

Creative Solutions to Management Problems via Dreamstorming

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Abstract: We can “Google” thanks to a dream! Fortune reported that Google co-founder Larry Page had a dream in 1996 about downloading the entire web onto computers. “I grabbed a pen and started writing . . . I spent the middle of the night scribbling out the details and convincing myself it would work.” This paper reviews historical dream-based insights such as this, speculates on the mechanism by which it occurs, and builds on contemporary dream research to develop a model for incubating dreams specifically aimed at group problem-solving for complex management decisions. Three examples of dream-incubated solutions are presented along with a protocol for extending this research into the realm of executive decision-making.

Key words: group problem-solving; dream incubation; creative problem-solving; executive decision-making

JEL codes: M, Y, Z

1. Historical “Dream-Based” Solutions

Years ago, when Conrad Hilton was trying to acquire the Stevens House—later to be known as the Chicago Hilton—he submitted an offer \$165,000 in a sealed-bid auction. When he awoke the next morning with the nagging thought of \$180,000 in his mind, he changed his bid, won the auction, and later sold the property for \$2 million. It turned out that the second highest bid was \$179,800 (Rowan, 1979).

John Moran’s success came with his medical invention of an automatic blood analyzer. He had worked for months unsuccessfully trying to finalize the design. Finally, frustrated with his efforts, he embarked on a long-postponed vacation and on the first morning of his trip he awoke with the sun’s rays filtering through his hotel window and he “saw” on the window—or in his mind’s eye—a detailed image of the design that had eluded all his conscious efforts. He sketched the image on hotel stationery and flew home, where he spent the next few months building a prototype based on his sketch. The prototype worked and Moran built his company, Hlycel, Inc., which he later sold to a German conglomerate for \$40 million (Rowan, 1986a).

Awakening with a solution appearing in a dream has been a common experience throughout history, and recorded examples from science, the arts, and business illustrate both the pervasiveness and power of such spontaneous solutions. Otto Loewi received the Nobel Prize for proving that chemical agents are involved in the transmission of nerve impulses. The radical methodology for testing his hypothesis occurred to him in a dream which recurred twice (Dave, 1979). Neils Bohr dreamed of being on a sun composed of burning gas while planets attached by thin filaments revolved about it, stimulating his model of the atom which became the foundation of modern physics (Van de Castle, 1971). Chemistry professor Friedrich Kekule discovered the structure of the benzene ring in a dream:

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“... For some time, he had been pondering the nature of the structure of benzene, but to no avail. One afternoon in 1865, he turned away from his work:

‘I turned my chair to the fire and dozed. Again the atoms were gamboling before my eyes. This time the smaller groups kept modestly in the background. My mental eye, rendered more acute by repeated visions of this kind, could now distinguish larger structures, of manifold conformations; long rows, sometimes more closely fitted together; all twining and twisting in snakelike motion. But look! What was that? One of the snakes had seized hold of its own tail, and the form whirled mockingly before my eyes, as if by a flash of lightning I awoke and I spent the rest of the night working out the consequences of the hypotheses’.

The snake grasping its own tail was Kekule’s clue to the benzene ring, and his dream is an excellent example of the role of the creative subconscious in scientific discovery.” (Van de Castle, 1978).

The arts include numerous stories of dream-inspired creations. Robert Louis Stevenson encountered the plot for Dr. Jekyll and Mr. Hyde in a dream, Wagner’s opera *Tristan and Isolde* was conceived in a dream, and Handel credited a dream for the last movements of *The Messiah* (Van de Castle, 1978). Coleridge reported that he composed substantial portions of *Kubla Khan* in his sleep, and Giuseppe Tartini’s dreamed that he watched as Satan played *The Devil’s Sonata* on a violin (Dave, 1979). More recently Paul McCartney reported that he literally dreamed the melody to *Yesterday*, one of the most covered songs in the history of recorded music (Fortune, 2012).

Elias Howe used his dream imagery of being captured by cannibals carrying spears with holes in their tips to solve his design problem for a mechanical sewing machine by placing the thread in the tip of the needle (Krippner & Hughes, 1970).

