

Physical Parameters of Mind-Body Interaction: Breaking the 1st Person 3rd Person Barrier

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Abstract. This physics note entails a summary of an extended form of Eccles-Cartesian Interactive Dualism mind-body-multiverse paradigm called Noetic Field Theory: The Quantization of Mind (NFT), distinguished as a paradigm because it is comprehensive and empirically testable. NFT posits not only that the brain is not the seat of awareness but also that neither classical nor quantum mechanics are sufficient to describe mind as the required regime entails the new physics associated with Unified Field, U_F Mechanics. This means that the brain is merely a transducer (form of quantum computer) mediating mentation, sensory data and metabolic function. The so-called ‘Hard Problem’ of cognitive science arises as a category error in philosophy of mind, i.e. an incorrect posit of the question “what processes in the brain give rise to awareness” which instead should simply be queried “what processes give rise to awareness”. In the history of science whenever a hard problem has arisen it has later been shown that the underlying principles had not been understood. NFT posits these underlying principles in a comprehensive empirically testable manner solving the ancient mind-body problem in a manner that enables breaking the 1st person 3rd person barrier able to explain Psi-phenomena. The premise is that the mind-body is a naturally occurring form of ‘conscious quantum computer’ (QC), not that the QC is conscious but that it is modelled after those principles. Such QC technologies could lead to routine telepathic effect devices.

1. Introduction

While most scientists will admit there is troubling indicia for an artefact called Psi-phenomena, it has been generally ignored because there has never been a sufficient theory of any merit; and the so-called experimental evidence generally remains within the realm of perceived experimental error. Further troubles occur with myriad challenges of repeatability. What is required is a proper theory that breaks down the 1st person 3rd person barrier. This entails solving the mind-body problem and developing a physical basis for and categorizing of qualia - an essential ingredient for accessing ‘other minds’.

Few believe this theory should be classical. If one aims a telescope or microscope at a subjects head a detector gives no mental information. With quantum theory mental information is still not available; and even the founders of quantum theory stated it was incapable of describing biological systems. Cognitive theorists believe because of localized brain activation with f-NMR they can crack neural codes [13,14]. Recent simplistic success has spurred them on. A remote connection at the quantum level has been found in the theory of nonlocality and such entanglement is now demonstrated up to ~ 30 km in EPR experiments; but it is not known how to transfer data. This is like being in a movie theater with the projector only shining a single photon through the film. The dot on the screen gives no information other

than perhaps color which one would say correlates with the state of polarization in the EPR experiment. This can be said to be a limiting factor imposed by the uncertainty problem as it relates to the Copenhagen Interpretation - reason enough to suggest that quantum theory is insufficient and incomplete.

The polarization of EPR photons usually occurs by a process called 'parametric down conversion' in a special crystal or an atom like mercury that emits a pair of photons simultaneously (this entangles them) when excited. But no one yet knows how to perform 'parametric up conversion' (to manually entangle) - We can open a channel but not send data through. Thus we say that both classical and the standard Copenhagen interpretation of quantum theory provide an insufficient framework to develop a comprehensive theory of mind and associated phenomena like the psi artifact. Our postulate is that the required model occurs within the higher dimensional (HD) String Theoretic regime of unified field mechanics. This required new physics has remained elusive and many scientists profess that a Cartesian dualism is nonphysical and would violate the laws of thermodynamics and conservation of energy. When Descartes claimed mind was non-physical (to distinguish it from ordinary matter) 400 years ago it is logical to assume he meant the "spiritual" connotation of meaning of the term; but in modern times the parlance of immaterial has stuck fuelling the discredit of dualism as archaic. Of course it doesn't help that Descartes believed mind came from the pineal gland.

