## Editor's Essay

# CREATIVITY, INTUITION, AND INNOVATION

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They come in the night, or unexpectedly in a walk across the park, with friends playing games, or in the quiet of meditation. These are the provenances of creative breakthroughs that have changed the course of human history; the intuitive insights of single men or women. Nikola Tesla's invention of the electric motor, at the end of the 19th century, came in a vision as he walked across a city park.[1] Mozart and Copeland had music come to them in an instant.[2] Einstein "saw" Relativity as he idled away time in a canoe, after an illness. He later wrote: "I believe in intuition and inspiration... Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution. It is, strictly speaking, a real factor in scientific research."[3]

Creativity concerns both the individual and society, and our survival as a species will be determined by our creative solution of problems so well-known their recitation has become a cliché. Our proficiency in understanding the creative process, and our success in nurturing its dynamic in our culture, will also determine the role we and our values play in the world — whether our vision or another directs the course of future events. One does not need to be sophisticated in historical analysis to recognize the impact a single creative individual can have in a society supportive of breakthroughs, and how harmful suppression of creative initiative is to both individuals and the commonwealth.

KEYWORDS: Intuition, creativity, innovation, consciousness

These are issues which should be in the forefront of our awareness as we seek to push forward the frontiers of subtle energies and energy medicine research. How great can the contribution of a single individual be? Consider this example from another scientific discipline, one sufficiently removed in time for an objective analysis of its impact to be perceived. Consider the German chemist Paul Ehrlich. This single man, and the teams he led, were responsible for a long list of pharmaceuticals, including the first synthesis of a quinine substitute, a cure for sleeping sickness, and the most effective pre-antibiotic cure for syphilis.

Although he died in 1917, so great was the creative momentum produced by Ehrlich that, as historian Henry Hobhouse notes, "In explosives, fertilizers, pharmaceuticals and synthetic substitutes of all kinds the German chemical industry was able to survive defeat in World War I, poor government and inflations in the 1920s, even the slump (*depression, Ed.*), largely because of the technological lead derived from Ehrlich and his pupils."[4]

Today, information is available at a rate unimaginable 20 years ago. Within another 20 years it may be possible to buy on an optical disk everything about a culture that can be reduced to digital data — its literature, history, statistics, and arts. All manner of technological developments help us to better understand or control physical reality. But information and the power to manipulate it are not creativity, although this difference is often confused.

As technology increases the role of creativity will become more not less important. We must still confront that part of the problem-solving task which the machines can not emulate, the ineffable part — creativity. But what can we say about creativity, beyond the fact that it occurs? One useful perspective is to consider what people who have had creative breakthroughs — breakthroughs acknowledged by both their peers and history — say happened to them. Such a survey reveals that unnumbered major creative figures describe a link between creativity, intuition, and innovation. For those interested in the study of energetic and informational interactions, the insights they offer have a particular relevance.

And yet, although the critical triumvirate of creativity, intuition, and innovation is described over and over again, very little is known about the linkage of the parts. Psychologists and sociologists have studied the intellectual as well as some of the emotional and experiential aspects of creativity. Neurophysiologists and biologists probe the bio-chemical foundations of the brain and its activity. Parapsycholo-

gists and physicists, as well as artists, have explored something of the process of intuition. Countless histories of innovation have been written. Each aspect, however, is usually treated as a separate subject. If we are to believe the words of Einstein, Mozart and others, however, it is the relationship amongst these parts that holds the key. Of equal significance, whether the breakthrough is in the arts, sciences, or humanities, the process seems to be the same.

