

PHILOSOPHICAL TENSION: A STRUCTURAL- PHENOMENOLOGICAL APPROACH TO PHYSICALIZATION IN TERMS OF THE CONTINUOUS STATE CONSCIOUS UNIVERSE

RICHARD L. AMOROSO*

Academian Mihai Drăgănescu has pioneered a structural-phenomenological approach to the concept of 'Philosophical Tension'. In this paper Philosophical Tension is recast in terms of Noetic Field Theory: The Cosmology of Mind in a Continuous state Conscious Universe as a step toward physicalization of the concept as a fundamental principle of the cosmology of consciousness.

INTRODUCTION – OBSERVED REALITY AS AN ILLUSION

Before a detailed delineation of Philosophical Tension (PT)³⁰ can be entertained, a framework for the discussion must be properly developed. The dominant current thinking states that the mind is synonymous with the brain. This is a naturalistic derivation compatible with the standard Big Bang cosmological model for the temporal origin of the universe in an initial singularity. The issue of mind is a difficult one; and very little progress has been made in understanding it in terms of the standard models of science. For the sake of argument we make the grand assumption here: "That to comprehend mind or consciousness all of the naturalistic models of science – Quantum Theory, Cosmology, Electromagnetism, Gravitation, Computer Science, Biology and Psychology – are insufficient, must be set aside and extended into the ontological domain of a conscious universe."

It has been suggested that fundamental awareness is composed of base states^{5, 6,9,10} imbedded in spacetime that evanesce into the 'standing wave' our perceived reality. This concept was described anciently in Plato's 'analogy of the cave'. Plato said 'that reality is like a cave where people are chained up facing a wall viewing events by the light of a fire projected from behind never knowing the true nature of existence. If we were released to turn toward the light at first we would be blinded by its brightness still having our perception clouded.' More recently in 1941 Einstein said: "Time and space are modes by which we think and not conditions in which we exist." Einstein elaborated by saying that all of science

* Noetic Advanced Studies Institute – Physics Lab, 120 Village Square, MS 49 Orinda, CA 94563-2502 USA, ramoroso@wenet.net

is based on two measuring rods – that of extension and duration. The problem is that we are composed of and imbedded in the same material as these measuring rods. This is the origin of the virtual nature of our perceived phenomenological reality. Apprehended temporal reality is a summation or superposition – a complex hyperdimensional ‘standing wave’ of spacetime and consciousness base state components. This premise is taken as the starting point for our discourse. This requires new Physics and Cosmology defining time and how our perception is involved in the parameters of spacetime. In the CSCU model localization occurs in association with matter; an event is a spacetime phenomenology. The CSCU does not suggest that locality does not exist, but that it is virtual; it is not fundamental – it is a teleological action of the self-organized properties of mind!

The bold challenge to obviate all of physics is not to discard it; the falsification of Newtonian mechanics for example merely relegated it to its absolute domain. By ‘obviating reality’ science defines its classical limit and prepares to describe a new framework redefining the physical world and creating a new formalism through the additional experimental methods needed to study this ‘noumenon’ (the thing in itself deeper than the phenomenon) of the universe beyond the ‘illusion’ of classical observation as determined by Gallilean empiricism. In this paper fundamental parameters of the cosmology that our awareness is imbedded in are outlined. It appears that it will not be possible to comprehend the nature of space, time or mind until this task is adequately undertaken.

De Broglie in his 1964 book on wave mechanics says: “Analysis should always be made without introduction of any abstract mathematical formalism which would tend to mask the significance of the facts and thus adversely affect their interpretation.” This paper is such a philosophical analysis because: **1.** Teleology has traditionally been such a difficult concept for science to embrace that pause for thoughtful analysis seems mandatory, and **2.** If the analysis is deemed successful, the path lies open to develop the mathematical formalism for the new model.

PHILOSOPHY OF MIND

Awareness has been classified as a ‘hard problem’ by Chalmers²³; with the easy problems being the ones that are nearly impossible to research. Only recently has a framework for posing the question of the nature of mind reached sufficient maturity.^{5,6,7} Chalmers goes on asking: ‘what processes in the brain give rise to awareness?’; this creates the ‘hard problem’ because this manner of posing the question represents a category error for the philosophy of mind. Historically whenever there has been a hard problem in science, it has turned out to be because

the underlying principles have been poorly understood. Although it has been postulated that the mind/body is a naturally occurring form of conscious quantum computer, mind is more than brain or algorithm^{5,7} and it is impossible to formulate a correct or sufficient theory of awareness from the point of view of AI, computer science or neuro-biology alone. Mind, to be adequately described, must be represented by a complete cosmology with mankind imbedded in it.^{5,6,9,10,12}

The solution to the hard problem introduced by the framework of the Continuous State Conscious Universe (CSCU) insists on reintroducing concepts like vitalism and teleology that have been historically disdained by science. Mechanistic models of the universe have had no place for these ‘philosophical constructs’ considered non-physical even by their proponents. In the CSCU they become physicalized and thus subject to falsification by empirical methods.

