

NONLOCALITY AND EXCEPTIONAL EXPERIENCES: A STUDY OF GENIUS, RELIGIOUS EPIPHANY, AND THE PSYCHIC

Stephan A. Schwartz^{1#}

Two hundred years of reductive materialism has failed to explain the extraordinary experiences we know as moments of genius, religious epiphany, and psychic insight. This paper proposes that these three experiences are in essence the same experience, differentiated only by intention and context. It reaches this conclusion based on well-conducted experimental research across the continuum of science–work that proposes a new interdependent model of consciousness that takes into consideration a nonlocal linkage or entanglement, as an aspect of consciousness not limited by space and time. The paper surveys some of the most important relevant research from quantum biology, physics, psychology, medicine, anthropology, and parapsychology. It proposes that more attention should be paid

to the autobiographies, correspondence, and journals of men and women to whom history unequivocally accords the designation of genius, saint, or psychic, offering examples from these sources. And it presents comparisons between ethnohistorical material and spiritual traditions, suggesting they arrive at a similar worldview. Finally, it proposes that meditation research, some examples of which are cited, be seen in the context of psychophysical self-regulation, and that it offers one powerful avenue for producing these exceptional experiences.

Key words: Nonlocality, consciousness, meditation, psychophysical self-regulation, quantum biology

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INTRODUCTION

For almost 200 years, the most intellectually rigorous approach we have had for examining the world–science–has had a strong bias toward reductive materialism. From this perspective, spiritual ecstasy is delusional, creative processes are the result of genetics and reinforcements, and parapsychological functioning is impossible. Yet from time immemorial, these experiences have been reported across geography and culture, and continue to be so today. After a century or more of trying to explain them by using the reductive analytical model, the result is acknowledged to be inadequate. There is an aspect of consciousness that has not been accounted for by the materialist worldview. Materialism asks us to believe these quite common experiences cannot be what they so obviously are: an aspect of consciousness not limited by space/time–the nonlocal aspect of consciousness.

In contrast to this materialist perspective, an interdependent model is emerging that sacrifices nothing in scientific rigor while incorporating the nonlocal and providing a framework for experimentation and hypothesis testing. This research appears in hundreds of studies, from many disciplines, addressing the nonlocal. The peer-reviewed journals that are science's benchmark carry papers on quantum entanglement amongst insects, ani-

mals, and birds,¹ distant mental influence,^{2,3} interactions between species,⁴ the efficacy of prayer,⁵ and transactions that do not involve standard sense perception.⁶ What is notable is that these papers often make few references to research outside of the authors' own discipline community. I mention this for two reasons: first, it means there is enough research in single disciplines for references to exist, and second, to emphasize the point that these are independently arising lines of inquiry merging into an as yet unacknowledged consensual perspective. This work collectively suggests that religious epiphany, creative breakthroughs, and parapsychological phenomena are, in fact, different manifestations of the same process–allowing the nonlocal aspect of consciousness to emerge into conscious awareness. Sometimes these experiences are spiritual (humanity's ancient spiritual practices such as meditation attest to this); sometimes they are the insight of creative genius, sometimes merely descriptions of teacups hidden in closets. But regardless of what they are, for the individuals who have them, they are always notable for a sense of connectedness and timeless wholeness.

Functionally and metaphorically in this emerging paradigm, we–all life–can be likened to workstations in a network. Our interactions with this network take place at many planes, from the physical to the nonlocal and, just as in any network from electronic to biological, individuals both inform and influence, even as they are informed and influenced through interaction with this network lying in a domain of nonlocal consciousness.

As Albert Einstein put it:

A human being is a part of the whole, called by us 'Universe,' a part limited in time and space. He experiences himself, his thoughts and feelings as something separated from the rest, a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to

¹ Senior Samuelli Fellow for Brain, Mind, and Healing. Samuelli Institute, Alexandria, VA 22314

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Corresponding Author. Address:
P O Box 905, Langley, WA 98260
e-mail: saschwartz@earthlink.net

our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty. Nobody is able to achieve this completely, but the striving for such achievement is in itself a part of the liberation and a foundation for inner security.⁷

DISCUSSION

Studying how these processes work is important, because this holds the key to developing a discipline for accessing nonlocal consciousness that is based on scientifically sound data. Taken one by one, these studies are often impressive; in aggregate, they present a compelling argument that materialism is no longer a fully adequate explanation of how our world works.

The Physicalist/Materialist Model

Following are some of the hallmarks of materialism:

1. The mind is solely the result of physiological processes.
2. Each person's consciousness is a discrete entity.
3. No communication is possible except through the defined physiological senses.
4. Consciousness dwells entirely within the time/space continuum.

