THE PHYSICAL BASIS OF CONSCIOUSNESS: IMPLICATIONS FOR NOETIC MEDICINE AND TRANSPERSONAL PSYCHOLOGY

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Abstract. The concept of an *élan vital* or life force has long been considered the elementary action principle driving the evolution of living-systems by theologically minded scientists and individuals. Sufficiently extending Einstein's original model of a Static Universe, to a Holographic Conscious Multiverse (HCM), provides a context for solving this centuries old problem for introducing this type of teleological principle into biology, medicine and psychology. This means the contemporary framework of *biological mechanism* should no longer be considered the formal philosophical basis for describing living systems and contemporary allopathic (scientific) medicine. The new noetic action principle has far reaching implications for medicine and transpersonal psychology. It will lead, for example to the prevention of Alzheimer's disease and the development of fantastic consciousness based technologies like the fabled *Star Trek Medical Tricorder* able to heal a wound in a few seconds normally taking months! The question is not if the current medical paradigm will shift to Noetic form; but how soon the necessary requirements can be implemented in order that society may reap the benefits.

Keywords: Autopoiesis; Cognitive domain; Complexity, Consciousness; Élan vital, Living-systems, Qualia, Transpersonal psychology.

1. Introduction

The discovery of Noetic Theory represents a Copernican class discovery; one that comes along only once in several hundred years. In sharing this occasion with you dear reader, it seems fitting to enjoy an ancient verse by Lucretius:

> *"I am blazing a trail through pathless tracts of the Muses' Pierian realm, where no foot has ever trod before. What joy it is to light upon virgin springs and drink their waters. What joy to pluck new flowers and gather for my brow a glorious garland from fields whose blossoms were never yet wreathed by the Muses round any head. This is my reward for teaching on these lofty topics, for struggling to loose men's minds from the tight knots of superstition and shedding on dark corners the bright beam of my song that irradiates everything with the sparkle of the Muses"* [1].

What would it take to make psychology a hard science like physics or chemistry? Hipparchus, a Greek mathematician 2,000 years before Copernicus was first to make calculations revealing a heliocentric cosmology in conflict with Aristotle's principle of perfect circles or spheres. After some intellectual struggling Hipparchus discarded his calculations as false because elliptical planetary orbits were considered unphysical theologically. Hipparchus' influence was so strong that his bias suppressed the truth for 2,000 years! A similar problem exists today. Scientists insist that consciousness is a product of brain only. Noetic Science is in radical opposition to current thinking in six main fields of scientific endeavor: Psychology, Philosophy, Biology, Physics, Cosmology and Computer science. Progress in medicine is driven by advances in these disciplines. Progress in the evolution of human consciousness most often takes place in a constant series of tiny steps; however on rare occasions like that of Galileo, Newton, Copernicus, or Pasteur for example, a radical transforming event occurs. You dear reader are witness to such a historical moment. The purpose of this chapter is to introduce the revolutionary concepts of noetic science precipitating a revolution where mankind leaves the 'modern Age' enters the Age of Consciousness.

The current vogue – *Biological Mechanism* states that: 'The laws of chemistry and physics are sufficient to explain all life; no other principles are required'. Providing a physical basis for the action of the '*life force'* or *élan vital* would finally change this myopic naturalistic perspective. The empirical formalization of such an action principle leads to a whole new class of consciousness based medical conditions and associated '*spirit*' or transpersonal based treatment modalities. When psychology is recast as a physical science 'Moral Psychology' will

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also have a pragmatic basis because one will be able to experimentally measure which types of behaviors or mental conditions promote life and health or disease and death.

This immense task is accomplished by first extending the standard model of cosmology from the current Darwinian naturalistic (atheistic) 'Bigbang' theory to one that contains an inherent teleology or purpose. Making this change creates a domino effect that runs through all the other standard models of science. Evolution remains in the new model, not as a random Darwinian progression; but one considered to be 'guided' by the teleological action inherent in the Conscious Megaverse. Such a Noetic cosmology called the Holographic Conscious Multiverse (HCM) has now been developed in general form [2-4]. The associated comprehensive theory of mind is now sufficiently mature; and is not only empirically testable, but also able to rigorously define qualia[1] and begin categorizing the associated fundamental conscious elements in a manner similar to that performed in developing the periodic table of the chemical elements in past centuries. This will lead immediately to new 'conscious technologies' allowing dissolution of the 1st person 3rd person barrier. Because of the teleology inherent in Noetic Cosmology, the HCM represents philosophically what is called a form of Cartesian substance dualism / interactionism. This means that the brain is not of paramount importance to consciousness; the brain is not the seat of awareness as cognitive psychologists currently define it [5]. The brain plays only a secondary role with three main biological functions related to the operation of the complex self-organized living system:

1. The brain couples awareness to temporal reality.
2. The brain acts as a transducer for processing sensory data and intentional action.
3. The brain represents a form of naturally occurring 'conscious quantum computer' that data processes and operates the moment-to-moment homeostatic and metabolic functions of the body.

This important discovery has not been feasible earlier because the currently dominant model for consciousness research (cognitive psychology) has rejected it by definition.

2. Current Status of Allopathic Medicine – The Demise of Vitalism

Contemporary Western Medicine is comprised of Traditional and Alternative treatment forms. Traditional scientific medicine is the orthodox style also known as Allopathic; a term derived from the Greek *allo* – reversal and *pathos* – to suffer. Traditional medicine is characterized by four treatment modes: 1. Pharmaceutical drugs, 2. Surgery, 3. Radiation and 4. Psychotherapy, which sadly are all applied only when a person's life is threatened.

The development of organic chemistry began in the middle of the eighteenth century when alchemy began to evolve into modern scientific chemistry. There were unexplained differences between substances in minerals and those observed in living systems; compounds from living systems were difficult to isolate and tended to decompose more readily than compounds from minerals. Swedish chemist Torbern Bergman [6] was first to express this difference between *organic* and *inorganic* substances in 1770. Many chemists at that time believed this difference was the result of a *vital force* which they believed precluded the ability to prepare organic compounds in the laboratory. But in 1816 when French chemist Michel Chevreul discovered that soap made from alkali and animal fat could be separated into glycerin and a number of pure organic compounds he called *fatty acids;* Vitalism was dealt a severe blow. This was the first time organic substances were converted into other substances without the influence of a vital force. About a decade later in 1828 German chemist Friedrich Wöhler converted the inorganic salt ammonium cyanate into the organic compound urea. By 1850 the scale had tipped heavily against Vitalism [6].

Not until the beginning of the twentieth century did standard scientific (allopathic) medicine become totally dominant. Before that allopathic physicians prescribed harsh and distasteful cures based on mercury, purgatives, emetics and blood letting which were not considered more effective than popular alternatives such as phrenology, homeopathy, botanics, eclecticism or folk remedies. Allopathic theory was based on the mechanical or material laws of physics and chemistry. The adherents of alternative medicine generally believed that health was based on a vital force related to the soul or spirit. A combination of adherence to the educational standards of state and local medical boards, the complete adoption of science (which history had shown meant progress) and development of a strong professional identity by the class of allopathic physicians led to the inevitable demise of Vitalism which became considered old fashioned by an increasingly progressive science and technology based society [7]

Is it time for a rebirth of Energy Medicine? First to clear up any nomenclature conundrums, Although there may be a loose association with contemporary discussions of Energy Medicine and Mind-body Medicine; any of these modalities would be considered primitive in terms of the advances Noetic Medicine will introduce. The standard models associated with the current state of medicine are 1. Darwinian naturalism, 2.biological mechanism and 3. the

[1] Qualia – short for 'quality of the feel', the 'what it feels like' sensation of awareness.

cognitive brain model of psychology. To summarize briefly this means: 1. evolution by natural selection, 2. the laws of physics and chemistry are sufficient to explain life, and 3. the mind is state of brain processes. Obviously Noetic medicine would be considered a radical heresy by these standards. Noetic medicine redefines the basis for living-systems based on a new cosmology that is an advanced form of Einstein's static universe model. This model includes what Bergson [8] and others called the *élan vital* or vital force. Currently use of Energy Medicine and Mind-body Medicine uses the vital force in only a superficial manner like the early history of electricity with only 'amber and fur' not the highly advanced transistor based devices of modern technology.

3. The Current Status of Consciousness Theory - The Hard Problem

The study of awareness has been recently classified as a 'hard problem'; with the easy problems of awareness being ones that are nearly impossible to research by scientists [5]. The nature of mind has been called the oldest and most difficult problem facing human epistemology [9-11]. Wile people of faith have always been complacent with theological doctrines stating that individuals have an immortal soul created by God; it is only recently that a framework for posing the question of the nature of mind has reached sufficient maturity that any real scientific progress has been able to be made [12]. Chalmers' initial premise that 'awareness is the fundamental principle from which to formulate a theory of mind' [5] is a reasonable assumption for studying consciousness; but he mistakenly goes on to ask: 'what processes in the brain give rise to awareness?', which creates the very 'hard problem' he wants to solve because this manner of posing the question represents a category error for philosophy of mind. While it is true that the brain is the most complex structure known in the universe it is not the seat of awareness. If the mind is instead a whole cosmology; then trying to save the problem in terms of the brain alone will be forever impossible. 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 [13-15] and it is impossible to formulate a correct or sufficient theory of awareness from the point of view of AI, computer science or neurobiology alone. Mind, to be adequately described, must be represented by a complete cosmology with mankind imbedded in it [2-4,12,13,16-18]. Currently about 93% of scientists mistakenly believe the brain is sufficient to model the mind.

4. Philosophy of Mind - Vitalism / Teleology

The noetic model of cosmology called The Continuous State Holographic Conscious Megaverse (HCM) requires reintroducing concepts like Vitalism and teleology that have been historically disdained by science. Mechanistic models of the universe have allowed no place for these 'philosophical constructs' considered non-scientific and non-physical even by their major proponents. In the HCM they finally become physicalized and thus subject to falsification or study by empirical scientific methods. So in one sense we cannot blame science, because by definition it only allows concepts that have been empirically tested even if it is obvious to many that they exist.

Teleology is the philosophy based on the supposition that the universe has intelligent design and inherent purpose beyond the mechanics of a Newtonian Big Bang universe driven acausally by a Darwinian type of natural or random evolution. Evolution obviously exists, but it is not a random series of accidental events. It is guided by a teleological quantum of action (God defined in the coldest scientific terms) inherent in the higher dimensions of the HCM. 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. Since God is unseen, he does not exist in our temporal locale but resides in a higher dimensional realm that acts nonlocally on our three dimensional domain.

Modern teleologists like H. Driesch or H. Bergson proposed a principle of *vitalism* - the processes of life result from a self-determining fundamental rule not explicable by currently observed physiochemical laws. Bergson, proposed an *élan vital* or vital force [8] as the spontaneous energy of the evolutionary process and defined mind as pure energy responsible for all organic evolution denying sciences claim to explain the universe on purely mechanical principles. This *vis vitae* is shown to be physical when discussed in terms of the noetic field [16-18].

5. Survey of Current Theories of Mind

Consciousness is not a brain state but a complex multi-factor cosmology. Often individual researchers consider their component theory to be a complete fundamental model. The time has come when it is possible to go beyond this "elephantness" consciousness to formulate a true comprehensive theory. The elephant metaphor relates to six blind men trying to feel an elephant, each attempting to describe it: One thinks of the tail as a rope, another the leg as a

tree, the elephant's trunk as a hose, the body as a wall, the tusks as swords and the sixth thinks the ear is a large fan. Until now this has been a major problem for consciousness researchers.

