

An Introduction to Noetic Field Theory: The Quantization of Mind

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Abstract. A conceptual introduction to the quantization of mind is presented in the framework of noetic field theory, the three base states of its cosmology, and its application to the new discipline of quantum cerebroscopy. Although the assumption that awareness is the fundamental principle from which to begin formulating a theory of consciousness is a correct one; the widely held opinion "what processes in the brain give rise to consciousness?" represents a category error for philosophy of mind leading to the recent definition of consciousness as a 'hard problem' ineffable to scientific scrutiny. The realization that DesCartes '*res cogitans*' - the mind, is not an abstract immateriality, but a physically quantifiable metric intrinsically interacting with '*res extensa*' - the brain and body, has led to the first empirically testable and comprehensive dualist / interactionist theory of consciousness. Extensions of the standard models of quantum theory and cosmology as well as elements of microgravity are required to formulate Noetic Field theory (NFT). Its broad applications to many fields of science are discussed.

Keywords: consciousness, gravitation, ontological, noumenon, teleological, quantum cerebroscopy, noncomputability.

1.0 Introduction

Consciousness must finally be considered in terms of the whole universe [34, 38]. Noetic Field Theory (NFT) is a whole cosmology [11,4] within a 'Continuous State Universe [42]. In the classical mechanics of Newton consciousness was deemed irrelevant to the clockwork universe. With the advent of quantum theory (QT) a troublesome observer appeared that could affect the outcome of observation.. In the 'Age of Consciousness' we are approaching consciousness is an essential teleological principle required to understand both the universe and the nature of mental life.

At the time of this writing few realize that NFT or some refinement of it is the long sought after model of consciousness. It has not yet been widely published, partly because it is in violent conceptual opposition to the current reductionist, emergent and monistic thinking; and like many radical new ideas it is not readily understood at first.

A treatise on NFT will not be rendered in this writing, only the more conceptual aspects of its interaction with the brain; but it is important to keep in mind that the Noetic Field is not only the light of the mind, and provides the self-organized spark of life, but in its relationship to microgravity and the unitary field entails an ubiquitous quantum of action that orders the whole universe. These three actions of the noetic field are of course a snapshot of the cosmology of consciousness to be discussed.

Scientific and philosophical thinking in the last century has adamantly clung to the classical behaviorist hypothesis in neuroscience - that a complete account of brain function can be given without introducing a conscious agent [37,40]. Sperry's model attempts to explain conscious experience as 'inextricably inseparable from, and embodied in, the functioning brain. It provided a rationale for the evolution of mind from matter and also the emergence of mind from matter in brain development'[37]. From this monism as Sperry called it; he claimed to derive the 'notion that emergent mental powers must logically exert causal control over electrophysiological events in brain activity' [37]. This was a conceptual step forward from the historical reductionism, but it must be clear that mind's ability to act on brain does not logically necessitate mind - brain identity.

Nobel laureate Sir John Eccles was the last great dualist / interactionist. Dualism suggests that conscious experience can exist separately from neural phenomena of the brain! That there are two interacting worlds as described by DesCartes [41], which allows for the existence of a conscious afterlife and various spiritual phenomena [39]. It is the beginning of the final refinements and completion of this work that is presented here.

The orthodox Copenhagen interpretation of Quantum Theory (QT) is known to be incomplete, and Bohr, its founder, was first to admit that this epistemological interpretation based on the phenomenology of measurement doesn't describe biological systems. Theorists have begun to realize the role quantum gravity (QG) plays in filling the explanatory gap. We have had to wait for a deeper ontological interpretation of QT to couple consciousness to brain dynamics. Noetic Field Theory (NFT) - The quantization of mind, in part an extension of Bohm's pilot wave model [1] and Cramer's

transactional interpretation [2] into a nonlocal domain encompassing elemental intelligence is such an ontological interpretation not in the manner often described by wave function collapse, but based on the density matrix of the matter wave [7,8].

Chalmers discusses awareness as a fundamental principle from which to formulate a theory of consciousness, but defined this as a hard problem [3]. In the history of science whenever there is a hard problem it usually has been shown to be because the underlying principles were not well understood. Chalmer's hard problem represents a philosophical category error, because it assumes that awareness arises from the brain. There is no scientific proof of this assumption; it is only appealing to the current cognitive philosophy. NFT solves Chalmers' hard problem by showing that awareness is not a fundamental principle from which to formulate a theory of consciousness, because awareness in the NFT model is comprised of primary base states that interact with brain dynamics rather than emerging from them.[4,11] NFT also corrects DesCartes assumption of relegating mind to immateriality by the bosonization of the Eccles' Psychon [4,5]. According to the noetic interpretation, individual intelligence arises from a teleological noumenon forming a Psychosphere which is a hyperstructure signifying the complete physical domain for all events of an individual consciousness. In this cosmology consciousness is a self organizing autopoietic [30] interaction of 1. the local matter field confined to the Heisenberg matrix of Pribram's brain holoscape[6], and 2. a complementary nonlocal noetic field originating in a noetic space encompassing singularities of elemental intelligence. This Psychosphere contains a dynamic raster of consciousness within which all conscious processes evolve. The complementarity of these two domains is integrated by 3. a cosmological ordering principle that mediates the global and nonlocal domains. Mind mediated by noeons - the confined gravitons of consciousness is quantized and surmounts uncertainty through the synchronicity of a delocalized noetic effect, a taxic principle of consciousness that couples causally to Bohm's quantum potential[1]. This acts as a phase regulator in the midst of pumped Frohlich-like coherent states to provide the entry point of intentional action on the quantum brain dynamics (QBD) in Pribram's holonomic formations of the dendritic microprocess [6]. The distribution of the charge carriers in the ionic bioplasma is described by equation 1.0 (Pribram, 1991) and evolves according to the distribution of dendritic isophase contours.