The Interdependent Interconnected Consciousness Model

In place of the physicalist/materialist model, an interdependent perspective is emerging that challenges these assumptions. Some of its principal hallmarks:

1. Only certain aspects of the mind are the result of physiological processes.
2. Consciousness is causal, and physical reality is its manifestation.
3. All consciousnesses, regardless of their physical manifestations, are linked (entangled).
4. Some aspects of consciousness are not limited by the space/time continuum.

Artificial Intelligence

What the world looks like from a strictly materialist view can be discerned in the field of artificial intelligence. Creating a "thinking machine" has been one of science's most alluring quests. Artificial intelligence enables computers to win at chess, as well as model systems as complex as the climate. But even ardent advocates realize something is missing: the creative originality that breaks molds and charts new paths remains a human hallmark. Professor James A. Hendler, a program manager at the Defense Advanced Research Projects Agency, as well as head of the Autonomous Mobile Robotics Laboratory and the Advanced Information Technology Laboratory at the University of Maryland, confessed the expert opinion of his field when he admitted that the self-awareness of consciousness is not on the perceptible horizon. "If you think of awareness as just a point where suddenly things are conscious—I don't see that happening."⁸

The great fear that machines would replace us, or that we would all be turned into interchangeable uniform cogs serving

vast combines, as Fritz Lang and Karl Marx envisioned, appears to have been a dark fantasy. Along with Communism and Freudianism, the mechanistic standardized future predicted has proven to be one of the great failed myths of the 20th century. A fourth myth, the strictly reductionistic materialistic worldview, seems headed toward becoming one of the early and great failures of the 21st century.

Hyman and Utts

So that we do not waste time arguing about the quality of the evidence for this—putting aside the peer review of the journals themselves—let me cite one case, and let it stand as representative. In 1995, the United States Congress commissioned the American Institutes for Research (AIR), a Washington, DC based not-for-profit think tank with a long history of work in human performance and close government ties, to assess the reality of "remote viewing" in research the US government had previously funded. Remote viewing is a protocol for obtaining objectively verifiable information that can only be obtained through opening to nonlocal awareness, the aspect of consciousness outside of space/time.

To make the assessment, AIR selected nationally recognized statistics professor Jessica Utts of the University of California, Davis, and well-known skeptic Professor Ray Hyman, a psychologist on the faculty of the University of Oregon and a fellow of the Committee for the Scientific Investigation of Claims of the Paranormal (now the Committee for Skeptical Inquiry). Both had previously written on nonlocal perception and were notably sophisticated in the issues involved. Utts had already addressed the question Congress was asking in a 1991 paper published in the journal *Statistical Science*.⁹

Hyman and Utts were each asked by AIR to produce an independent report by a fixed date. Utts complied and submitted her report by the deadline. Hyman did not. As a result he was able to see her report before writing his own, and the approach he chose to take, when he did write, was largely a commentary on her analysis. To compensate for this inequity, AIR allowed Utts to write a response that was incorporated into the final document submitted to the Congress. It is in this unplanned form of exchange that the essence of the two positions is revealed.

Utts' initial statement is remarkable for its clarity. She says:

Using the standards applied to any other area of science, it is concluded that psychic functioning has been well established. The statistical results of the studies examined are far beyond what is expected by chance. Arguments that these results could be due to methodological flaws in the experiments are soundly refuted. Effects of similar magnitude have been replicated at a number of laboratories across the world. Such consistency cannot be readily explained by claims of flaws or fraud.

The magnitude of psychic functioning exhibited appears to be in the range between what social scientists call a small and medium effect. That means that it is reliable enough to be replicated in properly conducted experiments, with sufficient trials to achieve the long-run statistical results needed for replicability.¹⁰

Hyman, responding to Utts', report wrote:

I want to state that we agree on many . . . points. We both agree that the experiments (being assessed) were free of the methodological weaknesses that plagued the early . . . research. We also agree that the . . . experiments appear to be free of the more obvious and better known flaws that can invalidate the results of parapsychological investigations. We agree that the effect sizes reported . . . are too large and consistent to be dismissed as statistical flukes.⁹

This is important because what Hyman, one of the more dogmatic skeptical critics, is admitting, is that the way in which the kinds of laboratory experiments described in this paper are conducted, and the way in which they are analyzed, is no longer a matter for dispute. Nonlocal perception cannot be explained away as some artifact resulting from how the data were collected or evaluated.

Blindness and Randomness

Nor is this research vulnerable to criticisms based on blindness and randomness. No other field of science is so obsessed with the gold standard issues of blindness and randomness. English biologist Rupert Sheldrake conducted a survey of leading journals published between October 1996 and April 1998.¹¹ The papers these journals had published were broken into three categories: (1) not applicable: papers that did not involve experimental investigations, for example theoretical or review articles, (2) blind or double-blind methodologies used, and (3) blind or double-blind methodologies not used.¹⁰ The reader may find the results surprising. As can be seen in Table 1, parapsychology as a percentage of published papers overwhelmingly uses this protocol more than any other discipline.

