



A Deeper Understanding of Consciousness Through Study of Creativity

James Paul Pandarakalam

ABSTRACT

Creativity is a multilevel process with a biological substratum. Studies of creativity signify the irreducibility of mind and may show the way beyond the quantum consciousness, unraveling its near-paranormal nature. The human mind should be regarded as a means of communication, constituting both a highly sophisticated receiver and a transmitter. The current genetic and psychopathological views of creativity are rooted in the reductionist model of consciousness. They are challenged by the parapsychological perspectives that offer us a broader vision of consciousness. Without adequate intellectual tools and an expanded model of the brain–mind consciousness complex, studies of creativity are inevitably erroneous. Psychography and evidences of discarnate existence may indicate that some original ideas may be flourishing in another dimension, in readiness for transfer to the minds of creative individuals. The assumed link between generativity and mental disorder can be clarified only when we elucidate the creative process, and parasciences may be able to clarify some of the conceptual confusions. Age related decline of creativity supports strongly the view that creativity has also a biological foundation.

Key Words: creativity, consciousness, psychopathology, parallel thinking, quantum mind, automatic writing

DOI Number: 10.14704/nq.2017.15.2.1018

NeuroQuantology 2017; 2: 171-185

171

Introduction

Someone with a capacious reservoir of knowledge may be regarded as intelligent, whereas an individual who uses their knowledge in an original and constructive way may be considered to be creative (Mussen *et al.*, 1979). Creativity may be defined as the process of bringing something new into being (May, 1975), whereby previously unrelated structures are combined harmoniously. It involves the capacity to take existing objects and synthesize them in different ways for new purposes – resulting for example in the recognition or discovery of novel ideas and solutions. The outcome will be larger than what has been fed into the creative mind (Koestler, 1981).

The concept of the unconscious mind as the source of dreams and automatic thoughts, the storehouse of forgotten memories, and the locus

of implicit knowledge existed prior to the time of the Austrian neurologist and psychoanalyst Sigmund Freud, who popularized and even romanticized it. The ultrafast primary-process thinking of the unconscious violates the laws of classical psychology. Quantum physics is now in a position to postulate a deeper perception of it, without which we are unable to study the mechanism of creativity. After a hundred years of controversy, consciousness is still the tip of the psychic iceberg that Freud imagined it to be (Westen, 1999), and quantum physicists seem to support that assertion of his. Unconscious events are not observable, and that is the fundamental obstacle to the integration of the Freudian views of mind with the long-established sciences. Similarly, the quantum wave function cannot be observed; it can only be inferred from observable data.

Corresponding author: Dr. James Paul Pandarakalam

Address: Consultant Psychiatrist, Department of Psychiatry, 5 Boroughs Partnership NHS Foundation Trust. Hollins Park Hospital & AFG hospitals, Hollins Lane, Warrington WA2 8WA, U.K.

e-mail ✉ james.pandarakalam@5bp.nhs.uk; jpandarak@hotmail.co.uk

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Received: 18 December 2016; **Accepted:** 22 January 2017



In spite of that, quantum physics has become a recognized science. In fact, the only way of integrating Freudian concepts with science is through the mediation of quantum physics.

The quantum unconscious offers a conceptual model through which we can study the possible contributions of creativity at a quantum level. Amit Goswami, a renowned particle physicist, classifies creative works into two basic categories and also attempts to give a new dimension to creativity studies. One is problem solving, similar to technological innovation, and the other entails the unearthing of deeper truth (Goswami, 2014). He recognizes that spiritual growth is inner creativity and creativity in arts and sciences is outer creativity. Inner creativity is akin to mysticism. Thus, St Augustine was a genius of spirituality, as are many eastern and western philosophers. The scientists of modern times are pursuing outer creativity. Such a view can help us to detect commonalities between the personalities of the contributors to faith traditions and to scientific disciplines, and between the divergent kinds of wisdom they offer to human growth. In the pre-scientific era, creative intelligentsias were focused on arts and inner creativity, and some of them may be classified as geniuses in their own fields. Goswami recognizes breakthrough ideas in sciences as fundamental creativity and mere adaptations in science as situational creativity.

The creative mind is alert and tuned to unexpected likenesses, and it looks for a new unity in the diversity of the natural world (Bronowski, 1987). The creative process can be likened to computer activity, but the creative mind cannot. Creativity consists of a four-stage process (Ludwig, 1989; Kim, 1990; Wallas, 1970). If information processing and storage is the primary process, then the secondary stage is the incubation or pondering phase – during which ideas germinate at a subconscious level – and the tertiary phase comprises illumination or flashes of insight into consciousness. The fourth phase is the period of elaboration, during which the new idea is developed and tested against scientific and social standards. These stages may be likened to the biological rhythm of conception, gestation, birth and infancy. This pattern may not be an inflexible one. In the majority of individuals, the process of illumination may be a gradual one, with many small instances of insight. Creativity is a poly-faceted, heterogeneous construct, with low convergent validity between its various measures (Hocevar, 1981) and this complexity makes the

interpretation of its relationship to psi highly challenging.

Certain Biological Perspectives

It is noteworthy that many particularly able people have emerged from very ordinary family backgrounds that lack any history of creativity. For example, Sir Isaac Newton had an undistinguished farming ancestry. Some researchers in genetics who are intrigued by the possible biological roots of creativity believe that mind may be reducible to chemistry. Molecular biologists have already interpreted the gene as a chemical entity that may be isolated in a test tube. Until human cloning becomes a reality it is not possible to arrive at a final verdict on this. Intelligence may be a trait that can be cloned, but creativity seems likely to be more complex than the mere duplication of genes. Reducing creativity to a single neurotransmitter or gene would probably be an injustice. Biological views about creativity have been extensively written about and are beyond the scope of our current discussion.

The study of the age of individuals in relation to outstanding achievement has gained the attention of researchers into creativity. While H.C. Lehman held the view that creative achievement is a curvilinear single-peak function of age, others who are focused on this area of study have described bimodal separate peaks with two age-peaks (Lehman, 1953; Abt, 1983). Outstanding contributions from mathematicians after the age of 50 are considered unlikely, and when they occur prompt close attention to all the factors involved. One of those is that many creative and intelligent people delay publishing their findings and theories until some years after they arrived at them; some even leave them to be promulgated posthumously. At the risk of hyperbole, we might say that this is analogous to light from a dead star or a red giant that existed billions of years ago becoming apparent to us now on earth. The observation of creative ability in relation to age supports a biological substratum for creativity.

Responses to dopamine-inhibiting drugs and to psychosis triggered by drugs that increase dopamine activity have been the basis of the dopamine hypothesis of psychosis. Dopamine over activity in psychosis should not be confused with dopamine excess or reserve in creative individuals. Dopamine is depleted with ageing, and this may correlate with decreasing creativity after a certain age. The process begins early; after



the age of 20, there is a 6% reduction in dopamine as well as in other neurotransmitters (Wang *et al.*, 1998)

Transpersonal visions

Studies of creativity have proved to be unsafe in the hands of reductionist scientists, although they have been adopted within transpersonal psychology, which integrates the spiritual and transcendental aspects of human experience within the framework of modern psychology. Creativity is the sublimation of sexual drives, according to the psychoanalytic explanation. The transpersonal view is that it is the outcome of the two opposites. Transpersonal psychologists have attempted to study the relationship between the psychopathological category of the manic phase of bipolar disorder and three transpersonal states of consciousness: creative, visionary and mystical. Studies using EEG to measure the amplitude characteristics of creative individuals show only moderate arousal. Manic states demonstrate hyperarousal and mystical rapture reveals the highest state of arousal (Fischer, 1971). Various meditative states were placed at the lower end of this continuum. Further studies are warranted in order to substantiate the claim of Fischer. However, his findings do not support the oft-talked-about association of manic state and creativity.