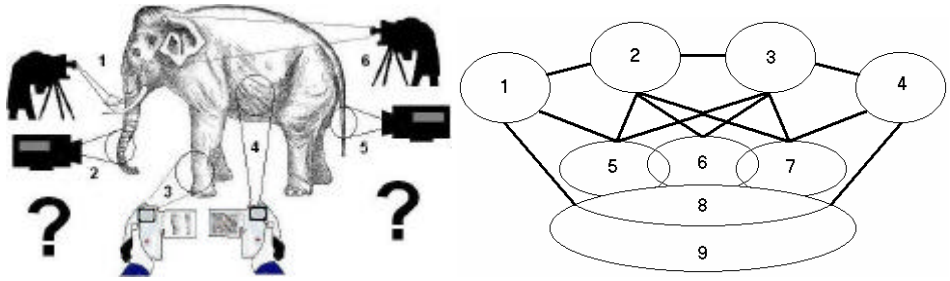

Figure 1. A) The Elephant of consciousness – see text. B) Another metaphor for current theories of mind illustrating how they are integrated into one comprehensive model by noetic field theory. 1. AI and Computational models**,** 2. Neural Networks**,** 3. Synaptic Tunneling, 4. Quantum Brain Dynamics, 5. Holonomic Brain Theory, 6. Orchestrated Reduction (Orch-OR), 7. Dualist / Interactionist Mind-Body Theory, 8. New Physics, 9. Noetic Field Theory: The cosmology for Quantization of Mind.

A number of partial theories of merit at the forefront of consciousness research are outlined below and then integrated into one comprehensive theory called Noetic Field Theory (NFT) representing The Quantization of Mind in a Holographic Conscious Megaverse (HCM). NFT is the first complete and empirically testable theory of mind.

6. AI and Computational models

The artificial Intelligence (AI) model states that the mind is merely a computer; and if the correct algorithm was known it would be able to completely describe all the functions of human consciousness. This view stretches from considering a thermostat as a conscious entity because it has two bi-stable states on one hand to an advanced autonomous android on the other.

Current classical computers are much less complex than the human brain and do not have enough degrees of freedom to handle consciousness. Furthermore they are pre-programmed and unable to change or escape from this condition as a sentient being is [15,16] able to make choices based on spontaneous volition.

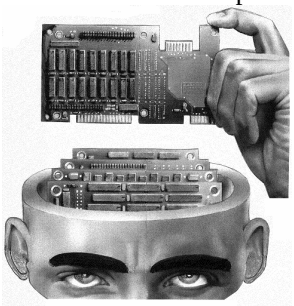

Figure 2. The AI computer model of consciousness states that mind is just a matter of a standard computer and programming. If the correct algorithm was known the intelligence of a human being could be readily duplicated on a Turing machine (standard electronic computer).

7. Neural Networks and Cellular Automata

The neural network model of mind states that the subjective process of awareness is a result of computational information dynamics in various biophysical networks such as neural, quantum and sub-cellular systems. Cognition is a problem of both processing and representation [19]. There is a wide spectrum of belief among researchers regarding the nature of mental data processing in networks. Some think the linear electrical pulses along neurons are sufficient. Others believe quantum processing with nonlocal effects is required [20,21]. Or is it nonlinear, parallel processing or a more complex form of distributed processing throughout the whole neural network as in the holonomic model of Pribram [22]? A similar conundrum occurs among researchers of the neural model regarding representation. This is called the problem of *qualia* - the nature and origin of qualitative subjective experience. Do

qualia emerge into a mind from the neural substrate? How does thought bind to the conscious system? This is called the binding problem. These questions have been called the hard problem of consciousness [5].

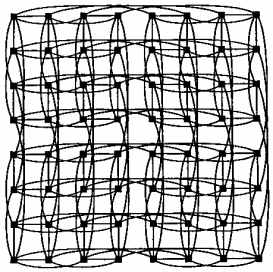

Figure 3. A six-dimensional hypercube with 64 nodes and 6 connections per node representing connectivity for computation in a neural net or cellular automata. This is a form of computer modeling used to study the possible neural network structure of the brain. Figure generated by Conrad Schneiker. Modified from [23].

8. Synaptic Tunneling

The linear action potential along a nerve fiber is electrical; and is converted to nonlinear chemical transmission at the synapse (See Fig. 4) which are 'boutons' at the end of nerve fibers that release various neurotransmitters. There is always a low level continuous release of neurotransmitter acting as the baseline of activity. Quantum tunneling is the charge transport of electrons through an otherwise impenetrable barrier or insulator at the synapse. Acts of volition or other neurosensory inputs are believed to be the phase regulators that trigger, through quantum tunneling, the release of neurotransmitter vesicles which is called exocytosis at the synaptic grid [24,25]The most a neural impulse can evoke is a single exocytosis, probably because of the paracrystaline nature of the material the vesicles are imbedded in. Exocytosis is the most fundamental action of the cerebral cortex; and is an all-or-nothing response each of which results in a brief excitatory postsynaptic depolarization [24].

The trigger model itself is still incomplete because it has only been developed at the classical level of the electron transmission. What is still needed is a description of the coherent process that couples a mental event by quantum probability selection to the actual biochemistry associated with action.

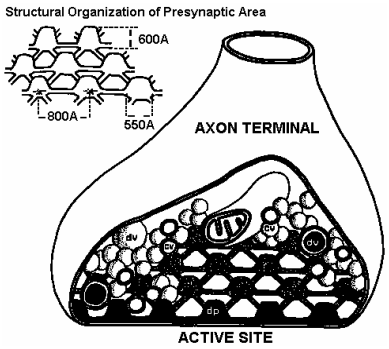

Figure 4. A representation of the synapse and synaptic grid where neurotransmitter vesicles are released by quantum tunneling of electron transmission. The tunneling mechanism is believed to be the trigger action of intentional mental activity or the site of the mind-body connection [24].

9. Quantum Brain Dynamics

Quantum Field Theory has several branches, Quantum Electro Dynamics (QED) for electromagnetic interactions, and Quantum Chromo Dynamics (QCD) for strong interactions. Quantum Brain Dynamics (QBD) is a quantum field theory describing biological systems and the fundamental mechanics of the brain [26]. QBD is mediated by an exchange field called the corticon [26], a quantum of the water rotational field which interacts with electric dipole oscillations along neural 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 and the founding fathers of quantum mechanics said it was not capable of describing biological systems. The Schrödinger equation describes the evolution of a particle on a manifold; so just because QBD describes action on a brain manifold it is not a sufficient extension of the theory. For this we need an extension not only of the orthodox Copenhagen interpretation but also are required to go beyond the quantum ontology of Bohm into a higher dimensional extension of Cramer's theory [27,28]. Bohm described the quantum potential as a nonlocal pilot wave effecting the probability matrix of the Schrödinger equation.

As we will show Noetic Field Theory: The Quantization of Mind completes Bohm's work by introducing a noetic effect [29]. Neurocomputing models of the brain are linear closed systems; Once a computer is programmed there are no remaining degrees of freedom for rational input.

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.

10. Holonomic Brain Theory

The holonomic brain theory relying heavily on the Fourier relation and the holographic application of Fourier's theorem by Gabor in 1946; has been expanded. by Pribram [30] to include a phase space of interaction in the brain; called the holoscape [22]. Integration of holonomic theory and the Bose-Einst6n model provide a substrate for explaining recent work on quantum information processing represented as conformational changes of alpha and. beta tubulin dimers in microtubule protein structure [31] providing a stage for the first application of these concepts to tangible brain material However the brain, a Fermi apparatus with Einstein-Bose interactions; is viewed here as only one of three key aspects of consciousness.

Integral to Pribram's holonomic brain theory is the concept of the holoscape, a neuronal manifold which embodies the polarization occurring in dendritic networks [22]. The holoscape (Figure 5) is the active manifold of entrained neural processing that couples phenomenal information to the phase space of what Pribram calls the Heisenberg matrix which includes the raster of consciousness (TV screen) below it. Gabor and Fourier relationships describe the activity of information processed in the neural ensembles as a raster of mental functioning.

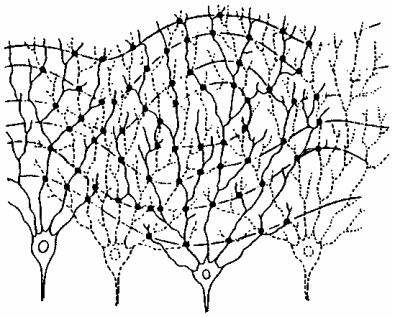

Figure 5. An idealized portrait of a holoscape. Reprinted from Pribram, [22]: "The contours forming such a holoscape are embodied in the microprocess of polarization occurring in dendritic networks, consisting of a sub- and trans-neuronal manifold". The Fourier and Gabor relation ensemble quanta of information into a dynamic phase space of neurodynamic functioning.

Freeman [32] relates that chaotic dynamics can create information in the Shannon-Weaver sense of information. This is the relationship with the Gabor logon utilized by Pribram [22] in the holoscape. Pribram has skillfully integrated his holographic model with quantum activity associated with QBD in what might be thought of as a dualistic picture of consciousness. The question remains, does consciousness originate from qualia at the level of holoscape dendritic microprocess or is it underpinned by the quantum domain? There has been general. skepticism of quantum effects having any relevance to such a hot entropic matrix as the brain. However there is a distinct difference in coherence at these levels. In the quantum realm there is essentially thermodynamic equilibrium. Much could be written about the holoscape, where the major philosophical issues are information coding and processing, the binding problem.

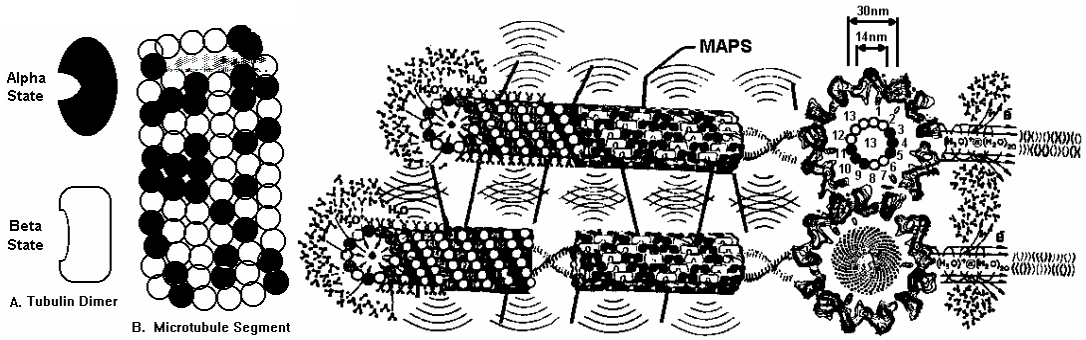

Figure 6. A. Alpha and Beta configurations (Two quantum states) of tubulin protein dimers provide a bit state model for information processing at the quantum level in cell structures. B. Segment of a microtubule composed of tubulin rings. Shading represents conformational ordering as data I/O patterns in active quantum states as a basis for brain level dynamics of consciousness. A tubulin dimer is about 8 nanometers long. The quantum dipole shifts or conformational shape changes occur with transitions of $10^{-9} - 10^{-11}$ seconds.

11. The Orchestrated Reduction (Orch-OR) Model of Hameroff & Penrose

The Hameroff & Penrose theory states that quantum events at the microtubule (MT) (Figure 6) and other nanoscale objects are sufficient to process the necessary amount of information to satisfy the needs for consciousness. The conformational states of the tubulin dimer are coupled to Van der Wall dipole moments. Each conformational state could represent a bit for information exchange [33].

There are several types of microtubules in the cytoskeleton that seem to have complementary features such as acidic and basic tubulin subunits. The tubulin polypeptide dimer has been found to have seven alpha and over ten beta species. Other differences include dynamic or stable, more or less curly, and variance in turnover rate. MT's are involved in a wide variety of cellular functions. They form the spindles during mitosis and meiosis, the cytoskeleton plays a major role in cell morphology, MT's aid transport, and maintain cell surface sites like receptor caps [34-36].