Consider the description of Brahms describing the act of composition: ". . .in this exalted state I see clearly what is obscure in my ordinary moods; then I feel capable of drawing inspiration from above as Beethoven did. . . Those vibrations assume the form of distinct mental images. . . Straightaway the ideas flow in upon me. . . and not only do I see distinct themes in the mind's eye, but they are clothed in the right forms, harmonies, and orchestration. Measure by measure the finished product is revealed to me when I am in those rare inspired moods. . . I have to be in a semi-trance condition to get such results — a condition when the conscious mind is in temporary abeyance, and the subconscious is in control, for it is through the subconscious mind, which is part of the Omnipotence that the inspiration comes."[5]

If we can say that creativity is something other than manipulating the known elements of a problem in some new and more elegant way, a leap into the unknown, as those accorded the title "creative genius" insist, then, perhaps research in parapsychology, the one discipline that studies rigorously controlled intuitive events may shed some insight. Studies at laboratories at Princeton, the former SRI lab, and my own lab Mobius, intriguingly, have indeed produced observations analogous to those reported by individuals making creative breakthroughs.

For example, when ordinary people are asked to carry out an intuitive task, known as Remote Viewing, which involves the ability to describe persons, places or events from which one is physically or temporally separated, and about which one could not know through normal sensory or intellectual channels, in debriefing sessions which follow such an experiment, participants frequently say about their intuition that "it came in a flash." Our research suggests that both subjectively and objectively the statement is accurate. Studies have shown that there is a 10-20 second "window of intuition" which, then, closes down as intellectual analysis overrides direct perception of the intuitive images.

The individual bits of information seem to come in a distinct pattern. We and others have learned that there are also practical things to be done which can "fix" the image so that it remains available to memory — and does not vanish like a dream. One of the easiest and best is to make a simple drawing. This seems to allow a wide (and undefined) range of detailed information to be developed. These simple drawings look very much like the doodles made by many scientists, particularly physicists, as they attempt to translate their interior images into an expression they can share with colleagues. There are also suggestive connections between the description of such experiences and Jung's concept of the Collective Unconscious,[6] the Morphogenetic Field Theory most recently espoused by Rupert Sheldrake,[7] and the ethno-historical eastern concept of the akaskic record.

Further, there is clear evidence of a direct correlation between intuitive functioning and creative decision making in business. Cnsider this example: Douglas Dean and John Mihalasky of Newark Institute of Technology carried out a series of experiments involving 385 Chief Executive Officers of American corporations.[8]

The task required of the CEO was to precognitively predict 100 randomly selected numbers. The results were then correlated with the financial report of the corporations. In every experiment a positive correlation was established between financial performance and high precognitive functioning — a correlation sufficiently strong that Dean was able to examine financial reports and predict how the CEO of that corporation would do in his number predicting experiment.

For the past 10 years, I have been searching the biographies, and autobiographies of men and woman to whom the title "creative genius" has been unequivocally awarded, the Einsteins, Mozarts, and Curries and, while we are only beginning to understand the creative "moment," there are six major components to the pattern of their creative breakthroughs that seem to be common to all tasks and fields:

1. **INTELLECTUAL EXCELLENCE:** Whether it is physics or sculpture, individuals of genius are masters in their field; thinking visionaries, intellectually on the leading edge, whose analytical prowess gives them the power to define the problem to be addressed. Yet this does not mean necessarily that they are the smartest people. The late Nobel Laureate Richard Feynman, humorously recounts sneaking a look at his college file, and learning that his I.Q. was 124.[9] Superior, a level attained by less than 5 per cent of the population, but hardly an indicator of an

internationally recognized and historically significant career in physics. Intelligence is needed, but creativity is more a function of working at full potential than just having the highest I.Q.

One correlation that does seem to hold was described by Dr. Mervin Freedman of San Francisco State College — a conclusion reached after studying the relationship between I.Q. and creative success. Dr. Freedman wrote, "Observations indicate that the more creative individual students tend to be more troublesome to the average teacher than other students."[10] It is a finding which, by itself, urges better understanding of the creative dynamic, so that our educational system does not dismiss troublesome individuals who are simply bored.