Alan Haug, head of Bell Labs Optical Computing Research Department, had been working for years on a laser-based computer that would be faster than a Cray supercomputer but he couldn’t find a workable solution via traditional computer engineering. For a period of several months he had a recurring dream: two armies marched towards each other, stopping just short of confrontation; or on some nights they would run into each other tying themselves into a big red knot. Then, one night they marched right through each other, but with no collision. When Haug awoke, he knew there was a way to make the laser computer work. Unlike electric currents, laser beams can pass right through each other unchanged, thus making normal circuitry paths irrelevant (Higgins, 1997).

Madame C. J. Walker, the first Black female entrepreneur of national prominence, credited her original hair care product to a dream of an herbal mix that cured her life-long head and scalp problem—one shared by many black women of her day (www.deeprancenow.com/dreaming.php). Jack Nicklaus dreamed of a new golf grip which broke him out of a prolonged competitive slump (www.dreamintrepretation-dictionary.com), and Steven King regularly dreams of plots for his novels (www.sfgate.com/entertainment/article/Stephen-King-s-inner-alien-horror-writer-s-2662471.php).

Physicians report patient dreams of accurate self-diagnosis (Sabini & Maffly, 1981; Medical Research Bulletin, 1978), and psychiatrists and psychologists regularly use their client’s dreams as a source of insight and recommended action in therapy (Frued & Jung). Dream wisdom also crops up in everyday experience, offering assistance with the normal problems of living. On the *Tonight Show* comedian David Brenner related how he keeps a pad and pencil by his bed in order to record jokes and other material which appear in his dreams; and *Business Week* reported how executives can access their unconscious to help solve personal and professional problems through creative dreaming (Business Week, 1979).

All these examples of spontaneous creative problem-solving drive us to the question of how and why does this happen? Additionally, since it does happen, can we somehow cause it to happen when and where we wish?

2. Creative Problem-Solving

What do we know about creative problem-solving—or creativity? Psychologists and educational researchers have been studying the subject since the mid-1950s, resulting in a variety of academic journals devoted to the topic and a number of models have emerged. Capon relates creativity to intuition which he suggests is a way of knowing or sensing, or a way of recognizing the possibilities in a situation. “Intuition leads you to ‘see’ the background—the ‘big picture’—clearly. You then perceive the startling, unsuspected connections it yields and which suddenly form an emerging foreground picture. This picture then becomes illuminated. It stands up or shoots up bright and proud.” (Capon, 1989). This also describes how a manager confronting a complex decision might intuitively sense the bigger problem lurking in the background and not be consciously aware of how, when, or why this insight occurred. “At any given moment one is conscious of only a small portion of what one knows. Intuition allows one to draw on that vast storehouse of unconscious knowledge that includes everything that one has experienced or learned, either consciously or subliminally. . .” (Vaughn, 1989). Among the more widely cited models relevant to our concern are two descriptive approaches which explain “how it works” and one normative approach specifying “how it should work”. The Wallas model describes creative problem-solving as a four-step process involving: preparation, incubation, illumination, and verification (Wallas, 1926); and research into the specialized functioning of the two sides of the human brain results in the Split-Brain model. A normative Creative Problem Solving (CPS) model developed and taught by Parnes (1992) and Isaksen and Treffinger (1985) identifies a sequence of activities that intentionally alternate between divergent and convergent thinking in order to facilitate creative problem-solving. Of particular relevance here is the “*Idea-Finding*” stage where creative alternatives are generated.

2.1 The Wallas Model

Wallas posited that problem solving follows a four-step process: Preparation, Incubation, Illumination, and Verification.