Teleology is the philosophy based on the supposition that the universe has design and purpose beyond the mechanics of a Newtonian or Big Bang universe driven acausally by a Darwinian type of natural evolution. Evolution obviously exists, but is guided by a teleological quantum of action inherent in the supra-locality of the CSCU. In perennial philosophies, teleology represents a basic argument for the existence of God, that the order and self-organization of the natural world are not accidental. If mind is fundamental to existence, an ultimate designer or teleological principle exhibiting a quantum of action must exist.

Modern teleologists like Hans Driesch or Henri Bergson proposed a principle of *vitalism* – that the processes of life result from, *i.e.* a self-determining fundamental rule not explicable by currently observed physiochemical laws. Bergson proposed an *élan vital* or vital force¹⁹ as the spontaneous energy of the evolutionary process and defined the mind as pure energy, responsible for all organic evolution; and denying the claim of science to explain the universe on purely mechanical principles. In ensuing sections this *vis vitae* is shown to be physical and discussed in terms of the noetic field.^{9,10}

THE COSMOLOGY OF A CONTINUOUS STATE CONSCIOUS UNIVERSE (CSCU)

In “The mass of the World” Teilhard de Chardin wrote: “The flame has lit up the whole world from within...from the inmost core of the tiniest atom to the mighty sweep of the most universal laws of being.” The 12D supralocal domain of the CSCU is such a flame, it is a megaversal ball of light – an extension of the classical Geon described by Wheeler.⁵⁸ The CSCU is based on the extended electromagnetic theory (EM) where the photon has additional longitudinal degrees of freedom and mass anisotropy.¹⁴ This means that the observed Hubble redshift is not Doppler but arises from coupling of the photon to vacuum dynamics during

propagation. This is the Vigier theory of ‘tired-light’. Likewise the CMBR in CSCU did not originate in a primeval explosion but occurs continuously as a black body radiation in spacetime gravitational cavity dynamics.^{8,13} The details of which are beyond the scope of this paper and are discussed elsewhere.¹¹

The higher ‘extra’ dimensions were not compactified in an initial big bang singularity, but are continuously compactified and recompactified in a spin exchange process relative to our perceived reality in a process which creates the physical nature of the ‘illusionary’ arrow of time. Further properties of the CSCU are reminiscent of Kant’s antinomy of spacetime which he proposed as a solution to the argument between Newton and Leibniz as to whether the universe was open or closed. The observed Hubble radius Einstein 3-sphere of our perceptual reality is closed and finite temporally; but is open and infinite atemporally. Thus the CSCU is like an 11(12)-D hyper Klein bottle with an infinite number of Hubble type spheres nested within it each of which might have a variance of the laws of physics³⁹. This is consistent with extended Everett/Bohm modeling and the Wheeler/Feynman/Cramer/Chu transactional many worlds theories.^{26,33,54}

The 12 Dimensional CSCU is comprised of three 3(4) sets of Einstein/Minkowski/Reiman spacetime packages consisting of a complement of three temporal dimensions. 8(9) of the 12 dimensions are nonlocal or ‘hidden’ at any momentary slice in the standing wave of spacetime. Here spacetime does not reduce to Planck scale compactified dimensions as in the current reductionist standard model. In CSCU cosmology our Minkowski/Riemann space is a subspace imbedded in the higher complete twelve dimensional space. The continuous harmonic translation of the symmetry of these canceled (boundary of a boundary equals zero) boundary conditions (relative to our perception) allows nonlocal contact of aspects of the Minkowski/Riemann 3(4)-D hyperstructure within the ‘perfect’ 11(12)-D hyperstructure to be ‘invisible’ to our phenomenology (because boundary of boundary equals zero) and to contain and sustain it.

Time is considered a structurally incomplete aspect of our perceptual phenomenological reality. While geometrodynamics is sufficient to describe coordinate free particle paths in terms of the Bianchi identity and parallel transport around a closed curve; as is well known general relativity does not provide a complete description of gravity. The additional 3(4)-D packages are necessitated by symmetry conservation, the introduction of sub-millimeter gravity and the teleology of the cosmology of consciousness.

