

Article

## On the Quantum Aspects of Brain-Mind Problem

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### Abstract

The brain-mind problem is also known as the mind-body problem and by extension mind-matter. How the mind relates to the brain has classically been discussed in terms of monism and dualism - that the mind and brain are one or that the mind and brain are separate. It has long been suggested that the brain functions as a sort of transducer from the universal to the particular. Quantum and sub-quantal phenomena may play an important part in the brain's transducer function. Further, our physical theories and narratives, rooted in philosophical notions about the interface of psyche and matter, also serve a symbolic function. If the unconscious is a magical powerhouse that speaks in symbols, our notion of the unconscious is also a symbol of the power of the primal field.

**Key Words:** mind, scalar field, vacuum fluctuation, biophoton.

*The unconscious is the matrix of all metaphysical statements, of all mythology, of all philosophy, and of all expressions of life that are based on psychological premises. -C. W. Jung [1]*

*In our metaphysics we declare our fantasies about the physical and its transcendence. A metaphysical statement can be seen as a psychological fancy about the relationship between 'matter and spirit'. [...] The archetypal neurosis is collective and affects all with the metaphysical affliction. --James Hillman [2]*

*Human consciousness is just about the last surviving mystery. A mystery is a phenomenon that people don't know how to think about - yet. There have been other great mysteries: the mystery of the origin of the universe, the mystery of life and reproduction, the mystery of the design to be found in nature, the mysteries of time, space, and gravity....With consciousness, however, we are still in a terrible muddle. Consciousness stands alone today as a topic that often leaves even the most sophisticated thinkers tongue-tied and confused. --Daniel C. Dennett [3]*

*The very best quantum-foundational effort will be the one that can write a story - literally a story, all in plain words - so compelling and so masterful in its imagery that the mathematics of quantum mechanics in all its exact technical detail will fall out as a matter of course. -- Christopher Fuchs [4]*

*The only reality we can ever truly know is that of our perceptions, our own consciousness, while that consciousness, and thus our entire reality, is made of nothing but signs and symbols. Nothing but language. Even God requires language before conceiving the Universe. See Genesis: "In the beginning was the Word." --Alan Moore [5].*

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## Dialogical Creativity and Dialogical Emergence

Science may contain political or philosophical aspects. Scientific and metaphysical ideas are not independent of their archetypal backgrounds which inform and shape them in the minds and biased interpretations of their authors. Even a psychological fancy is a self-consistent coherence – like a poem or work of art – perhaps a stopgap on the way to more rational thought.

To love such a psychological fancy requires a certain suspension of logic, disbelief, and even confirmation bias. We are still forced to speculate about our origins and destination in a logically credible style. Existential reality lies beyond facile solutions framed within the limiting scope of our human resources to learn and communicate. Our narratives address evolutionary, developmental, and functional emergence. However, intelligence emerges with symbolic language.

Master narratives provide collectivities with coherent visions of their history and a sense of homogeneity. Heisenberg said, “[s]cience is rooted in conversations,” and in doubt and uncertainty [6]. In “*What is Life?*”, Schrödinger claimed *organisms* feed on negative entropy and that consciousness is absolutely fundamental [7].

Arguably, the quantum aspect of brain (“quantum brain”) may be metaphysical in that it bears on Kant’s categories of God, freedom, and immortality – at least in its implications. Kant also suggests all human knowledge begins with intuitions, proceeds to concepts, and ends with ideas [8]. All knowledge begins with the senses, proceeds toward understanding, and ends with reason.

Such arguments are summarized in philosophical notions of pan-protopsyhism and pan-experientialism, which describe emergence of primal non-conscious processes. Panprotopsyhism suggests proto-consciousness may exist in the universe as a “fundamental property” without depending at all on anything physical.

