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Mind Tools: Applications and Solutions

Internal Research

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Elmer R. Gates (1859-1923), who held dozens of patents, made his living "sitting for ideas." His tools were a quiet room, a pen, blank paper, and his mind.

When I read about Gates in 1960, the notion of "sitting for ideas" appealed to me, and I began to try it. For two decades I intermittently pursued it in different settings with varying degrees of success and failure. In 1984, after one career as an academic and another as a conductor of contemporary music, I succumbed to my scientific and philosophical interests and formed Synergenesis Corporation, a small interdisciplinary think tank. Since then "sitting for ideas" has been a major preoccupation.

Learning to use introspection productively is like perfecting an artistic skill. It takes commitment, time, and understanding. There's no substitute for commitment, but you'll hasten your progress if you understand the underlying process.

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The example of Elmer Gates demonstrates three things: the unconscious has access to information that lies outside our normal awareness; under certain conditions that information can be released into consciousness; some of it can be unique and useful.

What psychological conditions favor the release of such information? To answer that, we need to examine two mental processes that operate autonomously at an unconscious level: *completing* and *rule-finding*.

Completing. The unconscious is sensitive to form; it seeks closure. When something *significant* is perceived to be incomplete, the imagination is spontaneously activated; thoughts flow into consciousness. The thoughts are hypothetical possibilities for eliminating the incompleteness and arriving at closure.

Language, because of its ambiguity, can convey a sense of incompleteness. Some words refer to more than one thing—the pronoun *he*, for example, can refer to any male.

When a word's referent is inexplicit, we find the word ambiguous; its meaning is incomplete. The incompleteness triggers an internal search, and the imagination generates possible referents to complete its meaning and establish closure. Although most of us are unaware this mental operation, we do it continually as we try to make sense of what we're being told.

A word whose meaning is incomplete is a *class*. The various meanings that can be assigned to that word are *members* of the class. *Lassie* is a member of the class *dog* because *Lassie* can complete the meaning of *dog*.

Some classes have other classes as members. The class *animal* has the class *dog* as a member because *dog* can complete the meaning of *animal*.

If I ask you to imagine a dog, you probably won't think of *Morris the Cat.* But if I ask you to imagine an animal, you might think of *Lassie* or *Morris* since both dogs and cats are animals.

The more inclusive the class, the greater the number of meanings one can assign to it. Let's state this another way: *the more inclusive the class, the greater the number of psychological responses one can make to it.*

The late psychiatrist Milton H. Erickson, an innovative practitioner of clinical hypnosis, recognized this fact and incorporated such ambiguities into his trance inductions. By making suggestions to his patients in words whose meanings were incomplete, he was easily able to elicit novel unconscious responses.

A typical suggestion was: “You may feel certain sensations.” The phrase “certain sensations” steers the unconscious toward sensate responses, but otherwise lacks content. Exactly *what* those responses might be or *where* in the body they might be felt or *when* they might be felt is indefinite—thus, incomplete. Since numerous sensate responses qualify as “certain sensations,” the phrase's inexplicit content increases the odds that the unconscious will find within its repertory of responses one which can complete the phrase's meaning.

Rule-finding. The unconscious' sensitivity to form also shows up in its ability: (1) to discover the rules that order its surroundings and (2) to generate spontaneous behaviors that conform to those rules.

Again, language is a good example. Go into any part of the community, randomly select an individual, and record what she says. If you analyze the structure of her speech, you will find that it is rule-based. The rules may not be those of Standard American English, but they will form a coherent grammatical system.

As children we internalize the fundamental rules of whatever speech environment we live in. Something within the unconscious sorts through countless sentences, looks for common structural features, abstracts them, learns them, and uses them to talk. The fact that we don't apply the acquired rules *consciously* (or even know that they exist) makes them no less real or operative.