Microtubules don't handle all the information processing of mental states. There is an integrated system of data processing that includes DNA, cell topology, microtubules, cAMP, and water [37], not only in the brain, but also coupling the noetic field throughout the entire body modulated by muscle dynamics, thought, and other psychosphere processes [17,18]. One problem with the Orch-OR model is that it attempts to utilize a conservative model of gravitation asking: 'what is the minimum gravitational mass required to collapse the wave function' which Orch-OR considers the process of mental action. This limits conscious systems to creatures only as small as a planaria; but we know from noetic theory that even the prion responsible for mad cow disease is a conscious system albeit a mechanical one [29,38,39].

12. Dualist / Interactionist Theory of Mind-Body

Over 400 years ago Rene Descartes claimed to receive a revelation from God that consciousness was divided into mind stuff - *res cogitans* and body stuff - *res extensa* [40]. This dualism of mind and body has endured until today because intuition dictates self as separate from world and until now there has never been a comprehensive mind/body theory. The nature of rationality or free will, as opposed to Newtonian determinism evidenced in a computer program or robot suggests that the basic theory of quantum mechanics also is not equipped to describe consciousness. The violation of the 2nd law of thermodynamics and entropy flow by living systems, and the smoothness of our perception of reality versus the discreetness or discontinuity of its origins at the microscopic brain level all show the inadequacy of our current thinking on the nature of cognition. Dualism states that although the mind has an independent eternal existence from the temporal body, it acts in concert with it [41]. Traditionally considered beyond physics because by definition only measurable quantities are deemed to exist; the dualistic view has funneled most scientists into the erroneous belief that brain equals mind. Since the brain is a physical object, scientists have believed this is the only basis for developing a physical theory of mind.

The complaint against the current thinking of Cognitive Psychologists regards the limits of inquiry bounded by its myopic metaphysical foundation of considering the brain as equal to mind. Science fits the basic definition of a theology by its rigid adherence to its principles. This heresy is not a call for science to embrace an *a priori* philosophy. Since Galileo the profound value of empiricism has been well learned. But the finite limitations

surrounding the measurement problem in quantum theory and the need for a more advanced approach strongly suggests that we have come full circle to the time for mandating another evolutionary step to improve:

- The ability to pose foundational and empirical questions, and
- Data gathering and evaluation techniques that accept input in ontological terms, allow subjectively or both.

There may be no alternative to integrating a noetic based science for progress to occur.

The Perennial Philosophy, attributed to Kant and others, states:

1. Deity exists
2. Is knowable
3. Provides a path to be found [42].

Benefits to utilizing the perennial philosophy include, insight into the nature of absolute truth [43], which promises a more efficient compass for reality testing; and insight into the utility of subjectivity by developing an acceptable methodology for instituting the radical empiricism of James [44].

Aspects of the following premises are based on noetic insight[2] using elements of the Cartesian modality (institution and verification by revelation or meditative insight), and presented axiomatically as a bold call for testing this hypothesis. It must be stressed that utilizing the 'Cartesian modality' does not interfere with the pragmatism of the empirical method. It is a time saver; if the correct model is 'divined' it may save hundreds of years in finding it, but it must then still be experimentally verified. Descartes distinction between *res extensa* and *res cogitans* has not been tested. If this turns out to be the correct model as is presented here; is it any wonder little progress has been made - if no one has been looking where the answer lies.

13. Beyond the Brain - Elemental intelligence

While the brain services the temporal aspects of our Earthly existence; current thinking has ignored the eternal aspects of mind and body. Elemental Intelligence is the fundamental eternal condition of individuality and exists outside of time and the bounds of the phenomenological reality we observe in our 3D world view. This bound, although currently an ineffable domain not yet having an empirical foundation waits for vacuum quantization and a deeper understanding of nonlocality to open the avenue to a more empirical explanation, and is currently only known to exist by noetic insight. Simply stated if individual intelligence has no domain, i.e. is not bounded in some manner; it cannot exist with any connotation of individuality. Apparently there is as much to us behind the curtain of reality as we see in front of us. So at this time only transcendent or philosophical arguments can be given for Elemental Intelligence as follows:

Firstly individuality must be separated from 'The One' at some level for absolute unity is again nothingness, and nothing has no boundaries and cannot exist by its very definition. For even the demarcation of nothing as such demands its qualification by something extant which gives it existence. This idea of nothingness is not meant also as in the abstract sense of redness for example. For though redness is not assigned "thingness", it still has existence in sentient apprehension and is therefore not nothing. This is the abstract content of consciousness often deemed immaterial. However, according to the tenets of Noetic Field Theory [17,18] thought is deemed a physically real unitary noetic field that is encoded with information; thus a typical case of abstractness in this sense is now relegated to tangibility.

Secondly without some form of separation from absolute unity there can be no self identity. Without this identity or boundary it would disappear into the 'one' or nothing as stated. Absolute unity is nothingness, cannot exist and cannot be comprehended. Further this complement of elemental intelligence is fixed nonlocally and promotes the separateness mandatory for individuality to exist.

[2] Noetic Insight: Plato said Noetic Insight was the highest form of knowing (epistemology) because it was transcendent – beyond ones intelligence and knowledge.

14. Consciousness is a Universal Cosmological Principle

The second compliment of consciousness is a cosmological principle that fills and orders the immensity of space. It could be said to be equivalent to the life principle, élan vital, chi, prana, or Holy Spirit. In contrast to elemental intelligence above this aspect is not fixed but represents flux and promotes the unity of mind and body. This is the root of the mind - brain problem – cognitive brain science versus Cartesian dualism. We are complementary aspects of both unity and separation so monism by itself cannot be an absolute.

The cosmological aspect of consciousness exists in all matter and is itself a pure material with the properties of light. However as ordinary photons originate in atomic geometries coupled with properties terminating in space, Photons of mind (psychons as termed by Eccles) originate in complex higher dimensional geometries. Noeons is the term given to the unitary field in Noetic Field Theory. They are confined to the spacetime backcloth like quarks. This is why they haven't been measurable by standard methods of Physics and why an extension of QT is required.

Consciousness pervades atoms, is the organizing power deeper than gravitation that controls the universe, causes gravitation, and the flux of which gives life. Plant life does not appear to make direct use of the component of elemental intelligence, only the cosmological ordering principle and the 'body state' of matter. Sentience is caused by the autopoietic (self-organized) integration of elemental (eternal) and cosmological (spiritual) intelligence. This basic holistic framework incorporates the implicate and explicate order described by Bohm.

15. The Origin of Complexity in Biological Systems: A New Model for the Origin of Life

Generally unicellular prokaryotes are considered the most fundamental form of living system. Many researchers include viruses since they commandeer cellular machinery in their replication; while others insist viruses are merely complex infective proteins. New biological principles are introduced suggesting that even the prion, the infectious protein responsible for transmissible spongiform encephalopathies, qualifies as the most fundamental form of life; and remains in general concordance with the six-point definition of living systems put forth by Humberto Maturana and his colleagues in their original characterization of living organisms as a class of complex self-organized autopoietic systems [45].

"What is the necessary and sufficient organization for a given system to be a *living unity*?" [45]. Maturana and his collaborators posed this question in their effort to formalize the general definition of a living system. They further stated that all other functions are secondary to the task of establishing and maintaining this unitary organization; defining this process as *autopoiesis* [45]. For review, the description of an autopoietic living system is as follows: *Autopoiesis* from the Greek 'self-production' is a fundamental expression of the basic complementarity of structure and phenomenology [46-48]. An autopoietic system is self-organized, complex, open, dissipative, self-referential, auto-catalytic, hierarchical, far from equilibrium and autonomous. A system is autopoietic when its primary function is self-renewal through self-referential activity. This contrasts an allopoietic system like a robot deriving function from an external source. Stated another way autopoiesis is a network of production components participating recursively as a globally stable structure operationally separable from the background [45,46].

These properties operate in an ascending hierarchy:

- An autopoietic system is an open non-equilibrium system. If closed in equilibrium all processes die down.
- The processes are cyclical.
- As a complex self-organized system, operations occur within multi-levels where higher levels contain all lower levels.
- Function – the primary function of the system is autopoiesis as defined above [45].

16. Summary of Maturama's Six-Point Key for The Determination of Life

1. Does the entity have identifiable boundaries?
2. Does the entity have unique constitutive elements?
3. Is the entity a *mechanistic system* possessing properties satisfying certain relations for its interactions and transformations?

4. Do the components constituting the boundaries of the entity act through preferential relations and interactions between the components?
5. Are the components constituting the boundaries of the entity produced by interactions of the components either by transformation of previously produced components, or by transformations and/or coupling of non-component elements that enter the entity through its boundaries.
6. If all the other components of the entity are produced by the interaction of the components as in 5, the entity is an autopoietic entity in the space in which it exists [46].

17. Non-Autopoietic Entities That Seem to Satisfy Maturana's Conditions

- **Automata** - Superficially automata [49] seem to obey Maturana's six points for autopoiesis, especially in terms of self-reproduction and autonomy; but they are readily disqualified for two salient reasons: Automata are generally nonphysical and cannot naturally escape or exist outside of the computer system they are programmed in.
- **Crystals** - Crystalline structures conform to many of Maturana's six key requirements. The symmetry of the *unit cell* contains the geometric framework of the whole periodic structure, which is repeated in translations of the unit cell. So although a crystal has open self-organized boundary conditions, appears to be recursive and can reproduce; a crystals main failing is that it remains mainly a chemical reaction because its 'unique constitutive elements' can only be reproduced and remain structure preserving under precise conditions of chemical reactivity.
- **Ribosomes** - Although partially comprised of components produced by the ribosome, as entities they are produced by processes beyond those comprising their operation and their function is not completely self-referential [1]. Ribosomes have high level metabolic properties but they are organelles not unique unities.
- **Belousov-Zhabotinsky Reaction** - A key aspect of a self-organized autopoietic system is its globally stable structure over an extended time. These are called *dissipative structures* because they maintain a continuous production of entropy, which is then continually dissipated. The best known dissipative structure is the Belousov-Zhabotinsky Reaction produced by the oxidation of malonic acid by bromate where rotating concentric or spiral waves create interference patterns oscillating with a periodicity maintaining itself for many hours [46,50]. Although self-organized with environmental interplay, can this be more than a recursive chemical reaction?

Jantsch and Maturana both state that dissipative chemical reactions like the Belousov-Zhabotinsky reaction and the glycolytic cycle qualify as primitive autopoietic systems [45,46]. Should these or any of the entities in section 17 above be accepted as living systems? Maturana's six-point key is not experimental; but a set of logical premises, and in that sense arbitrary philosophical deduction. Even if these systems are considered autopoietic by the claim of definition, the thesis developed here is to not accept these types of entities as living-systems but to make a case for requiring additional physical principles added to Maturana's key to complete the requirements for properly defining a unique class of autopoietic systems qualifying as true living-systems. Our conclusion is that Maturana's autopoiesis at best only defines the mechanistic components of self-organization.

18. Mechanism In Biology As A Semi-Classical Limit

Autopoietic systems as defined by Maturana 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 non-biological physical chemistry [51,52]. 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 [52].

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 [46,50] 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 [2-4], acting in concert with mechanism is required for life; providing components of what cosmologists have recently called the holographic cosmological principle.

19. New Cosmology Leads To Redefinition Of Biology

Until the advent of the Noetic cosmology [2-4] physical cosmologists generally believed that the universe could not be ordered enough to have a symmetric spacetime with an inherent periodicity where events are structured such that the future-past prepares the 'nows' evolution into the future [2-4]. These spacetimes were considered non-physical and appeared to violate the causal principles of quantum theory [53]. The semi-classical limit in physics refers to the boundary between classical mechanics and quantum mechanics where an incomplete understanding of the dynamics of a system allows only statistical predictions to be made on the behavior of a system rather than a precise determination [54]. Consciousness is able to violate quantum causality. Quantum mechanics is known to be both incomplete and not able to describe biological systems; therefore how can biological mechanism offer a complete framework for living-systems!