$$k(x,t) = \nabla S(x,t) = \left(\frac{\partial S(x,t)}{\partial x^1}, \frac{\partial S(x,t)}{\partial x^2} \right) \quad 1.0$$

Although Bohm's pilot wave model with its connection to classical dynamics has been criticized as bringing determinism back into quantum theory by causally regulating state evolution; the resultant causal connection of the Noetic Effect to the quantum potential does not make the system deterministic per se. It represents rather additional modes of interaction [29] or feedback between otherwise closed or noninteracting systems. Only two of the three domains actively interact to determine macroscopic effects at any one time. This means that there is another causal input governing the evolution of state, for as generally known, the logic of human practical reason [9] is governed by nonlinear acausality leaving these nodes open to the pertinent stochastic, chaotic, catastrophic, or tunneling influences of standard quantum theory when not influenced by the noetic effect. This is the noncomputability of mind described by Penrose.[31]

Because NFT contains a field like any other physical field, consciousness is quantifiable and open to empirical investigation. Work in progress to detect the Psychon/Noeon through phase control laser interferometry and optical nutation is proceeding [10]. The measurement problem which needs only be applicable to particles obeying Fermi-Dirac statistics is surmounted by the deeper ontology. As Planck discovered the quantization of energy; now it is known that mind can also be quantized. The noetic field operates throughout the body; pertinent arena seem to be provided by ordered water as a synchronization backbone, quantum effects in microtubules, synaptic vesicle release by quantum tunneling, and the dendritic microprocess. This entails the pragmatic utility of a teleological nonlocal noetic process of mind, a quantized interacting noumenon not a brain emergent phenomenology. Synchronicity maintains interaction free states of superposition. Apparently the universe is more conscious than physicists have recently wanted to admit. NFT thus provides a framework to formulate a comprehensive theory of consciousness [11,12,13] that will one day allow psychology to become a physical science.

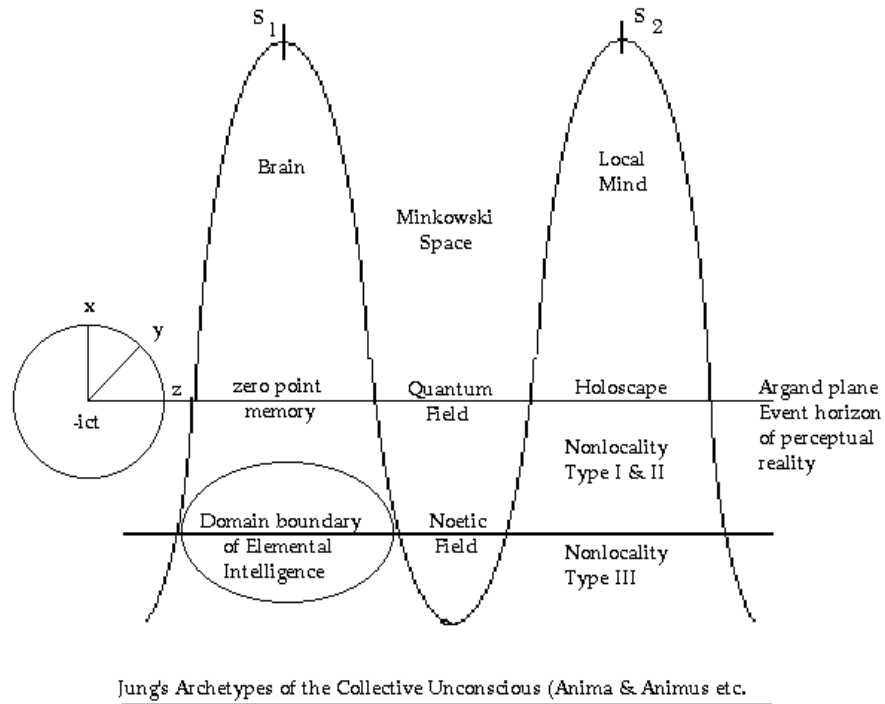


Figure 1.0 A simplified spacetime diagram of the psychosphere of paired individuals representing the three known cosmological domains: 1. macroscopic/classical - the brain, 2. quantum/nonlocality I & II - computation, and 3. unitary-noetic/nonlocal III - singularities of individual elemental intelligence. The model reveals the physical basis for synchronicity, illustrating Jung's collective unconscious which nonlocally stores racial and personality archetypes. The noetic space of elemental intelligence is shown imbedded in the collective unconsciousness.