The unconscious' rule-finding ability is not limited to speech environments; it is active in all environments. Musicians, for example, unconsciously internalize the elements of their repertory that occur with high frequency. When piano students begin to compose, their first pieces contain simple common patterns that are present in works they have played. Immerse the unconscious in any sort of environment and over time it will extract and utilize that environment's fundamental rules of organization.

We continuously carry out this subliminal processing. So do animals, and by studying them under controlled conditions, we can better understand ourselves. I had such an experience in a laboratory psychology class with Bob, a white rat.

In the lab was a cage unfamiliar to Bob. Inside the cage at one end was a lever; at the other end was a tiny empty cup. The lever would move if a rat chanced to push it; the cup could be filled with water if I activated it from outside the cage. Bob's task (unknown to him) was to learn to push the lever.

Bob was placed in the unfamiliar cage near the cup. He began to move about randomly. When he first turned ever so slightly in the direction of the lever, I filled the cup with water. The noise from the cup caught his attention; he saw the water and drank it.

Any movement that brought him closer to the lever was reinforced with more water; any movement away from it was ignored. Soon he was hanging out near the lever. Then reaching in its direction. Then touching it. And finally pushing it. Astoundingly, all of this took only a few minutes. By systematically rewarding Bob whenever his actions showed a tendency toward the desired goal, Bob's initial turning motion was transformed into the accomplished behavior of lever pushing.

To experience systematic reinforcement—like Bob did—is to experience an environment that is organized according to a simple set of rules. Somehow, the unconscious sorts out such rules, internalizes them, and behaves compatibly.

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An algorithm for internal research. An algorithm is a set of logical steps for accomplishing something. There is a mental algorithm that can be used to elicit useful information from the unconscious. It takes advantage of the unconscious' *completing* and *rule-finding* abilities; that makes it an effective tool for training oneself to conduct internal research.

- Begin by presenting the unconscious with an incompleteness; incompleteness activates the imagination. One that gives the unconscious a wide range of response options is best. I have found a simple question—"What needs to be known?" —to be particularly fruitful. I'll explain why.

"Needs" implies a search for information that is helpful. (That's the kind I'm looking for.) Otherwise, the sentence sets no limits: it doesn't specify *who* must need the information or *what* the information must be about. Its incomplete meaning gives the unconscious free rein to respond with *any sort* of information that is useful to *anybody*. Because of this, it is a potent psychological construction.

My question won't appeal to everyone; tastes vary. A different kind of incompleteness can work just as well. Simply focusing the attention on an interesting unsolved problem is sufficient. The great Indian sage Ramana Maharshi attained a mental state that he regarded as highly beneficial by repeatedly asking himself: "Who am I?"

- Respond in the following way to whatever information the unconscious generates. When any idea of even remote relevance comes to mind, reinforce the unconscious' response by recording the idea in a notebook reserved solely for this purpose. When any irrelevant idea comes to mind, ignore it and gently refocus your attention on the incompleteness. When the mind is blank, wait patiently. If the mind wanders, gently refocus your attention and begin again.

The psychological basis of the algorithm. For each possible unconscious response, the algorithm has a corresponding conscious response. It reinforces all ideas that tend toward relevancy; it withholds reinforcement from all that do not.

To the unconscious, this algorithm is just another body of information impinging on it. It finds the algorithm's rules and makes compatible responses. In effect, the algorithm's reinforcement rules calibrate

the *completing operation* of the unconscious, shaping its responses in the direction of greater relevancy. Daily application of this algorithm will yield increasingly more useful responses.

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If you have never engaged in this kind of introspection, you may be interested in knowing about the information that results.

What is the information about? In my case, the information generally concerns topics I'm already interested in—like finance, music, or information processing. Typically the information evolves over a period of weeks or months. It refines itself and may culminate in a strategy for doing something in a better way: an analytical format that better relates the variables in a bank's performance, a procedure that reduces the time it takes for a conductor to learn a musical score. This essay is itself the product of internal research, but I didn't conduct the research in order to write the essay; the essay's ideas chanced to be contained in the emerging material.