Five years later, Caroline Watt and Marleen Nagtegaal, working at Edinburgh University, restudied the use of the double-blind protocol in the various disciplines of science and reported in 2004 that in the ensuing years, little had changed.¹²

With the Utts/Hyman exchange, and the work by Sheldrake et al and Watt and Nagtegaal in hand, I think we can move beyond the sterile skeptic/proponent debate, which seems locked in an unproductive existential hall of mirrors, and begin

to think about what this research is trying to tell us about ourselves and our world.

Quantum Biology

One of the most intriguing lines of this new research is to be found in the emerging life science of quantum biology. Although still controversial, exactly as Thomas Kuhn predicts (because it threatens a paradigm), quantum biology posits life is a molecular process; molecular processes operate under quantum rules. Thus, life must be a quantum process. Experimental evidence is beginning to accumulate that this quantum view of life processes is correct.

University of California, Berkeley, chemist Gregory S. Engel led a team that ingeniously found a way to directly detect and observe quantum-level processes within a cell by using high-speed lasers.¹³

Using femtosecond lasers to follow the movement of light energy through a photosynthetic bacterial cell, Engel et al, quoted in Garfield, "observed the energy traveling along every possible direction at the same time. Instead of following a single trajectory like the electrons on a silicon chip, the energy in photosynthesis explores all of its options and collapses the quantum process only after the fact, retroactively 'deciding' upon the most efficient pathway."¹⁴

This means the basic processes of life rely ultimately on quantum transfers of information backward in time, which looks remarkably like retrocausal experiments to be found in physics¹⁵ or medicine¹⁶; all of which suggest the primacy of consciousness.

Genius

One of the other intriguing aspects of this new research is that the traditional association of genius and high IQ is falling away. In its place we are beginning to understand that it is this nonlocal aspect of consciousness that is the source of these experiences, whether spiritual ecstasy, the aha! moment of creative breakthrough, or the description of the teacup. Indeed the research suggests that all of these experiences are essentially the same experience modulated only by context and intention. Since much of our history has been shaped by men and women who have had these nonlocal experiences, it seems both necessary and important that we understand them and the processes that cause them to occur.

There is no question that geniuses are often very smart, and that high intelligence can be an important tool. But the linkage of creative genius and high IQ is nowhere near as strong as many seem to believe. Even where it would seem to be crucial, its role seems problematic. Physicist Richard Feynman, Nobel Laureate (1965), best-selling author, and one of the most influential scientists of the post-World War II world, says he snuck into his college's office to get a look at his file and learned that his IQ was only 124 (People Magazine, January 1986). Superior, certainly, but if IQ were the only determinant, no indicator that here was a man who would go on to be an internationally recognized and historically significant genius.

This is not just an anecdotal conclusion. If IQ were the defining attribute of genius, there ought to be some kind of consistent measurable relationship between IQ and the occurrence of ge-

Table 1. Use of Blind Methodologies by Discipline^a

Area of Science	Papers, No.	Blind Methodologies No. (%)
Physical science disciplines	237	0
Biological science disciplines	914	7 (0.8)
Medical science disciplines	227	55 (24.2)
Psychological and animal behavior disciplines	143	7 (4.9)
Parapsychology	27	23 (85.2)

^aTaken from Sheldrake.¹¹ Numbers of papers reviewed and the number involving blind or double-blind methodologies in a range of scientific journals. Only papers reporting experimental results were included in this survey; theoretical papers and review articles were excluded. All publications appeared in 1996-8 unless otherwise indicated.

nus. To see if such a relationship really exists, the first datum required is how many people have exceptionally high IQs.

Paul B. MacCready, an engineer by training, is considered by many to be a genius. He was best known as the “Father of Human Powered Flight” for designing and building the *Gossamer Condor* and *Gossamer Albatross*. MacCready was also fascinated with the nature of genius and he took the time to work out a calculation on the prevalence of high-IQ individuals.¹⁷ He assumed that intelligence was normally distributed across the planet and that each nation had the same ratio of smart, average, and below-average people as every other nation. It is not that simple, but the differences for this discussion are not important.

He started with the world average IQ, which is 100, and decided that for his analysis, a genius would be someone whose IQ was at least 145 (his actual calculation was “three standard deviations above average”; in this instance, one standard deviation is 15). This works out to be 0.13% of the human race. As MacCready pointed out, this is a subgroup so rare, most of the people on the planet may never personally know someone with an IQ that high. Yet as rare they are, in a world population of a bit more than 6.6 billion, that still means more than 8.58 million of us are geniuses, if that is defined as having an IQ of 145 or greater. And, given that the planetary population increases by about 212,000 humans every day—India ends each day with 50,000 more people than it had the day before—that means that 27,560 girls and boys with IQs at this level are added every 24 hours. In the course of an hour, that’s 149 more potential Leonardos, if IQ is the determinant. So if you define genius by IQ, there are lots and lots of geniuses, even if you don’t personally know one. Yet this way of looking at genius can’t be right. It can’t even be correct in terms of creativity generally.