1.1 DesCartes Misconception of Materialism

DesCartes misconstruing of materialism has been carried into modern times. DesCartes purported revelation of the distinction between mind and body was correct, but relegating mind to immateriality was a misnomer based on the more limited understanding of physicality during the 17th century. All 'things' are physical. This includes all forms of matter of which light is one form, spacetime and energy. Is energy immaterial? All energy originates in the boundary conditions of geometry or space. Fundamentally elementary potential energy is an orientation of boundary conditions relative to the boundary of a boundary which is zero. In this case zero orientation. The rudimentary translation of boundary conditions provides the kinetic energy for all motion. The tiered internal motion or geometric translation through the symmetry of spin exchange interactions creates all matter and spacetime. [11]

Thus immateriality is only relegated to abstract mental constructs which are the content of mind, not the mind itself or the Platonic forms which because of the geometry of form and information are of basic physical materiality. Only the abstract mental content or meaning like "redness" is immaterial. Red itself is a quantum state; and the apprehension of redness is a material noetic field bounded within the psychosphere of the active intelligence. The evanescence of meaning from the superposition of noetic fields like a photon has zero rest mass. If brought to rest the meaning is lost to consciousness because the conscious energy has been dissipated. This meaning in the apprehension of noetic fields by a conscious entity is readily confused with abstract meaning which has no physical or material existence. Some current theories limit the noetic field to Planck scale interactions within the brain, but the interactions of individual consciousness have a much broader scope.

2.0 Collective Modes Of Ordered Water As A Synchronization Backbone for Consciousness

For over thirty years it has been suspected that collective modes of conformation in the dipole oscillations of neuromolecular systems are a key factor in the dynamics of consciousness.[16,21,22] Until recently even though a brain cell is almost eighty percent water; the role of water in this process was dismissed as only a background filler within which to suspend biological species. The spin glass properties of ordered water [8] may provide a vehicle essential for the synchronization backbone of the quantum dynamics of consciousness. The utility of ordered water as part of the synchronization backbone of the conscious process is in its dipole oscillations acting as 1. a buffer for phase transitions which supplies a switching mechanism, 2. directional quenching of periodic moments which acts as an aid in maintaining coherence effects, and 3. a medium to translate microscopically distinct Hamiltonian operators into macroscopically equivalent long range correlations. This water mechanism would operate in association with the quantum dynamics of microtubules and the tunneling trigger mechanism of vesicle release at the synapse to integrate the total quantum conscious field.

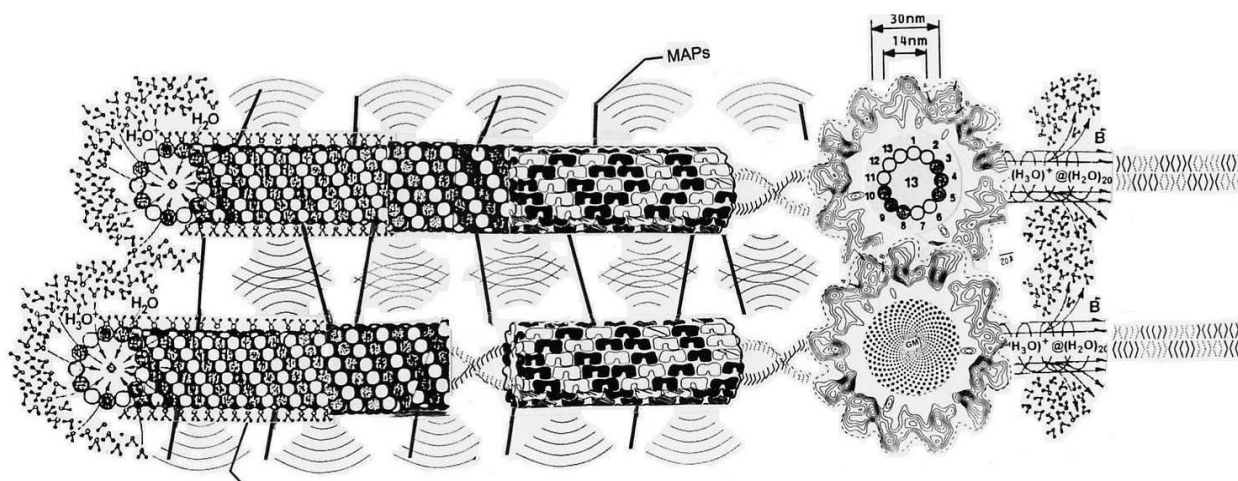


Figure 2.1 Ordered water as the synchronization backbone for nonlinear switching in quantum brain dynamics. A pair of microtubules with microtubule associated proteins (MAP'S) connecting them. Water is shown around the microtubule and coupled to the outer tubulin surface. The microtubules are also shown in cross section revealing the 13 protofilaments surrounded by electron density maps that shroud the length of the tubule. The electron density varies with the energy state of the dipole oscillations of the tubulin dimer and associated water molecules. Inside the microtubule is an energy field where water assembles into clusters along the inner surface. It is believed that coherence occurs in the core of microtubules through cyclotron resonance at Frohlich frequencies. The Casimir radius inside a tubule is of sufficient diameter that this ordered state might Bose condense providing a basis for one aspect of consciousness. Ordered water also has spin glass properties and is postulated here to provide the synchronization backbone that makes this superradiance a possible aspect of consciousness information processing [14,17].