Self-organization produces *freedom* and the degree of autonomy a system achieves in relation to its environment provides one way to loosely define *consciousness*. Jantsch says "this autonomy appears as an expression of the fundamental interdependence of structure and function which is one of the most profound laws of dissipative self-organization" [46]. Drãgãnescu further adds "If a virus is alive it has a phenomenological subconscious, if not, it cannot have any form of consciousness, because there is no structural organization with sufficient complexity to process structural information significantly"[48]. This is similar to Maturana's idea that the autonomy obtained by autopoiesis relegates a primitive form of consciousness, even to chemical dissipative structures, which he calls a *cognitive domain* in relation to the systems environment [47]. This is where we will draw a line in the sand giving a definitive description of the term *cognitive domain* that goes beyond mechanism.

Consciousness, and not necessarily that with self-awareness, requires a sufficient number of degrees of freedom beyond those of an allopoietic mechanistic automaton. While one might reluctantly concede that the Belousov-Zhabotinsky reaction [46,50] is autopoietic by Maturana's original definition [45]; one cannot proscribe a cognitive domain with the structural-phenomenology of intentional awareness to such an autocatalytic pattern-producing chemical reaction. How is this ultimately different than programmed automata? We believe that embracing biological mechanism leads one into the trap of 'conscious thermostats'. The autocatalytic chemistry of the Belousov-Zhabotinsky reaction has a cyclical self-organization that keeps the cycle in motion recursively by a chaotic component in the symmetry of the boundary conditions leading generally to a global stabilization of the reaction until a chance occurrence of an ordered ground state occurs. One could argue the reaction is the result of the inherent activity in the reactions so-called *cognitive domain* because it includes a self-referential multilevel hierarchy that maintains the cycle of the reactions self-production. One could carry this argument further to lend correspondence with Prigogine's symmetry breaking factors in the thermodynamics of evolution [55,56]. But the driving force described by these arguments is not an intrinsic *intentional awareness*; it is more like the incongruent geometric symmetries driving the chain of unstable intermediaries in a radioactive decay series– an automatic unraveling continues as long as a stable ground state with boundary conditions that preserve the unity of the intermediate atom cannot be reached.

20. Living-Systems And Consciousness

Recall Jantsch's claim that the Beluzov-Zhabotinski reaction, as a result of its classification as an autopoietic system by Maturana's definition [47], has rudimentary consciousness [46,57]. For decades researchers have believed that consciousness is merely a computer program, "a special software in the hardware of the brain or just a matter of information processing" [58]. This isn't seem acceptable; and is more a reflection of the current state of bias in the field of consciousness studies where the dominant cognitive model is aligned with the standard model of biology. This *philosophy of biological mechanism* provides only half the story of mind. Our aim is to show that an addition to and clarification of Maturana's key allows classification of the prion [38,39] as the fundamental living system.

The *cognitive domain* [47] of a prion[3] does not create and dissipate entropy in its own right like higher life forms. The prion is not even at the same level as the virus where this critical factor of far from equilibrium complex processing is satisfied by proxy when the virus protein commanders the existing cellular machinery of the host. The prion, as the zeroth case of a living system, does not 'live' at the viral level. The factor that separates the prion from the non-autopoietic entities listed in section 17 (which utilize only the mechanistic half of the complementarity required for a complex self-organized living system) is the prions utilization of the coherent energy of the *élan vital* in its propagation. This is a prediction of the noetic theory we intend to demonstrate empirically [29].

21. Is There More To Biology Than Mechanism?

Returning to the analysis of the fundamental philosophy of biology we summarize Brillouin's [59] categorization of the issues of mechanism versus teleology into three general positions:

- Knowledge of physics and chemistry is essentially complete and life could be explained without introduction of any additional *life principle*.
- Considerable physics and chemistry is known, but not everything. A new law or principle needs to be discovered to explain life; but this concept will not be outside the laws of physics and chemistry already known. Whether or not this is considered a *life principle* or not is irrelevant.
- A *life principle* is mandatory for an understanding of life because living systems are much different and more complex than inert matter. The laws of thermodynamics describe only inert and *dead* matter to which life is an exception requiring a new principle to explain.

Theories of mind abound with great disparity between them [48]. It could be said to be like the early days of electromagnetism when 'for every 100 theorists there were 101 theories'. Simply stated, and reducing from the top down, mind theory can be generally categorized as follows:

A. Classical Reductionism – Newtonian mechanics deemed sufficient to describe mental activity
- Neural action – Consciousness can be completely explained by brain processes
- Information processing in Neural Networks / Cellular Automata / Physics and Chemistry

B. Heisenberg Cut – Additional degrees of freedom, possibility of nonlinear & nonlocal interactions
- Quantum computation in brain microstructures like synapses, microtubules or ordered water
- Copenhagen phenomenology – collapse of wave function essential for mental activity

C. Cartesian Cut – requires additional 'life' and/or physical principles beyond mechanistic theory
- Dualism / Interactionism – ontological extension of quantum theory, collapse not required for evolution
- Monism – all is mind, consciousness is ineffable

The first four types above fall under the domain called the philosophy of biological mechanism. Theories in the Classical and Heisenberg arenas have defined consciousness as a hard problem too difficult to research [60]. This provides significant motivation to explore below the Cartesian divide where additional physical laws are anticipated. What evidence exists to justify such a search?

Continuing with the premise that quantum theory is incomplete, Schrödinger in relating the 2nd law of thermodynamics and life says: "We cannot expect that the 'laws of physics' derived from it to suffice straightway to

[3] The prion propagates through conformational changes in the geometry of its protein structure [29,38,39].

explain the behavior of living matter…We must be prepared to find a new type of physical law prevailing in it. Or are we to term it a non-physical, not to say a super-physical law [61]?"
But what can this new physical law be?

22. Complex Systems Theory: A New Model For The Origin Of Life

It appears unanimous that unicellular prokaryotes are considered the most fundamental form of living system with the inclusion of viruses controversial. By defining awareness as a fundamental physical quantity like the concept of *charge* in electrodynamics [29,63-66], it is possible to show how the prion recapitulates, in the sense of its organization, the propagation of its infective state by maintaining the 'charged' form of its conformation by merely being coupled to the Noetic Field. Prion propagation therefore represents the most fundamental form of biological mechanism and provides the root of its redefinition. Although slightly more complex, the self-organization pertinent to viral replication also falls under this new definition of biological mechanism. Something else happens at the level of bacteria or perhaps any motive unicellular life form. The cognitive domain has sufficient capacity for activity based on an *interactive computational model* [67]; the evolution of the content (qualia) is driven by more than the mere presence of teleology as in the case of the prion or virus, i.e. more degrees of freedom are available.

The *continuous state* of this new action principle, as already suggested, is a 'force for coherence' like the well-known radiation pressure in the QED of light propagation. This symmetry enhancing force acts not only on the topological states of prion conformation by constructive interference as the base state of biological mechanism, but also by higher order conditions of self-organization. The structural-phenomenology of the new noetic action principle [2-4] is a complementarity of mechanism and the noetic field, together forming a teleology that is the general driving principle governing all aspects of complex self-organized living systems [17,18]. Applying the concept of a *unit cell* from the nomenclature of crystal structure to this fundamental teleology in the topology of spacetime, forms the scale-invariant hierarchical basis of living-systems from the microscopic origins of mechanism to macroscopic intentional systems. The complementarity of mechanism and teleology is a structural-phenomenology that is the primary cosmological principle of the conscious universe; the fundamental least unit of which is defined as awareness [29].

Defining awareness as a fundamental principle like charge in Electromagnetic Theory [57,60,62] provides two paths to formulate a theory of life and consciousness. 1. The currently popular cognitive avenue poses the question '*what processes in the brain give rise to awareness*?' Unfortunately this creates a *hard problem*, which at present is deemed impossible to study empirically [57,60] - an investigative dead end! Charge has been considered fundamental physically and indivisible; but this definition appears to hold only to the semi-classical limit. Physicists are finding out that the so-called unit of elementary charge arises from a deeper wormhole structure in the higher dimensional topology of spacetime [34]. This is also true in defining the fundamental unit of awareness. Charge, or in this case awareness, does not arise as a brain process. 2. Only looking beyond the brain leads to a model of awareness (consciousness) that is both definable and empirically testable. In brief, the fundamental basis for the least unit of awareness has <u>three</u> complementary components [62-66]:

- Elemental Intelligence – A non-local atemporal HD domain or set of boundary conditions co-eternal with God that define an individual entity.
- Noetic Ordering Principle – A new action principle synonymous with aspects of the unified field and mediated by an exchange particle called the noeon that is synonymous with spirit or an *élan vital*.
- Local Fermi and Bose brain/body States – Classical, semi-classical and quantum modes associated with neural activity and other aspects of simpler autopoietic or complex self-organized living systems.

Remaining problems center around the fundamental nature of space; suffice it to say that Einstein's superceding of Newton's 3D absolute space with a 3(4)D relativistic space was a significant milestone, but not a final answer. The triune complementarity above provides a sufficient structural-phenomenology of the 11(12) noetic space to define the psychosphere of an individuals mind and body.

23. Action Of The Unified Noetic Field

Fröhlich [68] proposed a new energy that produces coherent long-range order in biological systems. Some authors have suggested this coherence is a type of Bose condensate. Einstein and Hagelin [69] further postulate this coherent principle arises from the unified field, which is also proposed here by Noetic Field Theory. The action of the unified field is the basis for a life principle governing the evolution of complex self-organized living systems.

We will show generally how the continuous transformation of the topology of the 12D superspace of the noetic least unit introduces by periodic holophote action evanescence of a life force from the HD energy covering of each moment of the present [2-4,29,57,60,62]. First we illustrate one of a number of possible models of how at the semi-classical limit from the stochastic background of the vacuum zero-point field, this energy of the *élan vital* is harmonically injected into every point and atom in spacetime by a mechanism like a 'chaotic gun' [70,71].

24. Physical Self-Organized Basis Of Qualia

Qualia, plural of *quale*, is 'the subjective quality of experience; a *qualitative feel* associated with an experience' [72,73]. The physical HCM cosmology of *élan vital* leads to a rigorous model for representing qualia [74,75] allowing immediate application on the mind-side to psychology and on the body-side to medicine. In 'What's it like to be a bat?' Nagel [73] states that current reductionist attempts fail by filtering out any basis for consciousness; becoming meaningless since they are logically compatible with its absence. He assumes if an organism has conscious experience, "there is something it is like to *be* that organism". This is the subjective character of experience for any conscious entity whether bat or Martian. Every experience has a specific subjective nature [73].

To Nagel "there are facts which could not ever be represented or comprehended by human beings, simply because our structure does not permit us to operate with concepts of the requisite type"; because "to even form a *conception* of what it is like to be a bat one must take up the bat's point of view". If one removed the viewpoint of the subjective observer; what would be left? Nagel suggests the remaining properties might be those detectable by other beings, the physical processes themselves or states intrinsic to the experience of awareness. This changes the perspective of qualia to the form "there is something it is like to undergo certain physical processes". "If our idea of the physical ever expands to include mental phenomena, it will have to assign them an objective character". Nagel recognizes that:

> Very little work has been done on the basic question (from which mention of the brain can be entirely omitted) whether any sense can be made of experiences having an objective character at all. Does it make sense ... to ask what our experiences are *really* like, as opposed to how they appear to me?...This question also lies at the heart of the problem of other minds ... If one understood how subjective experience could have an objective nature, one would understand the existence of subjects other than oneself [73].