These notions suggest that, by focusing on experience rather than mentality, pan-experientialism avoids some of the traditional objections to panpsychism. Absolute space is the noumenal source of phenomenal consciousness, a fundamental quality, and Mind is a higher order hyperspace field outside brain's EM field. Fundamental proto-consciousness finds more particular expression when matter comes together in a certain way. Physics still struggles to describe this process, but is currently looking toward spin and entanglement as observable clues.

## Between Dialogue & Dogma

Real science can arise from individual or collective environments, distilling the essential from absolute knowledge of the unconscious. In that sense, we can hardly be optimistic that actual insight will result, yet somehow it has throughout the history of science, even though some solutions are provisional.

Meta-artist Roy Ascott [9] describes the process: “Within the matrix that integrates questions of society, the self, materiality, and consciousness there is a kind of five axes involved in

amplifying thought (concept development); sharing consciousness (collaborative processes); seeding structures (self-organizing systems); making metaphors (knowledge navigation); constructing identities (self-creation).”

Metaphysical ideas are by definition ‘beyond physics’, but not separate from their roots in mind-dependent ideas and philosophy. Marie-Louise von Franz said [10], “There is therefore no concept fundamental to modern physics that is not in one degree or another a differentiated form of some primordial archetypal idea”. Ideas about mind and consciousness are currently firmly entrenched in this category. What we have not been able to demonstrate in the past may not remain as elusive in the future.

Debriding the hidden forces of their archetypal projections remains a challenge at the leading edge. Essence, by its very nature, remains stubbornly intangible, unknown, and unseen. Form, on the other hand, requires only ingenuity, engineering, and due diligence. The concept of ‘quantum brain’ *looks* the part, but can it *play* the part?

Stuart Hameroff noted [11]:

*Consciousness defines our existence and reality. But how does the brain generate thoughts and feelings? Most explanations portray the brain as a computer, with nerve cells (“neurons”) and their synaptic connections acting as simple switches, or “bits” which interact in complex ways. In this view consciousness is said to “emerge” as a novel property of complex interactions among neurons, as hurricanes and candle flames emerge from complex interactions among gas and dust molecules. However this approach fails to explain why we have feelings and awareness, an “inner life”. So we don’t know how the brain produces consciousness.*

*We also don’t know if our conscious perceptions accurately portray the external world, or if we all have similar pictures of what lies outside our conscious minds. In fact, the fundamental nature of reality remains as mysterious as the mechanism for our conscious perceptions.*

When narrative precedes the science, skeptics will scoff and relegate it to the “nomenclature of belief” about ‘designer consciousness.’ Or, though science is enamored with the physical brain, they ignore it entirely or relegate it to the heap of pop physics, energy medicine, and consciousness books that few scientists take seriously. Other ideas, such as “free will” and “intentionality” may be more psychological or philosophical than provable notions.

This writer has noticed a gap between the language accepted in physics or consciousness studies and energy medicine, which tends to be expressed by practitioners using trendy terms, or those outdated in current articulation. One example is the evolution of various terms allocated for what was originally called ‘the ether’ in pre-scientific terms, and vacuum potential in scientific writing. Narrative trends have called the physical vacuum ‘zero point energy’, ‘scalar field’, and ‘torsion field’, thereby relegating much of that discussion to pseudo-science. Misused, the terms become ‘tainted.’ Another example is the conversion of the term ‘psi’ to ‘anomalous cognition’, or the metaphysical term ‘vibrations’ to ‘resonance’. They become more buzzwords, than viable concept descriptors.

Perhaps to the chagrin of the old guard, if ‘quantum brain’ continues building traction, it might rewrite the metanarrative of physics - the Holy Grail of paradigm shift. Is it rising from a subcategory of theory and experimentation - ideas about ideas - toward fundamental laws? We can paint broad strokes with narratives, which must ultimately be backed by hard science of experimental results. Yet, sometimes even concrete evidence is not recognized, or simply ignored, still labeled as dubious, delusional, and flawed. Lack of recognition may be the case for recent experiments to detect spin-mediated consciousness [12].