Edwin C. Land, the inventor of the Polaroid process, at the end of his career re-examined the work of hundreds of scientists and engineers in his firm, and concluded that most significant discoveries were made, "by some individual who has freed himself from a way of thinking that is held by friends and associates who may be more intelligent, better educated, better disciplined, but who have not mastered the art of the fresh, clean look at the old, old knowledge."[11]

So strong is this iconoclastic factor that it has become a part of our folklore. It is part of the cultural stereotype image of the creative scientist and artist as a non-functional and not very stable individual. Like all such myths there is some truth in some cases. However, such an evaluation is too coarse to detect the central point. A considerable body of research exists suggesting that creativity is in some way a function of focus. Let me propose that this focus can be achieved either through neurosis (an obsessional focus) or through a dedicated consciously-assumed focus (as in any of the martial arts). Because as a culture we do not provide effective and systematic training to achieve creative vision, when it does manifest it is often clouded by neurotic focus.

Nikola Tesla, for example, was one of the towering figures of early 20th century science, yet his fear of germs led to his demand that everything on his table be sterilized, and that at least two dozen napkins be placed next to him when he sat down to eat.[12] What produces such an imbalance? Why do many geniuses cling to debilitating idiosyncrasies? Perhaps, without consciously understanding the relationship they are afraid that if they give up their obsessions they will lose their focus and, thus, their creative powers.

2. **THE DEEP KNOWING THAT A SOLUTION TO THE CHALLENGE DOES EXIST:** Mastery of one's field is critical for a second reason; it is a precursor to knowing (as opposed to believing) that a solution exists. As Einstein explained it, "I feel certain I am right while not knowing the reason."[13] This knowingness could be described as a "leap of faith."

3. **STRATEGIES OF INWARD LOOKING:** It is essential to develop some technique of inward looking — some way of connecting with the factor that lies outside the purview of the intellect. Here again the ability to focus is a central factor. Historical accounts and laboratory research both suggest that meditation, gardening, even sports such as darts can fulfill this portion of the creative process. Years ago, when I was covering the early phases of the Space Program for the National Geographic Society, I visited Cape Canaveral and while walking down the hall happened to see a group of engineers engaged in a dart game. Later than evening I happened to meet one of these engineers at dinner, and I teased him about spending the day at darts. He responded that it was his team's secret weapon. "When we get stuck and no intellectual solution suggests itself," he said, "we begin playing. At first the conversation is about trivial things but, after a while someone is likely to offer a solution to the problem we face. A little while later someone else will add something and, suddenly, as if a spark caught fire, we will all be talking about the problem again. I can't tell you how many insoluble problems we have solved this way."

That engineer's dart game is a variation of something experienced by all who strive for creative breakthroughs. It is a technique allowing the practitioner to enter into a relaxed, open-focus state. Clearly, understanding this process holds substantial promise for learning how to create these states. Yet the idea of openly espousing and training students, or research teams, in techniques which would increase their ability to focus, is virtually unknown in the educational and scientific worlds. If it happens, as it often does, it does so on an *ad hoc* basis.

4. **SURRENDER:** A surcease from intellectual struggle must occur in order for the breakthrough to take place. One must reach the eye of the intellectual hurricane, a place of peace and assuredness, in order for the moment of breakthrough to occur. Surrender leads to the kind of inner-listening associated with creativity — just as intellectual command allows inner-listening to be effectively transformed into a socially useful contribution.

Darwin describes how, after years of collecting data, one day relaxed and away from his working place, the key issues of evolution fell into place in an instant.[14]

Alfred Wallace, who arrived at the same conclusions at almost the same time, had his experience of illumination when, after eight years of collecting specimens in the Malay Archipelago, he contracted a fever. After days of semi-delirium, like Einstein he experienced a breakthrough in which the basic principles of evolution's gradual change suddenly emerged in his rational mind.[14]

The French mathematician Jules Henri Poincaré reported that on two occasions major breakthroughs seemed to come "from thin air."[14]

Frederick Nietzsche states that *Also Sprach Zarathustra* came to him while he was walking through the woods beside Lake Silvaplana. He "saw" the story in a moment, but took months to write out his vision.[14]