Neither of these criticisms hold. Mind has now been defined in physical terms [1,5] and thermodynamics is not violated in a neo-Bohmian 'ontological' form of quantum theory where the usual phenomenological transfer of a field's energy requires an exchange particle such as the photon in electromagnetism. In an ontological theory, which U_F mechanics provides, information can be transferred by what is called 'topological switching' - like the energyless switching of the vertices of a Necker Cube when stared at. In this note we delineate a summary of parameters relative to an empirically testable comprehensive model of Cartesian Interactive Dualism that can operationally describe Psi-Phenomena. Just as phenomena of quantum mechanics lay beyond tools of classical Newtonian mechanics we must now enter a regime of unified field, U_F mechanics. In this note we present a battery of nine empirical protocols for manipulating long-range coherence in complex self-organized living systems (SOLS) in a manner surmounting quantum uncertainty (space quantization) and thereby allowing experimental access for the first time to the underlying coherent biophysical principles of teleological action driving self-organization [1].

2. Aspects of Anthropic Multiverse Cosmology

If mind is not tantamount to brain an anthropic cosmology is required to introduce a teleological system or 'life principle'. The new Noetic cosmology is based on an extended form of Einstein's original 'static universe' model called the Holographic Anthropic Multiverse (HAM) [1] which entails a unique 12D form of M-Theory with an inherent dual Calabi-Yau mirror symmetry that makes correspondence to extended higher dimensional (HD) forms of Cramer's Transactional Interpretation [2] and the de Broglie-Bohm Causal Interpretation [3,4] of quantum theory (QT). The symmetry of this modelling is important because it provides the basis for a gating mechanism mediating the U_F into each spacetime point and atom embedded in it.

In the standard Copenhagen Interpretation of QT an event, $|\Psi\rangle$ emerges only as a resultant condition of Heisenberg Potentia, $|\psi_+\rangle, |\psi_-\rangle$ and underlying objective reality is considered to be illusory to the Minkowski observer. Observation beyond 4D is blocked by experimental definition in the Copenhagen Interpretation by the uncertainty principle. In the 12D symmetry of HAM cosmology it is possible to surmount the uncertainty principle and manipulate the U_F by utilizing an rf-modulated resonance hierarchy.

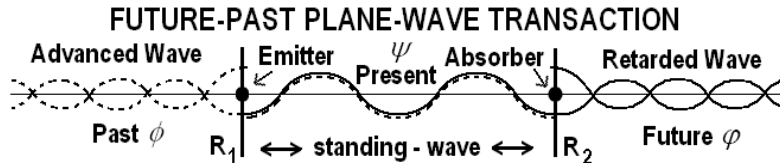


Figure 1. Conceptualized structure of a Cramer transaction (present state or event) where the present (simplistically) is a standing-wave of future-past elements. A point is not a singularity (although still discrete) in the classical sense, but has a complex structure like a mini-wormhole where R_1 & R_2 represent opposite ends of its diameter [2].

A key element of noetic cosmology rests on the parameters of a triune structure called the ‘least cosmological unit’ (LCU) with some similarity to the unit cell building up the structure of a crystal. A solitary least unit like that of an isolated quark does not exist in nature. A conceptual drawing is shown in Fig. 2a where the central parallel lines are the Witten string vertex with properties of a complex Riemann sphere able to continuously rotate from zero to infinity. In Euclidean geometry the vertex would be a fixed point unable to undergo rotation from local spacetime to HD space. The field lines represent the ‘super quantum potential’ of the unified field, U_F that guides the evolution of spacetime. Figure 2b illustrates the conceptual structure of the LCU exciplex gating mechanism. In traditional quantum spacetime the zero-point field (ZPF) is a stochastic foam of virtual particles governed by the uncertainty principle. The spacetime exciplex of HAM cosmology remains excited above the ZPF producing a holophote or ‘light house’ effect that pumps the U_F into local spacetime.

