

## The Role of Nonlocal Consciousness in Creativity and Social Change

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For almost 200 years, the nature of consciousness has been largely explored from the assumption that it was an as yet not understood neurophysiological process entirely resident in the organism. Its inherent physicality became a canon. From this materialist perspective moments of genius are genetics and conditioning, spiritual epiphany is delusional, and psychic functioning - or nonlocal consciousness as it should more properly be called -- impossible. And yet these three mysterious human experiences have played, and will continue to play, a major role in social change. The experiences of individuals and our reactions to them, create the social trends that transform our world. An individual has an insight, it impresses others and, in response their small quotidian acts, individual choices, made in the same time frame create social trends. Think how quickly Gay was supplanted by LGBT, representing a change in the social gestalt. Consider the change in attitude towards marriage equality, or shift in consensus concerning Marijuana Prohibition in the United States.

The process is most easily seen in religion, where it can be particularly powerful, even though it may be intellectually irrational which emphasizes the emotional quality of these insights at the social level. An individual has a nonlocal consciousness experience which they share. If it finds social acceptance, the interpretation of that nonlocal experience(s) becomes the dogma of a new religion. Joseph Smith and the rise of Mormonism in the 19<sup>th</sup> century, or L. Ron Hubbard and the growth of Scientology in the 20<sup>th</sup> are two clear examples of this process.

It may be less charismatic but it is no less powerful in science. Consider the German chemist Paul Ehrlich. His name has been forgotten by the public, even as history and the lives of millions have been profoundly effected by his creativity. He, 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 this man 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 inflation in the 1920s, even the slump (The Depression, ed.), largely because of the technological lead derived from Ehrlich and his pupils" [1].

History tells us that creativity is a broad river flowing through any culture. From our collective mass, with an egalitarian democracy that confounds elites, and breaks through privilege, mothers and fathers seen as the most ordinary folk, bring in souls whose lives blaze like comets through our history. These individuals speak to us from some deep place in our collective psyche and these singular people compel us to transform our world. Illumined moments, whether religious, psychic, creative, or scientific, come to individuals, but their power arises from their social acceptance.

The challenge for science is not to dismiss what the individuals say is happening to them as a delusion or fantasy, but to seek to understand the processes by which they occur, and the domain into which they lead us. It is important I think to learn what we can about invoking this state of consciousness, and nurturing it in our culture. We're going to need a 21<sup>st</sup> century equivalent of the two bicycle mechanics

from Ohio who taught humanity to fly, two young men in a garage creating the personal computer, a lone woman geneticist living above a garage who showed us how part of evolution worked and, three decades later everybody understood what she had seen, and Barbara McClintock was awarded the Nobel Prize [2].

We are going to need such people, perhaps as never before. We face extraordinary challenges resulting from climate change, the collapse of anti-biotic medicine, the breakdown of marine eco-systems and the acidification of the oceans. Projected sea rise that threatens to inundate many of the world's great urban areas. Drought so severe it will lead to migration. The transition out of the carbon energy era. All this and more will require great genius, and we should learn all we can about nurturing these breakthrough moments. But we are not doing that because we are trapped in a paradigm that, by its nature, cannot consider these experiences for what they are: a change in consciousness, a special state of mindfulness, as described by psychologist Charles Tart, in his classic 1972 Science paper "States of Consciousness and State-Specific Sciences" [3].

The individuals who have these experiences are very articulate in explaining what happened to them. Although the details vary according to their context - scientific, creative arts, spiritual disciplines, remote viewing - they all share one thing in common: a sense of being connected to a greater unity incorporating everything, a sense of being in a "spaceless space, a timeless time". They are describing and experiencing an aspect of consciousness not physiologically grounded, nor limited by space and time.

Thomas Kuhn, of the Princeton Center for Advanced Studies, and author of the Structure of Scientific Revolutions, arguably the most important book on the history and philosophy of science in the 20<sup>th</sup> century, who coined the term paradigm notes, "No ordinary sense ... fits these flashes of intuition through which a new paradigm is born. Though such intuitions depend upon the experience, both anomalous and congruent, gained with the old paradigm, they are not logically or piecemeal linked to particular items of that experience as an interpretation would be [emphasis added]" [4]. He goes on to say, "Scientists then often speak of the 'scales falling from the eyes' or of the 'lightning flash'" [5].

Brahms says "... 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" [6].

Einstein mirrors this same concept "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 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].

Edgar Cayce, the father of holistic medicine, whose entire career is a study in his ability to open to nonlocal awareness states, "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..." [8].

The Patanjali Yoga Sutras, which date at least to the second century BCE speak at length about moving into nonlocal awareness through meditation. Psychologist William Braud made a particular study of the sutra, notes: "The sixth, seventh, and eight 'limbs' of ashtanga Yoga are dharana (concentration), dhyana (meditation), and samadhi (profound absorption), respectively" [9].

The Patanjali source refines this further, Braud explains. "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). 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)" [2].

And Christian saint, Maria Teresa of Avila counsels "This magnificent refuge is inside you. Enter. Shatter the darkness that shrouds the doorway. Be bold. Be humble. Put away the incense and forget the incarnations they taught you. Ask no permission from the authorities. Close your eyes and follow your breath to the still place that leads to the invisible path that leads you home" [10]. "Follow your breath," a statement a Buddhist could make.