Specialization can differentiate the categories and content of reality while not advancing the process of defining pre-form thingness. It can miss the essential penetration, activation and transformation of human awareness and experience, which even physics informs us is profoundly and irreversibly subjective. Knowledge begins with experience, but does not arise from it. Particularizing only helps us slice-and-dice the known. Critically, essentials are not really touched in the process. Transformation is qualitative change.

Evolving a master narrative involving consciousness studies, quantum brain, and the observable and inferred effects of the vacuum potential takes place in a largely academic conditioned environment. No matter what we call it, there is a fundamental difference from consciousness that informs matter, or mind that emerges from dynamic physical form. Describing popular notions such as spin, resonance, and entanglement in a dynamic context remains a challenge, verbally and experimentally, much less in mathematics.

Narratives spawn many essentially different ideas, despite their apparent kinship. Does conscious awareness naturally emerge from complex structure or does it arise *a priori*, emerging in a co-extensive way with matter? The former models quantum brain theory, while the later reflects the primordial nature of pre-spacetime. On the other hand, the notion of spacetime itself may be a construct outside the context of standard theory. We have to look to the gaps in our knowledge that keep us from the elusive unified theory.

In neuroscience, quantum brain dynamics (QBD) is a hypothesis to explain the function of the brain within the framework of quantum field theory [13]. In 2002, in *The Quantum Brain* [14], Jeffrey Satinover reviewed the convergence of brain science, biological computation and quantum physics, and what it implies about our minds, our selves, our future, even God. His is the world of neural nets, computing, cellular automata, genetic algorithms, artificial intelligence, neurobiology, artificial intelligence, and some basic philosophy of mind problems.

Some narratives come from more credible sources than others. This area which is the dynamic interface of being and non-being has come a long way from its origins in natural philosophy and “ether physics” but sentiments within conservative academic communities remain skeptical. However, being labeled a ‘forbidden topic’ in some arenas has not deterred its exploration within frontier science. The aspects which withstand scrutiny may be embraced, while those that do not are consigned to the dustbin of failed ideas.

Faced with mystery, we tend to reach or overreach for answers to our existential dilemma – to fill in the blanks in the nature of reality. Projections are continually reiterated and stabilized

constructions which tend to mask particularity and bias behind universalized representations of objective truth. They can have a homogenizing as well as exclusionary potential.

## **Preconscious Vacuum Potential**

We are learning more and more about the pre-conscious nature of the medical and psychological unconscious, as well as the group mind of trends and -isms that go on beyond our normal background reality. How can we increase connectivity/coupling between the atom/molecule level reality and the vacuum level of reality?

This is a question posed by Tiller [15], among others who propose theories at this level of observation. He suggests that we delve beneath the pop buzzword of zero-point field to the enormity of latent energy in the vacuum reality beyond normal reality. He suggests we are "emotional, mental, and spiritual", echoing qabalistic and theosophical notions, as well as other wisdom traditions. Others, including physicist Claude Swanson [16], Gary Schwartz [17], and Leon Maurer [18] echo these sentiments that non-consciousness is co-extensive with Absolute Space.

In Hu and Wu's spin-mediated theory [19], "consciousness is intrinsically connected to quantum mechanical spin since said spin is embedded in the microscopic structure of spacetime and may be more fundamental than spacetime itself[;] [t]hus, we theorize that consciousness emerges quantum mechanically from the collective dynamics of "protopsyche" spins under the influence of spacetime dynamics[;] [t]hat is, spin is the "pixel" of mind [-] The unity of mind is achieved by quantum entanglement of the mind-pixels." The Persinger Group produced experimental evidence of such effects in 2013, demonstrating entanglement [20].