LEAST UNIT EXCIPLEX COMPOSITE

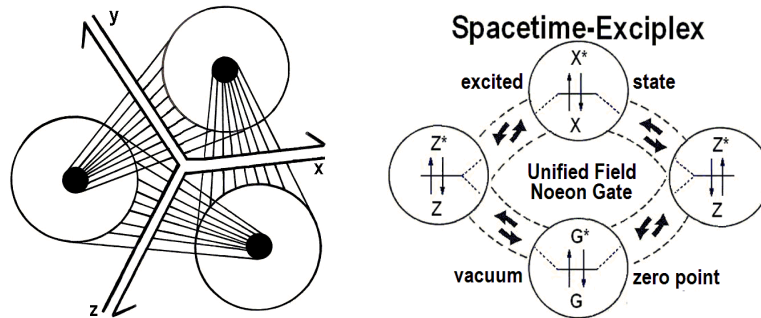


Figure 2. a) Least cosmological unit (LCU) tiling the spacetime backcloth of HAM cosmology. b) The spacetime exciplex complex is comprised of an array of LCUs acting as a gating mechanism for entry of the unified field, U_F into Minkowski 4-space and all matter as a self-organized life principle.

3. Redefining Biological Systems

The current model of biological systems is based on what is called ‘biological mechanism’ which states: ‘The laws of Chemistry and Physics are sufficient to describe all life, no additional life principle is required’. HAM cosmology reintroduces a life principle or *elan vital* based on the U_F [5,6]. This is in an extended Cartesian sense by designating a triune structure to the nature of a human being or living system: Descartes body stuff - *res extensa*, Descartes mind stuff - *res cogitans* which entails qualia and an eternal elemental intelligence outside 4D spacetime existing in the timeless realm of the U_F . See Fig. 3 where a SOLS is represented in a movie theatre model.

Autopoietic systems as defined by Maturana [7] are a special class of mechanistic system. This is a challenging philosophical issue. It is generally considered an open question whether all biological process can be described completely in terms of the ‘mechanisms’ of physics and chemistry. In the philosophy of

biology mechanism is defined as the view that every event described as a biological event is the same as those exemplified in nonbiological physical chemistry. Beckner in a discussion of mechanism states:

It is plausible to suppose that biology contains terms that could not be defined by reference to physics and chemistry, particularly if we count psychological phenomena as special cases of the biological, but perhaps even if we do not. Biological theory takes account of the circumstances of an event's occurrence in a way that the physical sciences do not. For example, it is a biological fact that lions hunt zebras. The biological mechanist ought to insist merely that everything that happens in a given case of zebra hunting is identical with a sequence of physicochemical events, not that the concept of hunting can be defined in physicochemical terms. It may be the case that hunting can be defined only in intentional language [8].

This has left the final sense of reduction for the standard model of biology an open question; and until recently this is where conceptual development had to remain. The philosophy of biological mechanism reviewed here is akin to philosophical naturalism that states that 'the natural world represents the whole of reality without requiring any additional teleological parameters'. This suggests that the current limits of scientific pragmatism provide sufficient explanation for all universal phenomena. Arguments on mechanism and naturalism have probably not been quite beaten to death but let it suffice here to postulate that additional scientific laws are yet to be discovered because 'lion hunting' as intentional action is not describable by the laws of physics and chemistry.

One cannot in good conscience label the Belousov-Zhabotinsky reaction as a living system any more than one can logically allocate consciousness with reasonable definition to the bi-level state of a thermostat as is often done in Artificial Intelligence (AI) circles. The sophistication of self-organization in autopoietic systems cannot be discounted. While this inherent complex order provides a highly efficient substrate for living systems to be built on, like a little finger applied to the helm of a megaton ship, mechanism alone provides an insufficient basis for describing living systems. A teleological principle, inherent in a conscious universe, acting in concert with mechanism is required for life; providing components of what cosmologists have recently called the holographic cosmological principle.

4. Mind-Body Interaction

If the brain is insufficient to describe mind then aspects of the required new cosmology have theological overtones. The theological-philosophical basis of HAM cosmology arises from the statement: 'The spirit (chi, ki, *prana*, *elan vital*, teleological life principle synonymous with the U_F) emanates from the throne of God, fills the immensity of space, gives life (*elan vital*), is the light of the mind (qualia) and the power that frames the heavens (Gravitation).