2.1 Ordered Water

Water is electrically neutral overall; but because of charge asymmetry in the geometry of the Hydrogen and Oxygen bond the water molecule is polar. This allows adjacent water molecules to hydrogen bond into clusters that have been found binding to protein surfaces. A (20) water cluster is very stable due to strong Coulombic interactions and believed to be associated with microtubules [14,15] which have been postulated to play a major role in quantum interaction processes relating to the mind.

2.2 Collective Modes

The water molecule has a constant electric dipole moment that coincides with its axis of symmetry. Several degrees of freedom apply to the water molecule; spatial motion, rotation, and molecular vibration. The most important being molecular

rotation around the axis of symmetry. This 'spinning top' can be considered a quantum mechanical spinor field which couples to the collective modes of the electromagnetic vibration of biomolecules throughout the brain. Collective modes are the key to the dynamics of living systems. When the energy Eigenstates of oscillating dipole molecules become strongly correlated it is called quantum coherence. It is the propagation of these coherent states, Frohlich waves of between 100 billion to a trillion hertz, exchanging energy with the electromagnetic field, that is believed to be the basis for consciousness [8,16].

$$\mu = - \sum_i q_i r_i \quad 2.0$$

$$\Delta E = h\nu = \frac{hc}{\lambda} \quad 2.1$$

A water molecule has a dipole moment resulting from the oscillation of van der Waals radii around the covalent bond. The dipole oscillation by incident photons or coherent waves in biological systems produces conformational change in optically active molecules. Equation 2.0 is the vector potential of a dipole moment; which is the product of the charge q and the radius r . Equation 2.1 shows the change in energy E depends on Planck's constant and either the frequency ν or the wavelength. Conformational variation can originate in the energy variance from the ground state by incident photons. In the case of the brain this would be by corticons [8] and psychons [4] or noeons.

2.3 Synchronization Backbone

Richard Feynman found nothing in the laws of physics to suggest that a quantum computer wasn't possible; and that the most feasible way to build a quantum computer was using a 'synchronization backbone' [17]. The synchronization backbone eliminates the time dependence of the systems Hamiltonian without which the quantum computer could not maintain data accurately and be useless. A conscious quantum computer simulating quantum brain dynamics has been designed [18,19]. The purpose of the synchronization backbone is to provide a buffer to support coherence effects. This accomplishes two things: 1. an amplification or memory effect and 2. to ease transitions in wave propagation thus avoiding thermalization which would annihilate coherence. In the conscious quantum computer laser phase control interferometry resonating at Frohlich frequencies in heterosoric molecular crystals provides the synchronization backbone. Feynman's [17] synchronization backbone works by building the quantum computer on top of another quantum system. It is suggested in this paper that the human brain performs quantum computation and also contains a synchronization tier and that the synchronization backbone for consciousness is provided by the activity of ordered water and its coupling to microtubules and other dipole oscillations in the cortex. This provides the two tiered quantum system necessary to provide the synchronization backbone.

3.0 Quantum Brain Dynamics and the Noetic Field Theory of Consciousness

Quantum Field Theory has several branches, Quantum Electro Dynamics (QED) for electromagnetic interactions, and Quantum Chromo Dynamics (QCD) for strong interactions for example. Quantum Brain Dynamics (QBD) is the quantum field theory describing biological systems and the fundamental mechanics of the brain [8]. QBD is mediated by the corticon, [8] a quantum of the water rotational field which interacts with the electric dipole oscillations along proteins. When synchronization of the water corticon and electromagnetic field occurs, nonlocal coherence is manifest giving rise to long range order and collective phenomena. Nonlocal coherence provides a much stronger correlation than a classical collective mode could describe.

QBD of the water rotational field and interacting electromagnetic field although providing an excellent model of neuromolecular computation is not sufficient to describe consciousness because free will or intentionality is still left out of the picture. For this we need an extension of the orthodox epistemology of the Copenhagen interpretation into the quantum ontology of Bohm and Cramer [1,2]. Bohm described the quantum potential as a nonlocal pilot wave effecting the probability matrix of the Schrodinger equation. Bohm's work was criticized for bringing causality back into the picture because the pilot wave makes a connection to classical mechanics. Noetic Field Theory: The Quantization of Mind

completes Bohm's work. Intentionality is nonlinear and acausal, not linear and causal as the determinism of Newtonian mechanics. Although the result of intentionality acts as a causal operator on the quantum potential; because of its nonlinear/acausal dynamics the probabilities inherent in the evolution of the Schrodinger equation are not violated. They are surmounted by the synchronicity of noncomputability. This is the entry point of mind into quantum theory and another key factor for in the operation of the synchronization backbone provided by the water corticon field. Neurocomputing models of the brain are linear closed systems; Once a computer is programmed there are no remaining degrees of freedom for rational input. The see saw action or harmonic oscillation of the synchronization backbone provides a switching mechanism called the noetic effect [12] for the entry of either intentionality or sensory phenomenology into the conscious process.