Preparation: In the Wallas model, preparation represents all of the manager’s activity leading up to a decision. Within the context of a specific question or problem, preparation begins when the manager becomes aware of the problem and continues throughout all of his or her efforts to reach a solution. In the larger context, it includes a lifetime of training, education, practice and experience which come to bear on the problem. Mintzberg describes an executive explaining a problem in a factory of the Boulava Watch Company. The executive was able to so precisely describe the complex interrelationships between the different functions of the business—production, sales, purchasing, inventory control, and transportation—that, according to Mintzberg—a systems analyst could have easily created an accurate model or flowchart based on the conversation. He concluded that the executives he studied were so involved in and aware of their businesses that they unconsciously construct these mental models that accurately describe their operations, and then mentally manipulate them when trying to resolve complex problems, i.e., they are prepared (Mintzberg, 1986).

Incubation: Following a period of effort searching for a solution which results in failure and frustration, decision-makers will set the problem aside and turn their attention to other pressing tasks. This choice to “get away from the problem” invites a period of incubation. While the conscious mind may stop struggling with the problem and focus attention elsewhere, the unconscious mind continues to mull it over, constantly reexamining the data from different perspectives and in various combinations in a continual search for a workable solution.

This incubation can be either intentional or unintentional. Once stuck, continued data gathering and efforts at problem-solving become counterproductive. According to Dacey, “It is essential to leave the problem alone.

Efforts to solve the problem must be allowed to sink into the unconscious mind.” (Dacey, 1989). By becoming focused on other activities, the decision-maker’s unconscious mind becomes receptive to the products of incubation. Since the mind never really lets go of an unresolved problem, a period of rest from conscious effort can allow for the non-conscious generation of potential answers that—unfiltered by conscious “rules”—will often emerge into conscious awareness when least expected. For example, most of us have experienced being unable to remember a person’s name or a specific fact, which we know that we know. Pouring over the problem seldom seems to solve it, yet if we can move on to other activities and consciously forget the problem, the name or fact may suddenly appear—as if by magic.

Some individuals set out to incubate by intentionally engaging in activities which stimulate this process. Einstein, for example, would take a nap when he couldn’t resolve a problem, while Mozart preferred exercise (Conger, 1995). In *Imagineering*—a book on creative problem solving—Michael LeBoeuf says decision-makers should “Take a walk. Take a nap. Take a bath. Work on another project or hobby. Forget it for a weekend. Sleep on it. . . Most important insights and decisions are made at the subconscious level. Whether it takes six months, six minutes or six hours, the next stage of the creative process cannot occur until the subconscious mind can do its work.” (LeBouef, 1980).

Illumination: King Hero of Greece, it is said, charged Archimedes with the task of determining if his new crown was made of pure gold. Short of melting the crown and assessing the material, Archimedes couldn’t find a means of accomplishing the task, so he returned home to relax in his bath. It happened that as stepped into the tub some of the water to spilled out, resulting in what we have come to know as the EUREKA (I have found it) experience. Somehow, the spilling of the water stimulated his unconscious thinking about displacement and specific gravity, which provided the insight required for evaluating the material in the crown.

Archimedes’ experience illustrates the incubation-illumination interaction described in the Wallas model. He worked on the problem but failed to reach a solution and put the problem aside. He then became engaged in other activity while his non-conscious mind continued to wrestle with the problem. Through some unknown process, most likely stimulated by the water displacement, he had an illuminating insight and “discovered” the solution. According to this model, when incubation is successful, illumination occurs, i.e., a solution emerges. One hypothesis is that the unconscious mind combines the various facets of a problem in ways that expose or tease-out relevant solutions. Often these solutions are ones that could have been rejected by the conscious mind heuristically evaluating them as inappropriate or unworkable. However, during incubation, many of the mind’s conscious filters shut down or are suppressed and new combinations can slip into conscious awareness. This is not unlike suspending judgment or criticism in a brainstorming session where it is argued that such suspension of evaluation can open the way to more creative possibilities.

Verification: Verification is an after-the-fact; logical process which evaluates a solution to make sure it does, in fact, work. The decision-maker examines the potential solution from a rational perspective and, if not satisfied, begins the cycle again. With any potential solution a manager must logically and consciously determine: can it, will it, and does it work?