A COMPREHENSIVE THEORY OF MIND

Noetic field theory^{5,6,9,10} suggests that the mind $|\psi_M\rangle$ is a state with quantifiable superimposed properties. This phenomenology/noumenon of consciousness is composed

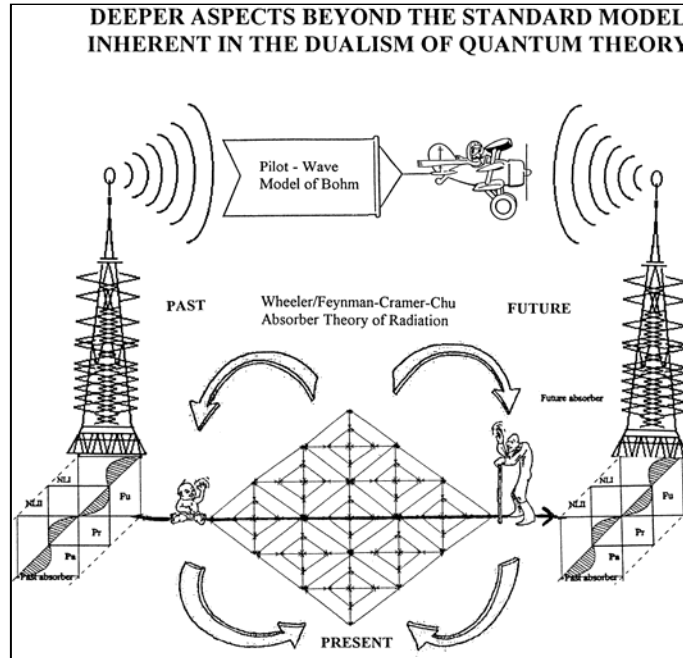


Fig. 1. – The quantum field of information may be compared to a ship on automatic pilot guided by radio waves from the future and the past. In addition to the local/nonlocal standard model of quantum theory, a deeper nonlocal/unitary ontological aspect suggests that a quantum dualism is required for a complete quantum theory. The ontological domain is described by a combination of the Everett/Bohm Pilot wave non-collapse version and the Wheeler/Feynman Cramer/Chu transactional-absorber theory of radiation. In this model the present collapses from a higher dimensional hyperstructure continuously recreated out of the energy of the future-past. The pilot-wave quantum potential has a relationship to causality. Gravitational tidal effects regulate aspects of quantum state evolution U and state vector reduction R in both collapse and non-collapse domains of the quantum dualism. This cosmological spacetime structure is an important aspect of the conscious universe; and is required because the standard model of quantum theory is not sufficient to describe the mind. It is through this deeper structure that the Noetic field enters the body and there are enough degrees of freedom for reason to operate. In the figure much of the hyperstructure is suppressed to give a 2D view. The three 3(4)-D spacetime packages are spread out from left to right across the figure. The central unit labeled the present in terms of our ‘reality’ consists of a superposition of all three in a dynamic hyperdimensional ‘standing wave’.

of three integrated base states: elemental intelligence $|\psi_e\rangle$, cosmological ordering principle $|\psi_c\rangle$, and the brain defined as an apparatus $|B|\psi_M\rangle$. The base states of mind interact at the quantum and nonlocal levels as described conceptually in equation 1 or as the summation represented in

$$|\psi_M\rangle = |\psi_e\rangle + |\psi_c\rangle + |B|\psi_b\rangle \quad (1)$$

$$|\psi_M\rangle = \sum_i^{Z^{\alpha} \bar{Z}^{\alpha}} N_i |\psi_i\rangle \quad (2)$$

equation 2, where N is the superimposed base states summed over a prespace twistor singularity (Nonlinear aspects appear on expansion).

The domain for sensory phenomena, mentation, and all noumenal conscious processing is called the ‘psychosphere’. The structure of the psychosphere is the complex bound containing the totality of individual consciousness and the extent of its influence. This means both locally in the brain and body fields, and nonlocally in prespace. The psychosphere includes a higher dimensional hypersphere or tesseract for nonlocal interactions. This is the domain from where coherent Bose psychons condense. Once it is realized that there is more to mind than brain or algorithm a comprehensive theory of consciousness can be formulated in terms of a continuous state conscious universe (CSCU). The three base states of mind are: 1. Classical and quantum brain dynamics, 2. A nonlocal elemental intelligence that serves as an atemporal boundary condition of individuality and 3. The interaction of the nonlocal noetic unified field that integrates the duality.^{5,6,9,10,12} Recent studies of extended electromagnetic theory (EEM) claim that this work could lead to the ‘completion’ of quantum theory and that it will be a deeper understanding of small scale gravitational effects that will be instrumental in this breakthrough. The three base states are not separable in the ‘standing wave’ of reality space. It can be envisioned how the three base states cycle continuously into our spacetime from the twelve dimensional unitary domain that our reality is a subspace of.

The CSCU is considered scale invariant³⁹; the teleology of which has self-organized the embedding of our consciousness into a central perceptual position of the Hubble sphere. A Holophote (lighthouse) is used to illustrate the *elan Vital*¹⁹ or life-force and how it enters spacetime and every atom of our being to self-organize life and the ‘light of our mind’. Using the metaphor of the holophote, the noetic ‘source’ enters spacetime from the unitary domain through parallel transport in the spinor structure²¹ of the ‘lens’ and reflectors in the 12D hyperstructure. The rotation of the reflectors is symbolic of the dipole oscillation of the oscillating EM field. Interestingly the Frohlich frequencies in the brain have been found to be the same as those in the CMBR. Supralocality is outside the circle of the arrows; and the appearance is inward towards the center keeping with the CSCU supposition that points in our reality are in a subspace of supralocality.