In summary water has been theorized to play two important roles in consciousness: 1. to provide a storage buffer to amplify or attenuate the corticon field, and 2. to allow switching between sensory computation and intentionality. Although the role of ordered water in the dynamics of consciousness remains a qualitative model at this point in time, a growing body of literature from both experimental and theoretical areas are converging to suggest an important role of water in the quantum physics and molecular biology consciousness.

4.0 The Role of Gravitation in the dynamics of Consciousness

QG is an essential factor in the dynamics of consciousness especially the deeper extracellular aspects of intentionality. Gravitationally mediated intentionality phase regulates QBD. In the spin exchange compactification model of gravity (SEQG), gravitons are confined photons of the unified nonlocal noetic field that curves spacetime through the stress energy tensor and the moment of rotation described by Einstein's field equation for GR. This has implications for the quantization of mind in that the phase regulation of intentionality is mediated by a nonlocal gravitational Boson of consciousness called the noeon. Einstein's General Theory of Relativity is incomplete because it fails to describe gravity at the quantum level. NFT integrates a deeper ontological QT that includes the quantization of spacetime and nonlocal quantum gravitational elements that couple consciousness to QBD by extending Bohm's pilot wave model into a nonlocal unitary domain.

Twistor and superstring theories have been considered the most promising candidates for the nonlocal integration of QT and GR; but both lack a 'Rosetta stone' for delineating the unique topological package of higher dimensional hyperstructure required to complete the task. Both eastern and western theologies claim that gravitation is caused by the movement of spirit - spirit, ki, chi, or prana which are not immaterial but Bose or photon based. The spin exchange model of quantum gravity (1) incorporating the expanded Wheeler-Feynman absorber theory of radiation (2,3) putatively describes gravitons as superposed moments of confined nonlocal photons mediated by unitary field dynamics. The cosmological constant is the coupling constant between both domains; the zero averaged fluctuation of the gravitational potential localizes and delocalizes the flow of conscious energy. The lower limit for the quantization of mind is a Planck scale hypercavity where the gravitational potential may remain balanced when at rest. Gravitational mass dependency is not required by conscious entities for state evolution as in the Hameroff-Penrose Orch-Or model because spacetime curvature provides boundary conditions gating the energy flow of Bose psychons. No gravitational work is required, mental activity is frictionless at this level, but not at the higher organic species level. Radiation or light pressure is sufficient to modulate the boundary conditions. All levels of scale are proportional to the elemental Planck unit through the law of energy quantization. Degenerate energy from infinite density singularities not being applicable to consciousness. Thus one may whimsically query 'How many Einstein's (moles of photons) does it take to turn on a light bulb? The bulb being a 'byte' of Planck bits pertinent to the conscious scale of the entity. Thus entity Z with a 10^n Planck byte raster of consciousness, has a 10^n byte psychosphere and resolves factors of 10^n bytes of external and internal mental events. Thought being dynamic moments of local quantization and summation of conscious energy. This is the cosmological root of consciousness. Nothing is said about the branches in quantum brain dynamics and nonlinear neurodynamics essential to higher brain function and the phenomenological inputs of awareness. An experimental protocol has been developed to empirically isolate and extracellularly confine the Bose psychon (4,5).

4.1 A Unique Topological Package: The 'Rosetta Stone' of Spacetime Hyperstructure

Absolute truth occurs in science when a theory becomes falsified. The Newtonian world view became an 'absolute truth' [33] in the domain it describes when superseded by the standard cosmological model which describes the observable universe in terms of quantum theory (QT) imbedded in the classical geometry of Einstein's theory of general relativity (GR).

Once again science arrives at a propitious moment that will soon obviate GR and QT necessitating a profound transformation of the standard models. The scalar curvature of the 'Planck wall' currently defined by the gravitational

elements of Einstein's field equations opens in the new theory of SEQG through the coupling of a dynamic dimensional hyperstructure to reveal a universe not limited to the putative 10 to 20 billion light year Hubble radius of an Einstein three-sphere; but like a hyperdimensional Klein bottle of intermingled Hubble hyperspheres which can be described in terms of Birkhoff's theorem of equalizing gravitational spheres [35].