The transmission of novel material from the unconscious into consciousness is easiest when one already understands the material's conceptual foundations. New information applicable to particle physics is more likely to occur to a person who knows something about the field. A notable exception was the well-documented psychic Edgar Cayce, who generated useful pharmacological information of which he had no conscious understanding. However, he could only produce this information while in a deep trance—a stenographer transcribed what he said—and upon waking he had no memory of the information and no clue as to its efficacy.

What form does the information take? Occasionally the material presents itself in a completed form, but usually it appears in little bits and pieces. I have described the process in *How Ideas Take Shape: The Ecology of Creativity*.

Much of the information is verbal—a *word or phrase* that succinctly captures a concept. But some of it is nonverbal. There may be a *fascination* with or *curiosity* about a subject. Sometimes there is an *impulse* to do something—say, to look up a particular fact in a reference book. At other times there is a *wondering*—maybe about the relationship between this element and that.

Occasionally there is a *physical feeling* that a certain thing is needed. Once I had the distinct bodily sensation—no verbal thought was involved—that internal research would proceed more easily if I exercised more and ate more fresh produce. (I did these things, and the research seemed to improve.)

Some information presents itself as a *visual image*. A solution to a problem in planning logic came in the form of an evolving diagram; it ended up looking like two stacks of pancakes placed side by side with a garden hose running up through the center of one then down through the center of the other.

How reliable is the information? I always test an idea's validity. Some ideas turn out to be unusable. Others are wrong in and of themselves, but prove to be a conceptual bridge to the right idea. So, despite their incorrectness, they *are* a part of the solution.

As a general principle, one should always subject unconscious materials to rational evaluation. To do otherwise would be foolish.

Where does the information come from? We turn now to the ultimate question, repeatedly asked in one form or another since the dawn of humanity. What is the source of this information? That, we must discover individually though our own self-inquiry. The answer lies within the experience, but the experience can never be fully conveyed. We must yield to the conclusion of the philosopher Ludwig Wittgenstein: *Whereof one cannot speak, thereof one must be silent.*

An Elmer Gates postscript. The above article was written in 1995. Five years later, I located a fascinating psychological study of Elmer Gates, compiled by his son: Donald Edson Gates, *Elmer Gates and the Art of Mind-Using*, (Jericho, NY: Exposition Press, 1971). Unfortunately, this extraordinary book is out of print.

On page 261 is this quote by Elmer Gates: "If I ask something important to come into my mind I begin the asking process by a certain kind of *attention*, not necessarily to any subject except I want a new idea of value to me. But I do more than hold a state of expectant attention; I am dimly aware that it must be a discovery, an invention, a business idea or an impulse leading me to some deed. I *dirigate* [= to direct one's own attention] to the cerebrum introspectively; it is difficult to define just what I do. But I am AWARE to the fullest extent of all I *know* and *want*. Several hours or days or weeks of this state are necessary, kept up intermittently with appropriate rest intervals, and always the mind produces results I am glad to get. If I keep up this dirigative introspection long enough I become aware of cerebral fullness, blood goes to the brain and I become more and more *unaware* of my surroundings, absent-minded, and desire to be alone. Gradually certain subjects become uppermost in my mind, and suddenly a new idea, invention, or

impulse takes possession of me. Up to certain limits, the longer I keep at that subject, the more I become experimentally acquainted with knowledge on it, the more discoveries and inventions I make. After a time the mind gets tired of that subject, wants a rest, and then takes up some other subject. In developing a subject all methods of accumulating verified knowledge must be brought to bear: experimental investigation, the mind's total knowledge of that subject must be kept classified, the application so far made of that knowledge must be studied, and practical specialists conversed and worked with, systematic ideation carried on, re-functioning [= remembrance and reconsideration] of the mental content, and so on."

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