Because of the dearth of empirical studies, any transpersonal discussion on this subject remains speculative (Lukoff, 1988). Stanislav Grof (1988), a transpersonal psychiatrist, considers four groups of creativity deriving from transpersonal sources. The first category relates to unresolved problems brought into motion by the sudden streaming of illumination during a 'non-ordinary' state. Spontaneous transmission of great ideas or systems of thought that go beyond the state of the art in the field to which they relate is another group of creativity. An example of this is the concept of distribution of information about the universe found in the ancient Jainist theory of the jivas, which resembles emerging holonomic theories of physics. The third class includes creative encounters which give a nearly complete product ready for implementation by society. Modern examples of this group include the work of Nikola Tesla, who saw his inventions as finished working prototypes; Einstein riding on a light beam in his imagination and thereby understanding the theory of relativity; and Mozart, who heard his compositions' final form, all

at once, inside his head. Grof also recognized inner creativity as proposed by Goswami.

Such mystical experiences can be transformational for both the individual and society. An example is Moses receiving the Ten Commandments. This is an instance of how creativity enlarges the spirituality of mankind. Maslow's assertion that the creative individual is 'completely lost in the present' is an intense encounter and refers to an altered state of consciousness – a gentle quantum state.

Creative dreams, quantum consciousness

Creativity is difficult to operationalise for research as there are a lot of missing links. The presumed link between generativity and mental disorder does not hold water when the creative process is studied against the background of quantum physics and parasciences. Dream processes shed some light on creativity. Like poetry, dreams are full of metaphors that are visual and highly idiosyncratic in nature. Dreams are the art of the unconscious; while dreaming we are tapping into a universally shared creative source. The dreaming psyche revels in its own seemingly unlimited creative potential.

The anecdote of the chemist Kekule (who recounted that he conceived the ring structure of benzene after a dream in which a serpent biting its tail appeared to him) that is often quoted is an example of a creative dream. The pharmacologist Otto Loewi, who demonstrated that nerve impulses are chemically mediated, was inspired by two dreams on consecutive nights. Elias Howe, the inventor of the sewing machine, was stuck in the final stage of his inventive endeavor as he could not see a way for the needle and thread to work together. A strange dream came to his rescue. In that dream Howe was captured by a savage, who presented him with the ultimatum that he was to finish his invention or be executed. As he prepared for execution in the dream, Howe noticed that the captor's spear had eye-shaped holes near the points, and when he woke up a novel idea occurred to him that solved the problem. He found that the way to make his sewing machine work was to devise a needle with a hole near the point to carry the thread.

Certain creative thoughts may be symbolic, like dreams, and sometimes they take the form of dream fragments. Some conscious creative thoughts may be versions of dreams that are edited by the unconscious. Particle physics is an element in this particular debate: quantum consciousness is posited as the dream machine.



Dreams occur in a personal quantum-dream space where the dreaming and waking spaces are fused (Kelly *et al.*, 2015). Quantum theories help to explain the dream process and to understand certain aspects of memory storage. Dreams reflect non-linear thinking and are arguably the 'royal road' to the quantum mind. Their bizarre nature is analogous to the bizarre behavior of quantum particles – the parallel thinking postulated by neuroquantologists may comprise the raw material of dreams.

Quantum thinking goes on without our awareness while we are awake – it is synonymous with the data processing performed by a computer. Dreams are not confined to sleep; they may be considered a form of quantum hallucination. Jung acknowledged them as the hallucinations of normal life (Jung, 1977). Dreams involve hallucination-like experiences; their definition is close to that of hallucinations in that a dreamer has sensory experiences that lack appropriate external stimuli.

According to Rhawn Joseph, some dreams and hallucinations are de-evolving or still-evolving mental phenomena. These hidden faculties have a specific purpose, giving us a glimpse into multiple perceptual realities (Joseph, 2011). Electrochemical processes within the brain may enable consciousness to access another part of the 'reality' of the self that is denied through normal sensory inputs; quantum thinking – which is non-linear – and parallel thinking start to creep in. Hypothetically, psychosis pathology and some forms of substance misuse may open a window in specific areas of the brain, and the patient may be experiencing a momentary insight into other perceptual realities – as if through Aldous Huxley's doors of perception.

Parallel thinking

Computational concepts of creativity have been suggested, but these are mostly metaphorical and help us to understand data collection and storage, the preparatory stage of creativity. Yet, quantum computational models may explain the analysis and synthesis of creative ideas. Study of the mechanism of creativity is helpful in developing better conceptual models of creativity and deeper understanding of mental process. Zizzi and Pregolato (2012) have attempted to explain the phenomenon of creative individuals experiencing sudden flashes of creative insight in terms of quantum computations. They observe that such spontaneous intuitive leaps arise from states of mind through intermediate steps that remain

hidden beneath consciousness, and that the creative ultrafast processing which involves a concealed intermediate step is consistent with quantum computations (Zizzi & Pregolato, 2012). A person with creative intelligence who enjoys superior mental health is capable of swinging from unconscious quantum logic to the classical logic of consensus consciousness with ultrafast speed. In psychotic states, the 'quantum gates' do not shut swiftly as in normal mental states, and the sufferers get trapped in quantum logic. Quantum thinking occurs parallel to classical thinking. There is now empirical evidence supporting the idea that the unconscious operates in a much faster manner than conscious thought does (Kennedy, 2010).

Co-thinking or parallel thinking may be a simplistic form of quantum thinking. According to quantum physics, reality occurs on two levels: possibility and actuality. Goswami uses this same duality to explore what he calls 'quantum thinking', which focuses on two levels of thinking – the conscious mind of actuality and the unconscious mind of possibility (Goswami, 2014). According to Goswami, all quantum objects exist in two levels of reality. At the transcendent level objects exist as a possibility in the realm of potentiality; and in the immanent level objects are made manifest. He believes that we process transcendent potentiality in the unconscious state that has no subject-object split awareness and we experience the immanent with conscious awareness.

There may even be multiple levels of interior thinking – inner speech, co-thinking and other kinds at the quantum level – including the larval stage of creative thinking and intuition. Thus, there may be multiple layers of parallel thinking in the subterranean region of the unconscious and they may all contribute to the creative process. Such associate thinking may be more symbolic, condensed and highly loaded with meanings. There may be a continuum between co-thinking, automatic thoughts and inner speech. Associate thinking may initiate and supplement inner speech. Sigmund Freud's unconscious cerebration may be analogous to the proposed parallel thinking and be quantum linked, even though Freud did not recognize that (Pandarakalam, 2015).

Neuroquantologists suggest that parallel thought processing (quantum thinking) may be taking place at the quantum level alongside verbal thinking. The classical computer analogy is not adequate to explain new leaps of creativity.



Quantum computers have enormous storage and productivity. If the human mind consists of such quantum computer(s), the processing and productive powers are unimaginable and could help us to understand the hidden channels of mind. If we hypothesize quantum-like computers (higher consciousness) incorporated with the mind-brain complex, we will be in a better position to appreciate creativity of a higher order.