Max Planck, the father of Quantum Mechanics, framed it very clearly in an interview with the respected British newspaper, The Observer in its January 25, 1931 edition. He did not mince words: "I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness" [11]. After more that a decade of additional research in 1944, in a lecture in Florence, Italy Planck doubled down on his point. "As a man who has devoted his whole life to the most clear headed science, to the study of matter, I can tell you as a result of my research about atoms this much: There is no matter as such. All matter originates and exists only by virtue of a force which brings the particle of an atom to vibration and holds this most minute solar system of the atom together. We must assume behind this force the existence of a conscious and intelligent mind. This mind is the matrix of all matter" [12].

In spite of the words of Planck, Einstein, Brahms, Catholic saints, Hindu masters and, so many others, the men and women who have changed our lives, the current prevailing model of consciousness is entirely physiological. It posits:

### The physicalist/materialist model

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

The problem with this model is that it conforms with neither the observed experimental data, nor the words of the people who have had the experiences. So what do we know about the process by which these experiences happen?

There are clearly neurophysiological correlates. Beginning in 2003, and continuing with a shifting list of collaborators, cognitive neuroscientist Mark Jung-Beeman at Northwestern University has step-by-step sought to understand the neurobiological process of insight: the aspect of consciousness that solves problems. To study this he has used fMRI and an innovative protocol. He places participants in the instrument and gives them a puzzle that cannot be worked out with the intellect alone [13]. From his research he concludes, "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" [14].

University of Pennsylvania radiologist has come at this nonlocal opening of consciousness from a different angle, the spiritual epiphany experience. Working with participants who are all defined by their practice of an established spiritually contexted psychophysical

self-regulation discipline, he scans their brains while they carry out their practice. The participants are nuns, Sikhs, and Buddhists. The research has detected changes in their brains and reported, "Meditation involves attentional regulation and may lead to increased activity in brain regions associated with attention such as dorsal lateral prefrontal cortex (DLPFC) and anterior cingulate cortex (ACC)" [15]. The research has reached a point where it constitutes a new sub-discipline: neurotheology.

It is also important to note another correlate: nonlocal perturbation, consciousness directly affecting material reality at a distance. It can be clearly seen through direct observation as well as statistics in Jeanne Achterberg's very elegant therapeutic intention study. As she describes it, "Each healer selected a person with whom they felt a special connection as a recipient for Therapeutic Intention. Each recipient was placed in the MRI scanner and isolated from all forms of sensory contact from the healer. The healers sent forms of (TI) that related to their own healing practices at random 2-minute intervals that were unknown to the recipient. Significant differences between experimental (send) and control (no send) procedures were found ( $p = 0.000127$ ). Areas activated during the experimental procedures included the anterior and middle cingulate area, precuneus, and frontal area. It was concluded that instructions to a healer to make an intentional connection with a sensory isolated person can be correlated to changes in brain function of that individual" [16].

But it clearly is not just neurophysiology, as that is usually understood. A new sub-discipline in biology, Quantum Biology, has emerged in the last decade that takes the physical to its limits. Life through this lens 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. U.C. Berkeley chemist, Gregory S. Engel, led a team that ingeniously found a way to directly detect and observe quantum-level processes within a cell using high-speed lasers [17].

In early 2012 a team led by Neill Lambert at the Advanced Science Institute, RIKEN, and Yueh-Nan Chen of the Department of Physics and National Center for Theoretical Sciences, National Cheng Kung University in Taiwan, published a meta-analysis review of the Quantum biology literature to that date. Their conclusion: "Recent evidence suggests that a variety of organisms may harness some of the unique features of quantum mechanics to gain a biological advantage. These features go beyond trivial quantum effects and may include harnessing quantum coherence on physiologically important timescales" [18].

This work is of enormous importance because it is building step-by-step to the most refined quantum physicality. But even its most ardent exponents recognize it has not given us the fullness of the mind. It has not answered what CU Smith of the Vision Sciences Laboratory at Aston University calls the 'hard problem' - the neural correlates of consciousness (NCC). Smith examined "the work of prominent modern investigators: J.C. Eccles/Friedrich Beck; Henry Stapp; Stuart Hameroff/Roger Penrose and David Bohm and their attempts to show where in the brain's microstructure quantum affects could make themselves felt. Smith reluctantly concluded that none have neurobiological plausibility".

Neuroscientists Jeffrey M Schwartz and Mario Beauregard, working with physicist Henry Stapp, have also recognized this: "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 (e.g. "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]" [19].

In my view, it is the new medical sub-discipline of Resuscitation medicine that is finally going to push science into a new paradigm, more consistent with Planck's observations.

In the beginning Near Death Experience (NDE) studies were all retrospective, people recounting experiences that had happened to them while little or no monitoring was underway, sometimes decades after the fact. These accounts were riveting, and the recurring elements common to so many of these subjective experiences was notable. The child studies by a team led by pediatrician Melvin Morse were particularly compelling because the children were too young to be knowledgeable about near death [20].