STEPS TOWARD PHYSICALIZATION OF PHILOSOPHICAL TENSION

Now that the model of consciousness has been conceptually illustrated, we are able to show how the ‘flux tube’ of time is generated into our level of ‘virtual phenomenological’ reality. We have supposed that our reality is comprised of a standing wave of hyperdimensional spinor dynamics acting in concert in three Minkowski/Riemann 3(4)-D spacetime packages that together form the 12D supralocality of the complete CSCU. Because by parallel transport all the boundary

conditions sum to zero at each present moment according to the Wheeler-Feynman/Cramer-Chu absorber/transactional model, we are comprised of the ‘matter’ projected from this fundamental space, and our consciousness is likewise coupled to and imbedded in this same material by a “philosophical tension”³⁰ caused by the flow of awareness in conjunction with the thermodynamic evolution of matter and the teleology of the noetic field that mediates it. This structure is depicted in Fig. 2. Two 3(4)-D packages are suppressed.

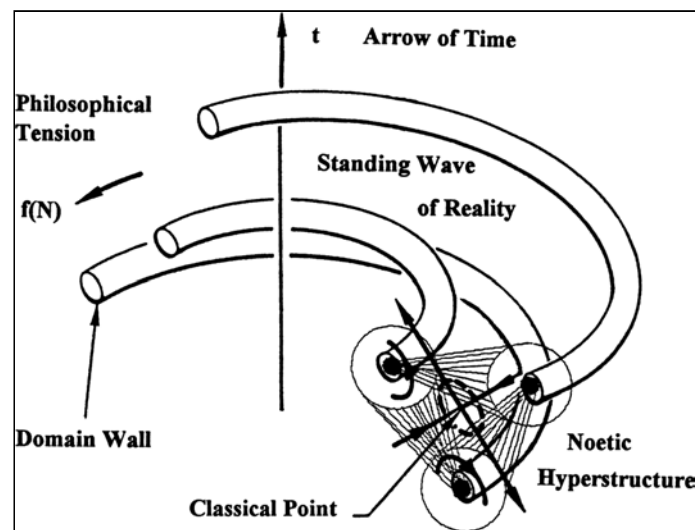


Fig. 2. – The physical origin of Philosophical Tension (PT). The multidimensional holographic hyperstructure is depicted showing the origin of the arrow of time and how the vital Noetic Field projects reality from virtual Planck scale singularities in the continuous dynamics of spacetime geometry. Note that time does not originate in a Big Bang singularity, but arises naturally and continuously from the harmonic dynamics of spacetime hyperstructure.

PT has four basic components: **1.** Light pressure of the Noetic field. This is depicted by the force $f(N)$ and is involved in the temporal binding of human consciousness to the standing wave of our ‘virtual reality’. **2.** Electrogravitational effects of intensionality. The formalism for this dynamic is being developed by the ontological extension of quantum theory and will describe noncomputable geodesic deviation, a mental action causally mediated by extended gravitational theory. **3.** Phase relationships of the flow of the temporal geometry of spacetime as they relate to the domain wall boundary conditions of the limits of the ‘reality barrier’. **4.** Self-organized scale invariant dynamics of the ‘event phenomenology’ that keeps the structure of reality in homeostasis.

NON ZERO RESTMASS PHOTON ANISOTROPY & PHOTON STRUCTURE

The hidden gauge invariance for the photon occurs as an anisotropic restmass of $\sim 10^{-65}g$ that periodically couples to the vacuum zero point fluctuation.⁵³ Although there has been discussion of non zero photon restmass for many years it has typically been ignored because as stated above it was considered in violation of Gauge theory and also to be ad hoc. Recently it has been shown¹⁴ that the photon has mass in terms of considerations from the weak field limit and quantum gravity, both of which can be derived from first principles.

According to Einstein rest energy or mass is the result of external or internal structural motion of a particle. Unlike Fermi matter that maintains a well developed internal kinetic structure through atomic movements whether at rest or in motion, photons cannot be brought to rest without immediate annihilation and dissipation of their energy because its symmetry cannot be maintained at rest. For propagating photons the internal transformation undergoes anisotropic oscillation. The restmass fluctuates harmonically from zero to > 0 as a consequence of the complementarity of its wave particle duality; which signifies according to $E = MC^2$ a change in energy from inward reflection during the instance of mass and interaction with the vacuum to outward displacement through space during zero mass moment. In addition to the wave-particle duality photons also have complementarity between locality and nonlocality in there propagation. They exist both in spacetime and independent of it; therefore the timelessness of the photon is maintained during the masslessness of its wave propagation at the constant speed c , allowing the temporal particle moment coupling to the vacuum zero point oscillation to not interfere. Fluctuation in mass-energy is not mysterious as it is generally known that inertial and gravitational masses are an aspect of this movement.²⁰