These are questions an integrative Noetic Science can answer. Standard definitions of qualia are an inadequate philosophical construct describing only subjective character. In the physical sense of Noetic Field Theory (NFT) components describing qualia from the objective sense are introduced - i.e. distinguishing the phenomenology of qualia from the noumenon or physical existence of the *thing in itself*.

A comprehensive definition of qualia includes three forms considered physically real by NFT because the noetic fields of HCM cosmology on which the noetic model is based are all physically real. See [74,75].

> Type I. The Subjective - The *what it feels like* basis of awareness. Phenomenological states of the qualia experience. (The current definition of qualia Q-1)
> Type II. The Objective - Physical basis of qualia independent of the *subjective feel* that could be stored or transferred to another entity breaking the 1st person 3rd person barrier. The noumenal elements of qualia upon which the phenomenology is based.
> Type III. The Universal - Living systems represent a Qualia substrate of the conscious universe, acting as a 'blank slate' carrier from within which Q-II are modulated into the Q-I of experience by a form of superradiance or hyper-holographic evanescence.

A standard image requires a screen or other reflective surface to be resolved; but if the foci of two parabolic mirrors (Casimir-like plates in our model) are made to coincide, the two images superpose into a real 3D image that does not need a screen. See Fig. 7 above. A science toy called the 'magic mirage' is used to demonstrate this effect of parabolic mirrors. Objects placed in the bottom appear like solid objects at the top of the device.

The holophote action of *élan vital* energetics arises from the harmonic oscillation of least unit boundary conditions tiles the spacetime backcloth and pervades all self-organized living systems. The inherent beat frequency of this continuous action produces the Q-III carrier wave that is an *empty slate* modulating cognitive data of Q-II physical parameters into Q-I awareness states as a superposition of the two (Q-III and Q-II). This modulation of qualia occurs in the HD QED cavities of the cognitive domain. The QED cavities are a close-packed tiling of least unit noetic hyperspheres; the Casimir surfaces of which are able to reflect *quaneme* subelements. While the best

reflectors of EM waves are polished metal mirrors, charged boundary conditions also reflect EM waves in the same way radio signals bounce off the ionized gases of the Kennelly-Heaviside layers in the Earth's ionosphere. This reflective 'sheath' enclosing the cognitive domain is charged by the Noeon radiation (exchange particle of the noetic field) [16] of the *élan vital*, the phases of which are 'regulated' in the complex HD space of the least unit HCM cosmology.

Cosmological Origin and Production of the Three Types of Qualia

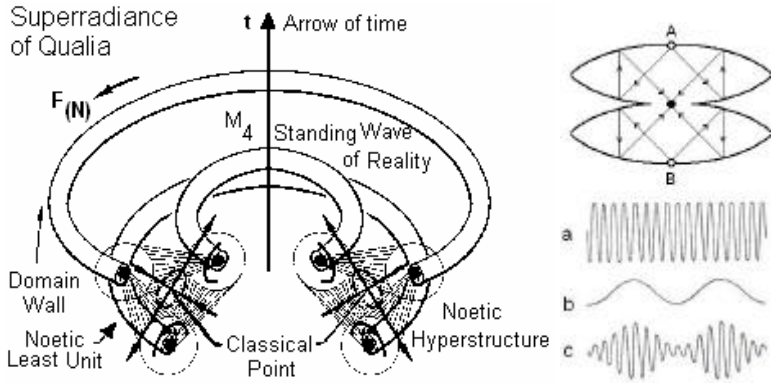

Figure 7. Metaphor for the emergence of qualia from the continuous action of the noetic least unit (1a), a microcosm of the HCM where past oriented compactification periodically produces a classical spacetime point. The standing-wave domain walls represent the lightcone singularities of Q-III propagation, the surfaces of which act structurally as Casimir-like plates, and phenomenologically as a carrier wave base for Q-I qualia evanescence by Q-II modulation. 1b represents two pairs of parabolic mirrors (the Q-III Casimir domain walls) whose foci overlap; this is the high frequency wave in 1c denoted as *a*. The longer wave *b* represents Q-II qualia which is modulated by the Q-III wave into the usual Q-I qualia *c*. Thus *a*, *b*, and *c* in 1c represents the three forms of qualia and how they work together to form Q-I by superradiance of the noetic field.

How does noetic theory describe more complex qualia than the simple qualia of a light pencil? (The qualia-II of a light pencil is assumed to be *the* pencil of light [74,75] Light quanta are microscopic in contrast to the macroscopic sphere of awareness. It thus seems reasonable to assume that scale invariant properties of the HCM least unit of awareness would apply. Like phonemes as fundamental sound elements for audible language there are qualia-nemes or *quanemes* for awareness all based on the physical modulation of Q-II states by the geometric structural-phenomenology of the Q-III carrier base of living systems 74,76].

25. Cosmology of Noetic Medi cine – An Introduction to Catastrophe Theory

Regarding homeostasis - living-systems and every component subsystem, especially those related to health and well being, biophysically are forms of *dynamical systems* that generally operate in a framework of stability and equilibrium – the maintenance of which is the charge of medical practice. Technically these systems have a restrictive class called gradient systems which contain singularities or points of *extrema*. Some causal action can institute a bifurcation of an extrema that can initiate a qualitative change in the physical state of the system.

Catastrophe theory[4] describes the breakdown of stability of any equilibrium system causing the system to jump to another state as the control parameters change. The changes in the singularities associated with the bifurcation of extrema are called elementary catastrophes [76-78] and can be described by real mathematical functions

$$f : R^N \rightarrow R. \qquad (1)$$

The equation describing an elementary catastrophe utilizes variables representing *Control* and *State* parameters of the system and is a smooth real function of *r* and *n* where *R* represents the resultant singularity or catastrophe

$$f : R^r \times R^n \rightarrow R. \qquad (2)$$

[4] The groundwork for Catastrophe Theory began with Poincairé's work in 1880 on the qualitative properties of solutions to differential equations; and became formalized in the 1950's by R. Thom's work on mapping singularities in structural stability, which he called catastrophes.

The *r* variables are the control parameters of the state variables *n*. The function f is therefore an *r*-parameter family of functions of *n* variables. If we let

$$f\left(a_i ,...a_r ;\quad x_j ,..x_n \right) \tag{3}$$

be a smooth real-valued function of $r + n$ real variables we get equation (2).

The number of elementary catastrophes depends only on *r* and is finite for $r \geq 5$ totalling eleven (table 1) and infinite for $r \geq 6$.

***r* (Control Factors)**	**Number of Catastrophes**	**Name**		**Dimensions**
r = 1	1	A_2	Fold Catastrophe	2D
r = 2	1	$A_{\pm 3}$	Cusp Catastrophe	3D
r = 3	3	A_4	Swallowtail	4D
r = 4	2	$A_{\pm 5}$	Butterfly	5D
r = 5	4	A_6	Wigwam	6D
r = 3	-	D_{-4}	Elliptic Umbilic	5D
r = 3	-	D_{+4}	Hyperbolic Umbilic	5D
r = 4	-	D_5	Parabolic Umbilic	6D
r = 5	-	D_{-6}	2nd Elliptic Umbilic	7D
r = 5	-	D_{+6}	2nd Hyperbolic Umbilic	7D
r = 5	-	$E_{\pm 6}$	Symbolic Umbilic	7D
r = 6	∞	X_9	Double Cusp	9-11D

Table 1. The general forms of catastrophes showing how the dimensions increase as the number of control factors increase. The names bear some resemblance to the geometric pattern of the catastrophe. The double cusp catastrophe is utilized in development of Noetic Theory because it models most closely noetic superspace transitions and is compatible with the fundamental equation of consciousness.

26. Catastrophe Theory and Anticipatory Effects of the Noetic Formalism

The structural-phenomenology of Double-Cusp Catastrophe (DCC) Theory in $\geq 9D$ appears homeomorphic to the Riemannian manifold of both 10(11) dimensional M-Theory and the topological geometry of the continuous state dimensional reduction spin exchange compactification process inherent in the action of the corresponding scale invariant least unit of noetic superspace which because it is a complex self-organized system has inherent anticipatory properties mediating the catastrophes. In this general framework the double-cusp *equilibrium surface* is analyzed in terms of a hierarchy of *jumps in state* providing a framework for expanding the basis of allopathic medicine and psychology. One can say FAPP that the noetic least-unit tiling [66] of the Planck backcloth is a complex HD catastrophe manifold mediated by the unitary noetic field .

The noetic action of consciousness $F_{(N)}$ is not a 5th fundamental force but an integration of the electromagnetic and gravitational force at the unitary level where it is confined to the Universal sea of consciousness embodying an 11(12)D Noetic spacetime metric $S_{(N)}$ [2-4]. The well known Schrödinger equations central to quantum theory make correspondence to Newton's second law of motion $F = ma$ which is also the starting point for deriving the noetic formalism. Newton's law of gravitation $F = Gm_1m_2 / r^2$ is not chosen because it is not the fundamental form of gravitation and also contains an undesirable constant of dimensionality. Whereas $F = ma$ is dimensionless. Likewise Einstein's gravity is also not chosen.

Substituting Einstein's mass-energy relation $E = mc^2$ into Newton's 2nd law we obtain: $F_{(n)} = E / c^2 a$ where $F_{(n)}$ is the noetic force and E becomes the self-organized autopoietic energy [45,46] related to y_e of the cosmology of mind defined in the fundamental dualistic interactionist relationship of noetic theory:

$$|\Psi_M\rangle = |B|y_b\rangle + (|y_e\rangle + |y_c\rangle) \quad (4)$$

i.e. the mind Ψ_M is not merely quantum brain dynamics By_b, but a classical $\rightarrow$quantum $\rightarrow$unitary continuum of brain, élan vital y_e and HD elemental intelligence y_c. *E* is scale invariant through all levels of the HCM beginning at the highest level in the supralocal Megaverse as a hyperdimensional Wheeler Geon - a *ball* of photons of sufficient size to self cohere through gravity [80]. At the micro level the Geon becomes synonymous with the de Broglie wave-like mental energy of a conscious entity. The Prion [29,81-83], the infectious protein responsible for spongiform encephalopathies (mad cow disease) is designated the simplest known life form, if correct that the prion protein is 'animated' by the self-organizing properties of the *élan vital* of the noetic field [76]. The *E* unit is comprised of a factor of *Einstein's*, the fundamental physical quantity defined as a 'mole - Avogadro number (10^{23}) of photons'.

Next the derivation of the noetic equation is generalized for the conscious universe by taking an axiomatic approach to cosmological scaling from the work of Kafatos et al, [84] suggesting that all lengths in the universe are scale invariant. Beginning with the heuristic relation $c \equiv \dot{R}$ or $\dot{R} = L/t = c$ where $\dot{R}$ represents the rate of change of scale in the universe. This corresponds to the Hubble relation for perceived Doppler expansion of the universe where $H_0 = \dot{R}/R$ and $a = \dot{R} \times H_o$. By substituting $\dot{R}^2 / R$ for *a* in the original $F_{(n)} = E / c^2 a$, for final substitution we have $F_{(n)} = E / c^2 \times \dot{R}^2 / R$. Since $c = \dot{R}$ the c^2 & $\dot{R}$ terms cancel and we are left with:

$$F_{(N)} = E / R \quad (5)$$

the unexpanded fundamental formalism for noetic action within a conscious entity in the HCM model. It should be noted that *R* is a complex rotational length with standing wave properties and could be derived in terms of angular momentum or spacetime spinors at HD levels in domains described by future developments in M-Theory.

When applied in concert with the fundamental noetic equation of consciousness [63] and the model of interactive computing [67,85] double-cusp catastrophe theory provides a mathematical basis for the noetic basis for medicine and psychology. The processes of metabolic homeostasis and intentional action are modulated by the ubiquitous flux of the unitary noetic field as described by the anticipatory effects of the $F_{(N)}$ formalism.