"Never Mind" may be used as a poetic euphemism for the one mind or (potential) consciousness that seems to emanate from this timeless domain of absolute space. Researchers such as Swanson [21] call such processes 'Life Force', and describe its dynamics in energetic terms of control and communication channels involving frequencies of radiation between DNA, molecules and cells. Mae-Wan Ho concurs [22]. Coherent biophotons function in a laser-like manner to regulate mind-body coordination. Such work bears on notions of the nature of life and consciousness which have been persistently elusive in both biology and physics models.

There has been a continuous shift in the notions about consciousness: mind-field, quantum brain, holographic mind, and negentropy. Words, concepts and theories map the footprints of our crystallizing intuition, but descriptors come into and fall out of fashion. The dialogical edge has dropped down another level to the pre-quantum world, to a principle underlying those of quantum mechanics. For example, scalar waves first described by Tesla and described by some Russian scientists as torsion waves are notions of unconditioned pre-cosmic harmonic oscillations of the stress energy tensor of the vacuum. Their spiraling nature is said to be simply an impulse of momentum throughout the physical vacuum, without electromagnetic qualities.

The all-pervasive sea of quantum energy, discovered in the 20th century, remains arguably the most exciting frontier of the 21st century. The jiggling of subatomic particles is attributed to the zero point field, the virtual photon flux that occurs between the dipole and the vacuum.

Virtual particles are not stable enough to remain in manifestation yet they have tangible effects -- a frictionless field of potentiality with spinning effects with emissions. Can it be that absolute space has no metric because it is a BEC (Bose-Einstein Condensate)? Is the physical universe then completely contained, energetically and informationally, in the infinite spin momentum of absolute space?

Randomly virtual photons jump back and forth between the zero point field and our physical world. They collide with and are absorbed by subatomic particles that will be excited into a higher energy state. After nanoseconds the energy is released again by means of another virtual photon that returns to the zero point field. The photon is called a virtual photon since it comes and goes from the zero point field and is ephemeral in the material world. It is only used in the energy exchange between the zero point field and the material world.

Photons and the variety of elementary particles seemingly come into our physical reality from nowhere at all. They make their appearance in our physical reality for only thousandths or millionths of a second to disappear once again into the void. These forms of 'mystical' particles were called virtual particles since they were not stable enough to stay around in our reality. The zero point field has been described as a quantum foam of virtual particles and photons.

Such modeling may have implications for a new computer brain language that allows computers to learn, and to read human thoughts by using brain-machine interface. That raises ethical implications. Our neural synapses will soon work as biochemical nano-devices to transfer information energy from electrical to biochemical signals.

For this discussion, the vacuum potential is being defined as "the locus of a vast energy field that is neither classically electromagnetic nor gravitational, nor yet nuclear in nature. Instead, it is the originating source of the known electromagnetic, gravitational, and nuclear forces and fields. It is the originating source of matter itself." [23]

The active vacuum is active spacetime. The vacuum potential is the pervasive source of all matter/energy rooted in the cosmic acceleration. Its first observable manifestation is photonic and biophotonic light. The vacuum potential is raw, untranslated pre-spacetime.

The pure vacuum potential, without its zero-point fluctuations decomposes into a harmonic set of bidirectional longitudinal EM phase conjugate wave pairs. Thus EM energy flows between the imaginary plane of time domain and manifest 3-space when the four-fold symmetry is broken with any dipolarity or potential, such as longitudinal or scalar (time) polarization of the photon.

Practical or fanciful engineering applications in zero-point energy extraction, torsion field generators, or antigravity are beyond the remit of this article, which focuses on the ontology and epistemology of the source field in relation to human energy systems. Separating legitimate theoretical ideas from pseudoscience requires stripping the theory down to bare bones and

resisting wild speculations - the imaginative from the purely fantastical. Shaking off the legacy of fanciful ether theory has not been easy in this research niche.

## Negentropy

The information-theory term, negentropy is used less and less as a buzzword in favor of 'torsion field' models in energy medicine and consciousness studies. The unity of being that used to be attributed to notions of holographic reality and quantum processes is more and more assigned to the non-observable but inferred effects of the torsion field, previously known as the scalar field underlying virtual vacuum and virtual photon flux. If the vacuum potential is the groundstate it must influence brain-mind-matter.