Creativity has two aspects, invention and engineering. The quantum mind may be the inventor and the neurotransmitters/neuro-computers may be doing the engineering work. The quantum mind stores the information fed to it from the brain that has been collected from sensory channels. The quantum brain may also have information gathered through non-sensory routes and hypothetically due to quantum entanglements. The quantum mind is in a superior position to generate new ideas, and they are passed to the conscious mind. That in turn does the matching with sensory data and sends ideas back with more experimental information to the quantum mind. Novel ideas may be the product of such exchanges of information between the brain and quantum mind. In fact, the brain-mind consciousness complex is an *in vitro* laboratory for highly cognitive individuals in whom *gedanken* experiments take place.

The creative normal person is able to effect a transition back to reality from a transient "creative psychological shift" – we may compare this to a diver searching for diamonds in the depths of the sea and returning safely to air. It is instructive to consider the example of the American mathematician John Nash. The quantum gates closed on his unconscious mind and he became trapped in a quantum mode. That does not indicate that his creativity was a product of his psychopathology. His mental disorder and creativity may have been a coincidence; or his psychiatric condition may have been a consequence of his creativity, psychopathology in turn probably facilitating his creativity. The struggle to tune in to both classical thinking and parallel thinking may lead to apparent absentmindedness, which has resulted in the tendency to portrayal scientific geniuses in a humorous way.

John Nash claimed that he heard the voices of aliens giving messages, and that he could not distinguish them from his creative mathematical thoughts. Those made him believe entirely in the voices. A case study such as his indicates that auditory hallucinations and creative thoughts may

have a common quantum source, but that does not imply that they are identical phenomena. Sims recognizes that the psychotic and the creative are subjectively indistinguishable and states that delusions arrive in the minds of the mentally ill in the same way that ideas drop in the minds of creative people (Sims, 1988).

Globus argues that the schizophrenic symptoms of thought insertion and auditory hallucinations are a continuum reflecting a parallel brain process (Globus, 2010). There may be different phenomenological types of auditory hallucination; it is hard to categorize them. One form may be considered as a co-thinking glitch due to abnormal auto-tuning (auto-tonoensis) that results from schizophrenic psychopathology. Individual auditory hallucinations may have contributions from different thinking modalities and one form may be due to the objectification of parallel thinking (Pandarakalam, 2015). New ideas, or a solution to an existing problem suddenly emerging after a good night's sleep, are commonly observed by creative individuals and this may support the idea that parallel thinking is active even during sleep.

Quantum scientists are able to expound the secondary and tertiary stages of creativity-incubation and sudden insight. The primary stage is when individual gets a vague intuition of something new to come about- creative akathesia and start doing the ground work. The incubation period is the relaxing phase when the conscious mind is inactive and the unconscious mind is rather overactive. Brain is a material machine and cannot process meaning; it would require infinite number of symbols to process meaning. Neuro-computer is no exception. Here, we have to say farewell to the reductionist model of mind if we are to make any progress to the study of creativity. The cardinal difference between a classical computer and human consciousness is that the former cannot process meaning and cannot find solutions to all problems. So quantum computing has to be brought into the equation. Flashes of insight are similar to quantum leaps. Creative quantum leaps involve quantum jumps from one type of thinking to another in a discontinuous manner (Goswami, 2014). This phenomenon is analogous to the electrons circulating in the nuclear orbit disappearing and reappearing without using the intermediate space – the quantum jump. Only fundamental creativity may involve quantum jumps. Such new insights coming out of the blue are compared to the emergence of delusional ideas- a momentary schizophreniform-



like state. Sudden insights can generate anxiety state in the creative individual, particularly so if he is in a non-receptive environment to new ideas.

The voice hearer and founder member of The Paranoia Net work, Peter Bullimore (2012) has written a book in collaboration with his hallucinatory voices-A Village Called Pumpkin. The same author maintains that his book was written in association with his voices and without their influence he would never have had the ideas and creativity to generate the characters and story-lines. He informs that whilst writing the book the characters would speak to him and ask what role they would be playing. Bullimore's claim when viewed in a background of the suggestions of Gordon Globus about auditory hallucinations is an indication that auditory hallucinations may have their origin in the quantum mind and this unconscious part is a major player in the genesis of creativity.

Limitations of quantum consciousness

Exclusive brain-centered research into creativity may be futile – it would be like taking a radio apart to find where the music is coming from. The Orch OR (orchestrated objective reduction) theory of Penrose and Hameroff postulates that consciousness occurs due to a Bose-Einstein Condensate (BEC) formed in microtubules in brain cells (Penrose, 1994; Penrose *et al.*, 2011). They used the theory of Frohlich condensation to account for BEC forming in cell tissue from tiny resonators of energy. Critics of Orch OR argue that thermal fluctuations in biological tissue are not compatible with Penrose and Hameroff's proposal. Moreover, Orch OR does not help the appreciation of transcendental experiences such as those near death (NDE) and other non-ordinary experiences of both an introvertive and an extrovertive mystical nature (Borutta, 2015).

In the quantum mechanics of consciousness, there are three predominant views. The first is the reductionist one that quantum consciousness evolves from the brain. The second is that the brain appropriates consciousness from somewhere in the universe and that proto-consciousness – property dualism – exists. The third view promulgates the pre-existence of consciousness even before the Big Bang and holds that consciousness is the fundamental driving force – substance dualism. In such a scenario, it may be hypothesised that a quantum-like consciousness may be downloaded into the human quantum computer. Whether the brain is immersed in consciousness or

consciousness is immersed in the brain is a fundamental question yet to be answered. If transcendental consciousness is a reality, the former assertion could be true. Survival research offers evidence for the existence of such a Super-consciousness and the creative process may require its participation.

Orch OR may not be good enough to explain the 'psychic quantum computer' entirely. The human mind is too complex to be studied with existing, limited scientific tools. For that reason, quantum theories of consciousness may not be adequate to explain creativity of a highly complex nature, such as that which involves a psi-mediated mechanism. It is not certain whether Orch OR is the neural beginning or neural end of consciousness. Consciousness studies have revealed more obscurities regarding human existence, and have made the human mind even more mysterious.

My contention is that the study of creativity should not be limited to brain and quantum consciousness, and that creative work may be taking place at a cerebral level, a quantum level and a quantum-like consciousness level which may also receive information from beyond the physical plane and assimilate and integrate such external information. The creative process involves the whole of the brain-mind-consciousness complex, and the existence of a unique non-cerebral component has recently been substantiated through survival research, which is vital for studies of creativity. Such a non-cerebral component may be able to exist independently of the brain and may even survive physical extinction, so it is appropriate to look into the evidence supplied by survival research for unveiling the hidden channels of mind that may play a significant role in the creative process. It is even possible that the extra-cerebral component may be the seat of the hypothetical 'super-psi', which may have enormous and even mysterious creative abilities – the biological factors that incorporate high IQ to the creative process should not be ignored, but they may become less salient. Gordon Globus wonders whether a science-based discussion and quantum physics might be barking up at the wrong tree (Globus, 2011)

Parapsychological perspectives

Reductionism reached its zenith in the second half of the twentieth century, and during this period researchers ignored the non-biological aspects of creativity. Creativity may be proved to have a paranormal component and recently



parapsychologists have become interested in this challenging field of research. The contemporary scene in parapsychology is riddled with controversy. Creativity's products are often confused with its process and this has contributed to the confusion. Even though the ancestors of human beings have existed on this planet for about six million years and humans evolved about 200,000 years ago, technological advancements have taken place only in the last few centuries. They have occurred without any noticeable changes in the development of the human brain. In the years to come parapsychology may be able to explain the sudden burst of creativity that led to our modern age and its thinking. Utts affirmed that all the basic phenomena of experimental parapsychology – ESP, PK, precognition and so on – have been statistically proved to exist with the recent development of meta-analysis. Parapsychological views can no longer be ignored, even though there is no general scientific agreement about how they fit into the scheme of things (Utts, 1991).