Equation (4) is a standard equation for the equilibrium surface of the DCC [77-79] as modeled in (Fig. 8); where $B \pm Q$ is the state variable and m_d and u_d are the control parameters.

$$(B+Q)^3 + (B+Q)m_d + u_d = 0 \quad (6)$$

The position of the two cusps is found at $m_d = 0$ and $u_d = 0$.

Noetic Action on the Equilibrium Plane of a Double-Cusp Catastrophe

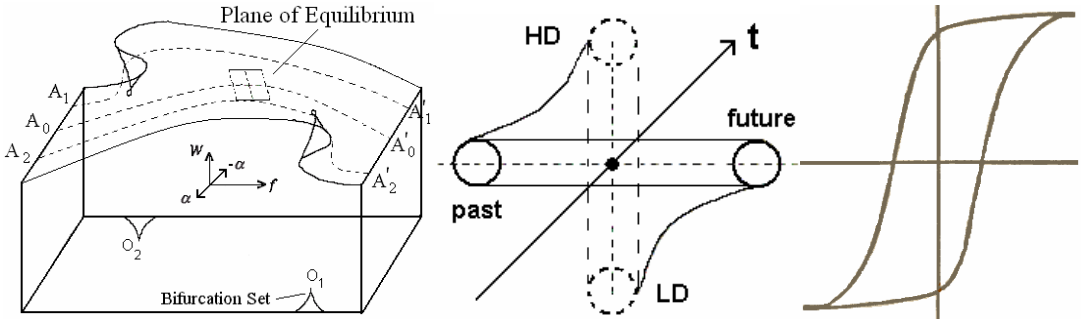

Figure 8. In 8a, the DCC is illustrated showing cusps at each end of the plane of equilibrium. The DCC is said to occur in ≥ 9 dimensions and thought to be the catastrophe form most compatible with NFT symmetry. The plane of equilibrium is a topological manifold tiled of noetic *least units*. The equilibrium manifold undergoes a 'conscious' quantum computation best described by interactive computation [67,85]. Fig. 8b graphically illustrates the fundamental scale invariant noetic equation $F_{(N)} = E/R$ of conscious action. Any internal or external stress or change in E is a nonlinear dynamic process producing stability or instability in the boundary conditions of R; an instability in $E \rightarrow$ stress $\rightarrow$ displacement $\rightarrow$ catastrophe $\rightarrow$ jump…whereas stable flux is homeostatic. 8b like noetic HCM cosmology is also a form of hysteresis loop generalized in 8c.

If fig. 9a is considered as a present moment; 9b is a flag of temporal permutations as the noetic catastrophe cycle evolves in time from future to past and higher to lower dimensions in the same manner as the HCM cosmology for the spaces: $R^{12} \supseteq ...R^4 \supseteq R^3 \supseteq R^2 \supseteq R^1 \supseteq R^0$.

Unit Circle and Associated Flag of Temporal Evolution for Noetic Catastrophe Cycle

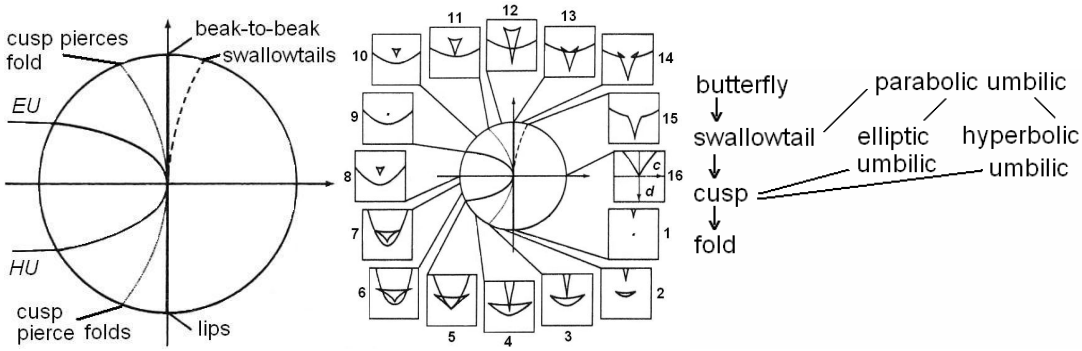

Figure 9. [77,78] 9a represents a plane of the unit circle with corresponding cross sections in 9b: Section 16 for example shows a cusp. A single point in 1 grows to the 'lips' in 2. In 3 to 4 the original cusp 16 penetrates the mouth becoming a hyperbolic umbilic point at 5, turning into an elliptic umbilic at 6, shrinking to a point in 9. Growing again in 10 to pierce the fold line in 11 and through it in 12. A 'beak-to-beak singularity in 13 breaks in 14, collapsing to a swallowtail 15. The seven fundamental catastrophes contain 'subcatastrophes according to the diagram in 3c.

Table 2. Geometry of zero to twelve dimensions showing points and lines contained

N	Point	Lines	Squares	Cubes	Tesseracts	5T	6T	7T	8T	9T	10T	11T	12T
0	1												
1	2	1											
2	4	4	1										
3	8	12	6	1									
4	16	32	24	8	1								
5	32	80	80	40	10	1							
6	64	192	240	160	60	12	1						
7	128	448	672	560	280	84	14	1					
8	256	1,024	1,792	1,792	1,120	448	112	16	1				
9	512	2,304	4,608	5,376	4,032	2,016	672	144	18	1			
10	1,024	5,120	11,520	15,360	13,440	8,064	3,360	960	180	20	1		
11	2,048	11,264	28,160	42,240	42,240	29,568	14,784	5,280	1,320	220	22	1	
12	4,096	24,576	67,584	112,640	126,720	101,376	59,136	25,344	7,920	1,760	264	24	1

The putative significance of Tbl.2 for the application of double-cusp catastrophe theory to the noetic HCM formalism is that the structure of possible boundary conditions and the number of control points is revealed. For example, in this simplistic view, a 3D point in real spacetime might have 16 control photon-gravitons (noeons) covering it. Carrying the analogy all the way up to the 12D holoscape of the Megaverse, the same 3D point might be controlled or guided by a total of 8,176 photons. The number arrived at by summing the points of D4 to D12. No point in the universe is isolated; so this metaphor does not include the possible power factor by associated points in both the HD and LD HCM backcloth. Within the inherent continuous-state dimensional reduction compactification process, the LD domain (dimensions less than 3) might be coupled to orders of magnitude more photon-gravitons. This detail of Noetic Theory has not been completely worked out yet.

27. An Example of Noetic Medicine: The Mechanism of Protein Conformation In Prion Propagation

Fatal neurodegenerative disorders known as transmissible spongiform encephalopathies (TSE'S) have been shown to spread by a proteinaceous infectious particle or prion [81-83]. According to Prusiner's definition these prion elements propagate conformational variation leading to replication by a mechanism not well understood until now [81]. Two conversion hypotheses have been proposed:

- The *template-assisted conversion model* [86] where a putative cellular chaperone called protein X assists conformational transition by altering the thermodynamic equilibrium of a kinetic barrier in favor of transition state protein formation.
- The *nucleation-polymerization model* where highly ordered aggregates of the infectious element form. This also shifts thermodynamic equilibrium allowing this nucleus to act as a seed for further prion propagation. Protein folding thus appears in both cases to be the primary autocatalytic mechanism propagating prion diseases.

According to Prusiner [83]:

> Nascent prions are created either spontaneously by mutation of a host protein or by exposure to an exogenous source. Prions are composed largely, if not entirely, of a modified form of the prion protein (PrP) designated PrPSc. Like other infectious pathogens, they multiply but prions do not have a nucleic acid genome to direct the synthesis of their progeny. A post-translational, conformational change features in the conversion of cellular PrP (PrPC) into PrPSc during which alpha-helices are transformed into beta-sheets. Since this structural transition in PrP underlies both the replication of prions and the pathogenesis of the CNS degeneration, much of the effort in the laboratory is devoted to elucidating the molecular events responsible for this process. Indeed, prion diseases seem to be disorders of protein conformation.

And further relative to the theory of propagation proposed here:

> During prion replication, an as yet to be identified factor that we have provisionally designated protein X binds to PrPC. The PrPC/protein X complex then binds PrPSc; by an unknown process, PrPC is transformed into a second molecule of PrPSc [83].

A Postulated 3D X-bundle structure of the PrPC was chosen by Prusiner from four penultimate PrPC models reduced from ~300,000 possible configurations by both theoretical and experimental constraints. These four choices correlated best with human prion mutations. A Conceptual model of the orientation of the four helices of the X-bundle model looks like two X's nearly superimposed on each other. Since prions have no nucleic acid based genome to direct their propagation. Noetic theory proposes that prion replication is directed by fundamental mechanisms of complexity theory and that the action principles driving this complexity are a more fundamental form of mechanism than that perceived currently by the philosophical basis of mechanism in biology.

28. Star Trek Medicine

The popular US sci-fi TV-movie series Star Trek includes advanced medical techniques utilizing a device called the *Medical Tricorder* able to diagnose and heal. Most notable at the fundamental level of triage is the tricorder's ability to heal a variety of injuries in a few seconds that today might take several months to heal. At the advanced level

using combined features of replicator and transporter[5] technology as illustrated in the movie "the Voyage Home" when Dr. McCoy utilizes the tricorder to repair a ruptured cerebral artery inside Chekov's head. The operation is accomplished by *beaming out* the damaged section of the artery and *beaming in* a new section.

We may not see the advent of the advanced form of the tricorder until our children's or grandchildren's day; but sufficient theory exists to construct the basic form of the tricorder now. In the interim noetic theory can be used to greatly expand the versatility of Transpersonal Psychology.

29. Completing Epistemology: The Utility of Transcendence as a Tool in Transpersonal Psychology

I want to know God's thoughts ... the rest are details - *Albert Einstein*

Human epistemology has steadily evolved from dark ages of superstition through enlightened periods of logical reason to the current pragmatic age of empiricism. Now another Galilean class revolution completing epistemology by integrating Science and Theology (S&T) utilizing transcendence seems immanent. S&T represent opposite ends of a long continuum of schools of thought rather than mutually exclusive disciplines as often believed. To implement the required paradigm shift an integrative noetic science must include an adequate understanding of Transcendence. Over 2,000 years ago the Greek philosopher Plato considered this type of noetic insight, paraphrased here as a corollary:

§ Noetic Insight: *No matter how great ones intelligence or how vast ones wisdom, noetic insight is cosmic insight transcending the capacity of the self* [87].

Human epistemology has come full circle to a time not only for another evolutionary step, but the final one completing the tools of epistemology through the use of transcendence.

> For the first time since the Dark Ages, physicists Paul Ginsparg and Sheldon L. Glashow wrote 12 years ago, we can see how our noble search may end, with faith replacing science once again [88].

This condition is not what is advocated here because it seems that no matter how advanced tools of transcendence may become, empiricism leads directly to engineering which is an integral part of temporal existence. In some arenas current science has already reached, at least in terms of experimental design, the limits of empiricism; for example some experiments in particle physics require an accelerator the size of the universe and some calculations require a computation cycle with a duration the age of the universe. Only about 70 years ago Cosmology was not considered science. The universe was believed to be clock-like as described by Newtonian mechanics. Since the advent of Quantum Theory the majority of scientists have considered the universe to be quantum.

But recent studies extending the standard models have allowed a growing number of scientists to embrace forms of an Anthropic Conscious Multiverse. The form utilized here in Noetic Theory has continuous-state properties with temporal reality cast as a virtual subspace of a higher dimensional eternity [2-4]. This new cosmology yields key elements pertinent to premises here (especially the periodic properties enabling introduction of an inherent spirit-based action or life principle); some of which are:

- The fabric of reality continuously cycles between classical, quantum and unitarity (continuous-state).
- Phenomenological reality is virtual; because of the arrow of time much of the underlying noumenon is 'filtered' out of perception.
- Dimensionality cycles continuously from spatial to temporal to energy.
- Matter by Einstein's $E = mc^2$ is continuously created, annihilated and recreated (the well known wave-particle duality) forming the holographic backcloth of perceptual reality.