Matti Pitkanin [24] summarizes Persinger's group reports related to EEG, magnetic fields, photon emission from the brain, and macroscopic quantum coherence. The findings provide support of Hu and Wu's proposal that nerve pulse activity could induce spin flips of spin networks assignable to cell membranes. He further suggests that "lipids of the two layers of the cell membrane are accompanied by dark protons which arrange themselves to dark protonic strings defining a dark analog of DNA double strand."

However, the twin phantoms of dark matter and dark energy, (theories incompatible with one another), as well as 'strings' remain controversial as 'solutions'. Our 'knowledge vacuum' with its 'smoke and mirrors' supersedes the mysteries of the vacuum potential at the interface of psyche and matter.

Entropy is a concept from thermodynamics and self-organizing complexity of coupled cycles in dissipative or coherent structures. Negentropy or negative entropy (also syntropy, extropy or entaxy) is defined in a living system as "the entropy that it exports to keep its own entropy low; it lies at the intersection of entropy and life." In 1944, Schrödinger introduced the concept of 'negative entropy' in *What is Life?* [25].

Léon Brillouin shortened the phrase to negentropy, to describe how a living system imports negentropy and stores it. In 1974, Albert Szent-Györgyi [26] suggested replacing that term with syntropy, working toward a unified theory of biology and physics. Buckminster Fuller tried to popularize this usage, but negentropy remains common, particularly in information theory and Susskind's cosmological Holographic Principle, which is a hypothetical solution [27].

Physics describes the interrelationship of chaos and order as field relationships, while chaos theory describes nature's own methods of creation and self-assembly. Entropy is the tendency for any closed part of the universe to expand at the expense of order. It is a measure of randomness and disorder -- chaos. Negentropy is the generative force of the universe. Negentropy (emergent order from chaos) is a nonlinear higher order system, a dynamically creative ordering information.

Negentropy, like art, is 'in-form-ative.' It is related to mutual information exchange. Information is embodied in the fractal nature of imagery and symbols, which compress the

informational content of the whole. Creativity is an emergent phenomenon patterned by strange attractors, which govern the complexity of information in dynamic flow. Negentropy is the degree of order, or function of a state.

That which was formerly unmanifest comes into being. Negentropy governs the spontaneous transmission and direction of flow of information among systems. The qualities of that information are timeless. It is synergistic in that what was formerly unconnected becomes so, creating something wholly optimal and new – futuristic.

In cybernetics, a meaningful interpretation of negentropy is a measurement of the complexity of a physical structure in which quantities of energy are invested, e.g., buildings, works, technical devices, and organisms which become more complex by feeding not on energy but on negentropy [28].

## **On the Nature of the Vacuum and Virtual Subspace Entities**

Quantum field theory (QFT) presumes the vacuum ground state is not completely empty, but seethes with impermanent virtual particles and fields. There are at least two theories that describe the behavior and characteristics of the physical vacuum and the ZPE at the atomic or sub-atomic level, the quantum vacuum field:

Consistent with special relativity, QED is the quantum electrodynamics model of charged particles with the electromagnetic field. At the atomic level, the QED model proposes that, because of the high inherent energy density within the vacuum, some of this energy can be temporarily converted to mass. The QED model maintains that the zero-point energy reveals its existence through the effects of sub-atomic virtual particles. ZPE permits short-lived particle/antiparticle pairs to form and almost immediately annihilate each other. These particle/antiparticle pairs are called virtual particles.

QED describes mathematically both interactions of light with matter and those of charged particles with one another. An atomic particle such as a proton or electron, even when entirely alone in a vacuum at absolute zero, is continually emitting and absorbing these virtual particles from the vacuum -- a virtual particle cloud. The absorption and emission of these virtual particles also causes the electron's "jitter motion" in a vacuum at absolute zero. As such, this jittering, or Zitterbewegung, as it is officially called, constitutes evidence for the existence of virtual particles and the ZPE of the vacuum.