Creativity is considered to be the product of the inspirational or creative imagination combined with meticulous, disciplined hard work. The Edisonian perception of invention as being 1% inspiration and 99% perspiration may be explained in terms of the hypothesis of interactive creativity, assuming that the inspirational part has a paranormal component. Ervin Laszlo has presented a thesis of interactive creativity (Laszlo, 1994). He supports his researchable hypothesis with the observation of cultural creativity – which includes the collective advance of entire populations through the typical creative activity of their members – as well as distant populations and documented incidences in modern science, where different investigators have developed new scientific insight simultaneously without any known contact between them. Early cultures developed tools of close resemblance; simultaneous and independent discovery of the calculus by Newton and by Leibnitz, and of biological evolution by Darwin and by Wallace, are examples of creative coincidence. Similarly, Graham Bell and Elisha Grey applied for a patent on the telephone on the same day. Rubic's cube was simultaneously conceived and designed by Rubic and a Japanese inventor.

Jung's researched into the phenomenon of creative synchronicity helped him to formulate the concept of the collective unconscious (Jung, 1973). A striking similarity has been observed between the ostensible paranormal observations

of subatomic particles by Annie Besant (1847–1933) and Charles Leadbeater (1847–1934) and the basic ideas of superstring theories formulated at a later date (Philips, 1995). One of the implications of this correlation is that it establishes a link between ESP and scientific creativity, in the sense that the psychics and the scientists probably had a common paranormal source of contact. At least some creative scientists are subliminal psychics with a high sense of objectivity and the advantage of superior intelligence. There may be a 'psychical internet' from which creative people tap new ideas. Spontaneous brain-to-brain interactions may underlie acts of unusual creativity. Polayni opined that scientific discovery is informed by imagination and integrated by intuition or vice versa (Polayni, 1960). This statement is very close to the Edisonian perception of creativity. If imagination is a property of the brain, intuition and inspiration occur in the unconscious realm. Laszlo's views are not definitive on the subject, yet they supplement our existing knowledge about creativity.

The idea of reincarnation, if scientifically proved, may contribute to a better understanding of such diverse matters as phobias, childhood skills not learned in early life, abnormal child-parent relationships, gender identity confusion, birth marks and congenital deformities (Stevenson, 1987, 1997). The idea of reincarnation has been proposed as an explanation for some child prodigies, the suggestion being that they may have acquired their unusual knowledge and skills in a previous life. Srinivasa Ramanujan, an East Indian mathematician, was born into a totally non-mathematical family, and without any formal training made extraordinary contributions to mathematical theory, number theory and infinite series. Between the ages of 16 and 26, he produced a compendium of some 5000 known mathematical equations. His work has found applications in diverse areas such as blast furnace design, manufacture of plastics and telephone cables, cancer research, statistical mechanics, and computer science. The 6-year-old Mozart composed accomplished musical works. The idea of reincarnation may help to explain the special aptitudes and the stronger motivations of a few creative children.

Dr Stevenson does not claim to have demonstrated the existence of reincarnation, but has simply found and reported evidence that would make it feasible. Overenthusiastic



commentators on his research allege that Stevenson has proved that the phenomenon is a reality. Critics argue that he has not challenged the spiristic hypothesis of previous life memories adequately. Some investigators consider that there is accidental reincarnation for some, not universal reincarnation; some people reincarnate for unknown reasons, and that may be because they are stuck in another dimension, unable to advance further (Tucker, 2013). Interestingly, Chester Carlson, the inventor of Xerox machines, was a benefactor to Stevenson's research because Carlson believed in the paranormal origin of creative ideas. The creativity of prodigies and children remembering past lives, savant and autistic children are limited to certain specific area whereas the creativity of over perceptible and high cognitive ability individuals are more global and poly-faceted.

Parapsychologically oriented investigators believe that creativity is akin to mediumship and have postulated a spiritistic component (Klimo, 1991). Psi faculties are thought to be mobilized prior to a major psychotic breakdown as the last defense mechanism (Ullman, 1949, 1952). This could result in the transference of creative ideas already stored in the unconscious mind to conscious scrutiny. Heightened psi sensitivity is observed among recovered patients, and this may facilitate their paranormal search for new ideas. Artists readily recognize a creative impulse that pervades their creative object and have a better appreciation of the paranormal component of their creative experiences than many others do. Rhine noticed that conditions favorable to the occurrence of psi and original creative works in the arts are similar (Rhine, 1947). It is difficult for those holding a strict biological model of mind to comprehend the near-paranormal nature of creativity, and that some of the original ideas may be blooming in a discarnate dimension and then transferred to the unconscious mind of living people.

Myers' Views on Genius

F.W.H. Myers who himself was a genius had the first say about geniuses in his seminal work on Human Personality and its Bodily Survival of Death (1903), but unfortunately his enormous wisdom came to be camouflaged by Freudian works in the early part of the 20th century. In the last few decades, cognitive sciences are trying to rediscover Myers' profound psychological wisdom and the book of Kelly et al (2007), "Irreducible Mind" has been a land mark in such

an endeavour. In their genius appraisal of Human Personality and its Survival of Bodily Death, Kelly et al argued that Myers' views on genius have been confirmed at various points in recent empirical and theoretical investigations (Kelly *et al.*, 2007). Probably, only geniuses can comprehend the genius.

To expand our consciousness to the maximum is a fundamental human evolutionary drive. Stevenson believed that human evolution takes place in two streams-biological and spiritual (Stevenson, 1997). The latter engross the evolution of consciousness and creativity. Influenced profoundly by Darwin, Myers saw genius as "evolutive" in distinction to the "dissolutive" nature associated with psychiatric disorders and at the same time, he also distinguished the latent faculties inherent in the subliminal from the terrene evolution of Darwin. According to Myers, in geniuses, we see a symbiotic relationship between the subliminal and supraliminal self as far as possible to satisfy this basic need that results in various forms of creativity. Myers believed that there is an amplified potency and deliberation of the inwardly directed power leading to improved coordination and incorporation of the supraliminal and subliminal phases of the personality in geniuses (Kelly & Grosso, 2007).

Myers likens consciousness with the spectrum of light; individual consciousness is an amalgam of a selection of different aspects of consciousness with variable potentialities. Myer's concept of subliminal self is different from the Freudian concept of the unconscious. His subliminal realm consists of a hierarchical organization, each with its own functional properties. Myers tried to describe three such levels. The lowest strata are that of bare vegetative functions. The middle realm is the "hypnotic stratum" and is associated with automatism, deep hypnosis, source of dreams and imaginations. The deepest realm is the most mysterious and is the locus of psi phenomenon, intuitions and inspirations of creative people. Interestingly, Myers' model of the subliminal realm is in tandem with the plasma physicists' concept of different energy bodies assembled like an onion ring and constituting the human body and psyche (Jay, 2006).