Then Dutch Cardiologist Pim van Lommel led a team that took the research to another level. They published a major prospective study in a major medical journal, *The Lancet* [21]. In this prospective study, they included "344 consecutive cardiac patients who were successfully resuscitated after cardiac arrest in ten Dutch hospitals". They covered every variable they could think of: "demographic, medical, pharmacological, and psychological data between patients who reported NDE and patients who did not (controls) after resuscitation". Of the 344 patients in the study 62 (18%) reported NDE, "of whom 41 (12%) described a core experience". The study became longitudinal and they followed up both groups and compared the data two and eight years later.

Through all of this skeptics have been able to argue the dying brain model. In August 2102, neuroscientist Dean Mobbs, of the British Medical Research Council, Cognition and Brain Sciences Unit, and Edinburgh University Senior Lecturer Caroline Watt published a paper in *Trends in Cognitive Sciences* saying, "Taken together, the scientific evidence suggests that all aspects of the near-death experience have a neurophysiological or psychological basis: the vivid pleasure frequently experienced in near-death experiences may be the result of fear-elicited opioid release, while the life review and REM components of the near-death experience could be attributed to the action of the locus coeruleus-noradrenaline system. Out-of-body experiences and feelings of disconnection with the physical body could arise because of a break-down in multisensory processes, and the bright lights and tunneling could be the result of a peripheral to fovea breakdown of the visual system through oxygen deprivation. A priori expectations, where the individual makes sense of the situation by believing they will experience the archetypal near-death experience package, may also play a crucial role" [22].

But medicine has not stood still. Resuscitation Medicine, is now a specialty community large enough to sustain its own journal, eponymously titled *Resuscitation*. It is one of the ironies of science that these physicians, completely dedicated to understanding the physical organism as it enters death, and closely monitoring the process, and bringing about the successful resuscitation are presenting evidence that challenges materialism in a most fundamental manner. To begin with they are working in a time frame unlike anything seen in human history. Resuscitations are occurring after up to six hours and, by their success, taking science to the limits of physiological consciousness and into the domain of the nonlocal. The patients treated by these medical teams are monitored with a precision impossible even five years ago. Yet patients at approximately the same frequency of occurrence as in past studies are still describing classic NDEs, and are providing testimony concerning objectively verifiable events that occurred while they lay "dead" on the operating table. Against this level of monitoring and knowledge of brain function the opioid arguments against the reality of NDEs appear crude and unsatisfying.

There is another issue as well. As medical staff become more aware of NDEs and medicine becomes ever more sophisticated, more NDEs cases show up. In the U.S. over 13 million people, about 4.2% of the American population, has reported having experienced an NDE [23]. And the number is almost certainly larger since many people don't speak of their experience to medical personnel. Still, 13 million is lot of people. It also follows that out of those millions some will be prominent. Republican Illinois Senator Mark Kirk claims that while recovering from a massive stroke in the right side of his brain at Northwestern Memorial Hospital's Intensive Care Unit in Chicago, he was visited by three angels -- who asked him, "You want to come with us?" To which he replied matter-of-factly, "No, I'll hold off" [24].

So for reasons of breakthroughs in scientific research and changes in social gestalt, we are reaching a tipping point. I believe it is time to think about consciousness in a new way, giving primacy as Planck proposed. Two corollaries flow from his assertion: First, is the existence of Nonlocal Consciousness, an aspect of consciousness independent of space-time and not dependent on physiology. Second, as the Therapeutic Intention/healing research shows it is possible for a healer holding a strong intention - whether for good or ill - to have an effect on another organisms, even though separated by distance or time, from single cell organisms to high order mammals suggesting that all consciousnesses are interdependent, and interconnected.

Wolfgang Pauli, another of the 20<sup>th</sup> century's physics immortals saw it this way: "It is my personal opinion that in the science of the future reality will neither be 'psychic' nor 'physical' but somehow both and somehow neither" [25].

In the next generation, physicist Oliver Costa de Beauregard observed, "Today's physics allows for the existence of so-called 'paranormal' phenomena .... The whole concept of 'non-locality' in contemporary physics requires this possibility" [26].

### From this perspective a new model of consciousness emerges

#### The interdependent inter-connected model

- 1) Only certain aspects of the mind are the result of physiologic processes;
- 2) Consciousness is causal, and physical reality is its manifestation;
- 3) All consciousnesses, regardless of their physical manifestations, are part of a network of life which they both inform and influence and are informed and influenced by: there is a passage back and forth between the individual and the collective;
- 4) Some aspects of consciousness are not limited by the space-time continuum

I have written extensively elsewhere about the quality of the evidence for this Interdependent Inter-connected model [27,28]. There are at least six double-blind randomized and stabilized protocols being carried out in laboratories around the world, by dozens of researchers, whose odds of occurring by chance are one in a billion or better - six sigma. These careful studies, as revealed by meticulously structured protocols all confirm this about consciousness: it is both local, sited in the physiology of the body, and nonlocal existing independent of the body, and this aspect is not limited by space or time. Is this work to be trusted? I have also discussed the quality and nature of the critical review of this research literature elsewhere in several papers [29-31]. Here I will just say, these studies have been exhaustively critiqued, and the results still stand.