2.2 The Split Brain Model

Medical science has long been aware that the human brain is divided into what are commonly known as the left- and right-hemispheres; and that these hemispheres each control unique and specialized physical and mental functions. The left hemisphere, or left-brain, receives sensations from and controls the right side of the body while the right-brain receives sensations from and controls the left side. Thus, neural activity causing your left hand to

move occurs in the right hemisphere and similar activity in the left hemisphere causes the physical movement of the right side of your body. Other functions are controlled by one side or the other. For example, damage to certain areas of the left hemisphere can cause loss of speech, impaired reading ability, and a general deterioration in logical thinking, while damage to the right hemisphere can result in deterioration in visual spatial functions, such as recognition of faces or the ability to dress oneself.

It has also been established that these two hemispheres also have unique strengths with regard to recognizing and processing information. In a series of studies at California Institute of Technology, Dr. Roger Sperry determined that information available to one side of the brain was not necessarily available to the other (Gazzaniga, Bogen & Sperry, 1965).

Henry Mintzberg relates this split-brain research to his own studies of managerial behavior and hypothesizes: “. . . the important policy level processes of managing an organization rely to a considerable extent on the faculties identified with the brain’s right hemisphere (Mintzberg, 1976). In another review of split-brain research, Peter Russell divides the hemispheric specialization along the lines of linear versus simultaneous information processing. “The picture that is beginning to emerge is that the left half of the brain is more specialized in serial processes, that is to say, analysis that involves processing information one bit after another; while the right half of the brain is more specialized in parallel processing, that is, taking several bits of information together and forming a synthesis of them (Russell, 1979). According to Robert Ornstein, “. . . The left hemisphere is specialized for analysis; the right hemisphere . . . seems specialized for holistic mentation. . . It processes more diffusely than does the left hemisphere, and its responsibilities demand a ready recognition of many inputs at once. If the left hemisphere can be termed predominantly analytic and sequential in its operation, then the right hemisphere is more holistic and relational, and more simultaneous in its mode of operation (Ornstein, 1974).

3. An Integrated Model

The Wallas model and the split-brain model present independent approaches to explaining how a manager’s mind approaches problem solving. The former indicates that there are separate steps beginning with preparation followed by incubation, occasionally illumination offers a solution which is subsequently subjected to verification. The split-brain model infers that the linear analytic work is done by the brain’s left hemisphere while the right hemisphere provides the integrative and insightful ideation. It is likely that both of these models are partially correct and neither is completely explains the phenomenon.

First of all, most problems are solved as a result of many attempts, not just one pass through the four steps described by Wallas. Problem solving generally occurs through successive approaches to a solution, each one getting closer and closer until a workable result is achieved. Secondly, while the right-brain is associated with creativity, many of the split-brain studies note that intuition and creativity are not the sole property or product of the right-brain, but rather, they occur as a result of repeated oscillation between the left and right hemispheres. Thus, the four-step model might more properly be thought of as a closed loop wherein the mind cycles repeatedly through these four steps in constant search for a solution. In Figure 1 we see the Wallace model superimposed on the split-brain model along with archetypical right and left-brain strengths. In terms of these specializations, preparation is a left-brain, bit-by-bit, data collection and processing activity. Verification too, is dominantly left-brain linear analysis. The two intermediate steps of incubation and illumination are right-brain functions. During incubation the mind mulls over the data, forms a variety of hypothetical relationships, engages in future

scenario speculation, and generally digests the data to get a feel for the potential consequences of alternative decisions. Illumination is then a sudden insight where we see the whole picture or the answer becomes obvious, i.e., the right-brain synthesizes the information and generates a holistic view of both the problem and the alternative solutions.