According to Myers, the genius state was opposite to dissociative state; an opinion challenging the then existed concepts of the Lombrosians who regarded the men of genius as an aberrant type- "the mad genius" notion. Myers'



studies on genius excels the current 10000 papers on creativity in that it accommodates various non-ordinary phenomenon such as psychological automatism, secondary streams of consciousness, altered states of consciousness, unusual forms of symbolic thinking, and psi. The existing trend in most of the recent papers is to deflate genius level creativity and consider it as the product of an unusually persistent, regimented and expanded application of ordinary cognitive process, at the most a superb synthesis of normal psychological functioning or the mystical flowering of a secondary personality.

Myers focused more on the illuminative phase of creativity which was hailed as the "subliminal up rush" in his classic book. "Some intervention of intuition issuing from the unconscious is necessary at least to initiate logical work" (Myers, 1903/2015). He attempted to explain the inspirational part of creativity in his theory -laden terminologies. Continuity, automatism and incommensurability featured the illuminative phase. Myers argued that the major inspirations of genius point to something which transcends ordinary forms of cognition. Inspiration is the reach into supraliminal consciousness of some novel form of order that has bloomed somewhere beyond its normal precincts. It results from a mutual relationship between the subliminal and supraliminal consciousness. Myers contented that there may be some form of fundamental link between the subliminal up rushes of the genius and general category of psychological automatism and it may also belong to other related phenomenon such as mediumistic trance and altered states of consciousness (Kelly & Grosso, 2007). To put it simply, the momentary flash of inspiration is a brief automatism. In terms of quantum physics, it must probably be the quantum gating of the microtubules that facilitates such an intrusion of subliminal self to the supraliminal. Myers views of creativity justify the inclusion of the succeeding paragraphs which normally belong to survival research.

Lessons from Psychography

Francisco 'Chico' de Paula Candido Xavier (1910–2002), a renowned Brazilian medium, was a secondary-school drop-out. Despite being categorized when a child as possessed, crazy and an impostor, and being beleaguered as a young man by the cynical media, he wrote more than 420 books, using most of the words in the Portuguese language, through automatic writing or

psychography (Playfair, 2010). The content of most of his books is spiritual, but Xavier also transcribed novels and works of philosophy and science from the spirit world. His books sold an estimated 25 million copies, and the profits from them were all channelled into charitable work. Whether the novels Xavier published were wholly written in the physical dimension or in the discarnate dimension is a matter of debate. His writings have been subjected to self-psychological editing and also editing by his publishers.

According to Professor Stanley Krippner (Playfair, 2010), 'his [Xavier's] legacy provides challenges not only to conventional models of creativity and dissociation, but to the mainstream concepts of consciousness itself'. The late Professor Ian Stevenson, who has made a critical analysis of automatic writings, advocates the maintenance of a balance between extremes of naïve credulity and equally naïve incredulity (Stevenson, 1978). He reminds us that there is never a counterfeit without a related original of some value – exemplified by fake currencies, which do not have any value in the absence of genuine currency in circulation. Ian Stevenson (1978) states, 'any single comment may contain a mixture of several ingredients: subliminal rubbish; information culled from garrulous sitters; items obtained by delving paranormally into the minds of sitters and their absent friends; dramatic productions displaying the imaginative powers of the medium; and rarely communications from discarnate personalities'. If automatic writings have spiritistic origin, our concepts of creativity will have to be revised.

There are indications in Chico Xavier's writings that constructive and destructive creative ideas may be emanating from the discarnate realm and then transferring into the unconscious mind of incarnate beings. When Chico Xavier died on 30th June 2002, his obituary in the *Guardian* newspaper reported that information which Xavier communicated that came from beyond the grave was often regarded in Brazil as fact. At one time, in 1979, a man accused of murdering his best friend was set free because the judge accepted a witness statement from that friend which he had communicated telepathically through Xavier. The man who was accused, said his friend, was innocent. He went on to reveal the identity of the murderer.

Poetry from beyond the Grave (1932) is an anthology of about 260 poems transmitted to Xavier by 56 discarnate Brazilian poets. Some of these were celebrated writers. The widow of at



least one of them took Xavier's works seriously and attempted to sue him for royalties. The leading newspaper *Estado de Sao Paulo* took account of the literary achievement evident in the anthology, observing that if the poems had not been written by the dead poets as claimed, then Xavier's own compositions were of such merit that he should be awarded a prominent place in the Brazilian academy of literature. Xavier had been employed as a fingerprint expert in the Brazilian ministry of agriculture, and he lived on meagre wages before he retired and drew a state pension – as already mentioned, he had used his income from the royalties on his books to support charities. Courtroom logic points towards the legitimacy of Chico Xavier's phenomenal powers – parapsychological investigations are partially based on courtroom logic that is not necessarily always fair. Xavier's literary output links studies of creativity with survival research.

Peter Bullimore, who has been mentioned in an earlier paragraph, was unable to write many books, as Chico Xavier did. If we ascribe hallucinatory voice as a property of the quantum mind, we may argue that one of the sources of automatic writing and the creativity associated with it is probably the quantum mind. Even if we stretch the meaning of quantum mind, Chico Xavier's mammoth prolific writings cannot be explained as mere quantum products because they contain too many extraordinary details. Therefore, the involvement of external agencies is plausible. The quantum mind may be one of the intermediaries in automatic renderings such as Xavier's. In clinical practice, we come across pathological automatic writing. In one such case, that of schizophrenic patient whom I have encountered, automatic writings in the form of pages and pages written on a daily basis for years did not include a single coherent paragraph. Like Xavier, many outstanding mediums have demonstrated skills in psychography.

Another interesting case of mediumship creativity is that of the literary works of Pearl Curran and "Patience Worth." Pearl was born in Illinois in 1883 and was a mediocre student at school with little exposure to poetry, fiction or general history. She was not particularly religious and was raised to consider spiritualist séances as a taboo until Patience Worth; allegedly a spirit communicator contacted her (Braude, 2003). In the afternoons, while their husbands were at work, Pearl would meddle with Ouija board with a friend who lived nearby. They did not have any messages transmitted to them in the initial

periods and found it boring and tosh. Then, to the ladies surprise, the message on the board seemed to make sense. "Many moons ago I lived. Again I come. Patience Worth is my name," it spelled out. The communicator revealed that she lived in Dorsetshire (England) in either 1649 or 1694 (Prince, 1927).

To start with, Patience spoke in English appropriate for the 19th century as she revealed later that she wanted to ensure her audience understood her, and then changed to an archaic fashion (Braude, 2003). Eventually though, the messages began coming so fast that no one could write them down and Pearl suddenly realized that she didn't need the board anymore. The sentences were forming in her mind at the same time they were being spelled out on the board. She began to "dictate" the replies and messages from Patience to anyone who would write them. She would first employ a secretary, but later Pearl would record the words herself, using first a pencil and then a typewriter. She displayed broad and in depth knowledge of the various times and places depicted in her novels and offered a wide-ranging directory of archaic Anglo-Saxon words (Kelly & Grosso, 2007).

For the next 25 years, Patience Worth dictated a total of about 400,000 words. Her works were vast and consisted of not only her personal messages, but creative writings as well. She passed along nearly 5,000 poems that were published to critical commendation (Prince, 1927). This mutual relationship eventually resulted in the writing of several novels, poetry and prose which Pearl Curran claimed was delivered to her through channeling the spirit, Patience Worth (Prince, 1927). Pearl Curran died in California on December 4, 1937.