All of this research plus the study of the biographies, autobiographies, diaries and papers of the men and women who have these nonlocal experiences, particularly those that produce technological breakthroughs suggests that there is a pattern to the process. One of the things that distinguishes the creative master from people who are just smart may be that those known for their creativity work out their own way of invoking this pattern. The techniques they use may vary, but there are six major components to the pattern that seem to be common to all.

**Intellectual excellence:** Whether it is physics or sculpture, creative masters are first of all masters in their field, thinking visionaries. Yet this does not mean necessarily that they are the smartest people. The linkage of creative genius and high I.Q., 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 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 I.Q. was only 124 [32]. Superior, certainly but, if I.Q. were the only determinant, there was nothing in his to indicate an historically significant genius. This is not just an anecdotal conclusion. If I.Q. were the defining attribute of genius there ought to be some kind of consistent measurable relationship between I.Q. 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 I.Q.s.

Paul D MacCready, an engineer by training, is considered by many to be a genius; he is best known as the "Father of Human-Powered Flight" for designing and building the Gossamer Condor and Gossamer Albatross. MacCready is also fascinated with the nature of genius, and he took the time to work out a calculation on the prevalence of high I.Q. individuals [33]. 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 I.Q., which is 100, and decided that for his analysis a genius would be someone whose I.Q. was at least 145 [34]. This works out to be the top 0.13 per cent of the human race. As MacReady points out, that's a subgroup so rare you, the reader, may never personally know someone with an I.Q. that high. Yet as rare they are, in a world population of seven billion human beings that still means more than nine million of us - 910,000,000- are geniuses, if that is defined as having an I.Q. of 145 or greater. And, given that the planetary population increases by 228,000 humans every 24 hours [35], that means that 296 girls and boys with I.Q.s at this level are added every day. So if you define genius by I.Q. 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 over nine million individuals are alive today -- let alone the millions and millions of men and women with I.Q.s of 145 or better who have lived during the past five thousand years -- and most of us can name less than 100, obviously something besides just high I.Q. is necessary to become a genius. Put another way, if high I.Q. were the only thing needed, then MENSA, the organization that selects its membership on the basis of high I.Q. - 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 I.Qs. Intelligence as the single dominant factor fails as an explanation to genius, and even less impactful forms of creativity.

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" [36]. Darwin's choice of gender words reflects the bias of his time, but his fundamental point is as valid today as it ever was.

We should not, however, make the mistake of confusing creativity with enlightenment. Many creative masters are not very stable or functional in other parts of their lives. Gauguin may have been a great painter but he was a man tortured by fears and angers. Picasso, by the accounts of all who knew him, was often not a very nice man. It is not required that creativity and desirable character traits be linked. What does seem to be important is that creativity is in some way a function of focus. Focus can be achieved either through neurosis (an obsessive focus) or through a dedicated consciously-assumed focus (as in any of the martial or meditative arts). Perhaps because, as a culture, we do not provide effective and systematic training to achieve creative vision, when it does manifest itself it is often clouded by neurotic focus.

Nikola Tesla, for example, was one of the towering figures of early 20<sup>th</sup> 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 [37]. 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.

**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" [38]. This knowingness could be described as a "leap of faith". It is an act of trust. Creative masters may be filled with doubts about the other parts of their lives, but about the wellspring of their creativity they all seem to have a sense of trust. Creative breakthroughs are not just re-combinations of known elements (although they may be that as well), but genuine ground breaking insights, and it does not seem possible to attain them without this sense of trust and without the courage to make that leap of faith from the known to the unknown no matter the cost.

**Strategies of inward looking:** It is essential to develop some technique of inward looking - some way of connecting with that aspect lying beyond the purview of the intellect. Here again the ability to focus, to hold intentioned awareness, is a central factor. Historical accounts and laboratory research both suggest that meditation, gardening, even sports such as darts, can provide a way of looking beyond the known horizon.

Given the commitment to do so, could we, in fact, develop training processes which would create the conditions for a creative breakthrough? I believe we can and that the place to start is with the psycho-physical self-regulation techniques practiced in meditation and some mindfulness training.

Over a 1,000 papers were published on Meditation in the peer-reviewed literature just between 2006 and 2009. There is not one meditation literature, but multiple branches to this literature in several disciplines, from physics to pastoral. Much of the research focuses on stress reduction, sleep problems, and attention issues. But in the context of opening to nonlocal consciousness and the creative pattern, I want to concentrate principally on the emerging evidence on the lasting effects meditation has on our neuro-anatomy, particularly our brains and, even here I am only going to focus on the research of the past few years.

By 2004 it was already well-established that electroencephalogram patterns of meditators were different than non-meditators. But the question was: did this mean there was enduring fundamental change in the brains of meditators? To answer this question a team at the Psychiatric Neuroimaging Research Program, Massachusetts General Hospital in Boston headed by Sara Lazar, used MRI to scan the brains of long-term meditators to see if the physical structure of their brains really were different. In 2005 they reported their findings in *Neuroreport*: "Brain regions associated with attention, interoception and sensory processing were thicker in meditation participants than matched controls, including the prefrontal cortex and right anterior insula. Between-group differences in prefrontal cortical thickness were most pronounced in older participants, suggesting that meditation might offset age-related cortical thinning. Finally, the thickness of two regions correlated with meditation experience. These data provide the first structural evidence for experience-dependent cortical plasticity associated with meditation practice" [39].