“In other words, the transformation of “matter” into “energy” is just a change from one form of movement (inwardly, reflecting to-and-fro) into another form (*e.g.*, outward displacement through space.) The possibility for objects of zero rest mass exists provided that they are moving at light speed. For if rest mass is “inner” movement, taking place even when an object is visibly at rest, it follows that something without “rest mass” has no such inner movement, and that *all* its movement is outward, in the sense that it is involved in displacement through space. Light does not have the possibility of being “at rest” because it does not possess any such inner movements.”²⁰

TIDAL EFFECT OF NEWTONIAN GRAVITY

Based on the critical assumption of non zero restmass photon anisotropy, it becomes straight forward (conceptually) to apply the tidal effects of Newtonian gravity to produce a superposition of two spatially separated coordinate systems

without collapse of the state vector. This means that there is a dual aspect to state vector reduction – one that applies classically in terms of the standard model, and another in terms of Everett/Bohm non collapse models by the action of the (B3) longitudinal field. The topology changes with mass. The tidal curvature change allows two spatially separated geodesics to converge into one spacetime and under certain phase conditions to superpose without collapse; which is a nonlocal effect of vacuum zero point fluctuations.

The evolution of the quantum state described by the Schrodinger wave equation and its reduction is considered to be the core of quantum theory (QT). It is suggested that the Copenhagen interpretation of QT provides an incomplete description of the physical world; and that the application of non zero restmass photon anisotropy leads directly to a dual description of state vector reduction in terms of both the standard model and non collapse versions of QT which are found not to be in violation of hidden gauge invariance in Gauge Theories as typically considered. In the Poincaré group the simplest realization is the geometrical interpretation of the free particle trajectory as a world line. It is suggested that the application of non zero restmass photon anisotropy leads directly to a geodesic deviation in apparent violation of the standard Copenhagen interpretation, but not for ontological noncollapse versions. This requires a description of strong and weak causal factors that relate to separated systems that are correlated and uncorrelated and suggests that there is another group of transformations beyond the Poincaré group needed to incorporate the higher dimensionality beyond the Minkowski/Reimannian metric. This has exciting implications for the completion of QT that will lead to a deeper understanding of the requirements for developing Planck scale Geometrodynamics.

COUPLING OF THE NOETIC FIELD

It is generally known that the standard models of quantum theory and cosmology do not include consciousness or give an adequate description of the nature of time, suggesting that the elucidation of these ideas must come from extended theoretical insights. Human perception indicates a flow of time – from past, to present to future in accordance with the second law of thermodynamics by appropriate changes in entropy of the system observed as it undergoes evolution. Thus temporal order seems related to entropic order; and these dynamics constitute how we perceive ‘action’ or translation in this particular dimension, the dimension of time.

In terms of the vertical or up/down dimension, ‘action’ or direction is determined in our awareness by the nature of the gravitational force. In the absence of gravitation one loses all ‘sense’ of this direction or dimension. Can this relationship of the force of gravitation to direction be equated to a similar action for

the perception of time? Is there a force or inherent ‘action’ in the cosmology of mind that couples awareness to the entropic activity observed in the perceived external reality that we equate with the flow of time? Do we ‘ingest’ time parameters through an ‘axis mundi’ into our psyche during transit through the cosmological sea as a whale ingests plankton while swimming in the ocean? If it is true, that the entire perception of time is a creation of a normative human ontology through an innate or habituated ‘philosophic tension’³⁰ that drives the orientation of our mind, a decoupling from the flux of this noetic field would allow a reorientation of our ‘psychosphere’^{6,9,10} and the possibility to re-tune the perception of our psyche to additional or alternative parameters of entropic ‘action’, time or atemporality. This is a key point in understanding the nature of time and will be described in more detail.

THE NOETIC GROUP OF TRANSFORMATIONS AND PHILOSOPHICAL TENSION

This paper postulates additional transformations here called the ‘noetic group’ with an another causal relationship distinct from the strong causality of the standard model allowing spatially separated systems to exchange information without orthodox collapse of the wave function. This occurs through a nonlocal gravitational coupling of (B3) field effects which produce a geodesic deviation mediated by intentionality. The dynamics of particles and fields are described by various groups of transformations; the Galilean group describes Newtonian mechanics, and the Lorentz transformations describe modern theory. This action is outside the current limits described by the Galilean, Lorentz and Poincaré groups of transformations. This additional noetic transformation of a normally null path is allowed in extended electromagnetic theory by nonzero restmass photon anisotropy¹⁴ without violating gauge theory.¹⁵ The correspondences in physical theory, for example the reduction of quantum mechanics to classical mechanics or the recovery of thermodynamics from its successor statistical mechanics will also apply in relation to the mind and the nature of time. A correspondence between a complementary stable and unstable causality is shown to reduce to the null path of the standard model.