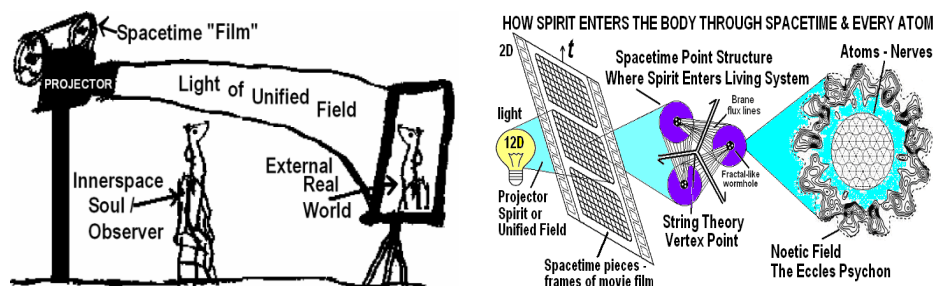


Figure 3. a) Macroscopic movie theatre model of virtual reality (like a hyper-hologram) and the observers place in the theatre. b) Microscopic details of transduction of the U_F through the complex exciplex spacetime gate into self-organized living systems (SOLS).

This model allows qualia to be represented physically and classified in the same manner the chemical elements were classified in past centuries [1,5]. The Noetic Model is empirically testable as outlined in the next section.

5. Empirical Tests of Noetic Field Theory Cosmology

A partial list of putative empirical tests relating to both demonstrating aspects of noetic cosmology as well as mind-body parameters is listed. If experiments prove viable we anticipate a new class of research platform for studying properties of the spacetime vacuum, the structure of matter with bench top apparatus instead large accelerators and fundamental aspects of living systems. We propose nine derivatives of the experimental protocol to test the HD continuous-state hypotheses:

1. Basic Experiment - Fundamental test that the concatenation of principles is theoretically sound. A laser oscillated rf-pulsed Sagnac Effect resonance hierarchy set to interfere with the periodic conformal scale-invariant structure of the inherent 'beat frequency' of spacetime in a covariant Dirac polarized vacuum to detect the new action principle associated with a cyclical entry of the Unified Field, U_F into 4-space. See Fig. 2b.
2. Bulk Quantum Computing - Utilizing protocol (1) Bulk Universal QC can be achieved by superseding the quantum uncertainty principle. (see [1] for details) Programming and data I/O are performed without decoherence by utilizing the inherent conformal scale-invariant mirror symmetry properties that act like a 'synchronization backbone' [1] whereby the local quantum state is causally free (measurable without decoherence) at a specific HD node in the continuous-state conformal symmetry cycle.
3. Protein Conformation - Utilizing aspects of protocols (1 & 2) dual Hadamard quantum logic gates are set as a Cavity-QED spacetime cellular automata experiment to facilitate conformational propagation in the prion protein from normal to the pathological form [6,7].
4. Manipulating a special case of the Lorentz Transformation [9] - Aspects of a spacetime exciplex model [1] in terms of restrictions imposed by Cramer's Transactional Interpretation [2] on mirror symmetry can be used for the putative detection of virtual tachyon-tardyon interactions in Zitterbewegung (rapid oscillation of elementary particles) [10]. We design our tachyon measurement experiment by initially considering Bohr's starting point for the development of quantum theory, i.e. the emission of photons by atoms from quantum jumps between stable Bohr orbits. We do this from the point of view of the de Broglie-Bohm causal stochastic interpretation in order to take into consideration new laser experimental results described by Kowalski [11]. As one knows light emitted from atoms during transitions of electrons from higher to lower energy states takes the form of photon quanta carrying energy and angular momentum. Any causal description of such a process implies that one adds to the restoring force of the harmonic oscillator an additional radiation (decelerating) resistance associated (derived from) with the electromagnetic (force) field of the emitted photon by the action equal reaction law. Any new causal condition thus implies that one must add a new force to the Coulomb force acting at random and which we suggest is related to ZPF vacuum resonant coupling and motions of the polarized Dirac aether. We assume that the wave and particle aspects of electrons and photons are built with real extended spacetime structures containing internal oscillations of point-like electromagnetic topological charges, e^\pm within an extended form of the causal stochastic interpretation of quantum mechanics. Kowalski's interpretation drawn from recent laser experiments showing that emission and absorption between Bohr atomic states take place within a time interval equal to one period of the emitted-absorbed photon wave, the corresponding transition time is the time needed for the orbiting electron to travel one full orbit around the nucleus. Kowalski describes the additions to the usual theory of atomic structure. In the noetic theory the Kowalski additions can be further manipulated in terms of new parameters related to

