

Trends That Will Affect Your Future . . .

Genius

- By Stephan A. Schwartz -

The SchwartzReport tracks emerging trends that will affect the world, particularly the United States. For EXPLORE, it focuses on matters of health in the broadest sense of that term, including medical issues, changes in the biosphere, technology, and policy considerations, all of which will shape our culture and our lives.

Creating the thinking machine has been one of science's most alluring quests. Artificial intelligence enables computers to win at chess and 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, now senior constellation professor of the Tetherless World Research Constellation at Rensselaer Polytechnic Institute, at the time 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—a person competent to speak on the subject—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.”¹

The great fear of our fathers, that machines would replace us or that we would all be turned into interchangeable uniform cogs serving vast combines like Charlie Chaplin and Karl Marx envisioned, has proven a dark fantasy. Along with Communism and Freudianism, the mechanistic standardized future was one

of the great failed myths of the 20th century. A third myth, the strictly materialistic scientific worldview, seems to me to be headed toward becoming one of the great failures of the 21st century. Thirty years of experimental evidence has piled up, suggesting what the men and women who actually have genius experiences attest: the source of creativity is nonlocal—an aspect of consciousness not constrained by space time. This is what makes it possible for geniuses to make leaps into the unknown and bring back their insights. The good news is that, for the first time, science is finally beginning to have some understanding of how the process of genius works. It is becoming possible to think about how to train for genius.

In a world that is, as author Thomas Friedman describes it, increasingly “flat, green, and crowded,” what was once a pop belief in the psychic, or an academic interest of a small consciousness research community, should become a matter of national security and prosperity. Why? Because, the transition from petroleum to green, that I believe history will pronounce a metamorphosis more profound than the one from sail to steam, requires innovation. When innovation is the leverage point, genius is the hand upon the lever.

There is no question geniuses are often very smart, and that high intelligence can be an important tool in the manifestation of creativity in a field such as mathematics. But the linkage of creative genius and high IQ is nowhere near as strong as many seem to believe. It may, in fact, be largely irrelevant in a field such as painting. 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 in the last third of the 20th century, once told me at a restaurant some-

thing that was later memorialized in a magazine interview.² We were being served what turned out to be a memorable Italian dinner in a new restaurant in Santa Monica. Passing the Parmesan, he began a story I have never forgotten. He said he was very ambitious when he was young and wanted to know whether “I had the brains to be a first-tier physicist.” He snuck into his college’s office, he said, to get a look at his file, and learned that his IQ was only 124. “It was like a blow,” he said, and I could see he was in that moment.

An IQ of 124 is superior, certainly, but if IQ were the only determinant, it is no indicator that here was a man who would go on to be an internationally recognized and historically significant genius. But it’s not just an anecdote. If IQ were the defining attribute of genius, there ought to be some kind of consistent measurable relationship between IQ and the occurrence of genius. To see if such a relationship really exists, the first thing required is to know is how many people have really high IQs.

Paul D. MacCready, an engineer by training, was 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 the *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.³ He assumed that intelligence was normally distributed across the planet (it doesn’t actually seem to be, but the difference here is not significant), and that each nation had the same ratio of smart, average, and dumb people as every other nation.

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).³ 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 8.5 million of us—8,580,000—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 Leonards, 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 500,000 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 eight 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 5,000 years—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.”⁴ 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 is surely a term covering an aggregate of traits compounded of personal character, integrity, intuition, intelligence, and a public persona that is the same as the private person. Notably, it does not necessarily embody spiritual awareness or high moral values, although these may be present. When they are, genius takes on an ethereal quality. 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 implicitly nonlocal.

Even the word “genius” contains this implication. Genius, or more accurately, in its original and 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 are concepts that are nonlocal in nature but not terribly helpful in advancing our understanding.