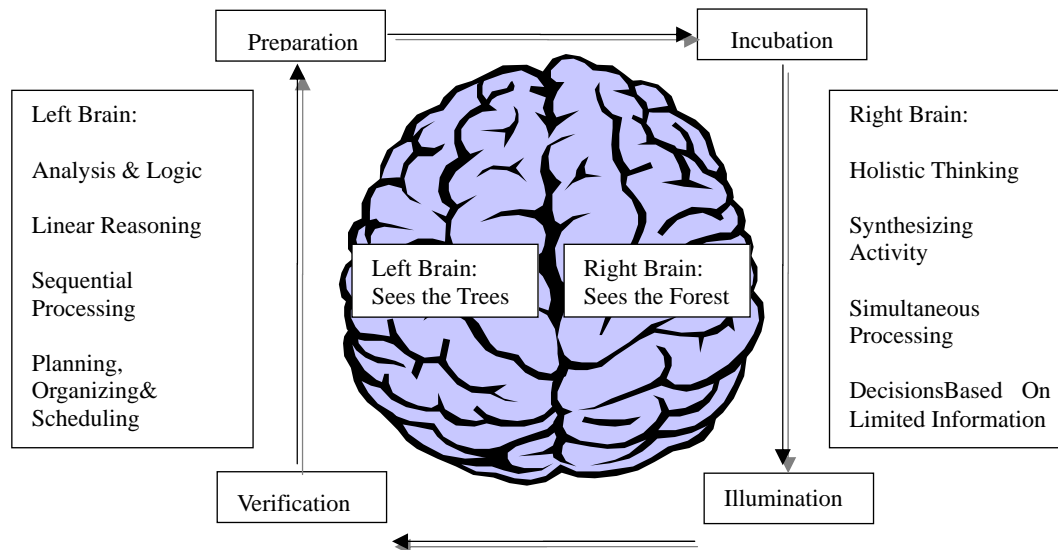


Figure 1 An Integrated Model

3.1 A Normative Model

According to the normative CPS model, convergent and divergent thinking are the central cognitive processes in creative work, and numerous well known approaches have been developed to stimulate divergent thinking. Divergent thinking forces the problem solver to “think outside the box” in order to generate non-traditional alternatives. For example, devices such as SCAMPER force out-of-the-box thinking: what can be Substituted, Combined, Adapted, Magnified or Modified, Put to other uses, Eliminated, or Rearranged/Reversed. Analogy and Metaphor are frequently employed to force abstract thinking to tease out the essentials of a problem. Techniques such as Meditation, Yoga, Journaling, Role Playing, Brainstorming, Guided Imagery, and Gestalt Dialogue have also been successfully used to generate unique creative solutions.

3.2 Management and Creative Problem Solving

Organizational success—and even survival—depends on uncovering “creative” solutions. How can this product or service be differentiated from the competition? What innovative wrinkle can we add to enhance value? What other markets could be interested in what we have to offer? How can we lower our costs? What organizational structure is best for us? Organizations spend vast amounts of time and money looking for creative solutions to problems like this; i.e., trying to think outside of the box.

The question stimulating this research was: Can work groups confronted with a problem requiring a unique creative solution intentionally use the resources of their dreams to generate potential solutions? Specifically, could they collectively incubate dreams for a specific problem?

4. Dream Incubation and Problem Solving

Among the variety of ways in which one might intentionally choose to “incubate” a problem in order to

invite intuitive insight, the universal phenomenon of dreaming has received significant attention in the Psychological literature. Extensive laboratory investigation of both sleep and dreams has clearly shown that we all dream, with dreams occurring approximately every ninety minutes, and getting successively longer as we sleep through the night. We also know that much of the material which makes up the dream content is “day residue”, e.g., characters, locations, objects, emotions, actions, etc., that can be traced to the events in the dreamer’s waking life (Hall & Van de Castle, 1966). In the course of each night’s sleep we spend approximately an hour and a half dreaming. Moreover, Bakan has shown that the right-brain is dominant during this time, as compared with the other twenty-two and a half hours when the logical left-brain is in control (Bakan, 1977). Hence, these periods present an opportunity for some of our most creative ideation.

If dreams can provide an open door to the intuitive or creative mind, is there any way to make this apparently spontaneous event more programmable or under intentional control, i.e., can we enlist dream support in managerial problem solving?