Given the commitment to do so, could we, in fact, develop training processes which would create the conditions for a creative breakthrough? Research since the mid-1970s, by teams at such institutions as Harvard Medical School and Menninger Foundation, suggest a sound scientific basis for approaching this part of the process exists, and is surprisingly easy to learn.[15,16] Combined with research in meditation and Altered States of Consciousness (ASC) this surprisingly large corpus, although principally focused on stress-reduction and psycho-physiologic self-regulation strategies, clearly suggests that these same techniques could be employed in developing a personal inward looking discipline designed to enhance creativity.[17-19]

Even the sleep state has its role to play in the surrender and inward looking components of the creative process, as evidenced by both laboratory studies and autobiographical accounts. Consider just one pattern apparent from our biographical study. Robert Lewis Stevenson recounts how he would go to sleep asking, "the gremlins of my mind to write a story while I slept."[20] Physician and researcher Dr. Jonas Salk, provides this account: "Intuition is something we don't understand the biology of yet," he says, "but it is always with excitement that I wake up in the morning wondering what my intuition will toss up to me, like gifts from the sea. I work with it, and rely upon it. It's my partner."[21] Salk is reported by Fortune Magazine editor Roy Rowan as crediting this technique in guiding him to make the correct leap that led to the discovery of the polio vaccine.[21]

Perhaps the most ironic example, however is one given by Rene Descartes. On Saint Martin's eve (November 10th) 1619, in Neuberg, Germany, he had an experience which led to what he called "a wonderful discovery."[22] It led him to formulate what he called "a marvellous science," a world view whose hallmark was its commitment to the primacy of the intellect; a view which has dominated how technological cultures have thought about the world ever since. What was this wondrous experience? It was a dream.

5. **THE MOMENT OF ILLUMINATION:** It has been called the Ahha! experience, and could be known as the moment of genius. As can be seen by the examples already cited, it is inevitably wholistic. Even the most cursory analysis of either anecdotal or controlled intuitive experimentation produces numerous subjective accounts. Typically researchers hear participants say "Images are all there. . . as if it were a hologram hanging in my mind."[22] Indeed, so strong is this aspect that Arthur Koestler coined the term *holons* to deal with this inpouring of comprehension.[23]

6. **INTELLECTUAL EXPLICATION AND VERIFICATION:** Once the moment of illumination has taken place, the conscious, analytical, and synthesizing intellect comes back into play. Descartes gives a clear example of the process when he says that after his dream it took him the rest of his life to make that vision intelligible to others. There is also the necessity to winnow the valid inspirations from the erroneous ones. This, too, requires the special skills of the intellect.

These six steps describe a natural rhythm which, present research suggests, may be susceptible to objective quantification. We are not there yet, though now it is conceivable to structure an experiment that tracks genius moving through the brain. Scans and test procedures guide our way to understanding our instrument of insight. But the instrument — the brain — is only the physical, not the full continuum of consciousness. A body of research, of which intuition and creativity are but a part is now developing which proposes a world view in which all manifestations of consciousness, regardless of the complexity of their physical forms, are part of a network of life. A network in which each component both informs and influences, as it is informed and influenced.

Understanding this exchange may help unravel the intuitive component of creativity, and researchers with an interest in subtle energies and energy medicine would seem a particularly apt group for such work. ISSSEEM is the reality of the

conviction that it is possible to explore ineffable realms without abandoning science. We are part of an emerging evolutionary synthesis: western process and technology melded with the tools of empirical non-technological inner-pilgrimage. What flows from the joining will make an extraordinary epoch.

If we can come to better understand the relationship between creativity, intuition, and innovation, and the process that invokes moments of genius we will, in the process, make of ourselves better and more insightful researchers and clinicians. As Paul Ehrlich has demonstrated someone who undertakes the journey of this task, may change both himself, and the course of history.

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