5.0 The Noetic Effect: The Phase control entry point of Intentionality into Neural Holography

QBD is an open system interacting with the classical active manifold of entrained dendritic and neural processes called the holoscape that couples phenomenal information back to the phase space of the Heisenberg matrix of QBD below it. To provide an empirically testable model for the phase regulation of holoscape patterns, a radical framework of noetic psychotropism called the noetic effect is described: 1. formulating a physical basis for Jung's synchronicity factor and archetypes of the collective unconscious, 2. introducing a multi-mode phase regulator into the pattern of charge carriers in the dendritic holoscape of Karl Pribram's seminal work on holonomic brain theory, and 3. describing an inherent action of the conscious process

$$h \frac{\partial \theta}{\partial t} = - \frac{\hbar^2}{2m} |\nabla \Theta|^2 + V - \frac{\hbar^2 \nabla \cdot \nabla R}{R} \quad 5.1$$

called the Noetic Effect. Equation 5.1 is a modification of the Schrodinger equation that includes Bohm's quantum potential in a way that it might apply to noetic Field theory. This is accomplished by applying the author's work on Noetic Field Theory (an extension of Bohm's ontological quantum theory into a teleology that includes a nonlocal conscious process) [11,12], to recent developments in the emerging science of Consciousness. This represents a first practical application of Holonomic Brain Theory.

The noetic psychotropism is based on a complementarity of mind and body [5]. The Eccles psychon is bosonized into a unified field theory to recast mind as a material entity [4], not immaterial as originally described in Cartesian dualism.

Pauli and Jung [20] tried to formulate a quantum mechanical model for Jung's concepts of the collective unconscious and the synchronicity factor; but physical theory was not advanced enough at that time to accomplish the task. Now we suspect that memory operates with vacuum zero point fluctuations [21,22] by a type of neural holography [6]. There are two types of memory involved: 1. every day personal memory of learned facts and experienced events more or less under direct conscious mediation, and 2. a transpersonal 'memory of being', a dynamic Hilbert space storing archetypal forms of the personality or psyche. These forms can be compared to a dynamic backbone synchronization [17] in a quantum computer acting as a waveguide for the translation of the noetic field. Archetypal forms although they can be objects of subjective attention are generally occluded deeply in the Jamesian fringe because they provide more the bottle of rather than the experiential content of awareness.

According to Noetic Field Theory - the Quantization of Mind, the Psychosphere is defined as the hyperstructure signifying the domain of individual intelligence; a self organizing interaction of the local matter field confined to the Heisenberg matrix of the brain holoscape and a complementary nonlocal noetic field that includes cosmological factors of consciousness. This is the dynamic raster of consciousness within which all conscious processes evolve; not in the manner often described by wave function collapse, but based on the density matrix of the matter wave [7,8,12]. In this context action of the Noetic Effect can induce a trophic phase. In physical terms this syzygy would have active mediated moments of force. The noetic effect as mediator of the nonlocal conscious process, acts as a causal (including the acausal/nonlinear properties of rationality) operator on Bohm's quantum potential. This is a point of entry of consciousness into quantum systems. This includes both conscious and subconscious nodes of entry. Driven by the Hamiltonian of the Conscious Potential, the resultant action of the Noetic Effect couples operators of the Noetic Field to specific loci of pumped Frohlich-like coherent states. This is a phase regulator into the patterns of Pribram's holonomic formations [6]. The pumping mechanism for this process is inherent in the self organization of the system. The radiation pressure of the (Psychon) Bose state, Fermi-quasiparticle transitions, vacuum zero point fluctuations, and string dynamics etc (Full gravitational circle- cosmological to quantum) are sufficient to drive this dynamic. This is the normal operation of energy flow by the nonlocal conscious ontology causally coupled to Bohm's quantum potential. Thus the current thinking on the involvement of wave collapse is a mathematical invention not a description of the actual logical cosmology of noetic consciousness [12,23].

The influence on development by significant others seems obvious; children are imprinted with many personality characteristics of their extended families. Under certain conditions a deeper psychotaxic noetic force causes prenatal

inversion of the foundation of the psyche, providing an apparent genetic pre-disposition for attributes. The concept of noetic psychotropism applies physical theory somewhat ahead of its time. Experimental protocols being developed will rigorously quantify this model; but early application of noetic field theory to holonomic brain theory seems warranted. The noetic action of archetypes allows adjustment by self actualization or psychotherapy. Because operation of the noetic effect is deeper than current understanding at the psychosomatic level; noetic psychotropism will lead additionally to therapeutic methods for personality disorders and medical problems like colitis and Alzheimer's disease [24].

6.0 Quantum Cerebroscopy: Applied Noetic Field Theory

Based on a spin exchange model of quantum gravity (1,2) that includes a nonlocal teleology and quantization of mind or the bosonization of DesCartes 'Res Cogitans', a new field of quantum cerebroscopy (QC) is defined. Noetic Field Theory (NFT) (3) allows the measurement problem to be surmounted ontologically through the noninteractive synchronicity of the unified field. The brain is considered a naturally occurring quantum computer. The extracellular containment of natural intelligence (4) in a stack of heterosoric photon band gap materials is achieved by applying parameters of quantum brain dynamics (QBD) (5,6) utilizing a system of tuneable laser phase control interferometry of Rydberg cavity quantum electrodynamic states to evanesce nonlocal conscious processes into the core of a cerebroscopic transducer.