There is a cloud of virtual particles around the "bare" electron interacting with it. When a full quantum increase in the vacuum energy density occurs, the strength of the charge increases. With a higher charge for the "point-like entity" of the electron, we expect that the size of the particle cloud increases because of stronger vacuum polarization and a more energetic Zitterbewegung, (the circulatory motion of electrons).

SED stands for stochastic electro-dynamics. According to Puthoff in 1987, SED approach affirms that the ZPE exists as electromagnetic fields or waves whose effects explain the observed



phenomena equally well. SED treats quantum field-particle interactions like classical dynamics [29]. In the SED approach, the vacuum at the atomic or sub-atomic level may be considered inherently comprised of a turbulent sea of randomly fluctuating electro-magnetic fields or waves. Stochastic resonance is produced by random stimuli.

These waves exist at all wavelengths and are homogeneous and isotropic at the macro-level, which means they have the same properties uniformly in every direction throughout the whole cosmos. In the SED explanation, the Zitterbewegung is accounted for by the random fluctuations of the ZPF, or waves, as they impact upon the electron and jiggle it around.

Because light waves are an electromagnetic phenomenon, their motion through space is affected by the electric and magnetic properties of the vacuum, namely the permittivity and permeability of free space. The effect of vacuum fluctuations on electron coherence is known: the time-varying electromagnetic field produces a time-varying Aharonov-Bohm phase, a phase-shift illustrated by interference experiments. If more than philosophical, it describes

- whether potentials are "physical" or just a convenient tool for calculating force fields;
- whether action principles are fundamental;
- the principle of locality.

## **The Unified Field: Quest for the Holy Grail**

The Copenhagen Interpretation is the standard model of quantum physics because of its ability to make predictions from a real-world experimental basis. In this theory, light is both a particle and a wave and so is everything else. Uncertainty rules supreme since we cannot simultaneously calculate both position and velocity of subatomic operators, but only probabilities.

Other coherent yet flawed theories have been less successful in this and other regards, some being entirely non-testable. All agree that light is a primary manifestation of the engine of the cosmos. Meanwhile, subatomic factors with many strange properties have proliferated into the "particle zoo."

Still, the search for undiscovered particles or energies that could point toward unification continues. Many attempts have been made to fit all observations into one 'container' that describes everything from the macro- to the microcosmic, down into the virtualities of subspace. Abstract models, flawed inventions or approximations are not physical explanations. Clarity remains elusive and many alternative and idiosyncratic theories have arisen. Theories are often patched up with unnecessary complications.

In the 1960s, Buckminster Fuller proposed a geometric philosophy he called "Synergetics" describing a crystalline vacuum based on nature [30]". His notions of tensegrity have applications in classical and quantum physics, as well as biophysics. He described the crystalline vacuum of cosmic space with the pre-geometrical properties of "Cosmic Zero" in his model of the Vector Equilibrium Matrix.

Echoing Fuller, in 2013, physicists reported the discovery of a jewel-like geometric object at the heart of matter that dramatically simplifies calculations of particle interactions. It challenges the notion that space and time are fundamental components of reality. They claim, “The new geometric version of quantum field theory could also facilitate the search for a theory of quantum gravity that would seamlessly connect the large- and small-scale pictures of the universe” [31].

*In keeping with this idea, the new geometric approach to particle interactions removes locality and unitarity from its starting assumptions. The amplituhedron is not built out of space-time and probabilities; these properties merely arise as consequences of the jewel’s geometry. The usual picture of space and time, and particles moving around in them, is a construct. [32].*

This model is tied to string theory, but, have they actually found it? String theory is an extension of the Kaluza-Klein theory.