- large scale HD to test for U_F action and new quantum cavity dynamics.
5. Extended Quantum Theory - Test of causal properties of de Broglie-Bohm-Vigier quantum theory by utility of the U_F holophote effect (protocol 1) as a “super quantum potential” to summate by constructive interference the density of de Broglie matter waves.
 6. Coherent Control of Quantum Phase - Additional test of de Broglie-Bohm for existence of a nonlocal ‘pilot- quantum potential’ to manipulating the phase ‘space quantization’ in the double slit experiment by controlling which slit quanta passes through.
 7. Manipulating Spacetime Structure - (similar to protocol 6) Test of conformal scale-invariant properties of the putative Dirac conformal polarized vacuum, a possible ‘continuous-state’ property related to an arrow of time (Similar to basic experiment, but more advanced)
 8. Testing for and Manipulating Tight Bound States (TBS) [10] - (similar to protocol 4) Vigier [10] has proposed TBS below the 1st Bohr orbit in the Hydrogen atom. Utilizing tenets of the original hadronic form of string theory such as a variable string tension, T_S where the Planck constant, \hbar is replaced with a version of the original Stoney, $\tilde{\lambda}$ where \hbar is an asymptote never reached and instead oscillates from virtual Planck to the Larmor radius of the hydrogen atom, i.e. the so-called Planck scale is a restriction imposed by the limitations of the Copenhagen Interpretation and is not a fundamental physical barrier. Large-scale XD exist behind it. Key to operation of the experiment is what we have termed a ‘couple-punch’. Utilizing relativistic quantum field theory (RQFT) at the moment of spin-spin coupling an rf-pulse is kicked at various phases of a Bessel function harmonically set to coincide with putative phases in the cycle of TBS. [9-11]. Considered simplest and least expensive empirical test.
 9. Test of the Unique String Vacuum - Until now the structure of matter has been explored by building ever bigger supercolliders like the LHC. If the model described here for accessing HD space in terms of a Dirac covariant polarized vacuum proves to be correct utilizing the inherent conformal scale-invariant mirror symmetry properties of de Broglie matter waves will allow examining the various cross sections in the structure of matter in symmetry interaction during the cyclic continuous-state future-past annihilation-creation modes of matter in the spacetime metric.

Experimental access to vacuum structure or for surmounting the uncertainty principle can be done by two similar methods. One is to utilize an atomic resonance hierarchy and the other a spacetime resonance hierarchy.