How many geniuses can you name? Don’t restrict yourself to only those living now, make it easier. Take the last 5,000 years of history as your time frame. Well, you might start, “There’s Einstein, Leonardo, Blake, Mozart, Picasso . . .” (mostly people we know by one name). But after 15 or 20 names, it gets harder to add to the list. If you’re like most people, you’ll end up with less than 100 names. If almost 8.58 million individuals are alive today—let alone the millions and millions of men and women with IQs of 145 or better who have lived during the past five millennia—and most of us can name less than 100, obviously something besides just high IQ is necessary to become a genius. Put another way, if high IQ were the only thing needed, then MENSA, the organization that selects its membership on the basis of high IQ (their threshold is only 132) ought to be filled with the leading geniuses of our time. It is not. Its membership is filled with obviously bright, often interesting and eccentric, frequently likeable people, the great bulk of whom work in quite ordinary jobs leading anonymous lives just like their neighbors who have much lower IQs. Intelligence as the single dominant factor fails as an explanation to genius and the creativity that is its hallmark.

In 1871, Charles Darwin, enormously famous and recognized for the genius of his work, wrote his son a letter in which he tried to puzzle out the mystery: “I have been speculating,” he said, “what makes a man a discoverer of undiscovered things; and a most perplexing problem it is. Many men who are very clever—much cleverer than the discoverers—never originate anything.”¹⁸

Darwin’s choice of gender words reflects the bias of his time, but his fundamental point is as valid today as it ever was.

Genius in both life, and as a dictionary entry, suggests a far more prominent place should be given to a mysterious quality of self, an essence—what one might call “beingness.” It is difficult to define, but it seems clear it has both an individual and collective quality. The illumination of genius comes to individuals, but its power arises from collective acknowledgement. Many individuals may have moments of genius, spiritual epiphany, or have powerfully accurate “psychic” perceptions, but to be recognized these individual experiences must resonate within their societal context. Notably, beingness does not necessarily embody spiritual awareness or high moral values. Both Gandhi and Hitler had personal beingness that affected world history. What geniuses, psychics, and saints all share in common is the sense of nonlocal awareness, a connection to a greater whole—God, the Creator, the collective unconscious, Logos, and a host of other terms, all explicitly nonlocal.

Even the words we use in our discussion of these matters imply nonlocality. *Spiritual epiphany* by definition is predicated on contact with something beyond space and time. And the same is true with an experiment in precognition. Genius, or more accurately, in its original plural, *genii*, were in Roman mythology the two attendant spirits everyone was assigned at birth. They were always with one and stayed on the job until one’s death. In the east of Persia and India, *genii* were believed to have actual corporeal substance—the genie in the lamp. In the Christian tradition, we speak of the guardian angel. Universally, these concepts are founded in an element of nonlocality.

Intelligence may not explain genius, but this biochemical research is essential to understanding the physiology of intelligence. Through these studies we are beginning to comprehend how intelligence can be supported and enhanced, and the horizons which open as a result are extraordinary. Changing just one gene in mice can increase their intelligence,¹⁹ and perhaps the same will prove to be true in humans. It has also been established that changes in environment can increase IQ,²⁰ as can changes in diet.²¹

Physics has not given us the neurobiology of mind; it has not answered what CU Smith of the Vision Sciences Laboratory at Aston University calls in his review paper, the “hard problem”—the neural correlates of consciousness. He examines “the work of four prominent modern investigators . . . : J.C. Eccles/Friedrich Beck; Henry Stapp; Stuart Hameroff/Roger Penrose; David Bohm. With the exception of David Bohm, all attempts to show where in the brain’s microstructure quantum affects could make themselves felt. It is reluctantly concluded that none have neurobiological plausibility.”

And this from a paper coauthored by physicists J. M. Schwartz, Henry Stapp, and Olivier Costa de Beauregard:

Neuropsychological research on the neural basis of behavior generally posits that brain mechanisms will ultimately suffice to explain all psychologically described phenomena. This assumption stems from the idea that the brain is made up entirely of material particles and fields, and that all causal mechanisms relevant to neuroscience can therefore be formulated solely in terms of properties of these elements. Thus, terms having intrinsic mentalistic and/or experiential content (eg, “feeling,” “knowing” and “effort”)

are not included as primary causal factors. *“This theoretical restriction is motivated primarily by ideas about the natural world that have been known to be fundamentally incorrect for more than three-quarters of a century”* [emphasis added].²²

Psychic Insight

Grinding the diamond down to carbon dust in an attempt to study its sparkle, although it will yield a great deal of knowledge about the physical, does not appear to be meaningfully addressing the nonlocal experiences we know as genius, religious epiphany, and psychic functioning—that class of experiences which has shaped our lives and societies for as long as records have been kept.