Early laboratory experiments have generally shown dreams to be resistant to manipulation or control, and difficult to interpret; yet Reed’s research on dream incubation demonstrated that when given a problem which is relevant to an individual, there is a way to maximize the chance of dreaming a creative solution (Reed, 1979). Dave’ has also demonstrated that dreams can facilitate creative solutions in symbolic or idiosyncratic terms, i.e., the dream requires interpretation (Dave, 1979). Barrett trained research subjects in the process of dream incubation then had the subjects incubate dreams addressing self-selected problems for one week. Approximately half recalled a dream which they judged to be related to their problem, and a majority of these believed their dream contained a solution (Barrett, 1993).

Reed and Van de Castle found their way around the interpretation obstacle by developing a group brain-storming version of dream incubation, in which a group of individuals attempt to have creative dreams for a common problem (Reed, 1977). They found that each dream individually considered was idiosyncratic and difficult to interpret in light of the problem; however, common elements and themes would invariably appear in the collection of incubated dreams such that group brainstorming could lead to problem solutions. The group naturally responded to the common dream elements, and through the use of brainstorming and analogy they developed potential creative solutions.

As an example, consider one dream in which someone that, during a TV commercial, is about to pour cream in his coffee when he notices in the nick of time that the cream has soured... In another dream, someone about to resume traveling as the traffic light turns green notices that a car to the right is running the red light... Here we can see the commonalities of normal, anticipated interruptions or pauses (traffic lights, TV commercials) and of unexpected, undesirable consequences of making habitual responses (drinking spoiled cream; getting hit by a car), and being watchful to be able to make quick adjustments. On the basis of the common patterns, the group begins a “profiling” analysis: What kind of life situation would stimulate dream patterns such as those observed? Higgins reports a similar approach using guided imagery followed by brainstorming based on the common images experienced among the group (Higgins, 1997).

5. An Experiment

Reed and I adapted the Reed-Van de Castle model to see if intentional dream incubation could provide substantive creative insight for a work group confronting a serious problem. The six-person teaching staff of a

small private school in Virginia preparing for its fourth year of operations when it would open a third grade was our experimental work group. The school had begun with a Kindergarten and had added one grade per year. It was February and they were actively planning for the new class, however, there were financial problems. They had started up with the support of a non-profit membership organization and many of the initial students had come from local members' families. The pool of potential member family students was not appreciably growing, creating enrollment concerns; the economy was hurting and contributions were in decline; and the membership organization was dragging its feet about committing to future financial support.

We met with the group from 7 to 10 pm on a Friday evening and had them describe the situation/problem as they saw it. Our goal was to make the issue very current in their thinking and for each to hear how the others felt. We worked toward a consensus statement of their problem in accordance with the problem finding stage of the CPS model. We avoided the solution finding stage as our aim was to leave them in a state "mental tension" with an unresolved problem and lots of information/data.

Our homework assignment was for each person to:

- (1) Write a "pillow letter" to yourself: "I will dream about (restate the problem) and remember my dreams when I wake up.
- (2) Place the letter under your pillow when you go to bed.
- (3) Put a notepad and pencil or pen beside your bed.
- (4) Upon waking, lie quietly for a few moments and recall whatever you can of your dreams.
- (5) Write down whatever you recall—even fragments.
- (6) Give the dream a short title.

We met on Saturday morning for breakfast where we asked each person to share what they recalled from their dreams. They were specifically asked to tell the dream in the present tense, as if it were currently happening. The group was encouraged to ask for clarity when unsure of what they heard or understood, however, no attempt at analysis or interpretation was permitted.

The dream content became fodder for brainstorming. Were there similarities or direct opposites that appeared? Were there common themes, locations, people, symbols, etc.

One of the dreams captured everyone's attention. The dreamer reported seeing herself on a rural farm in colonial times where she was distraught because their only cow had stopped giving milk. She titled the dream: "The Cow's Gone Dry". There also appeared a common theme of "marketing" among several of the dreams. One person was shopping in a supermarket, another was surprisingly not distressed by telemarketing calls, and a third dreamt of being back at her former job in sales. For those with a business orientation one interpretation relating to sales or marketing might be seem obvious; but for a group of young dedicated teachers on a mission it took some brainstorming to recognize. *The Cow's Gone Dry* led them to seriously consider that the organizational support could dry up and that in order to continue in business they needed to mount a major marketing effort.