Inherent in these periodic properties is the unitary field or spirit of God, acting in governance as a higher dimensional de Broglie-Bohm super quantum potential [89,90]. Periodicity allows for the pervasive ubiquity of this supernumerary action principle. Since a conscious universe is implied the field is one of information. This is key to

[5] The Star Trek Transporter disassembles the individuals atomic and life energy information and broadcasts it to a remote site for reassembly. The replicator is a similar technology for objects and tissue assembled from templates stored in a computer.

our idea of transcendence. In an Anthropic Holographic Conscious Multiiverse (HCM) human beings are spiritual beings and a path to enlightenment is possible by following certain laws related to this condition. Because of the nonlocal (and because of the additional dimensionality – supralocal) character of the Holographic Principle individuals perceive themselves as separate entities in 3-space. But in Higher Dimensionality (HD) we are unitarily imbedded in the holographic backcloth, which because of its spiritual nature –

- Transcendence may occur and
- Information received in the process

The coming paradigm shift does not merely represent a significant intellectual breakthrough like Copernicus' transformation of egocentricity into heliocentricity, the advent of quantum theory or Einstein's theories of relativity; but a profound paradigm shift where Humanity will leave the so-called Modern Age behind an enter an Age of Consciousness.

An 'empirical metaphysics' [91] is under development that will violate the uncertainty principle and allow actualization of Plato's noetic insights in a manner useful for scientific exploration. Noetics, the study of the cosmology of mind, comes from the Greek word *nous* meaning intellect. Noetic insight when used scientifically to complete epistemology is the highest form of knowing because it utilizes and integrates the pure logic of philosophical reason, the rigors of scientific empiricism and the absolute truth of theology.

All scientific theory formation has at least low level metaphysical components. Without entering into a technical discussion of the nature of creativity, we assume here that this is what any creative process entails. The latter-day Mormon prophet Brigham Young went so far as to say "All scientific discovery comes as a revelation from God" [92]; while this may indeed be considered true in an Anthropic Universe, one would suspect the vast majority of scientists are currently neither generally interested in, consciously aware of its occurrence, nor even consider this possibility, especially since statistics have demonstrated that only about 20 to 30% of scientist believe in some form of god in contrast to 95% of the general population.

Does this mean that only few might be initially prepared to take advantage of the premises of noetic transcendence? An informal survey of my colleagues has revealed that some have already begun using transcendent abilities in various ways in scientific endeavor and daily routine with reasonable success. I know of no team efforts yet at this writing; although a five year budget for implementing bulk quantum computing approved in March 2007 will be used to test the premises here. As principle investigator I have chosen a question I believe, because of infinite possibilities, can only be answered by transcendence. Should we be successful certainly "the game will be afoot" as Sherlock Holmes would say at the beginning of a case. Hopefully preliminary results will be available before this volume appears in 2008. I think a result like this is required to create sufficient pause for engendering a Galilean class paradigm shift in epistemology. Since inception in the 1980's all attempts have failed at implementing bulk quantum computing. By utilizing transcendence I have been provided a unique approach by the *Zeitgeist*; that approach demands the development of what I have called "the Noetic Transform" [93].

The value of the high level addition of Transcendence as a tool of science in theory formation would be to accelerate progress by saving considerable time, energy and funds by optimizing both avenues for empirical research and efficiency in contemplating and defining fundamental new tenets of a model. For example, early in my career I sat in on a round table discussion by an august body of great thinkers of the age. They divided up a challenging problem into every logical possibility like spokes of a wheel. Each agreed to take a spoke or two, intending to spend the remainder of their careers working on their arena of interest of the problem. The utility of transcendence in cases like this would be to narrow the field to a spoke or two.

Currently all the standard models of science are Darwinian or naturalistic excluding any place for God or Spirit. For example Biological Mechanism, the basis for allopathic or scientific medicine and psychology states: The laws of chemistry and physics are sufficient to describe all life; no additional life principle is required [50-52]. The founding fathers of quantum theory stated it could not describe biological systems, Bigbang cosmology is also naturalistic; therefore something most assuredly must be missing in physical theory.

The noetic model for the integration of S&T is based on three premises:

§1. That transcendence is a universal Anthropic Principle able to provide an interface or *common ground* between S&T.
§2. Rigorous application of The Golden Rule (see below) spontaneously leads to transcendent abilities under certain optimal conditions because
§3. Man is inherently a spiritual being (*The spirit and the body are the soul of man* [94]) imbedded in a conscious universe guided by a unitary field tantamount to this spirit.

A common ground [76,95] uniting S&T is required because traditionally scientific principles are not accepted by faith based theology; and religious dogma is generally considered an unacceptable anti-intellectual mode of epistemological inquiry by the common definition of scientific pragmatism in place since Galileo showed that reason, in the case of heavier objects falling faster, failed. Similarly today Hubble discovered redshift, not a Doppler expansion of the universe. Other interpretations are available [2-4] supporting HCM cosmology.

To achieve this integrative result a model of an Anthropic Continuous-state Holographic Conscious Multiverse (HCM) [2-4] (and this volume) is utilized that includes an inherent basis for defining complex self-organized living systems in a manner that includes the physical basis of spirituality and therefore transcendence [17].

According to the Perennial Philosophy: God exists and has revealed a path to find him [96]. This perennial philosophy is not only universal to all theology but ultimately to all truth whether theological or scientific as we make the case for here. The HCM [2-4] an extension of Einstein's Static Universe model, is shown to naturally include a new action principle governing complex self-organized living systems. This HCM elucidates the physical basis of spirituality. All legitimate religions or life paths in principle provide avenues to transcendence. Achieving transcendence is not based on the superficial icons of the world's theologies. Superficial artifacts like phylacteries, crosses, rosaries or rituals like bowing east or genuflecting are not relevant.

Because human beings are inherently spiritual [17,94], transcendence can be achieved universally by practicing principles of love, service and charity; or adhering 'perfectly' to what is called the Golden Rule - Do unto others, as you would have them do unto you [97-104]. The Golden Rule is the most fundamental moral or ethical principle; it is the basis for the theology of virtually all world religions, the basis of social order, interpersonal relations, sound business practices and international diplomacy. The Golden Rule has many similarities to the Hindu belief in karma.

30. The Golden Rule Subsidiary to Love for God – The Great Commandment

For simplicity we will argue our case only form the point of view of Judeo-Christianity but the reader is asked to keep in mind that as illustrated in fig. 10 the premises here are postulated to apply to all legitimate theologies. The monotheistic religions Judaism and Christianity teach that the Golden Rule and other moral commands for human relations are subsidiary to the Great Commandment relating to God, e.g., Jehovah, Emmanuel or Jesus The Christ explicitly identified the Great Commandment as supreme love for God, as affirmed in the Hebrew Torah and Christian Bible [105]. In contrast to the ancient 'an eye for an eye', Jesus gave a new command - "Love one another as I have loved you" [106]. By categorizing 'Love your neighbor as yourself' as the Second command like unto the first, Jesus placed the Golden Rule and human relationships as not subsidiary but tantamount to one's ideal relationship with God the father.

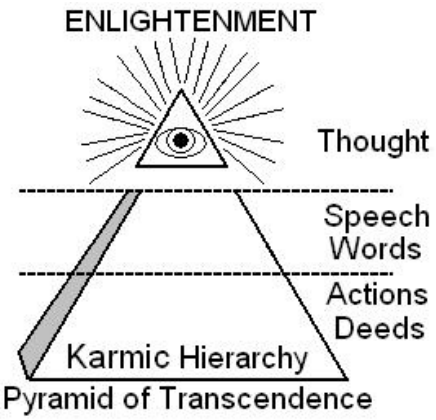

Figure 10 Pyramid of Transcendence / enlightenment. Individuals 'Living' operationally at the top of this 'karmic pyramid' spontaneously develop transcendent abilities. 'Sin' or violation of ethical principles, commandments or Karmic law can be classified into three weighted categories of decreasing severity: 1. Actions, 2. Speech, 3. Thoughts.

The paramount statement relating to our purpose here is Christ's teaching regarding the two great commands, specifically as stated in the last sentence:

> Master, which is the great commandment in the law? Jesus said unto him, Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind. This is the first and great commandment. And the

second is like unto it, Thou shalt love thy neighbor as thyself. On these two commandments hang all the law and the prophets [107].

Prophets are seers and revelators – users of transcendent abilities. The requirements for transcendence may be further clarified in terms of a three-level pyramid (Fig. 10). The base represents crimes or sins of action like murder, theft or adultery for example. The middle of the hierarchy is represented by sins of word like lies or insults, which under extreme conditions could lead to another's harm or death. Goethe's 1774 classic *Sorrows of Young Werther* [108] is purported to have produced a rash of suicides on its publication; whereas a statement like 'where'd you get that stupid shirt' may or may not only hurt ones feelings. The top of the pyramid represents sins of thought. Thought by nature is fleeting. As long as an evil thought is not dwelt on; it can be forgiven as quickly as contemplated. At this level of living the limitations of being human come into play. Deity can expect no more of a mortal being than trying to manage ones thoughts.

According to metaphysical law of the perennial philosophy as applied to HCM cosmology, one is virtually guaranteed attainment of a degree of transcendence when ones 'moral crimes' hover at the apex of the pyramid (Fig. 10); provided one has sufficiently good karma or repaired any karmic debt or made restitution for negative conditions of the past.

Noetic Cosmology suggests that by routinely living at this apex a universal Anthropic Principle of Transcendence comes into play whereby anyone maintaining this mode will spontaneously achieve a state of transcendence. If the premise for this noetic Principle of Transcendence is correct, any team of scientists whether comprised of any combination of Jew, Christian or Shinto for example will be able to utilize Transcendence as a tool in scientific theory formation (Fig. 11). Likewise any dialogue between scientists and theologians could achieve similar fruition. Based on the fundamental premise that Men are spiritual beings [17,94] living in an Anthropic Multiverse; the following postulate is said to hold true:

Postulate 1: Any individual or group of individuals living by the Golden Rule, to the extent where those individual's moral offenses[6] occur generally only at the level of thought, will spontaneously develop transcendent abilities.

Two conditions apply. The past history of the individual must be relatively free of serious offense. The postulate may not apply to those guilty of unpardonable offenses like murder or blasphemy against God[7]. The activity of thought is at the limit of human control. Human beings cannot be expected to have perfect control of their thoughts. The karmic rule is satisfied if one does not dwell on negative thoughts.

A power factor exists. Christian doctrine states: Charity covereth a multitude of sins [109,110]. This charity or good works, (charity of time or substance) provides a power factor for eliminating residual or negative Karma enabling the time to be shortened in reaching the apex of the pyramid or the transcendent state.

The basic needs of all life on Earth is optimized by 'The Golden Rule'- treating other entities and the environment holistically in the same manner as we would like to be treated. This perennial philosophy is an absolute truth that relates to all sentient consciousness universally throughout the Holographic Multiiverse where intelligent life is the rule not the exception. Transcendence can be achieved by a high level adherence to the universal tenets of the Golden Rule. Empiricism has been an impossible challenge for theology; and scientists have historically denigrated any dialogue utilizing religious dogma based on faith-based logic put forth by theologians as merely a product of pre-Galilean imagination. Therefore only by developing a common basis for utilizing transcendence as a universal epistemological tool can S&T be united pragmatically. Producing a universal framework for transcendence seems of grave import because such a completion of human epistemology could have broad impact ultimately leading to world peace, higher quality of life and amelioration of environmental concerns.