Research is beginning to tell us about how intelligence can be supported and enhanced. Studies show that changing just one gene in mice can increase their intelligence,⁵ and perhaps the same will prove to be true in humans. It has also been established that changes in environment can increase IQ,⁶ as can changes in diet.⁷ This biochemical work, however, although absolutely essential to understanding the physiology of intelligence (for all its receptors and neurotransmitters), has not ex-

plained creativity, much less genius or the sister nonlocal experiences of psychics and religious ecstasies. The one line of research that seems to be on to something is that of Mark Jung-Beeman. Beginning in 2003 and continuing with a shifting list of collaborators, he has steadily sought to understand the neurobiological process of insight.⁸ His work continues today and has yielded many insights, 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.”⁹ As important as this work is though, it doesn’t get us past the physiological. Reading the scientific literature about genius is an oddly unsatisfying experience because, as even many enthusiastic proponents of a physiological explanation of these experiences will admit, such research seems to grind the diamond down to carbon dust in an attempt to study its sparkle.

So if all this research is, at best, only a partial explanation of intelligence, and intelligence is at best only a partial explanation of creativity, and creativity is only a partial explanation of genius, and genius is one aspect of a complex of human experiences, where to turn?

The answer may lie in the autobiographies, collections of correspondence, and biographies of the men and women to whom history has unequivocally bestowed the title genius, seer, or psychic. When their words are added to the scientific research, the diamond’s sparkle re-emerges. Looking at the question from this more inclusive perspective suggests that there are important patterns to how this process works, and they involve a combination of intent, intellect, and a sense of contact with a greater whole. In the study of genius, it is not only clear but devoid of the controversy surrounding religious ecstasy and psychic perceptions. In the several hundred genius accounts that have come down to us of people living in different centuries—separated by vast geographical distances and widely disparate cultures—it is surprising that all describe, often with great passion and precision, the same simple pattern.

These accounts also 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 reveal that although genius springs from a single person, it is not a solitary process; the context of the lives of geniuses 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 genius is at once a highly personal and a deeply social phenomenon.

When we acknowledge a person's creativity and call them a genius in the process, we often, whether explicitly or not, define them as a special case. We set them apart from the rest of humanity. But are they? Are visionaries, geniuses, a different order of being? Is there something about them to which ordinary mortals cannot aspire? It doesn't seem so. The quotidian genius is essentially an ordinary fellow. Reading about them, sifting through the details of their lives—geniuses, saints, and psychics again and again describe the same basic account, a recurring pattern mixing intellect, intuition, and discipline, which collectively produces moments of genius. (I set aside here child prodigies, whose gifts seem more a function of reincarnation.) Genius stories always seems 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, or put another way, "left" and "right" brain functioning.

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."¹⁰ 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 be-

yond 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 . . ."¹¹

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 day dreaming or fantasy. It requires the will and a sense of clear intent, but without a cherished outcome. 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.'"¹² 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."¹³ 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."¹³

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. And the research results are there when one looks. Research physician Herbert Benson Director Emeritus, Benson-Henry Institute for Mind Body Medicine, Massachusetts General Hospital suggests that a sound secular scientific basis for approaching this part of the genius pattern exists and is surprisingly easy to learn.¹⁴ Benson's work is remarkably similar to research in more spiritually oriented forms of meditation,^{15,16} as well as altered states of consciousness studies.¹³ Psychologist Dean Radin, reviewing the literature of experimental work explicitly linking nonlocal experiences with meditation, said this: "It is relevant that a review of 16 experiments reported in the 1970s,¹⁷ 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.¹⁸ Radin says, "it appears to be a special population."¹⁹ In aggregate, this surprisingly large body of meditation research, although principally focused on stress reduction and psychophysiologic self-regulation strategies—biofeedback, without the feedback—gives clear indication that these techniques create the inward looking essential to genius manifesting.

Natural sleep also plays a role for geniuses. 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."²⁰ 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 partner."²¹ 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.²¹

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."²² From it he formulated "a marvel-

ous 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.

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. Douglas Dean and John Mihalasky carried out a series of experiments involving 385 chief executive officers of American corporations.²³ 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 and Mihalasky 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.²³ 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.”

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.

I have written before about the importance of identifying leverage points—points in the dynamic network of the

global metaculture—where maximum effect can be achieved with minimum effort.²⁴ And I have also proposed in these pages what I have called The Neuron Strategy—a national strategy impacting everything from education to the military-based-on-gender equality and the assimilation of minorities, so that the country has the greatest number of individuals, literally the greatest number of neurons, working to advance our collective interest.²⁵ To this I add a third imperative: 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. Teaching a form of secular meditation in the same year children learn the Pledge of Allegiance would be a good place to start.

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