QC results from an extension of the Weinburg/Feynamm absorber model (7) further developed by Cramer (8) and others. The cerebroscopic transducer is the core device for a number sensory bypass technologies being developed by Cerebroscopic Systems, such as visuoauditory prosthesis, and 'brain TV' or telecerebroscopy that will have utility in psychotherapy and provide possible enhancement of mental retardation.

7.0 The Philosophical Foundations of Noetic Field Theory

John Bell stated that the division between classical and quantum is not one of size but a division between matter and mind [25]. He thought that mind was immaterial; it has only seemed this way over the centuries because of the poor definition of matter and because the material aspects of the noumenon of consciousness have been confined like quarks, hidden behind the nonlocal Planck barrier. If this were not so minds would not be safe from external influences and mental problems would be the norm rather than the exception. Strong willed individuals would be easily able to harm weaker psyches. The noetic field of consciousness is mediated by Bosons, In the local brain these have been called corticons Goldstone Bosons, noeons and psychons. The nonlocal Boson introduced by noetic field theory is called the noeon. This has been heretofore missed by the incompleteness of the standard model which is limited by the uncertainty principle. Through a delineation of synchronicity by noetic field theory the noeon may be experimentally accessed through phase control laser interferometry [10]. In the past photons have been generally considered as arising from the electrostatics of atomic structure. This is not the only topology able to release Bosons. Quantum cavity electrostatics of the Planck scale vacuum backcloth also is mediated by photons - confined as gravitons in the case of matter [26,27], and noeons mediating nonlocal elemental intelligence with brain activity [4,11].

Compactification was not fixed in an original hot dense big bang cosmology, but is a dynamic process independent of an original cosmological temporal singularity as suggested by GR. During compactification dynamics the rotational symmetry and spin exchange of confined gravitons (photons) produces spacetime curvature and noeons (photons of consciousness) translate energy as simple harmonic oscillators, local time to nonlocal atemporality through the three base states of consciousness (4,11).

Time and Minkowski space are a product of our conscious reality. Local annihilation and recreation of all particles reveals the nonlocal propagation of the unified field as the quantum of action governs the flow of energy in all particle interactions and mediates time in the face of atemporality; this is the reason for the compactified dimensions. The extra degrees of freedom are needed to keep our perception of the external world smooth. Reality is like a standing wave composed of many dimensions. Plato's analogy of the cave [28] provides a good metaphor if applied to a movie theater. Reality is observed on the screen before us, but at the quantum level, the film in the projector is composed of discontinuous frames of celluloid. The discontinuity is not observed because it occurs at the Planck time of 10^{-40} seconds. Neither does reality fall apart because of the high order of magnitude the Planck energy.

8.0 Conclusion

The oldest and most entrenched ideas are usually the most difficult to change. It took thousands of years to realize that the Earth is not the center of the universe. How long will it take to have general acceptance that brain is not tantamount to mind. We have learned well the value of empiricism in the face of errors of seemingly sound philosophical deduction. But history has shown that experiments will not be performed until preceded by a new philosophy to drive them.

A parting Gedankenexperimente: If it is assumed that consciousness is mediated by tensor noeons, the leading lightcone singularity is modulated by a phase of the twistor (or heterotic string) noeon field. This suggests that there is a fundamental set of field equations that describes consciousness in the cosmology of mind. Strings are produced as the stochastic wake of graviton propagation. Noetic field theory trivializes the hard problem and is the first comprehensive and testable theory to have practical applications for biosensors or sensory bypass transducers [19].