In 2009, at the Center for Functionally Integrative Neuroscience, at Denmark's Aarhus University, Peter Vestergaard-Pulsen led a team seeking to explore the effects of long term meditation on brain structure. They found, as they report in their paper in *Neuroreport*: "Using magnetic resonance imaging, we observed higher gray matter density in lower brain stem regions of experienced meditators compared with age-matched nonmeditators. Our findings show that long-term practitioners of meditation have structural differences in brainstem regions concerned with cardiorespiratory control. This could account for some of the cardiorespiratory parasympathetic effects and traits, as well as the cognitive, emotional, and immunoreactive impact reported in several studies of different meditation practices" [40].

Half a world away and a few months later that same year a research team at the Laboratory of Neuro Imaging, Department of Neurology, UCLA School of Medicine publishing in *Neuroimage* reported: "... meditation practice has been shown not only to benefit higher-order cognitive functions but also to alter brain activity. Nevertheless, little is known about possible links to brain structure. Using high-resolution MRI data of 44 subjects, we set out to examine the underlying anatomical correlates of long-term meditation with different regional specificity (i.e. global, regional, and local). For this purpose, we applied voxel-based morphometry in association with a recently validated automated parcellation approach. We detected significantly larger gray matter volumes in meditators in the right orbito-frontal cortex (as well as in the right thalamus and left inferior temporal gyrus when co-varying for age and/or lowering applied statistical thresholds). In addition, meditators showed significantly larger volumes of the right hippocampus. Both orbito-frontal and hippocampal regions have been implicated in emotional regulation and response control. Thus, larger volumes in these regions might account for meditators' singular abilities and habits to cultivate positive emotions, retain emotional stability, and engage in mindful behavior. We further suggest that these regional alterations in brain structures constitute part of the underlying neurological correlate of long-term meditation independent of a specific style and practice" [41].

The work of Yi-Yuan Tang of Dalian University of Technology in China and Michael Posner of the University of Oregon will end my short survey. Their work confirmed once again that meditation literally changes one's brain. In the *Proceedings of the National Academy of Science* in August 2010 at the University of Oregon 45 volunteers were assigned to either an integrative body-mind training (IBMT) for meditation or a control group that did only a relaxation program [42]. In scanning the brains of both groups after training they found that the brains of those individuals who engaged in the IBMT form of meditation showed greater change than those who just used a relaxation technique and that: "... 11 h(ours) of IBMT increases fractional anisotropy (FA), an index indicating the integrity and efficiency of white matter in the corona radiata, an important white-matter tract connecting the ACC to other structures. Thus IBMT could provide a means for improving self-regulation and perhaps reducing or preventing various mental disorders" [42].

Natural sleep also plays a role. Lloyd Osborne, who wrote *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" [43]. 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" [44]. 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 [45].

Perhaps the most ironic example of dreams as a part of the pattern is the account of René Descartes. On Saint Martin's eve (November 10<sup>th</sup>) 1619, in Neuberg, Germany, he had an experience which led to what he called "a wonderful discovery" [46]. From it he formulated "a marvelous 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 that most non-intellectual of events: a series of three dreams or visions.

The technique used to achieve intentioned focused awareness does not seem to matter. From intense stress to meditation, anything that creates this single pointedness facilitates opening to the nonlocal aspect of consciousness. But understanding the dynamics of the nonlocal experience itself holds substantial promise for learning how to create these states and use them in a practical manner. Recently research was published on the effects of meditation on the four roughest San Francisco city schools point the way.

Twice a day a gong sounds in the classrooms for what is known as "Quiet Time". *San Francisco Chronicle* education reporter David Kirp who witnessed it said, "I've spent lots of time in urban schools and have never seen anything like it" [47]. The gong sounds and the students all sit quietly, eyes closed, and hold the focused attention to clear their minds and release anger and negative emotions.

In 2007 the city's Visitacion Valley Middle School became the first public school nationwide to adopt this Quiet Time program. Visitacion is situated in a neighborhood where gunfire is so frequent it is routine background noise. Nine shootings were reported in this one neighborhood from mid-December to mid-January 2014. Almost every child sitting in the school's classrooms knows someone who has been shot. Or they themselves have been shot. Murders are so frequent the school feels the need to employ a full-time staff grief counselor.

Kirp describes what has happened over the seven years the program has been in operation: "In years past, these students were largely out of control, frequently fighting in the corridors, scrawling graffiti on the walls and cursing their teachers. Absenteeism rates were among the city's highest and so were suspensions. Worn-down teachers routinely called in sick.

"Now these students are doing light-years better. In the first year of Quiet Time, the number of suspensions fell by 45 percent. Within four years, the suspension rate was among the lowest in the city. Daily attendance rates climbed to 98 percent, well above the citywide average. Grade point averages improved markedly. About 20 percent of graduates are admitted to Lowell High School - before Quiet Time, getting any students into this elite high school was a rarity. Remarkably, in the annual California Healthy Kids Survey, these middle school youngsters recorded the highest happiness levels in San Francisco" [45].