But there are several lines of research which may reveal where the nonlocal interacts with the physiological. Beginning in 2003, Mark Jung-Beeman, along with a shifting list of collaborators, has steadily worked to understand the neurobiological process of insight.²³ This work has yielded intriguing result, most notably: “We observed two objective neural correlates of insight. Functional magnetic resonance imaging revealed increased activity in the right hemisphere anterior superior temporal gyrus for insight relative to non-insight solutions.”²⁴

At virtually the same time, half a world away, Luo and Niki, both on the faculty of the Laboratory of Mental Health, Institute of Psychology, Chinese Academy of Sciences in Beijing, carried out “insight” research seeking a neural correlate. To explore this, they used Japanese riddles, imaging the brains of the participants “imaging the answer presentation and comprehension events, just after participants failed to resolve them. The results of event-related functional magnetic resonance imaging (fMRI) analysis demonstrated that the right hippocampus was critically highlighted and that a wide cerebral cortex was also involved in this ‘insight’ event.”²⁵

Let me also cite a report by Freska and Luna²⁶ of the National Institute for Psychiatry and Neurology in Budapest, in which they present a neuro-ontological interpretation of spiritual experiences: “The prevailing neuroscientific paradigm considers information processing within the central nervous system as occurring through hierarchically organized and interconnected neural networks. The hierarchy of neural networks doesn’t end at the neuroaxonal level; it incorporates subcellular mechanisms as well. When the size of the hierarchical components reaches the nanometer range and the number of elements exceeds that of the neuroaxonal system, an interface emerges for a possible transition between neurochemical and quantum physical events. “Signal nonlocality,” accessed by means of quantum entanglement is an essential feature of the quantum physical domain. The presented interface may imply that some manifestations of altered states of consciousness, unconscious/conscious shifts have quantum origin with significant psychosomatic implications.”²⁶

What particularly seem to be providing fresh insights upon which to build new lines of research concerning the nature of nonlocal consciousness and how it interacts with our physiology are experimental studies that specifically seek to exclude all but the nonlocal in their design, and that recognize and acknowledge nonlocal linkage data (many would call this entanglement) when it appears in their data. One very clear example of this healthy trend can be found in the research exploring physiolog-

ical response in an individual when they are the subject of intentioned awareness.

This idea of monitoring the brain to try and catch epiphany moments traces back to a German researcher, Johannes Berger, who was following up on earlier work done by Richard Caton in 1875, when he applied electrodes to the head of his son Klaus.²⁷ Indeed, the entire effort to measure the brain’s rhythmic electrical discharges, which culminated in the electroencephalogram we know today, was begun because of a nonlocal experience that occurred to Berger himself.

But only in the 1970s with work begun by Kelly and Lenz did it begin to take its modern form.²⁸ Most recently, psychologists William Braud at the Institute of Transpersonal Psychology³ and Dean Radin at the Institute for Noetic Sciences,²⁹ and biologist Rupert Sheldrake, director of the Perrott-Warrick Project,³⁰ physicists Ed May and James Spottiswoode of the Cognitive Sciences Laboratory,³¹ Jiri Wackerman,³² and a number of other researchers have gradually evolved our understanding of this interaction of the nonlocal and the human neuroanatomy so that it can reasonably be said that people are aware of being stared at, and their brains show this awareness when it is happening, even when it is only their television image being stared at by a person in a distant room. The rigor of the controls makes it such that only nonlocal linkage can account for this effect.

In a related line of research, Radin has shown that our brain activity alters in anticipation of an event, and that the more numinous, the more emotional the stimulus, the stronger the response. Even more importantly, within the brief of this paper, he has begun to explore how this physiological response offers a way to understand an aspect of placebo.

In his first study, “cortical potentials in the brain were monitored while adult volunteers anticipated either a flash of light or no flash, selected with equal probability by a noise-based random number generator.”³³ They reported: “Females’ slow cortical potentials significantly differentiated before stimulus onset ($z = 2.72$, $P = 0.007$, two-tailed); males showed a suggestive effect in the opposite direction ($z = -1.64$, $P = 0.10$, two-tailed).”

In a second study designed to monitor “pupillary dilation, spontaneous blinking, and eye movements . . . before, during, and after participants viewed photographs with varying degrees of emotional affect . . .” he discovered:

- (a) pupillary dilation and spontaneous blinking were found to increase more before emotional versus calm photos (combined $P = .00009$), (b) horizontal eye movements indicated a brain hemisphere asymmetry before viewing photos, appropriate to both the emotionality ($P = .05$) and the valence of the future images ($P = .01$), (c) participants selected for independently obtaining significant differential effects in pupillary dilation showed positive correlations between their eye movements before versus during exposure to randomly selected photos ($P = .002$), and (d) a possible ‘transtemporal interference’ effect was observed when the probability of observing future images was varied ($P = .05$ [two-tailed]). Gender splits on these tests showed that overall females tended to perform better than males.⁶

All of this work begins to give us an intellectual framework within which to understand how the experiences of geniuses, spiritual pilgrims, and remote viewers can be explored.