[6] Moral offense – We wish to skip for the most part a detailed delineation of what constitutes moral offense. For our purpose here we chose to simply state that good has a tendency to bring people together and moral offense has a tendency to separate or harm.

[7] Unpardonable Blasphemy – This is not a condition of swearing or cursing of the general kind; but a rare occurrence of a fully transfigured person who has beheld God like a Moses who then turn against God.

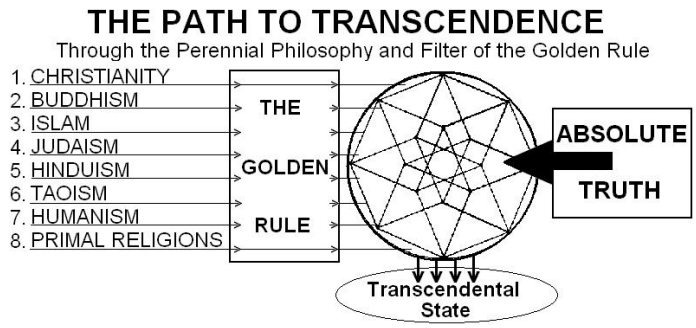

Figure 11. Because of the inherent spiritual nature of mankind as part of an Anthropic Cosmology with an inherent teleological life principle and the concomitant existence of 'Absolute Truth' in regard to spiritual matters, the Golden Rule, as a universal principle of the Perennial Philosophy provides a path to both find God and spontaneously develop transcendence.

31. Transcendence as a Tool in Scientific Theory Formation and Transpersonal Analysis

Since there are about 10,000 religious sects or spiritual paths in the world today, most of which have conflicting teachings or dogmas; how could developing an empirical metaphysics be possible? Whatever ones spiritual path - the dance of a twirling Dervish, fasting, meditation, charity, chanting, prayer or peyote, it is achieving the resulting pure transcendental state that is of paramount importance.

As done here for Noetic Cosmology a team of investigators or an individual therapist attempting to utilize transcendence might also utilize historical tracts or scriptures pertinent to their individual path as a starting point to help guide the questions posed to the universe or for the therapy. We realize the extent of this challenge; one must have sufficient faith in the veracity of a scriptural tract to use it as a starting point. The spirit of truth gained from entering the state of transcendence is then used in the Platonic sense [87] for verification. Noetic insight is received through diligent study after sufficiently following ones individual path to perfection (fig. 11) in conjunction with prayerful meditation. Alternatively when one comfortably 'hovers' at the apex of the pyramid if ones is studying a physics manuscript a passage on the Bessel function may leap out while reading or later while pondering as a transcendent suggestion that the Bessel function is pertinent to the engineering or other theory at hand.

We wish to make it clear that receiving such 'revelations from God' need not interfere with experimental verification; because as we mentioned earlier all theory formation has a metaphysical element when initially formulated in the creative mind(s) of its inventor(s). Therefore the metaphysical act of theory formation is independent of the pragmatic demands of hard science which is the second step or companion step in theory testing. There is already a growing movement for integrating science and theology.

Examples of noetic insight from history are Friedrich Kekule's dream of a snake joining head to tail in the discovery of the benzene ring, or perhaps more pertinent to our interest in the nature of consciousness here, Descartes claim of receiving a revelation from God designating to the distinction between mind and body [111]. Descartes 'vision' has remained controversial for over 400 years and is only now about to be tested by the methods of noetic theory. Science, if my work here has been successful, has finally progressed to the point where this is possible.

The great value of developing an integrative discipline of science and spirituality is that potentially 10's, 100's, or even 1,000's of years could be saved, along with the resources expended on spurious research paths that could alternatively be used to alleviate human suffering or maintain the environment etc. The timing in the Zeitgeist seems on target as history already suggests an asymptotic increase of technical information; so to keep pace transcendence seems timely.

As an example of a test question, for example noetic theory considers the Bigbang an erroneous interpretation of astrophysical data (Hubble discovered redshift not a Doppler expansion); more horrific at the time of this writing when a Nobel Prize has just been given out for the Bigbang's discovery touted as one of the most profound discoveries of the last century. If this noetic premise is proven true, some of the best minds in astrophysics could have more efficiently expended hundreds of thousands of man-hours over the last 75 years. Science by definition is satisfied only by empirical evidence and theology by quietly submitting to faith. Francis Crick believes that the concept of a soul is a myth and that modern neurobiologists (except notably the late sir John Eccles [112] see no

need for a religious concept to explain the interaction of nerve cells [113]. He calls this an astonishing hypothesis since over ninety percent of the earth's population believes in the soul.

32. Absolute Truth in Theology

The philosophical or theological concept of absolute truth is something has been argued for centuries; whether there is such a thing, what form it takes, can it be proven, and what are the implications if any. A very simple perspective is taken here: Absolute truth indeed exists, it is independent of opinion or even what some kinds of empirical tests might show; because sometimes interpretation can be ambiguous. Absolute Truth can only be verified through transcendence. For example in near history the Earth was considered flat (as can be seen from any mountain top or the seashore) and the center of the universe.

Although we might be interested in forms of theological Absolute Truth like 'the Gods organized the Earth and gave life to man' [114]; some theological elements will not easily lend themselves to standard experiential-experimental forms of ‘empirical metaphysics’ and will have to be ‘confirmed’ by mutual verification by teams of noeticists experiencing the same transcendent “facts” or remain faith-based until a viable experimental protocol can be designed. Critics might consider the “divinations” of a particular group a form of group hysteria, which might be dispelled if disparate groups are causally separated.

If we consider God to be the Great Physicist, it is physical truths that science would be most interested in and also most readily verified by standard empiricism after transcendent discovery. It is difficult to predict what the world might do when it realizes that the path to transcendence is formulaic and while not necessarily a cake-walk so to speak but certainly no more difficult than learning to play the piano proficiently. And the earlier one began the easier the journey. This is not unreasonable considering that most scientists undergo an average of 22 years of study in preparing for an academic life, plus the lifelong study to keep abreast of developments in ones field(s).

33. Absolute Truth in Science

Interestingly there exists a concept of absolute or immutable truth in science:

> A truth that represents a permanent and final grasp of some limited aspect of nature. Most people would say this is incompatible with the expectation that our theories will be falsified. I adhere to the expectation that our theories will be falsified, and look for the immutable truth only in those theories that have already been falsified. Newtonian mechanics...is an example of the most certain and permanent truth man has ever achieved. Its only failing is its scope; it does not cover everything [115].

Now that it has been falsified it is an 'absolute truth' in the domain it describes.

34. The Path to Transcendence

Consciousness is an ubiquitous cosmological principle of the universe; and the human mind is a complex system imbedded in this universe. Inherent in the nature of the human mind is a fundamental spiritual component; that allows absolute truth to be perceived from any valid perennial path. Transcendent abilities seem to derive from three main avenues:

1. A specific type of innate personality structure, which comprises our psychological makeup, level of intelligence, knowledge and wisdom, all of which occupies the spacetime structure of the individual psychosphere [16].
2. Special gifts that the universe bestows upon us for its own purposes, or more likely through modification of number 1 above or that we have developed by certain forms of psychological stress or earned as in 3 below.
3. Personal preparedness; which seems to equate in direct proportion to living life by the golden rule and any other ethical principles.

There are exceptions to the ascension of the basic karmic pyramid and more details beyond the scope of the discussion here, but as a simple generalization as one climbs the Karmic pyramid of perfection the threshold of spiritual enlightenment or reaching the transcendent state occurs when our imperfections become limited to misdeeds of thought only. There is a motivational factor also, and wisdom can also relate to mastery of the principles related to the chosen path that might enhance or vary this threshold. It helps to be actively engaged in a

worthy cause or service to humanity. Idleness would be a detractor to spiritual awareness. One must at least be involved in meditation or prayer.

One must also choose a viable spiritual path. It does not seem reasonable that one could pay singular homage to a stone, currency, psychotropic pharmacopoeia, or 'legal' forms of passion and expect a significant degree of success while mentally occupying the top of the pyramid. Of the 10,000 spiritual paths existing on Earth today, one must use one that works. Ones stage of personal growth limits the choice of perceived path. Some paths are significantly better; and it seems that there are relatively few that enable true enlightenment in a reasonable length of time. The path must therefore be chosen carefully. "It takes nearly a quarter century to become a great physician. Why, oh, why do people think they can fathom the most spiritual depths without the necessary experimental and laboratory work accompanied by compliance with the laws that govern it?" [114]. Kimball further states this expertise comes from personal righteousness followed by revelatory experience precept upon precept.

35. The Law of Hierarchies and Noetic Epistemology

In applying Noetic Field Theory [12,65,116,117] to the quantization of the soul [118,119] and "The spirit and the body is the soul of man" [17,94]; how does the metaphor of the Karmic pyramid relate physically as a law of hierarchies as the means for reaching the transcendental state? Following the work of Plato we have defined noetic insight [87] as the highest form of knowing; and stated that transcendent communion operates because 'the spirit and the body is the soul of man' [17,94] and 'all spirit is matter' [94].

All matter is not spirit but can become so by perfection. But in the meantime in our temporal existence the human soul is comprised of earthy matter and spiritual matter in a complementarity of temporality and eternity. Our consciousness is imbedded in temporality and this is where our sensory apparatus is coupled to. It is a misconception that there is a 'sixth sense'. What actually happens is that the senses couple to higher dimensionality instead which is in closer proximity to the flux of the vital noetic field. This is what occurs when one achieves the transcendental state. In a crude metaphor this could be likened to an electron going to a higher orbit in an atom when it is energized. The confinement of the electron to the higher orbit is similar to the senses being coupled to a higher plane of spacetime.

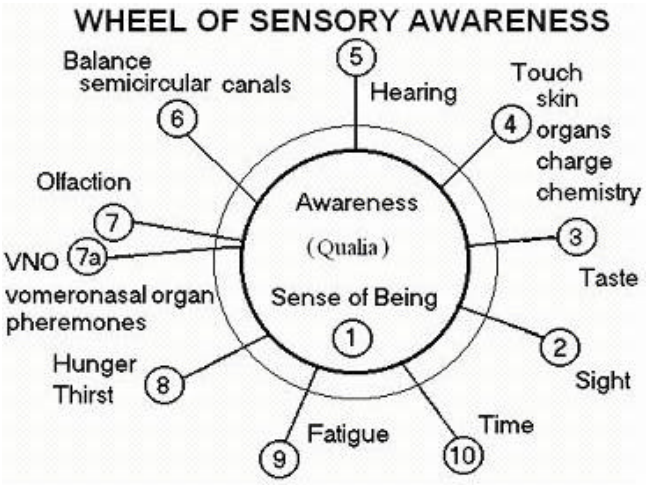

Figure 12. There are many more than the 5 common senses; all of which are connected to awareness. The term '6th sense' is a misconception. All of the senses are normally coupled to receive input from external sources but through a different orientation the mind can be coupled to higher dimensional spacetime to receive nonlocal input which is how 'paranormal' effects occur.

Newtonian mechanics was cast in 3 dimensions. Einstein showed us that we live in 4 dimensions, which is the limit of our normal perceptual phenomenology; but God dwells in the complete hyperstructure of at least 12 dimensions because this is the minimum number to describe eternity – meaning being causally free of temporal reality. Sins of deed and thought maintain a gulf from the 12D of perfection separating us from the full unity of the spirit and confining our matter to the 4D subspace.

Our goal should be to separate our being from the dross matter of imperfection and *precept-by-precept* climb the ladder of dimensions to the full 12D complement of light. Like the light in a laser reverberating between the mirrors

of coherent reflection, a light explosion in all the 12 directions, not attenuated by any darkness that stops the light or makes it tarry into dissipation.

Spirit Song Over the Waters

The soul of man
Resembleth water:
From heaven it cometh,
To heaven it soareth,
And then again,
To earth it descendeth,
Changing ever. – Goethe

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