Perhaps it is not surprising then that a significant body of research has grown up since the early 1970s, showing that there is a strong correlation between explicitly linking meditation to successfully completing a task that can only be done by opening to nonlocal consciousness [48]. There are dozens of papers exploring this correlation, and it is the single clearest indicator of nonlocal task success [49]. Why? Because meditation develops the discipline of holding intentioned focused awareness, which is the skill required to open to nonlocal awareness.

**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. By their reports individuals say surrender leads to the kind of inner-listening associated with creativity -- just as intellectual command allows inner-listening. Edwin Herbert 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" [50].

**The moment of illumination:** It has been called the Ahha! experience, and could be known as the moment of genius. It happens very quickly. Nietzsche said Also Sprach Zarathustra came to him in a moment while he was walking through the woods beside Lake Silvaplana [46]. Tesla's invention of the electric motor, at the end of the 19<sup>th</sup> century came, he said, during a walk across a city park [51]. The French mathematician Jules Henri Poincaré told friends that on two occasions major breakthroughs seemed to come "from thin air" [52]. Einstein said he "saw" Relativity as he idled away time in a canoe after an illness [53]. He would later write: "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.." [54]. Darwin, said that after years of collecting data one day when he was relaxed and away from his workplace, the key elements of evolution fell into place in an instant" [51]. Research suggest that there is a 10 - 20 second "window of intuition" which then closes down as intellectual analysis overrides direct perception of the intuitive images.

In remote viewing, one of the six explicit nonlocal consciousness protocols, a viewer is asked to provide their sense perceptions describing a person, place, or object from which they are isolated by reason of time or space or both. Researchers very early on discovered that to "fix" these short-lived evanescent moments so that they remain available to memory, one of the easiest and best ways to do so is to make a simple drawing [55]. Looking at the target drawings made in laboratory Remote Viewing experiments, the comparison with the doodles made by scientists as they attempt to translate their interior images into a formal expression they can share with colleagues is irresistible. In both instances the drawings, even after interruptions, can be used to refocus on the insight.

**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. Nietzsche says he "saw" the story of *Zarathustra* in a moment, but took months to write out his vision [56]. There is the necessity to winnow the valid inspirations from the erroneous ones. This, too, requires the special skills of the intellect.

One of the most intriguing things about these descriptions, other than their uniformity, is the uncanny resemblance they bear to research reports in parapsychology, the one discipline that studies rigorously controlled intuitive events. When, for example, 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 intuitive experience that "I kind of space out," or "it's sort of like focusing my mind at some middle distance". They describe the moment itself by saying, "it came in a flash," or "it was like a hologram". "Images are all there...as if it were a hologram hanging in my mind". Indeed, so strong is this aspect that Arthur Koestler coined the term *holons* to deal with this inpouring of comprehension [57].

We know the creative breakthroughs are real. We live in the world they create. New technologies, new symphonies, new paintings come into the world. One of the strange things about these moments of illumination is that they often occur in more than one person in near concurrency. Alfred Wallace and Charles Darwin has similar insights in near concurrence. Edison was not the only person to solve the problem of making a functional lightbulb, only the first to get a patent. This simultaneity is so marked that it is almost as if the collective mind of humanity was pregnant with the idea and gave it birth in several places to assure that at least one birth would survive. This suggests German polymath Adolf Bastian's (1826 - 1905), theory of *Elementargedanke* -- literally "elementary thoughts of humankind" which so influenced physicists like Planck, Wolfgang Pauli, and Einstein -- indeed much the German school of physics which was dominant in the early decades of the 20<sup>th</sup> century leading up to WWII -- as well anthropologists like Franz Boas (the father of American anthropology), and physicians such a Carl Jung. The idea of the Collective Unconscious (Jung's term for the nonlocal domain) was the way he expressed it. It 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.

It is worth noting that even if the selective criterion is "the bottom line", there is clear evidence of a direct correlation between intuitive functioning and creative decision making in business. Douglas Dean and John Mihalasky of Newark Institute of Technology carried out a series of experiments involving 385 Chief Executive Officers of American corporations [58]. The task required of the CEOs 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. Prophets, he found, make profits.

If one thinks of social policy from the physicalist model each consciousness is isolated and the Earth is a dead resource to extract or dominate. Consciousness has no real role. We live on that Earth largely isolated from Earth's meta-systems unless the weather is bad. In contrast from a perspective of consciousness being of primary importance in an interdependent and interconnected matrix of life. It becomes clear that we don't live on the Earth, we live in the Earth, centered in a cocoon that extends several miles below the Earth's surface and far above us. Spacecraft experience atmospheric effects beginning 75 miles out (120 km). And beyond that lies the protective veils of the magnetosphere. We are embedded in a vast interlocking system in which consciousness plays a powerful role. From the perspective of this matrix, wellness at every level from individual to planetary suddenly becomes the most desirable state, and of primary importance. Profit must be made within a life-affirming parameter. Science's socio-metrics have become sufficiently sophisticated and precise that we can say that, based on reliable objective measures, the compassionate life-affirming choice is the best one [59].