Thanks to May et al,³⁴ we have also refined how to analyze such experiments, breaking away from years of misassumptions. This is exactly the sign of analytical self-correction one would expect in a fruitful rigorous line of inquiry reliably producing data under controlled conditions. As May et al³⁴ put it:

We have demonstrated that substantial errors can be made if the underlying assumptions concerning hypothesis testing with correlations are violated, and these errors can propagate with the research community. We used skin conductance and EEG data from previous experiments to show that even small autocorrelations can affect the resulting *P* values by up to many orders of magnitude. We were also able to demonstrate that by using standard Monte Carlo techniques, it is possible to extract meaningful hypotheses test statistics.³⁴

Meditation

But perhaps the most productive line of research has been in exploring how to improve the instrument of nonlocal experience, the physiology of the human body through developing the practice of meditation. And it is important to note that this scientific research confirms the subjective spiritual science of earlier ages. It is worth spending a moment exploring but one of many examples. The Patanjali Yoga Sutras date at least to the second century BCE, about the time Hannibal was crossing the Alps with his elephants and the Great Wall of China was being built.³⁵ They speak at length about moving into nonlocal awareness through meditation.

Braud, who has made a particular study of this, notes: “The sixth, seventh, and eight ‘limbs’ of ashtanga Yoga are *dharana* (concentration), *dhyana* (meditation), and *samadhi* (profound absorption), respectively.”³⁶

The Patanjali source refines this further: “The repeated continuation, or uninterrupted stream of that one point of focus is called absorption in meditation (*dhyana*), and is the seventh of the eight steps (*tatra pratyaya ekatanata dhyanam*).”³⁷ Braud continues (W. Braud, private communication, October 2008):

When these three are practiced together, the composite process is called *samyama*. *Samyama* might be translated as *constraint; thorough, complete, or perfect restraint; or full control*; it might also be translated as *communion* or *mind-poise*. *Samyama* conveys a sense of knowing through being or awareness through becoming what is to be known. Through mastery of *samyama* comes insight (*prajna*), and through its progressive application, in stages, come knowledge of the Self and of the various principles of reality (*tattvas*). With increasing yogic practice come a variety of mystical, unitive experiences, states, conditions, or fulfillments—the various *samadhis*—along with the attainments or powers (*siddhis*).

Although couched in Eastern terms, the sutras describe the same insights and processes concerning nonlocal functioning that have been elucidated by a modern peer-reviewed meditation literature too large to cite—including papers and a best-

selling book, *Relaxation Response*, by Herbert Benson of the Beth Israel Medical Center.³⁸

Benson has suggested for a number of years that a sound secular scientific basis for approaching meditation exists and is surprisingly easy to learn, and a search of PubMed.com suggests he is correct. Searching on the term *meditation* produces 1787 papers between 1951 and 2009.³⁹ This work, in turn is remarkably similar to research directly linking meditation with success performing nonlocal experiences conducted under controlled conditions.⁴⁰

Psychologist Charles Tart over 30 years ago explicitly linked states of consciousness with scientific research,⁴¹ and Radin reviewed the literature of experimental work explicitly linking nonlocal experiences with meditation. Radin observed: “It is relevant that a review of 16 experiments reported in the 1970s,⁴² all investigating various nonlocal phenomena associated with meditation, estimated that their combined results were significant at $P = 6 \times 10^{-12}$,” which suggests the linkage is a strong one.⁴³ Radin says, “it appears to be a special population.” In aggregate, this surprisingly large body of meditation research, although principally focused on stress reduction and the psychophysiological self-regulation benefits meditation practices confers—gives clear indication that these techniques create the inward looking essential to genius manifesting.

Dreams and Remote Viewing

Natural sleep also plays a role. Psychologist Stanley Krippner who, together with Motague Ullman headed the dream laboratory at Maimonides Medical Center in New York City in the late 1960s, and into the 70s, assisted by Alan Vaughan and Charles Honorton, took the findings of Kleitman, Dement, and Aserinsky and carried out a pioneering series of experiments exploring the connection between nonlocal awareness—they called it telepathy—and dreaming. When the sleeper’s brain pattern indicated they were dreaming, and their eyes were moving behind their closed lids, the wakeful partner would open an envelope, which contained a picture, and attempt to link with the dreamer while looking at this image. After a few minutes, or when REM stopped, the dreamer would be awakened and asked to describe their dream. The results produced a significant correlation between the image held by the wakeful partner and the imagery in the dream.^{44,45}

This research line has now progressed to a point where remote viewing, the most concrete of the nonlocal perception protocols, has shown that when a sleeper trained in the skillset required to induce lucid dreaming attempts to remote view from within a dream, it can be accomplished (Figures 1 and 2).