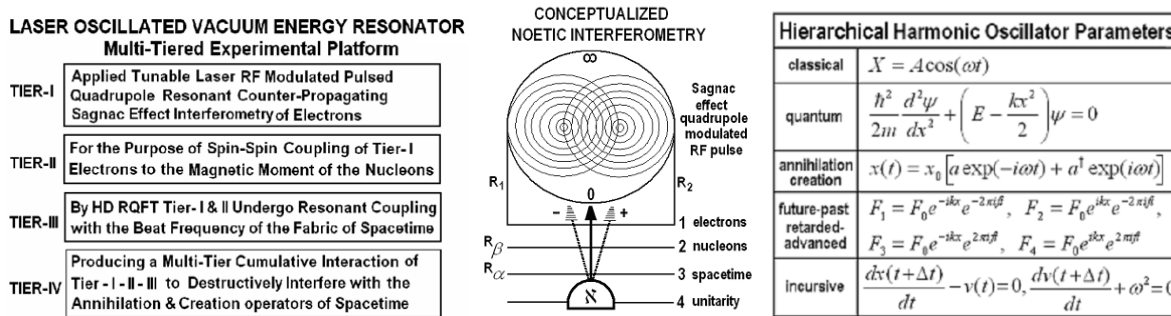


Figure 4. 4a) Top down list of the rf-resonance hierarchy for accessing HD space. 4b) The spheroid is a 2D representation of a HD complex Riemann sphere able to spin-flip HD brane coupling dynamics from zero to infinity and act as a holophote or ‘light house’ exciplex pumping mechanism to mediate the action of the U_F into spacetime. 4c) Basic conceptual mathematical components of the rf-pulsed applied harmonic oscillator resonance hierarchy in descending order: classical, quantum, relativistic, transactional and incursive are all required in order to achieve coherent control of the inherent conformal, scale-invariant properties of the HD Dirac polarized vacuum.

There are a number of very specific postulated cosmological properties required in order to perform these experiments [1,5,13] for isolating and manipulating fundamental parameters related to long-range coherence in biological systems. Our premise is that the so-called Planck scale stochastic regime has been a barrier to the study coherent effects in biological systems related to psi phenomena. Since Heisenberg's 1927 discovery the quantum uncertainty principle (in four dimensions, 4D) has been by empirical definition a barrier to accessing certain kinds of complementary physical data. As will be shown the simple solution is - do something else! That is, use different 'measurement' criteria. Nine experimental protocols have been outlined for testing these postulates; which if successful will lead to a standardized research platform for breaking down the 1st person-3rd person barrier. Salient theoretical postulates are:

- The Unified Field, U_F provides an evolutionary 'force' of long-range coherence in biological systems.
- The U_F can be accessed by surmounting the quantum uncertainty principle, a limitation imposed by the space quantization parameters of the Copenhagen interpretation of QT by manipulating new cosmological parameters described by the degrees of freedom related to additional dimensionality (XD).
- This XD relates Noetic Cosmology to symmetry properties of string theory that 'inject' the interconnectedness of the nonlocal life principle into every point and thus atom in spacetime.
- Utilizing the U_F provides a new action principle with an inherent force of coherence acting as a 'super-quantum potential' or pilot wave guiding spacetime evolution related to complexity in Self-Organized Living Systems (SOLS) as pervaded by this 'life principle' [5].
- This empirical mediation of the higher dimensional (HD) spacetime metric can be performed by a specialized incursive form of rf-modulated interference hierarchy able to surmount the uncertainty principle [5].

Since 1993 the so-called Elitzur-Vaidman Interaction-Free Measurement (IFM) paradigm, a procedure for detecting the quantum state of an object without a phenomenological interaction occurring with the measuring device that ordinarily collapses the quantum wave function, has provided indicia that it may be possible in general as proposed here to completely override the quantum uncertainty principle with probability, $p \equiv 1$ through utility of additional degrees of freedom inherent in the supersymmetric regime of string/brane theory [5]. Note: in Newtonian mechanics the universe was 3D, Einstein introduced a 4D cosmology and now the next step seems to require 12D. The disadvantages of the IFM model is that in order to improve the probability more and more Mach-Zehnder interferometers and more and more cycles through the apparatus are required; while our noetic apparatus acts with a single cycle because it represents a true and complete overriding of uncertainty [5]. We emphasize our position that it is impossible to violate the uncertainty principle in 4D (by empirical fact) which the IFM method is limited to. This duality in the Quantum Zeno Paradox (suppression of time evolution caused by quantum decoherence in quantum systems provided by sources such as measurement, interactions with the environment, chaos etc.) as experimentally implemented in IFM protocols suggests a duality between the regular phenomenological quantum theory and a completed unified or ontological model beyond the formalism of the standard Copenhagen Interpretation. Utilizing our extended noetic theoretical elements a putative empirical protocol for producing IFM with probability $p \equiv 1$ is introduced in a direct causal violation or absolute surmount of the current 4D quantum Uncertainty Principle and a definitive breakdown of the 1st person-3rd person barrier as related to interconnectedness in all forms of psi phenomena.

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