I believe we are now living through a fundamental change in human consciousness, not just technology, but a fundamental change in social paradigm. It has happened before. As precedent consider what German psychiatrist and philosopher Karl Jaspers (1883 - 1969) called the Axial Period, roughly the eighth to second century BCE, and mostly centered in the two centuries from 800 to 600 BCE. In that historically small time period most of the world's great pre-Christian religious movements and philosophical lines developed. Confucius (555-478BCE) and Buddha (567-487 BCE) were almost exact contemporaries as was Zoroaster, according to the best approximation, as well as Lao Tzu, founder of Taosim, and Mahavira, who is the most probable founder of Jainism. In the Middle East the line of monotheistic prophets which began with Amos of Tekoa midway through the eighth century, reached its culmination near the end of the sixth century with Deutro-Isaiac Judaism. At this same time, in the Northern Mediterranean the Greeks were experiencing the birth of philosophical speculation with the work of Thales and his successors. And in Athens democracy was established [60]. Human consciousness changed.

I believe we are facing a change of that magnitude, one whose outcome is still labile, but whose outcome is certain. Our survival depends on understanding that life is interconnected and interdependent, and that we must work with the great meta-systems of the Earth. The question is not whether we will change, but how much pain we must inflict upon ourselves before we make the choices that are compassionate and life-affirming, leading to wellness from the individual to the planetary. Understanding the creative pattern including the nonlocal aspect of consciousness component will make this transition easier.

### Bibliography

1. Henry Hobhouse. "Seeds of Change: Five Plants that Transformed Mankind". Sedgwick and Jackson, London (1985): 24-25.
2. Barbara McClintock. "National Women's History Museum" (2014).
3. Tart C. "States of Consciousness and State-Specific Sciences". *Science* 176.4040 (1972): 1203-1210.
4. Kuhn T. "Structure of Scientific Revolutions". Chicago: University of Chicago Press (1996): 122.
5. Kuhn T. "Structure of Scientific Revolutions". Chicago: University of Chicago Press (1996): 121.
6. Abell AM. "Talks with the Great Composers Garmisch-Partenkirchen". Germany: G.E. Schroeder-Verlag (1964): 19-21
7. Albert Einstein Quoted in: Eves H. *Mathematical Circles Adieu*. Boston, Mass: Prindle, Weber and Schmidt (1977).
8. Cayce E. Reading #3744-3. Virginia Beach, Va. Archives of the Association for Research and Enlightenment (1923).
9. Schwartz S and Dossey L. "Nonlocality, Intention, and Observer Effects in Healing Studies". Also in *Oxford Handbook of Psychology and Spirituality*. ed. Lisa Miller. Oxford: Oxford University Press 6.5 (2010): 295-305.
10. *The Complete Works of St. Teresa of Avila*. Trns and ed. E. Allison Peers from the critical edition of P. Silverio de Santa Teresa. Burns and Oates: London, New York (2002).
11. Interview with Max Planck. *The Observer* (1931).
12. Planck M Lecture. "'Das Wesen der Materie' [The Essence/Nature/Character of Matter], Florence, Italy (1944)". *Archiv zur Geschichte der Max-Planck-Gesellschaft, Abt. Va, Rep.* (1797).
13. Bowden EM and Jung-Beeman M. "Aha! Insight experience correlates with solution activation in the right hemisphere". *Psychonomic Bulletin and Review* 10.3 (2003): 730-737.
14. Jung-Beeman M., *et al.* "Neural activity when people solve verbal problems with insight". *PLoS Biology* 2.4 (2004): E97.
15. Baron Short E., *et al.* "Regional brain activation during meditation shows time and practice effects: an exploratory FMRI study". *Evidence-Based Complementary and Alternative Medicine* 7.1 (2010): 121-127.
16. Achterberg J., *et al.* "Evidence for correlations between distant intentionality and brain function in recipients: a functional magnetic resonance imaging analysis". *Journal of Alternative and Complementary Medicine* 11.6 (2005): 965-971.
17. Panitchayangkoon G., *et al.* "Long-lived coherence in photosynthetic complexes at physiological temperature". *Proceedings of the National Academy of Sciences of the United States of America* 107.29 (2010): 12766-12770.
18. Lambert Neill., *et al.* "Quantum biology". *Nature Physics* 9 (2013): 10-18.
19. Schwartz JM., *et al.* "Quantum physics in neuroscience and psychology: A neurophysical model of mind-brain interaction". *Philosophical Transactions of the Royal Society B: Biological Sciences* 360.1458 (2005): 1309-1327.
20. Morse M., *et al.* "Childhood Near-Death Experiences". *American Journal of Diseases of Children* 140.11 (1986): 1110-1114.
21. Van Lommel P., *et al.* "Near Death Experience in Survivors of Cardiac Arrest: A Prospective Study in the Netherlands". *The Lancet* 358.9298 (2001): 2039-2044.