The ‘80s ushered in the era of chaos theory, complexity, dynamics and self-organization, which may ultimately play into the final solutions. Every theory is based in certain fundamental assumptions and postulates about how nature works. They may be coherent within themselves, but not among themselves, where they can be mutually exclusive. But the Holy Grail theory remains hidden in the dealer’s hand.

Leading contenders in New Physics include the following: Bohm created a holographic concept, Susskind a ‘stringy’ Holographic Principle, Deutsch a variation on Many Worlds (MWI), and Cramer a Transactional Interpretation (TI). Sarfatti long ago proposed postquantum backaction, while Penrose proposes a twistor space. Pitkanin describes a TGD physics based on world sheets. Masreliez suggests a Scale Expanding Cosmos (SEC), with a uniform scale invariant expansion for the whole spacetime manifold of the universe.

Greene remains the main proponent of String Theory [33]. It has popular appeal but many theoretical inconsistencies, including a proliferation of dimensions and multiple solutions. Since it makes no testable predictions, it is accused of being more of a philosophy than a science. But Kanno et al (2006) describe how “quasi-scalar-tensor gravity works as a hologram at low energy in the sense that the bulk geometry can be reconstructed from the solution of quasi-scalar-tensor gravity” [34]. Edward Witten unified the five solutions of strings in M-theory, the mother of superstrings. But despite M-theory, uniting quantum physics with Einstein’s theory of relativity has remained elusive in experimental physics.

Still, answers about the true nature of Reality are unlikely to come from a new mathematical model. It should be the other way around:

- first find what you think might be the solution to a problem,
- then express it as a mathematical model;
- then test it.
- The coherent narrative should follow.

Nefediev [35] uses QCD (quantum chromodynamics) bubbles to describe properties of the vacuum and propagation of quarks and mesonic states in two- and four-dimensional models. In QCD the vacuum is full of quark and gluon condensates with negative energy. Electrogravitics theory (Valone) is a way of modeling gravity with time and emergent energy.

QFT models the fabric of space as tiny oscillating fields interacting with one another, reconciling quantum mechanics with special relativity. Elementary particles, local excitations of the vacuum, are point-like objects of zero intrinsic size. They appear smeared over a region of space due to quantum effects, but their description is written as mathematical points. Together, space, time, and energy form a manifold of functional quantum space.

Comings and Miller [36] (2005) have also proposed the void is a plenum in the Creative Physics model. The nature of embodiment is light. Another viable model of the Bivacuum comes from Kaivarainen [37]. The quantum vacuum is a dynamic massless scalar field. A scalar is a vector characterized by magnitude and time. Scalar waves (virtual particle flux wave) in the virtual state massless charge flux do not breach the quantum level to become observable, yet they are real. They are harmonic oscillations of the stress energy tensor of the vacuum. They cross the threshold of manifestation only briefly before they vanish. In the vacuum state everything is disintegrated, but highly dynamic.

The vacuum is not an emptiness filled with massless charge. Rather, it IS identically massless charge (disintegrated dynamicism). Though no real particles are present, it is a plenum, not an emptiness. It is also pure, undifferentiated action. Curiously, along the way to a Theory of Everything, physics is taking a somewhat mystical attitude in its descriptors of what remains essentially the great Mystery. This mystery is compounded when we attempt to apply physics theories to biological organisms, including ourselves – the realm of biophysics.

## **Cosmic Crystalline Vacuum**

Buckminster Fuller [38] spoke in quasi-mystical tones rhapsodizing about his sublime geometries, which bear a suspicious resemblance to zero-point. Jitterbugging Vector Equilibrium Matrix is not structure but a system, the prime nucleated system. V.E. makes conceptual models of 4th, 5th and 5th dimensional omni-experience possible, using tetrahedroning. A current example of this is CDT theory, a triangular universe of 4-dimensional tetrahedrons.