The alleged mediumistic claims of Hélène Smith (December 9, 1861- June 10, 1929) probably is illustrative of the thin margin between authentic forms of psychography and subliminal imagination and that many cases of automatic writings only shed light into the study of creativity; they may not necessarily offer any proof for discarnate survival. The details in this case are highly complex and well documented by the Swiss psychologist Theodore Flournoy (Flournoy, 1900/1994). Her original communicator identified as Victor Hugo and was later replaced by Leopold. Flournoy was initially sympathetic towards Helene Smith's mediumistic claims, but he later considered Leopold was a secondary personality generated through



autosuggestions and tried to explain them away as cryptomnesia (Braude, 2003).

There may be two types of automatic writings- discarnate automatic writings and subliminal automatic writings. Even in cases of paranormal automatic writings, there may be romances with subliminal imaginations. From a creativity study perspective, all cases of alleged automatic writings are of great significance. We may also recognize an RSPK element in automatic writings from the part of the writer as well as from the communicator and it is not yet clear whether automatic writings should be grouped under RSPK activity. It is now increasingly getting recognized that RSPK may have incarnate and discarnate origin and automatic writings may be instances of mixed involvement.

Implication of Survival Research

Even though, the survivalist views of Chico Xavier and Pearl Curran are not established, to appreciate their mediumistic creativity, one has to revisit the prevailing neuro-scientific reductionist and quantum ultra-reductionist models of consciousness. To accommodate the paranormal components of creativity, we need to establish the existence of a highly complex “inner texta terra” that would also include a higher consciousness. As mentioned in a preceding paragraph, we may have to assume that humans are endowed with a quantum-like consciousness that may be capable of communication with discarnate and incarnate beings. The current scientific evidence for the existence of a quantum-like consciousness is based on the finding that human consciousness may exist independently of the brain. Such an assertion is founded on the evidence accumulated by survival research projects. In that respect, even those investigators of creativity who are not interested in the scientific promises of after-death existence cannot ignore survival research. Some scientific researchers now argue that there are compelling reasons to support belief in life after death.

Skeptics argue that there is only evidence and not proof of post-mortem existence, but the record of evidence for after-death existence continues to grow longer as survival research progresses. Vernon Neppe, a neuropsychiatrist turned parapsychologist, has declared that the combined body of evidence for discarnate survival is overwhelming – so great that it may be regarded as scientifically cogent (Tymn, 2012).

Mediumship is germane to the current discussion. The Scoble Experiment (Fontana, 2009)

and Gary Schwartz’s after-life experiments (2002) support the authenticity of mediumship to some extent. Encouraged by the success of after-life experiments with mediums (Schwartz, 2002), the polymath Professor Schwartz claims to have invented a device to communicate with discarnate spirits and it has been dubbed as “Soul Phone”. This is a pinnacle in survival research that possibly offers irrefutable scientific evidence of after-life existence (Schwartz, 2014), but also takes account of all the potential negative consequences. To make a cautious note, if the Soul phone becomes a commercial property in the future, hell may break loose. He claims to have worked with black boxes in his laboratory, using a software programme that has generated proof that there is a spirit world by measuring light (Herrick, 2014). It appears that he has developed a technique whereby faint light may be detected in a totally dark box. Measurements are taken at the beginning of each experimental session, and then a specific ‘hypothesized spirit collaborator’ is asked to show a ‘spirit light’ in the box and a second reading is taken. The finding is that instruction for specific spirits to enter a light-sensing system is associated with a reliable increase in the apparent measurement of photons. Such a curious result means that the communicating spirits are able to hear, to respond and to produce light in an otherwise dark enclosure (Schwartz, 2011a; 2011b). Ian Stevenson (1978) appears to have some reservations about mediumistic communications, declaring, ‘I do not believe that death confers wisdom automatically any more than life does; there is no reason to lower our standards of excellence for the dead any more than for the living.’

To accommodate the spiritualistic contribution of creativity, we may have to conjecture a more expanded model of the mind-consciousness complex that also includes quantum-like consciousness. In such a model, information from the discarnate realm may be passed on to the proposed quantum-like consciousness, which in turn may be assimilated in the quantum creative process. The quantum mind is an intermediary between the brain and higher consciousness. Mainstream scientists seem never to have attempted to develop the conceptual tools and vocabulary needed to investigate the possibility of post-mortem existence. It may be that science will not accept the possibility of discarnate survival without a new theory of physical reality.



Weak Link with Psychopathology

Pathology has contributed positively to the study of human physiology, and psychopathology has similar potential for understanding mind and consciousness. Historically creativity has been linked with psychopathology, and the 'mad genius debate' demonstrates the division among researchers (Carson, 2014). There is no consensus regarding the association of psychopathology and creative achievement, and the attribution of the former to the latter hinders understanding of human potential and the deeper levels of consciousness. Psychiatric understanding of creativity gives a better insight into patient functioning, which may help the definition of normalcy and psychopathology (Pandarakalam, 2005). Such understanding is useful in differentiating creativity and mental illness when they coexist.

Belief that creativity is a product of an abnormal psychic state is age old, and genius is still sometimes correlated with mental illness (Corliss, 2002). Research into creativity is hindered by methodological problems, especially the definition and assessment of creativity (Thys *et al.*, 2014a). This makes the interpretation and comparison of studies problematic, producing contradictory results (Thys *et al.*, 2014b). Creative activity has been observed at its highest level in moderately ill patients and lowest in the severely ill (Ghadirian *et al.*, 2001). Earlier, researchers suggested that creative individuals have a higher tendency towards psychopathology than non-creative people, a propensity manifested in personality traits, behaviors and experiences similar to those in clinically ill patients (Andreasen & Canter, 1974a, 1974b; Holden, 1986).

Kyaga *et al.* (2011) performed a study based on Swedish records between 1973 and 2003. They compared the likelihood of a creative occupation being practiced by individuals who had received in-patient treatment for schizophrenia, bipolar disorder or unipolar depression and their siblings without such a diagnosis with the likelihood in a control group. Their findings suggest that bipolar individuals and healthy siblings of people with schizophrenia or bipolar disorder are overrepresented in creative professions. People with schizophrenia have no increased occurrence in creative professions compared with controls, but do have an increased rate in artistic occupations.

The evidence about which aspects of psychopathology – related to schizophrenia or to

affective disorders – are more closely linked to creativity is not clear. The Stanford 35-year follow-up study of over a thousand geniuses, the MacKinnon study of creativity in architects and Havelock Ellis's psycho-biographical study of eminent men are all concerned with the absence of psychopathology in creative individuals (MacKinnon, 1965). Creativity continues to be enigmatic, and its study has never been straightforward; investigations using different strategies all have merits and demerits (Brown, 1989; Hocevar, 1981; Hocevar & Bachelor, 1989; Mumford, 1980; Richards, 1981; Richards *et al.*, 1988; Simonton, 1991).

We need to recognize that the outer region of cognitive sciences is in a state of confusion, while very little is known about the inner. A recent finding from neurosciences and molecular genetics is that the biological determinants for psychopathology interact with cognitive factors to generate creative ideation (Carson, 2011). Those with creative ability and those with mental health problems feature cognitive disinhibition, neural hyperconnectivity and attentional style driven by novelty salience. These can turn out to be of advantages for creative people. Cognitive disinhibition permits stimuli to take effect and increase associations, becoming enhancers of creativity. In the model proposed by Carson (2011), these elements interact with meta-cognitive attributes such as high IQ, increased capacity for working memory and enhanced divergent thinking. These traits of high cognitive individuals facilitate widening of the range and depth of stimuli and result in the formation and shaping of novel ideas. Occasional psychiatric symptoms observed in creative output are likely to have been over emphasized by researchers. Breathlessness and palpitations, sometimes symptoms of respiratory and cardiac conditions, may occur in people undertaking rigorous exercise. In the same way, some psychiatric symptoms may be the outcome of intense mental exercise. The frequency and duration of these symptoms are what make them clinically significant.