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References

- [1]Bohm, D., A suggested interpretation of the quantum theory in terms of "hidden variables", I & II. *Physical Review* 85 (1952), pp. 166-179 and 180-193.
- [2]Cramer, J.G., The transactional interpretation of quantum mechanics, *Reviews of Modern Physics* 58 (1986), pp. 647-687.
- [3]Chalmers, D., Facing the hard problem of consciousness, *J. of Consc. Studies* 2 (1995), pp. 200-219.
- [4]Amoroso, R.L. & Martin, B., Modeling the Heisenberg matrix: Quantum coherence & thought at the holoscape matrix and deeper complementarity, in J. King & K. H. Pribram Eds. *Scale in Conscious Experience* (Lawrence Earlbaum, Mahwah 1995).
- [5]Eccles, J. C., Evolution of complexity of the brain with the emergence of consciousness, in K.H. Pribram ed. *Rethinking Neural Networks: Quantum Fields and Biological Data* (Lawrence Earlbaum, Mahwah, 1993)
- [6]Pribram, K.H., *Brain & Perception* (Lawrence Earlbaum, New Jersey 1991).
- [7]Nanopoulos, D., *Rivista Del Nuovo Cimento* 17 (1994) pp. 1-53
- [8]Jibu, M. & Yasue, K., *Quantum Brain Dynamics and Consciousness* (Benjamins, Philadelphia, 1995).
- [9]Searle, J. , The problem of consciousness, in J. King & K. H. Pribrams eds. *Scale in Conscious Experience* (Lawrence Earlbaum, Mahwah 1995).
- [10]Amoroso, R.L., The production of Frohlich and Bose-Einstein coherent states in in vitro paracrystalline oligomers using phase control laser interferometry, *Bioelectrochemistry & Bioenergetics* 40 (1996) pp. 39-42.
- [11]Amoroso, R.L., 1997, Consciousness a radical definition: The hard problem made easy, *The Noetic Journal* 1:1 pp. 19-27.
- [12]Amoroso, R.L., *Noetic Field Theory: The Quantization of Mind*. Book in progress.
- [13]Amoroso, R.L. 1995. The extracellular containment of natural intelligence: A new direction for strong AI, *Informatica* 19 (1995) pp. 585-90.
- [14]Koruga, D., Information physics: In search of a scientific basis of consciousness. in D. Rakovic & D. Koruga eds., *Consciousness Scientific Challenge of the 21st Century*. (ECPD, Belgrade 1986).
- [15]Watterson, J.G., A role for water in cell structure, *Biochemical Journal* 248 (1987) pp. 615-617.
- [16]Frohlich, H., Long-range coherence and energy storage in biological systems. *Int. J. of Quantum Chem.* 2 (1968) pp. 641-649.
- [17]Feynman, R., Quantum mechanical computers, *Foundations of Physics* 6 (1986) pp. 507-531.
- [18]Amoroso, R.L., Engineering a conscious computer, T. Toffoli & M. Biafore eds., *Proc. Fourth Workshop on Physics & Computation(Physcomp96)* (1996) pp. 12-16.
- [19]Amoroso, R.L.,1997, The theoretical foundations for engineering a conscious quantum computer, in M. Gams and M. Paprzycki, Eds., *Mind <> Computer*, Amsterdam: IOS Press.
- [20]Jung, C.G. & Pauli, W., *The Interpretation of Nature and the Psyche* (Bollinger, 1955).
- [21]Ricciardi, L.M. & Umezawa, H.,. *Kybernetik* 4 (1967) pp. 44-48.

- [22]Stuart, C.I.J.M., Takahashi, Y. & Umezawa, H., *J. Theor. Biol.* 71 (1978) pp. 605-618.
- [23]Orlov, Y., The logical origins of quantum mechanics, *Ann. of Physics.* 234:2 (1994) pp. 245-259.
- [24]Amoroso, R.L., The psychogenic initiation of Alzheimer's disease. *Proc.WPA Conv.* (1992.).
- [25] Bell, J., *Speakable and Unspeakable in Quantum Mechanics*, (Cambridge Univ Press, Cambridge, 1987) p. 191.
- [26]Amoroso, R.L. The origin of cosmic microwave back -ground radiation in the intrinsic fluctuation of vacuum compactification cavity electrodynamics, Preprint.
- [27]Amoroso, R.L., Kafatos, M., & Ecmimovic, P. The origin of cosmological redshift in spin exchange between Planck scale vacuum compactification and nonzero rest mass photon anisotropy, in G. Hunter and S. Jeffers, eds., *Causality and Locality in Modern Physics* (Kluwer Academic, Dordrecht, 1998).
- [28] Plato, *Plato: The Republic*, Penguin, 1955, p. 316.
- [29] Weber, 1997
- [30] Jantsch, E. *The Self-Organizing Universe*, New York: Pergamon, 1984.
- [31] Penrose, R. *Shadows of the Mind*, Oxford, Oxford Univ. Press, 1994.
- [32]Wheeler, J.A. & Feynman, R.P. 1945. *Rev. of Modern Physics*, 17, 157.
- [33]Misner, C.W. 1974, *Cosmology and theology*, In W. Yourgrau & A.D. Breck, Eds. *Cosmology, History and Theology*, New York: Plenum.
- [34]Kafatos, M. and Nadeau, R. 1990, *The Conscious Universe*, New York: Springer-Verlag
- [35] Silk, J. *The Big Bang*, Berkeley:Univ. of California Press, 1990.
- [36] Everett, H. 1957, *Rev. Mod. Physics*, 29, 454.
- [37] Sperry, R. 1980, *Mind - brain interaction: Mentalism, yes; dualism, no*, *Neuroscience*, 5, pp. 195-206.
- [38] Goswami, A. 1993, *The Self Aware Universe*, New York: Putnam's Sons.
- [39] Popper, K. and Eccles, J.C. 1977, *The Self and its Brain: An argument for Interactionism*, Berlin: Springer Int.
- [40] Pribram, K.H. , 1999, *The primacy of conscious experience*, in R. Amoroso et al eds. *Science and The Primacy of Consciousness*, pp. 1-7, Orinda, Noetic Press.
- [41] DesCartes, R. 1960, *Discourse on Method and Meditations*, L.J. Lafleur trans. Indianapolis: Bobbs-Merrill.
- [42] Amoroso, R.L. 1999, *The Continuous State Universe*, Preprint.