This new group of noetic transformations is a complementarity of NL-I & NL-II dynamics, which is an element missing in the typical EPR experiments done with classical – either temporal or spatial – measuring devices because of the action of the uncertainty principle in the reality of our subspace. The mind is not a classical device, but a whole cosmology encompassing both NL dynamics simultaneously: the standard classical either or interactions acting in brain phenomenology and an ontological non-collapse complement acting in the noetic mind. In CSCU cosmology an additional causal principle is involved in the noetic group of transformations. Its action occurs through the nonlocal teleology and action of human intentionality.¹⁰ These CSCU

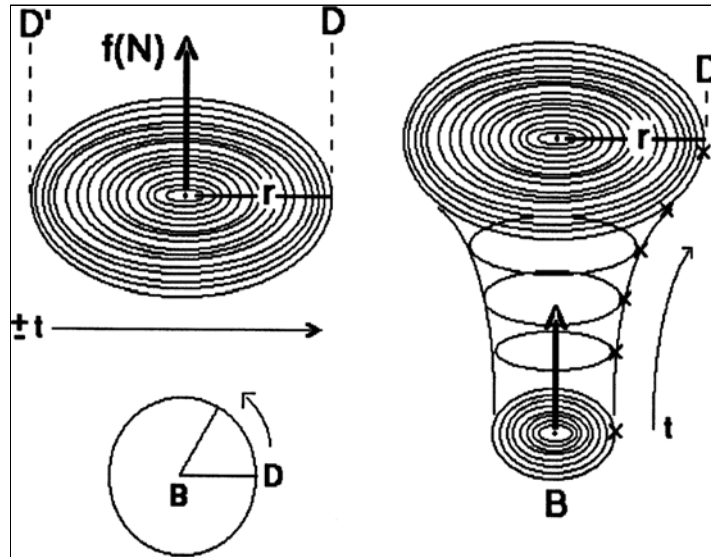


Fig. 3. – A conceptualization of the complementary structure of the wave function of an entity. $F(N)$ is the noetic quantum of action supplying the ‘philosophical tension’³⁰ that couples consciousness to the ‘physicality’ the entity is imbedded in. B is the point of entry or birth of the conscious entity into local spacetime; and D is death or exit from the domain. R is the psychosphere radius of the entity symbolizing the coherence length and content of the mind. In the smaller reference circle it can be seen that r evolves with age from B to D ; although the radial velocity is equal, the maturer entity maps out more area in the same time. This explains why time perception seems longer for a youth and accelerates for an adult. In an eternal sense the entity would ‘oscillate’ around some average position of its wave function. An entity may acquire an infinite amount of information; death does not come with a limit of information but because stressors have a tendency to translate the coupling loci until the associated ‘de Broglie wave of consciousness’ reaches the limit of the domain wall of the ‘wave function’ and the ‘spirit’ tunnels out of the Minkowski domain of our reality.

transformations act in an ‘event-like’ manner when the correspondence is relative to locality and are energyless interactions as described by extended electromagnetic theory (E-EM) and gravitational interactions¹⁰ No particle mediates the energyless interactions which exchange information by Bose-Einstein superposition.

The action of intentionality modulates the spin alignment angular momentum of the noetic field. This constitutes a gravitational action on infinitesimally separated geodesics by the longitudinal action of the (B3) field that does not collapse the wave function. This is an example of the non-computable actions of the mind/body interface where intentionality acts as a phase regulator on the holoscape manifold of Pribram’s dendritic microprocess.^{10,12} This action is also the same as that described by the psychon action on the dendron by Eccles and as such can be used to eventually develop a formalism to physicalize the Philosophical Tension of Drăgănescu.³⁰

SUMMARY AND FINAL CONSIDERATIONS

We have seen that the application of non zero photon restmass provides a simple method to describe a quantum dualism that includes both collapse and non collapse models of quantum state reduction. This has broad implications for completing QT, setting the stage for a deeper understanding of Geometrodynamics at the Planck scale and an understanding of noncomputability as it might relate to advances in quantum computing and applications to understanding the nature of consciousness and time.

Both general relativity and quantum theory are known to be incomplete. Twistor and superstring theories are currently considered as the most promising candidates for their nonlocal integration; 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 is not immaterial but Bose or photon based in Noetic theory. The spin exchange model of quantum gravity¹⁴ incorporating the expanded Wheeler-Feynman absorber theory of radiation^{24,26} putatively describes gravitons as superposed moments of confined nonlocal photons mediated by unitary 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 as in the (B3) field 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.