Once again it strikes me as significant that this laboratory research so closely parallels the ethnohistorical record of genius. Lloyd Osborne, who wrote *The Ebb Tide* with Robert Louis Stevenson, author of *Treasure Island* and *The Strange Case of Dr Jekyll and Mr. Hyde*, quoted Stevenson as saying that he went to sleep asking “the gremlins of my mind to write a story while I slept.”⁴⁶ Physician and researcher Dr Jonas Salk said something similar: “Intuition is something we don’t understand the biology of yet, 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



Figure 1. The target for one of Ed May's lucid dream remote viewing sessions.

partner.⁴⁷ Salk was 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.⁴⁰

Perhaps the most ironic example of dreams as a part of this pattern is the account of René Descartes. On Saint Martin's eve (November 10th) 1619, in Neuberg, Germany, he had an experience that led to what he called "a wonderful discovery."⁴⁸ From it he formulated "a marvelous science," a worldview whose hallmark was its commitment to the primacy of the intellect, a view that has dominated how technological cultures have thought about the world ever since. What was this wondrous experience? It was that most nonintellectual of events: a dream.

Intuition

In business there is evidence of a direct correlation between the inward-looking altered states that support intuition and the creative decision making that makes a corporate leader successful. Dean et al⁴⁹ carried out a series of experiments involving 385 chief executive officers of American corporations. The task required of the CEOs was to predict a random sequence of 100 numbers before a computer generated them. The results were then correlated with the financial reports issued by the corporations. In every experiment, Dean et al conducted, a positive correlation was established between financial performance and high intuitive functioning. It was so definitive that Dean was able to examine financial reports and predict in advance how a given CEO would do in his experiment.⁴² Prophets, he found, make profits.

Dean asked the CEOs how they made these critical decisions. They almost uniformly described techniques of inward looking and deep knowing, clothing the experience in pragmatic, manly words like "gut feeling."

Creativity, Genius, and Religious Epiphany

Because of these and many other correlations, I believe future researchers would be well advised to take seriously as a guide for

protocol design mimicking the data to be found within the autobiographies, collections of correspondence, and biographies of the men and women living in different centuries—separated by vast geographical distances and widely disparate cultures—to whom history has unequivocally bestowed the title genius, seer, or psychic. Because there are problems examining spontaneous religious epiphanies, spiritual experiences are usually so emotionally freighted with religious considerations that an objective analysis of them as nonlocal experiences is difficult, and often offensive. And because discussions of the nonlocal experiences we call psychic engage such rabid opposition, I want to continue this exegesis focusing on the third cousin, creativity and genius. The moment of genius post hoc becomes an unchallenged historical event at once subjective, yet capable of objective analysis and quantification.

Am I justified in suggesting the linkage of genius with the other categories of nonlocal awareness? Here is the account of one of history's most gifted psychics, Edgar Cayce, describing what he was doing. This is him, in 1923, speaking from his trance state in response to a question about the process and source of his nonlocal ability:

The information as given or obtained from this body is gathered from the sources from which the suggestion may derive its information. In this state the conscious mind becomes subjugated to the subconscious, superconscious or soul mind; and may and does communicate with like minds, and the subconscious or soul force becomes universal. From any subconscious mind information may be obtained, either from this plane or from the impressions as left by the individuals that have gone on before, as we see a mirror reflecting direct that which is before it . . . Through the forces of the soul, through the mind of others as presented, or that have gone on before; through the subjugation of the physical forces in this manner, the body obtains the information.⁵⁰

Now here is Johannes Brahms speaking of his state of consciousness while composing:

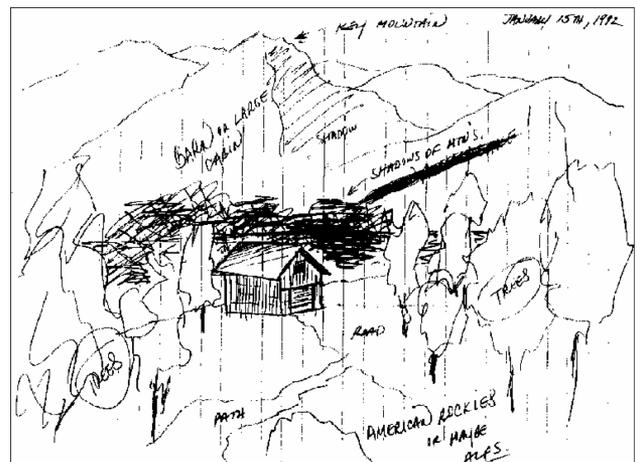


Figure 2. The drawing made by lucid dreamer/remote viewer Joe McMoneagle during a session on January 15, 1992.