Concluding Remarks

The inspirational component of creativity continues to be an enigma. It is my contention that creativity is essentially an inner psychic phenomenon. If it involves a paranormal factor or psi-mediated process, we may assume that the human brain–mind complex is also endowed with an advanced consciousness that is capable of



receiving messages from the discarnate realm or tapping into a common pool of ideas. Such a receiving part may have a nature similar to the paranormal realm – an extra-cerebral component surpassing the quantum brain. The supra-consciousness should be capable of functioning independently of brain and could survive physical extinction. Thus, study of creativity may be of immense value in enquiring into the mysteries surrounding the mind-consciousness complex.

An attempt to address the misunderstanding surrounding the psychopathological views of creativity has been made in this paper in order to expand the horizons of consciousness studies by analyzing creativity. There is no scientific consensus regarding the association between psychopathology and creative achievement, and scientific literature does not substantiate the reported high incidence of mental illness among creative people that exceeds chance expectation. Psychopathological views of creativity are a social belief rather than a scientific concept. Overstated psychopathological views about creativity have impeded the search for the truth behind the creative process and its source

For studies of consciousness to achieve any progress, we need a working hypothesis of mind and consciousness that will accommodate all the evidence in favor of mysticism, the paranormality of creativity and post-mortem existence, allowing continued investigation and leaving open the doors leading to further knowledge. Advances in genetics and parasciences may provide explanations for some of the mysteries and bring some clarification to the current confusion surrounding creativity. In future, the study of the kinetic mechanism responsible for spontaneous communication among spatio-temporally distant human beings and discarnate beings may perhaps uncover part of the truth about creativity, which would result in a shift of thinking to paranormality from faculties of genius being ascribed to genes alone. Most of the studies in creativity are confined to English-speaking people, while creativity is a global phenomenon, and also studies have been quantitative.

The multiplicity of scientific literature does not mean in the least that the ideas surrounding this particular subject are well-established scientific truths. Creativity may be as mysterious as creation itself. Creativity is largely a corporate product of the brain and of quantum and quantum-like consciousness. Quantum mind

is a bridge between brain and quantum like consciousness. The quantum mind has a larger storage capacity than the material brain and contains information gathered from the sensory world, quantum entanglements and paranormal data collected and assembled at a quantum-like consciousness level, in turn passed on to the quantum mind. Therefore, it is in a better position to analyze and synthesize novel ideas.

Physicists cannot believe in a non-physical realm without an intermediate phase or some form of continuity of physical universe (Tipler, 1994). Paraphysical dimensions may be such an extension of the physical universe - a greater universe. Other discarnate realms are non-physical/spiritual with their own objectivity. It is a general law in physics that nothing can end abruptly; physical world may have to continue as paraphysical dimensions which in turn may converge as quantum-like/spiritual dimensions with its own physics that might permit the dimension to end abruptly. The same laws of physics are applicable to brain-mind-consciousness complex and might justify a belief in quantum and quantum-like consciousness (Spiritual consciousness). The fledgling science of Neuroquantology may be able to explain the most part of creativity, but it is inadequate to explain all its aspects.

Extraordinary creativity can hardly be grasped by empirical and statistical methods. For a full understanding of creativity and consciousness, study of mysticism is imperative. To quote from Kelly et al (2007), mysticism is the foundation of reality; quantum is only the bedrock of matter. Neuroquantology can be a bridge between brain and higher consciousness.

The assessment of any phenomenon is invariably dependent on the measure used by the assessor and if the measure is small or inadequate, the result of assessment is flawed. Reductionist assessment tools have proved to be inadequate in the study of creativity and have resulted in contradictory and heterogeneous results. The concept of the unconscious mind is still valid from a quantum perspective and Freud's unconscious mind accordingly needs revision. While creative process can be observed and studied, its source remains obscure. Study of creativity and mysticism would help Neuroquantology to evolve as an enlightened specialty and save it from being reduced to ultra-reductionism.