Noetic theory gives a full explanation of the origin of time, a comprehensive description of consciousness. Philosophical Tension and experimental tests for isolating the noetic field have been prepared. **1.** Existence is in terms of a

continuous state conscious universe (No Big Bang) **2.** This means that there is a nonlocal teleological principle that has causal action on both cosmology and living systems. **3.** This further entails a *vis vitae* or *elan vital* – vital force that in terms of noetic theory is PHYSICAL and therefore falsifiable. **4.** This vital force is the noetic field, a quantum of action which is associated with the unified field and chi, prana, etc. in common nomenclature. **5.** Because the noetic field is associated with the unified field it is also coupled to small scale gravitation which introduces the causality of consciousness both in terms of the universal teleological principle, and in terms of Man's consciousness and agency. **6.** This model besides new cosmology requires extended quantum, electromagnetic and gravitational theory. The foundation for most of which is already known. **7.** All of physics is based on measurement and duration using yardsticks composed of the same material that we are made of and therefore steeped in our consciousness. Subjective and phenomenological Reality is therefore an illusion (as we are coupled to it in our ordinary wakeful state). Whether this seems hard to swallow or not at present, this is the most fundamental requirement to embrace if we are to get bet beyond or 'Godelize' sufficiently to ever understand both the nature of time and the nature of consciousness. **8.** Therefore we assume that ALL of physics is also falsified up to this 'classical' limit (same as Newton was falsified). **9.** Therefore time is an illusion also. All the 5 currently described arrows of time are not psychological *per se* but rather functions of the consciousness or the teleology of the conscious universe; but because in the continuous state conscious universe of noetic field theory consciousness is physical, all the parameters of the arrows of time are likewise physical. **10.** Opposed to reductionism of the standard models, the compactified dimensions were not laid down in the big bang to exist at a Planck scale 'below' us. In contrast we are a subspace of a higher 11(12)-D universe in continuous transformation (continuous state). This is very important because this sets the foundation for how the physical arrows of time and how the noetic *elan vital* is 'projected' into our subspace 3(4)-D domain. This is what is to be tested in the experimental protocol: the entry point of the noetic field and the structure it gives to spacetime and consciousness.

REFERENCES

1. Abbot, E.A., 1983, *Flatland*, Harper Perennial, New York.
2. Abolhasani M. and Golshani M., 1999, Born's Principle, action-reaction problem and arrow of time, *Found Phys. Let.*, 12:3, 299-306.
3. Amoroso R.L., 1995, The extracellular containment of natural intelligence, *Informatica*, **19**, 585–590.
4. Amoroso R.L., 1996, The production of Frohlich and Bose-Einstein coherent states in in vitro paracrystalline oligomers using laser phase control interferometry, *Bioelectrochemistry and Bioenergetics*, **40**, 39–42.

5. Amoroso R.L., 1997, A Brief Introduction to Noetic Field Theory: The Quantization of Mind, *Brain and Consciousness*, Rakic, Kostopoulos, Rakovic, and Koruga (eds), ECPD: Belgrade 297–302.
6. Amoroso R.L., 1997, Consciousness, a radical definition, *Noetic Journal*, Vol. 1, **1**, 19–27.
7. Amoroso R.L., 1997, Engineering a conscious quantum computer, *Mind Versus Computer*, Gams et al. (eds.), IOS Press.
8. Amoroso R.L., 1997, *The Origin of Cosmic Microwave Background Radiation in the Intrinsic Fluctuation of Cavity Quantum Electrodynamics*, Preprint.
9. Amoroso R.L., 1999, An Introduction to Noetic Field Theory: The Quantization of Mind, *Noetic Journal*, Vol. 2, **1**, 28–37.
10. Amoroso R.L., 1999, The Physical Parameters of Intensionality, *Address at 2nd GMU workshop on Fundamental Principles of Philosophy*, to be published.
11. Amoroso R.L., 2001, The Continuous State Universe, *Vigier III Symposium*, UC Berkeley, Dordrecht: Kluwer, in press.
12. Amoroso R.L. and Martin B., 1995, Modeling the Heisenberg matrix: Quantum coherence and thought at the holoscape manifold and deeper complementarity, *Scale in Conscious Experience*, King and Pribram (eds), Mahwah: Lawrence Erlbaum.
13. Amoroso R.L. and Vigier J.-P., 2000, *The Origin of the Cosmic Microwave Background*, preprint
14. Amoroso R.L., Kafatos M., and Ecimovic P., 1998, The origin of cosmological redshift in spin exchange vacuum compactification and nonzero rest mass photon anisotropy, *Causality and Locality in Modern Physics*, Hunter and Jeffers (eds.), Kluwer Academic, Dordrecht.
15. Atchison I. and Hey A., 1982, *Guage Theories in Particle Physics*, Adam Hilger, Bristol.
16. Barbour J.B., 1994, The emergence of time and its arrow from timelessness, *Physical Origins of Time Asymmetry*, Halliwell, Perez-Mercader, and Zurek (eds.), Cambridge Univ Press.
17. Barut A.O., 1980, *Electrodynamics and Classical Theory of Fields and Particles*, Dover Publications, New York.
18. Ben-Dov Y., 1990, No-collapse versions of quantum mechanics, *Quantum Theory Without Reduction*, Cini and Levy-Leblond (eds), Adam Hilger, New York.
19. Bergson H., 1911, *Creative Evolution*.
20. Bohm D., 1965, *The Special Theory of Relativity*, New York, W.A. Benjamin.
21. Cartan E., 1966, *The Theory of Spinors*, New York, Dover Publications.
22. Cartan E., 1979, *Albert Einstein Letters on Absolute Parallelism 1929–1932*, Debever (ed.), Princeton Univ. Press.
23. Chalmers D., 1996, *The Conscious Mind*, Oxford University Press.
24. Chu S.Y., 1993, *Physical Review Letters*, **71**, 2847.
25. Costa de Beauregard O., 1999, Lawlike reversibility, factlike irreversibility, The symmetry of time in physics, *Int. Journal of Theoretical Physics*, Vol. 38, **1**.
26. Cramer J.G., 1986, Transactional interpretation of quantum mechanics, *Rev. of Modern Physics*, Vol. 58, **3**, 647–687.
27. Davies P., 1974, *Physics of Time Asymmetry*, Univ of California Press, Berkeley.
28. Davies P., 1995, *About Time*, Simon and Schuster, New York.
29. Deutsch D., 1997, *The Fabric of Reality*, Penguin Books, New York.
30. Draganescu M., 1991, *The Philosophical tension and the cosmic feeling*, The Romanian Academy, Bucharest.
31. Dubrov A.N., 1979, The interaction of biological objects with time and space, *Psychoenergetic Systems: The Interaction of Consciousness, Energy and Matter*, Krippner and Carlson (eds.), Gordon & Breach, New York, 115–121.
32. Einstein A., 1950, *The Meaning of Relativity*, Princeton Univ. Press.