22. Mobbs D and Watt C. "There is nothing paranormal about near-death experiences: how neuroscience can explain seeing bright lights, meeting the dead, or being convinced you are one of them". *Trends in Cognitive Sciences* 15.10 (2011): 447-449.
23. Van Lommel P. "Consciousness Beyond Life". Harper One: New York (2010).
24. Lallanilla M. "Senator Claims Angels Visited Him in Hospital". Live Science (2013).
25. Pais A and Pauli WE. "The genius of science". Oxford, England: Oxford University Press (2000).
26. De Beauregard O. "The paranormal is not excluded from physics". *Journal of Scientific Exploration* 12.2 (1998): 315-320.
27. Schwartz S. "Six Protocols, Neuroscience, and Near Death: An Emerging Paradigm Incorporating Nonlocal Consciousness Aspects of Consciousness - Volume II". *Essays on Physics, Death and the Mind*. ed. by Ingrid Fredriksson. McFarland: Jefferson, NC (2014).
28. Schwartz S. "Through Time and Space: The Evidence for Remote Viewing in The Evidence for Psi". Ed. By Damien Broderick and Ben Groetzel. McFarland: New York (2014).
29. Schwartz S. "The Antique Roadshow: How Denier Movements Critique Evolution, Climate Change, and Nonlocal Consciousness". In *Debating Psychic Experiences*. ed. Stanley Krippner and Harris L. Friedman. Praeger: Santa Barbara (2010): 179-194.
30. Schwartz S. "False Equivalencies and the Mediocrity of Nonlocal Consciousness Research Criticism". *Explore: The Journal of Science and Healing* 9.3 (2013): 131-135.
31. Schwartz S. "Nonlocality, Near-Death Experiences, and the Challenge of Consciousness". *Explore* 8.6 (2012): 326-330.
32. People Magazine (1986).
33. Paul MacCready. "Potential and Achievement Categorization of Genius". *Skeptic* 2.1 (1993): 42-45.
34. Ibid. His actual calculation was "three standard deviations above average". In this instance, one standard deviation is 15.
35. Population Institute (2014).
36. Charles Darwin, 1871 letter to his son Horace as reported by Erasmus Darwin 2 (1915): 207.
37. Reminiscences of Nikola Tesla Tesla Institute: Jugoslavia.
38. Albert Einstein quoted in *Farady, Maxwell and Kelvin* by D.K.C. MacDonald (Doubleday: Garden City, N.J) (1964).
39. Lazar SW, *et al.* "Meditation experience is associated with increased cortical thickness". *Neuroreport* 16.17 (2005): 1893-1897.
40. Vestergaard-Poulsen P, *et al.* "Long-term meditation is associated with increased gray matter density in the brain stem". *Neuroreport* 20.2 (2009): 170-174.
41. Luders E, *et al.* "The underlying anatomical correlates of long-term meditation: larger hippocampal and frontal volumes of gray matter". *Neuroimage* 45.3 (2009): 672-678.
42. Tang Y-Y, *et al.* "Short-term meditation induces white matter changes in the anterior cingulate". *Proceedings of the National Academy of Sciences of the United States of America* 107.35 (2010): 15649-15652.
43. Lloyd Osborne. *An Intimate Portrait of RLS*. Privately Printed (1924).

44. Roy Rowan. "Those Business Hunches are More than Blind Faith". *Fortune* (1979): 110-114.
45. Ibid.
46. C Adams and P Tannery. *Oeuvres de Descartes*. (Vie de Descartes. vol. XII).
47. Kirp D. "Meditation Transforms Roughest San Francisco Schools". *San Francisco Chronicle* (2014).
48. Robert Keith Wallace. "The Physiological Effects of Transcendental Meditation". Doctoral Dissertation UCLA. Grant NIMH 2-TO1 MH 06415-12, 1971. 19. See also Ramakrishna Rao and H. Dukan. "Meditation and ESP scoring." In WG. Roll, RL. Morris, and JD Morris (eds.). *Research in Parapsychology 1972*. (Scarecrow, Meutchen, N.J (1973): 148-151.
49. Meditation and ESP. Google Scholar (2014).
50. Edwin C Land. Address to Polaroid Employees (1963).
51. WIB Beneridge. "The Art of Scientific Investigation". (Vintage, New York, NY,) 3<sup>rd</sup> edition (1957).
52. Gail Delaney. "Creativity in Music". *Proceedings of the Association for the Anthropological Study of Consciousness. Annual Meetings* (1984).
53. Einstein. *Collected Papers*. Princeton Center for Advanced Studies, Princeton, N.J.
54. 1929 October 26, *The Saturday Evening Post*, What Life Means to Einstein: An Interview by George Sylvester Viereck, Start Page 17, Quote Page 117, Column 1, *Saturday Evening Post Society*, Indianapolis, Indiana. (Verified on microfilm).
55. *Mind at Large*. Ed. Charles Tart. Praeger: New York (1978).
56. AM Abell. *Talks with the Great Composers*, G.E. Schroeder-Verlag: Garmisch-Parten-Kirchen (1964): 19-21.
57. Arthur Koestler. *Janus*. Random House, New York, NY (1978).
58. Douglas Dean., *et al.* *Executive ESP*, Prentice-Hall, Englewood Cliffs, NJ (1974).
59. Schwartz S. "Social Values, Social Wellness: Can We Know What Works?" *Explore: The Journal of Science and Healing* 8.2 (2012): 89-91.
60. Jaspers K. "The Origin and Goal of History". Translated by Michael Bullock. New Haven, CT: Yale University Press (1953).

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