Reed described the results to some of his graduate students and two of them replicated the experiment; one with a politician about to run for a higher office and the other with a family-owned auto dealership. The politician—a state representative—was preparing to run for the State Senate. His staff made up the work group and the procedure followed the format Reed and I used for the school group. Dreams among the staff evoked many images relating to delay. One dreamed that there was no rush to get to the head of the line. Another dreamt of vacationing and a third was strolling in the park. The "prize" dream among this group occurred for a staff member who woke with the song *Feeling Groovy* running through her mind, particularly the line: "slow down,

you're going too fast. . .". The representative decided not to run, his party's candidate was defeated, and he won the Senate seat in the subsequent election.

The family with the auto dealership used the process to look at the facts and feelings associated with changing the organizational structure to mutually satisfy a new multi-generational ownership; much like a family-therapy intervention.

6. Conclusions

Creative problem-solving is essential for effective management and a variety of consultants and trainers offer myriad approaches/models for enhancing these efforts. Bennis makes a persuasive case for the end of the great man, i.e., individuals are no longer the lone problem-solver/inventor that we observed in the industrial revolution. Rather, contemporary innovations, discoveries, and inventions are typically the product of groups working collaboratively. Organizations faced with long-range planning, new product introductions, or crisis situations rely on a group or task force for analysis and recommended courses of action. Often, such efforts are pursued in off-site retreats or planning sessions—an ideal environment for dreamstorming. Executives can tap into their own unconscious storehouses along with those of relevant experts and intentionally incubate a set of provocative ideas in “real time”.

This paper has reviewed a variety of spontaneous dream-inspired inventions, innovations, and creative solutions in science, literature, and the arts. It has also tracked the psychological research and demonstrated that it is possible to go beyond spontaneous and serendipitous insights and incubate dreams for specific problems, both individually and as a group. Finally, preliminary results of experiments using dreamstorming for specific management problems have been positive. The concept now deserves a larger scale evaluation in corporate settings. A protocol and instructions for conducting a dreamstorming exercise either during the normal work week or during an off-site meeting are available from the author.

References:

- Agor Weston (1989). *Intuition in Organizations*, Newbury Park, CA, Sage publications.
- Agor Weston (1989a). “The logic of intuition: How top executives make important decisions”, in Agor.
- Bakan Paul (1977). “Dreaming, REM sleep and the right hemisphere: A theoretical integration”, *Journal of Altered States of Consciousness*, Vol. 3, No. 4, pp. 285-307.
- Barrett Deirdre (1993). “The ‘Committee of Sleep’: A study of dream incubation for problem solving”, *Dreaming: Journal of the Association for the Study of Dreams*, Vol. 3, No. 2, pp. 115-122.
- Bennis and Biederman (1977). *Organizing Genius: The Secrets of Creative Collaboration*, Addison-Wesley
- Business Week* (1979). “Dreams can help you manage your waking life”, December 17, pp. 93-94.
- Capon Daniel (1989). *Intuition: Harnessing the Hidden Power of the Mind*, Toronto: Bedford House Publishing Corporation, p. 55.
- Conger J. Daniel (1995). *Creative Problem Solving and Opportunity Finding*, Boyd & Fraser Publishing Company, p. 233.
- Dacey John S. (1989). *Fundamentals of Creative Thinking*, Lexington Books, p. 85.
- Dane and Pratt (2007). “Exploring intuition and its role in managerial decision making”, *Academy of Management Review*, Vol. 32, No. 1, pp. 33-54.
- Dave Robert (1979). “Effects of hypnotically induced dreams on creative problem solving”, *Journal of Abnormal Psychology*, Vol. 88, No. 3, pp. 293-302.
- Fortune*, February 6, 2012.
- Frued and Jung, any psychology text or web site describing the work of these men.
- Gazzaniga Bogen and Sperry (1965). “Observations on visual perception after disconnection of the cerebral hemispheres in man”, *Brain*, Vol. 8, pp. 221-236.