33. Everett H., 1957, *Rev. Mod. Phys.*, **29**, 454.
34. Gold T., 1967, *The Nature of Time*, Cornell University Press, Ithaca.
35. Goswami A., 1995, *The Self Aware Universe*, Putnam's Sons, New York.
36. Griffin D.R. (ed.), 1986, *Physics and the Ultimate Significance of Time*, State Univ of NY Press, Albany.
37. Halpern P., 1990, *Time Journeys*, McGraw-Hill, New York.
38. Kafatos M. and Nadeau R., 1990, *The Conscious Universe*, Springer-Verlag, New York.
39. Kafatos M., Roy S., and Amoroso R., 2000, Scaling in cosmology and the arrow of time, *Studies on the Structure of Time: From Physics to Psych(patho)logy*, Buccheri and Saniga (eds.), Kluwer, Dordrecht.
40. Margenau H., 1950, *The Nature of Physical Reality*, McGraw-Hill, New York.
41. Miller W.A., 1985, The geometrodynamical content of the Regge equations as illuminated by the boundary of a boundary principle, *Between Quantum and Cosmos*, Zurek, A. van der Merwe, and Miller (eds.), Princeton Univ. Press.
42. Misner C.W., Thorne K.S., and Wheeler J.A., 1973, *Gravitation*, Freeman W.H., San Francisco.
43. Morris R., 1984, *Time's Arrows*, Simon and Schuster, New York.
44. Penrose R., 1985, Objective state-vector reduction, *Twistor Newsletter*, **19**, 1–4.
45. Penrose R., 1996, On gravity's role in quantum state reduction. *Gen. Rel. and Grav.* 28, 5, 581–600.
46. Penrose R. and Isham C.J. (eds.), 1986, *Quantum Concepts in Space and Time*, Oxford Univ. Press.
47. Prigogine I., 1996, *The End of Certainty*, The Free Press, New York.
48. Savitt S.F. (ed), 1995, *Times Arrow Today*, Cambridge Univ. Press.
49. Shimony A., 1985, Events and processes in the quantum world, Penrose and Isham (eds.), *Quantum Concepts in Space and Time*, Oxford Univ. Press.
50. Sklar L., 1985, *Philosophy and Spacetime Physics*, University of California Press, Berkeley.
51. Sklar L., 1995, Time in experience and in theoretical description of the world, *Time's Arrow Today*, Savitt (ed.), Cambridge Univ. Press, 217–229.
52. Toller M., *Variance of the quantum coordinates of an event*, preprint.
53. Vigier J.P., 1992, Status of the Einstein, de Broglie theory of light, *Proceedings of the ISQM workshop on quantum mechanics*, Tokyo.
54. Wheeler J.A. and Feynman R.P., 1945, *Rev. of Modern Physics*, **17**, 157.
55. Wolf F.A., 1998, Timing in Conscious Experience, *J. of Scientific Exploration*, Vol. 12, **4**, 511–542.
56. Wooters W.K., 1994, Is time asymmetry logically prior to quantum mechanics?, *Physical Origins of Time Asymmetry*, Halliwell, Perez-Mercader and Zurek (eds.), Cambridge Univ Press.
57. Ouspensky, P.D., 1970, *Tertium Organum*, Vintage Books, New York.
58. Wheeler J.A., 1955, Geons, *Physical Review*, 97:2, pp. 511–536.