinen, P., & Gold, S. (1981). Imagery as an aid in reducing depression. *Journal of Clinical Psychology, 37*, 523-529.

Kazdin, A. E. (1978). Covert modeling: The therapeutic application of imagined rehearsal. In J. Singer & K. Pope (Eds.), *The power of human imagination.* New York: Plenum.

Kepner, C. H., & Tregoe, B. B. (1965). *The rational manager: A systematic approach to problem solving and decision making.* New York: McGraw-Hill.

Kim, D. H. (1993). The link between individual and organizational learning. *Sloan management review, 35*, 37-50.

Kogut, B. T., & Zander, U. (1993). Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies, 24*, 625-645.

Liebeskind, J. P. (1996, Winter). Knowledge strategy and theory of the firm. *Strategic Management Journal, 17*, 93-107.

Lott, A. J., & Lott, B. E. (1965). Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequent variables. *Psychological Bulletin, 64*, 259-309.

McClelland, D. C. (1973). Testing for competence rather than for "intelligence." *American Psychologist, 28*, 1-14.

Miller, D. (1996). A preliminary typology of organizational learning: Synthesizing the literature. *Journal of Management, 22*, 485-505.

Mintzberg, H. (1994). *The rise and fall of strategic planning.* New York: Free Press.

Morris, B. (1997, May 25). Doug is it. *Fortune,* pp. 42-52.

Mosakowski, E. (1998). Entrepreneurial resources, organizational choices, and competitive outcomes. *Organization Science, 9*, 625-643.

Myers, I. B. (1984). *The Myers-Briggs type indicator–manual.* Palo Alto, CA: Consulting Psychologists Press.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science, 5*, 14-37.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge creating company.* New York: Oxford University Press.

Parikh, J., Neubauer, F. F., & Lank, A. G. (1994). *Intuition: The new frontier of management.* Cambridge, MA: Blackwell.

Polanyi, M. (1966). *The tacit dimension.* Garden City, NY: Anchor Books.

Priem, R. L. (1990). Top management team group factors, consensus, and firm performance. *Strategic Management Journal, 11*, 469-479.

Saint-Onge, H. (1996). Tacit knowledge: The key to the strategic alignment of intellectual capital. *Strategy & Leadership, 24*, 10-14.

Schoemaker, P. J. H., & Russo, J. E. (1993). A pyramid of decision approaches. *California Management Review, 36*, 9-31.

Schweiger, D. M., Sandberg, W. R., & Rechner, P. L. (1989). Experiential effects of dialectical inquiry, devil's advocacy, and consensus approaches to strategic decision making. *Academy of Management Journal, 32*, 745-772.

Shina, D. (1990). The contribution of formal planning to decisions. *Strategic Management Journal, 11*, 479-492.

Simon, H. A. (1946). The proverbs of administration. In J. M. Shafritz & J. S. Ott (Eds.), *Classics of organization theory* (3rd ed., pp. 101-113). Belmont, CA: Wadsworth.

Simon, H. A. (1991). Bounded rationality and organizational learning. *Organization Science, 2*, 125-134.

Simonton, O. C., & Simonton, S. S. (1975). Belief systems and management of the emotional aspects of malignancy. *Journal of Transpersonal Psychology, 7*, 29-48.

Smircich, L. (1983). Concepts of culture and organizational analysis. *Administrative Science Quarterly, 28*, 339-358.

Spender, J. C. (1996, Winter). Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal, 17*, 45-62.

Sternberg, R. J. (1996). *Successful intelligence: How practical and creative intelligence determine success in life.* New York: Simon & Schuster.

Sternberg, R. J. (1997). Managerial intelligence: Why IQ isn't enough. *Journal of Management, 23*, 475-493.

Sternberg, R. J., Wagner, R. K., Williams, W. M., & Horvath, J. A. (1995). Testing common-sense. *American Psychologist, 50*, 912-927.

Taylor, S. E. (1981). The interface of cognitive and social psychology. In J. H. Harvey (Ed.), *Cognition, social behavior, & the environment* (pp. 189-211). Hillsdale, NJ: Lawrence Erlbaum.

Thompson, J. D. (1967). *Organizations in action.* New York: McGraw-Hill.

Tsoukas, H. (1996, Winter). The firm as a distributed knowledge system: A constructionist approach. *Strategic Management Journal, 17*, 11-25.

Wagner, R. K. (1987). Tacit knowledge in everyday intelligent behavior. *Journal of Personality & Social Psychology, 52*, 1236-1247.

Wagner, R. K., & Sternberg, R. J. (1985). Practical intelligence in real-world pursuits: The role of tacit knowledge. *Journal of Personality & Social Psychology, 49*, 436-458.

Wagner, R. K., & Sternberg, R. J. (1990). Street smarts. In K. E. Clark & M. B. Clark (Eds.), *Measures of leadership* (pp. 493-504). West Orange, NJ: Leadership Library of America, Inc.

Walsh, J. P. (1995). Managerial and organizational cognition: Notes from a trip down memory lane. *Organization Science, 6*, 280-321.

Weick, K. E. (1979). *The social psychology of organizing* (2nd ed.). Reading, MA: Addison-Wesley.

Weick, K. E. (1995). *Sensemaking in organizations.* Thousand Oaks, CA: Sage.

Wiersema, M. F., & Bantel, K. A. (1992). Top management team demography and corporate strategic change. *Academy of Management Journal, 35*, 91-120.

Erich N. Brockmann is an assistant professor of management and Richard J. Stillman Assistant Professor of Management in the College of Business Administration at the University of New Orleans—Lakefront. He received his Ph.D. at the Florida State University in 1997. His research interests include the decision-making processes of top

management teams as well as their influences on the recovery potential of distressed organizations.

William P. Anthony is a professor of management, Carl DeSantis Professor of Business Administration, and director of the DeSantis Center for Executive Management Education in the College of Business at the Florida State University. He has published 16 books and more than 90 articles and papers in a variety of journals in the areas of management and human resources management. He obtained his Ph.D. and M.B.A. from The Ohio State University.