- Halland VandeCastle (1966). *The Content Analysis of Dreams*, New York, Appleton-Century-Crofts.
- Harper Stephen (1988). "Intuition: What separates executives from managers", *Business Horizons*, September-October.
- Higgins James M. (1997). *Escape from the Maze*, Winter Park FL, The New Management Publishing Company.
- Isaack T. S. (1978). "Intuition: An ignored dimension of management", *Academy of Management Review*, Vol. 3, No. 4, pp. 917-921.
- Isaack T. S. (1980). "Intuition: A treasury of knowledge", *Personal Administrator*, Vol. 25, No. 7, pp. 74-78.
- Isaksen and Treffinger (1985). *Creative Problem Solving: The Basic Course*.
- Isenberg (1976). "How senior managers think", *Harvard Business Review*, p. 63.
- Krippner and Hughes (1970). "Genius at work", *Psychology Today*, June, pp. 40-47.
- Leavitt Harold J. (1975). "Beyond the analytic manger", *California Management Review*, Vol. 17, No. 3, pp. 5-12.
- LeBouef Michael (1980). *Imagineering*, Berkley Books, p. 53.
- Medical Research Bulletin*, April, 1978, Vol. 8, No. 8, Phoenix, A.R.E. Clinic, Inc.
- Mintzberg Henry (1976). "Planning on the left side and managing on the right", *Harvard Business Review*, Vol. 54, No. 4, pp. 49-58.
- Mintzberg Henry (1986). "Interview with Roy Rowan", in: *The Intuitive Manager*, Northbrook, IL: MTI Film & Video.
- Murray David (2009). *Borrowing Brilliance*, New York, Penguin: Gotham Books.
- Ornstein Robert (1974). *The Psychology of Consciousness*, New York, Viking Press, 1974.
- Parnes Sidney (1992). *Source Book for Creative Problem Solving*, Creative Education Foundation.
- Reed Henry (1977). "Sundance: Inspirational dreaming in community", in: J. Long (Ed.), *Extrasensory Ecology: Parapsychology and Anthropology: Proceedings of the Rhine-Swanton Symposium*, American Anthropological Association, Metuchen, NJ: Scarecrow Press, 1977, pp. 155-187.
- Reed Henry (1979). "Dream incubation: A reconstruction of a ritual in contemporary form", *Journal of Humanistic Psychology*, Vol. 16, No. 4, pp. 53-70.
- Rowan Roy (1979). "Those business hunches are more than blind faith", *Fortune*.
- Rowan Roy (1986a). *The Intuitive Manager*, Boston, Little, Brown & Co., p. 13.
- Rowan Roy (1986b). *The Intuitive Manager*, Boston: Little, Brown & Co., p. 36.
- Robinson A. D. (1980). "How can intuition help trainers?", *Training and Development Journal*, Vol. 34, No. 2, pp. 54-56.
- Russell Peter (1979). *The Brain Book*, New York, Penguin Books, 1979.
- Sabini and Maffly (1981). "An inner view of illness: The dreams of two cancer patients", *Journal of Analytical Psychology*, Vol. 26, pp. 123-150.
- Sadler-Smith and Shefy (2007). "Developing intuitive awareness in management education", *Academy of Management Learning & Education*, Vol. 6, No. 2, pp. 186-205.
- Smith DeCicco and Moran (2009). "Can individuals dream about the personal problems of others?", in: *2008 Annual Meeting of the International Association for the Study of Dreams*, Chicago, IL, June 26-30, 2009.
- Van de Castle Robert L. (1971). *The Psychology of Dreaming*, Morristown, N.J., General Learning Press,
- Van de Castle Robert L. (1978). "Sleep and dreams", in: *Lindsey, Hall, & Thompson, Psychology* (2nd ed.), New York, Worth Publishers, 1978, p. 34.
- Vaughn Frances (1989). "Varieties of intuitive experience", in Agor.
- Wallas Graham (1926). *The Art of Thought*, Harcourt, Brace and World.