Equilibrium between plus [+] and minus [-] is Zero. V.E. is the true zero reference of the energetic mathematics. It is cosmic zero. Zero pulsation in the V.E. is a 'metaphorm' of eternity and God: the zero-phase of conceptual integrity inherent in the + and - asymmetries. V.E. is important because all the nuclear tendencies to implosion and explosion are reversible and always in exact balance. V.E. is the anywhere, anywhen, eternally regenerative, event inceptioning and evolutionary accommodation that is never seen in any experience, according to Fuller.

This metaphorm (V.E.) represents the self's initial real-I-zation both inwardly and outwardly from the beginning of being "betweenness"; maximum inbetweenness. Fuller characterizes it as

push/pull; convergence/divergence; gravity/radiation. At zero-point, waves pass through waves without interfering with one another. Vectoral phase or zone of neutral resonance occurs between outwardly pushing wave propagation and inwardly pulling gravitational coherence.

Emptiness at the Center: all 4 planes of all 8 tetrahedra are congruent in the four visible planes passing through a common V.E. center, the cosmic terminal condition and nature's most economical lines of energy travel. Fuller links this dynamic activity with the drive to know, to penetrate, to illumine, culminates in a stillness, silence, cessation of all effort which itself dissolves in the tranquility of total negation.  $0 = 2$ . It is only by virtue of the fact that it is Naught. All form and power are latent in the Void. Hamein and Rauscher (2005) have employed this cuboctahedron to model all of creation and the origin of spin. [39].

## The Crown of Creation

There may be a virtual replica of all matter, including living organisms, in the vacuum. Resonance and oscillation is accompanied by modulation of virtual particle/antiparticle pressure waves. We come from, are sustained by and are returning to the light of our mass -- radiant energy. It is the mass-free, force-free form that energy takes in space before its interaction with mass that creates force.

The most we can say about our so-called physical existence is that we are standing wavefronts in spacetime. To truly live from that place is to identify ultimately with a superluminal massless body of light, the Diamond Body, also called the Philosopher's Stone. Natural philosophy knew this as the true nature of the vehicle of our consciousness, our essence. Such beliefs may have scientific and symbolic analogs.

Virtual particles are the unseen energetic medium, the dynamic energy matrix of the Universe, riddled with virtual pressure waves. Bidirectional EM wavepairs are the hidden scalar potential. These infolded electrodynamics describe subspace or higher dimensions, depending on how you model it mathematically.

Right or wrong, Kozyrev [40] described spinning or twisting "torsion fields" and/or "torsion waves" as the spiraling flow of "time energy." Bearden, calls them "scalar waves" [41]. Their spiraling nature is simply an impulse of momentum that travels through the medium of the physical vacuum, without electromagnetic qualities.

Torsion fields, like gravity or electromagnetism, are said to be capable of moving from one place to another in the Universe at "superluminal" speeds, meaning that they far exceed the speed of light. An impulse that moves directly through the "fabric of space-time", travels at super-luminal velocities and is separate from gravity or electromagnetism. It is a significant breakthrough in physics – one that demands that a "physical vacuum" or "zero-point energy" must really exist.

The active vacuum is active spacetime. The vacuum potential is the pervasive source of all matter/energy rooted in the cosmic acceleration. Its first observable manifestation is photonic

and biophotonic light. The vacuum potential is raw, untranslated spacetime, which correlates informationally with raw or primordial (non)consciousness.

## Conclusions

It has long been suggested that the brain functions as a sort of transducer from the universal to the particular. Pribram [42] has suggested a holographic brain in a holographic universe. He contends that the binary code is embodied in the all or none characteristics of the nerve impulse that allows connections between parts of the brain. Processing occurs during passive field-like transactions.

Quantum and sub-quantal spin phenomena may play an important part in the brain's transducer function by affecting neural substrates of consciousness and classical neural activities. Further, if the unconscious is a magical powerhouse that speaks in symbols, our notion of the unconscious is also a symbol of the power of the primal field.

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