References

- Abt HA. At what ages do outstanding American astronomers publish their most cited papers? Publication of the astronomical Society of the Pacific 1983; 95:113-116
- Andreasen NC, Canter A. The creative writer: Psychiatric symptoms and family history. *Compr Psychiatry* 1974a; 15:123-131
- Andreasen NC, Canter A. Genius and insanity revisited: psychiatric symptoms and family history in creative writers. in *Life history Research in Psychopathology*, vol 4 University of Minnesota Press, 1974b.
- Borutta R. The Music of the Soul and the Inner Light. *The Journal for Spirituality and Consciousness* 2015; 38(2)113-120.
- Braude Stephen. *Immortal Remains*. New York: Rowman & Littlefield Publishers, 2003.
- Brown RT. Creativity: what we are to measure? In J.A G lover, R. R. Ronning & C. R. Reynolds (Eds). *Handbook of creativity*; 32-52, New York: Plenum press, 1989.
- Bronowski J. The creative process is scientific in scientific genius and creativity. *Readings from Scientific America*, New York, W.H. Freeman and Co. p3-8, 1987.
- Bullimore P. *A Village Called Pumpkin*. Sheffield: Limbrick Center, 2012
- Carson S. Leveraging "mad genius" Debate: Why we need a neuroscience of creativity and psychopathology. *Frontiers in Human Neuroscience* 2014; 8:250-258
- Carson S. Creativity and Psychopathology. *The Canadian Journal of Psychiatry* 2011; 56(3): 144-153.
- Corliss RW A search for Anomalies. *Journal of Scientific Exploration* 2002; 16:453 Cramer P. *Word Association*. New York: Academic Press, 1968.
- Fischer R. A creative cartography of ecstasy and meditation studies. *Science* 1971; 174:897-904.
- Flournoy Theodore. *From India to the Planet Mars: A case of multiple personality with imaginary languages*. Princeton NJ: Princeton University Press, 1900/1994.
- Fontana D. *Life beyond Death*. London: Watkins Publishing, 2009.
- Ghadirian AM, Gregoire P, Kosmidis H. Creativity and the Evolution of Psychopathology, *Creativity research journal* 2001;13(2) 145-148
- Globus G. *Toward Quantum Psychiatry: Hallucinations, Thought Insertion and DSM*. *Journal of Neuroquantology* 2010; 1: 1-12.
- Globus G. *Consciousness and Quantum Physics: a Deconstruction of the Topic*, in *Consciousness and the Universe*. Cambridge: Cosmology Science Publishers, 2011.
- Goswami A. *Quantum Creativity*. London: Hay House, 2014.
- Grof S. *The Adventure of Self-Discovery*. Albany, N.Y.: State University New York Press, 1988.
- Haisch B, *The God Theory: universes, zero point Fields, and what's behind it all* by Weiser Books, San Francisco, 2009.
- Herrick EK. President's message: Looking ahead. *The Search Light* 2014; 23(4).
- Hocevar, D. Measurement of creativity: review and critique. *Journal of Personality assessment* 1981; 45:450-464
- Hocevar D and Bachelor P. A Taxonomy and critique of measurement used in the study of creativity. In Glover, R.R. Ronning & C. R. Reynold (Eds). *Handbook of creativity*; 53-75, New York: Plenum press, 1989
- Holden C. Manic depression and Creativity, *Science* 1986; 233:725
- Jay A. *The Invisible Bodies*. Victoria, BC, Canada: Trafford Publishing, 2006.
- Joseph R. *Dreams and Hallucinations, In consciousness and the Universe* edited by Sir Roger Penrose, Dtuart Hameroff and Subash Kak. Cambridge: Cosmology Science Publications. 2011
- Jung CJ. *Psychology and Literature*. In *The Creative Process*, Ghiseline, B., Ed. The New American Library, NY, 1973
- Jung CG. *The Psychology of the unconscious*, in *The Collected Works of C.G. Jung*. Vol.vii Princeton, N.J: Princeton university Press, 1966.
- Jung C. *Psychology and the Occult*. Princeton: Princeton University Press, 1977
- Kelly E, Grosso M. *Genius*, chapter in the *Irreducible Mind*. New York: Rowan & Littlefield Publishers, 2007.
- Kelly E, Crabtree A, Marshall P. *Beyond Physicalism: Toward Reconciliation of Science and Spirituality*. New York: Rowan & Littlefield, 2015.
- Kennedy WG & Bugajska MD. *Integrating Fast and Slow Cognitive Processes*. In *Proceedings of the Tenth International Conference on Cognitive Modeling*, 121-126. Philadelphia, PA., 2010.
- Klimo J. *Psychics, Prophets, Mystics*. Aquarius Press, London, 1991.
- Koestler A. *The Three Dimensions of Creativity* in D Dutton, M. Kraesz, eds. *The concepts of creativity in science and art*, The Hague. Boston, London, Martinus Nijkoff Publisher, 1981.
- Kim HS. *The Essence of Creativity*. New York: Oxford University Press, 1990.
- Kyaga S, Lichtenstein P, Boman M, Hultman C, Långström N, Landén M. Creativity and mental disorder: family study of 300 000 people with severe mental disorder. *The British Journal of Psychiatry* Oct 2011; 199 (5): 373-379.
- Laszlo E. *The Genius Hypothesis: Exploratory concepts for a scientific understanding of unusual creativity*. *The Journal of Scientific Exploration* 1994; 8, No. 2: 257-267.
- Lehman HC. *Age and achievement*; NJ: Princeton University Press, 1953.
- Ludwig AM. *Reflections on creativity and madness*. *American Journal of Psychotherapy* 1989; 43:4-14.
- Lombroso C. *The man of genius*, London. Walter Scott, 1981
- Lukoff D. *Transpersonal perspectives on manic psychosis: creative, visionary and mystical states*. *The Journal of Transpersonal psychology* 1988;20 (2):112-139.
- May R. *The Courage to Create*. New York: W.W. Norton & Co, 1975.
- McKinnon DW. *Personality and the realization of creative potential* *Am Psychol* 1965;20: 273-281.
- Mumford MD & Gustafson SB. *Creativity syndrome: Integration, application and innovation*. *Psychological Bulletin* 1980; 103:27-43
- Mussen PH, Conger JJ & Kagan J. *Child Development and Personality* (5th edn) 1979; pp. 262- 264. New York: Harper & Row
- Myers FWH. *Human Personality and its Survival of Bodily Death*. London: Facsimile Publisher, 1903/2015.
- Pandarakalam J. *Auditory Hallucinations and the Quantum Brain*. *Paranormal Review* 2015; 75:21-25.
- Penrose R. *Shadows of the Mind*, Oxford: Oxford University Press, 1994.
- Penrose R, Hameroff S, Kak S. *Consciousness and the Universe*. Cambridge: Cosmology Science Publishers, 2011.
- Philips M. Stephens. *Extrasensory Perception of Subatomic Particles*, *Journal of Scientific Exploration* 1995; 9(4): 489-525
- Playfair LG. *Medium of the Century*. London: Roundtable Publishing Co. 2010.
- Polayni M. *The Creative Image*. Ibid p91-108 Post Felix. *Creativity and Psychopathology*. *British Journal of Psychiatry* 1994; 165; 22-34.



- Preti A, Miotto P. Journal of Memtics-evolutionary model of creativity, evolution and mental illness. Information Transmission.1: on-line at http://www.cpm.mmu.ac.uk/jum-emit/1997/vol/preti_a&miotta_p.htm,1997
- Prince WF. The Case of Patience Worth. New Hyde Park, NY: University Books, 1927.
- Rhine JB. The Reach of the Mind. New York: William Sloane, 1947.
- Richards RL, Benet DK, Benet M & Merzel APC. Assessing everyday creativity: characteristics of the lifetime creativity scales and validation with three large samples Journal of Personality and Psychology 1988; 54:476-485
- Richards RL, Relationship between creativity and psychopathology: an evaluation and interpretation of the evidence. Genetic Psychology Monograograph 1981; 103:261-324
- Schwartz EG. The Afterlife Experiments. New York: Atria Books, 2002.
- Schwartz EG. The Sacred Promise: How science is Discovering Spirit's Collaboration with Us in Our Daily Lives. New York: Atria Books, 2011a.
- Schwartz EG. Photonic measurement of Apparent Presence of Spirit Using a Computer Automated System. drgaryschwatz.com, 2011b.
- Schwartz EG. After life communications. Florida: ASCS Publications, 2014.
- Shakespeare W.A Midsummer Night's Dream, act5, scene 1, lines 7-8
- Sims A. Symptoms in the mind. London: Bailliere, Tindall 1988.
- Simonton DK. Latent variables of posthumous reputation: a quest for Galton's G. Journal of Personality & Social Psychology 1991; 60:607-619.
- Stevenson I. Children who remember previous lives. Charlottesville: University Press of Virginia, 1987.
- Stevenson I. Reincarnation and Biology, a contribution to the Etiology of Birthmarks and Birth Defects (2 Vols); London: Prager,1997.
- Stevenson I. Some Comments on Automatic Writing. The Journal of the American Society for Psychical Research 1978; 72:315-332.
- Tarlaci S. Neuroquantology, Quantum physics in the Brain. New York: Nova Science Publishers, 2014
- Thys E, Sabbe B, De Hert M. The assessment of creativity in creativity/psychopathology research- A systematic review. Cognitive Neuropsychiatry 2014a; 19(4):359-377.
- Thys E, Sabbe B, De Hert M. Creativity and psychopathology: A systematic review. Psychopathology 2014b;47(3):141-147.
- Tucker BJ. Return to Life. St Martin's Press: New York, 2013.
- Tipler JF. The Physics of Immortality. New York: Anchor Books. 1994.
- Tymn M. An Interview with Dr Vernon Neppe. The Search Light 2012; 21 (4).
- Ullman M. On the nature of psi processes. Journal of Parapsychology1949; 13: 59-62
- Ullman M. On the nature of resistance to psi phenomenon. Journal of the American Society for psychical Research1952; 46: 11-13
- Utts J. Replication and Meta -analysis in Parapsychology. Statistical Science 1991; 6, 363.
- Zizzi P, Pregnolato M. Quantum logic of the unconscious and schizophrenia. Neuroquantology 2012, 10(3): 566-579.
- Wallas G. The Art of Thought. In Creativity, Vernon, P.E. Ed. Penguin Books, New York, 1970
- Wang Y, Chan GLY, Holden JE, Dobko T, Mak E, Schulzer M, Huser JM, Snow BJ, Ruth TJ. Age dependent decline of Dopamine D1 receptors in human brain. Science 1998; 30:56-61
- Westen D. The Scientific Status of Unconscious Process: Is Freud Really Dead? Journal of the American Psychoanalytical Association 1999; 47(4):1061-1106.