. . . 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.⁵¹

Mozart and Copland also seem to have had similar experiences.⁵¹ In Mozart's case, the pages of his compositions are so free from alterations, they look almost like finished transcriptions.

Perhaps the most explicit statement showing the linkage between religious epiphany and the moment of genius is to be found in the words of the Indian mathematician Srinivasa Ramanujan who, with almost no formal training, produced insights into the nature of numbers of such profundity that pure mathematicians are still struggling to understand them nearly a century after his death. As Robert Kanigel explains Ramanujan's conviction, "It was the goddess Namagiri, he would tell friends, to whom he owed his mathematical gifts. Namagiri would write the equations on his tongue. Namagiri would bestow mathematical insights in his dreams."⁵²

Here are a few lines from Mary Oliver's poem "The Swan," which captures what the nonlocal experience was like for Blake and others who frequented the domains he knew so well:

Said Mrs. Blake of the poet:

I miss my husband's company—
he is so often
in paradise.
Of course the path to heaven
Doesn't lie down in flat miles.
It's in the imagination
with which you perceive
this world,
and the gestures
with which you honor it . . .⁵³

CONCLUSIONS

These accounts show us that the moment of genius when a great insight occurs is not the beginning or the end, but actually a midpoint in a process that begins sometimes decades before and that often extends decades into the future—the genius effect. The personal words of these geniuses, saints, and psychics reveal that although a nonlocal experience springs from a single person, it is not a solitary process. The context of the lives of these men and women seems to be very important, as does when they lived, who their allies were, and a host of other issues that all contribute to the effect. Collectively, the stories of their lives leave little doubt that these experiences are at once a highly personal and a deeply social phenomenon.

Genius stories always seem to have the same six components: excellence through mastery of one's skill set, deep knowing,

inward looking, surrender, illumination, and explication and replication. And there is a pattern to the sequence of the steps. They move back and forth between intellect and intuition.

Mastery of one's field is obvious and critical; 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."⁵⁴ This knowingness has been described as a "leap of faith." People who have had these moments clearly see them as an act of trust. Geniuses may be filled with doubts about other parts of their lives, but about the wellspring of their creativity they have a sense of contact with some source that gives them confidence. Breakthroughs are not just recombinations of known elements, not one more brick on the wall. Instead, they are something beyond the perimeter of the wall. Without trust, it is hard to muster the courage to leap from the known to the unknown, no matter the cost. The deep knowing this trust affords is what gives potential geniuses the inner strength to make that leap. Einstein described it: "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 . . ."⁵⁵

It seems essential to develop some technique of inward looking—some way of connecting with that aspect of the self lying beyond the intellect's horizon. The key to this is the ability to focus. Historical accounts by and about geniuses, the lessons of martial art disciplines, and laboratory research all suggest that there are many paths up the mountain. Meditation, gardening, even playing darts have provided that discipline. The one thing all these techniques have in common, though, is that they allow the practitioner to enter into a state of open focus. This is different than daydreaming or fantasy, because it has the impetus of intention toward not a cherished outcome, but a goal. The practitioner is both focused and receptive.

Einstein's assistant, himself a major physicist, Banesh Hoffman, said, "When excited discussions failed to break the deadlock (of a problem), Einstein would quietly say in his quaint English, 'I will have a little tink.'⁵⁶ As Hoffman and Leopold Infeld, the other assistant, also a major physicist, looked on in silence, Einstein would pace the room, coiling and uncoiling his signature hair around a finger as he walked, his sockless ankles winking into view as his pants flapped. "There was a dreamy faraway, yet inward look on his face," Hoffman said, but, "No sign of stress. No outward indication of intense concentration."⁵⁵ Neither assistant felt he could say a word. After a few minutes, Einstein would suddenly come back to normal consciousness, "a smile on his face and an answer to the problem on his lips." Hoffman said the ideas "seemed to come from left field, to be quite extraordinary."²⁵

Given the commitment to do so, and with both science and biography to guide us, it should be possible to take what has been learned about the genius process and develop training programs that create the right conditions to produce breakthroughs.

When all the various accounts across the spectrum of very different activities are considered, it is easy to see that the specific technique of inward looking does not seem to matter any more than the field in which it is to be used matters. We know the research, in its parts, but the idea of assembling it into a program and openly training students or research teams in techniques

that would increase their ability to focus is virtually unknown in the world of the academy. Yet in the business world, where financial success is the uncompromising arbiter, it is the regular subject of corporate seminars.

Using what we are learning we need to see this research in a larger context—as the learning curve to develop programs that will foster the emergence of genius. We cannot know which person will blossom in this way, but we can increase the probability of its emergence because of the insights such research reveals, and the techniques to do this it develops. Teaching a form of secular meditation, a technique of psychophysical self-regulation for experiencing nonlocal awareness, embodied within our educational system, would be a good place to start.

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