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## The Whole Sum Infinity: Merging Spirituality and Integrative Biophysics

Iona Miller\*

### ABSTRACT

We all have our own metaphysics – a worldview – whether we are aware of it or not. Science can and should contribute to that worldview of how things are and work, but should not monopolize it. We should locate scientific understanding within a wider view of knowledge that gives equally serious consideration to other metanarratives and forms of human insight and experience. Perhaps we must learn to respect both domains to understand fully the world in which we live. We can conveniently call the scientific perspective “physics” and the stereoscopic view “metaphysics,” which goes beyond (“meta”) the purview of science alone. Both provide what we can call a meaningful “working” knowledge of reality for getting things done, whether they are an entirely accurate reflection of Reality, or not, until science solves the final riddles of existence.

**Key Words:** metaphysics, worldview, science, spirituality, biophysics, quantum psychology.



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*“We can assert with certainty that the Universe is all center, or that the center of the Universe is everywhere and the circumference nowhere.” –Giordano Bruno*

*“If we knew what we were doing, it would not be called research would it?” --Albert Einstein*

*“Whoever undertakes to set himself up as a judge in the field of Truth and Knowledge is shipwrecked by the laughter of the Gods.”—Albert Einstein*

## **Heavy Meta**

There is no unique way to go from physics to metaphysics. Although the reductionist scientific view does not determine the full nature of the existential field, it imposes certain requirements and restrictions on it. Both systems function as socially-structured language games. But even the most reliable map reveals virtually nothing about the detail of the terrain.

Both scientific and metaphysical theories or models must be beautiful, elegant, economical, and coherent, despite any application of their criteria. Metaphysics must explain the entire set of phenomena fundamental to human experience. This can be done, as in physics, from a top-down or bottom-up approach.

In science, top-down means from the cosmological to the subquantal level of observation. In metaphysics, we work from the biological/emotional/mental to transpersonal or archetypal levels of experience and expression. In physics, matter/energy is foundational, while metaphysics considers consciousness even more fundamental. Quantum or nonlocal mind models also reflect the later. We can examine a wide or narrow view of the nature of Reality and our own nature, in both scope and detail.

## **Full Circle**

Is physics coming around full circle back to Natural Philosophy after only 500 years? The so-called new physics is described even by its practitioners as “mystical”. Sir Isaac Newton, godfather of modern science, wasn’t merely a scientist, but also an experimental alchemist. Alchemy was the search for the Godhead in matter.

Einstein lauded Newton, saying “Nature to him was an open book... In one person he combined the experimenter, the theorist, the mechanic, and not least, the artist in exposition.” Newton presumed that matter and energy were animated from and infused by a more fundamental dynamic that was behind them both – a negentropic source perhaps too fine to observe that fed the fires of the universal engine.

Newton hypothesized that any body can be transformed into another of some kind, including its intermediate grades of qualities. Buckminster Fuller proposed much the same in *Synergetics I*

and II, demonstrating it geometrically in a series of dynamic subatomic transformations, beginning and ending with what he poetically called “Cosmic Zero”.

Today we refer to that negentropic source as the vacuum potential, vacuum fluctuation, zero-point energy, or synergetically (Fuller) as Vector Equilibrium Matrix. Quantum electrodynamics is a powerfully predictive theory developed by Nobel prize-winning physicist Richard Feynman and others. It proposes that virtual particles, electrons and photons appear and disappear from a zero-point field, the quantum vacuum that pervades the universe.

Other physics models share similar conclusions on the vacuum potential. It is the dream of many that mankind can tap this ocean of potential as a free energy source that increases our survival potential. Metaphysicians suggest harmonizing or resonating psychobiologically with this low amplitude resonance enhances spirituality. It is the groundstate of consciousness.

‘Nous’ is an ancient word for what we now call nonlocal mind or consciousness. Many philosophers and modern physicists consider ‘consciousness’ as the fundamental basis of all that is. Nous is, curiously, the French term for ‘we’ or ‘us’. And, indeed, we are That. This metaphysical Source of all that exists lies at the threshold where Nothing becomes something – where the universal becomes the particular.

Normally, it would be considered philosophical at best and solipsistic at worst to attempt in this modern era to illuminate our understanding of the nature of the microcosm with such an archaic non-scientific term. We might expand our philosophical concepts using physics or science models, but can we gain as much by illuminating our scientific paradigms with ancient or modern philosophy? Perhaps we can because throughout history, we have all struggled to find words and concepts for our phenomenal experience, common human perceptions and apprehensions of Truth.

Such is not the usual realm of science, but that of Transpersonal, Jungian or archetypal psychology, which examines the deeper meanings of concepts which are metaphors of our existence – an artistic or aesthetic as well as deductive method. Aristotle considered ‘nous’ a faculty of the human soul. Today, soul is studied in the domain of these sacred psychologies and in “noetics”. Through metaphysics we contemplate both exterior and interior perceptions of the underlying structure of the universe.

When Wolfgang Pauli collaborated with Jung, he encouraged us to find “a neutral, or unitarian language in which every concept we use is applicable as well to the unconscious as to matter, in order to overcome this wrong view that the unconscious psyche and matter are two things.” Psyche and soma are indissolubly wed in nature and our nature, and must be considered in an adequate account of reality.

Can we be scientifically conservative and metaphysically bold, simultaneously? It means walking the narrow edge of Occam’s Razor. Often metaphysical ideas are metaphorical and burden us with false assumptions and irrational quantum leaps of logic. It is not that our subject should be rational and linear, but these arguments are constructed such that if you believe this

underlying premise, it is assumed certain outcomes result. At best this is the old mechanistic model of causal or classical physics, not the counterintuitive quantum world.

But the vacuum potential appears to be much more than a metaphor. It is the most fundamental phenomenon we are currently capable of perceiving. It provides us with a new paradigm for our very existence – one that recognizes wholeness, connectedness, integration, and participation in the universal scheme. Every ‘thing’ – from concepts to objects -- including the universal waveform originates from the fertile and “whole sum” womb of spacetime. This is also the domain of nonlocal mind.

Most scientists will tell you that wavefunctions, universal or otherwise, do not really exist, except on paper. But it may be that wavefunctions really exist and are akin to the mind of God. If the wavefunction is consciousness and our personal wavefunction is connected with it in a constrained or limited fashion, too much information appears as noise. But the connection suggests a relationship between intelligence and spacetime.

## Let's Do the Spacetime Warp Again

Andrei Linde of Stanford has suggested the expanding fractal universe generates emergent information that could be poetically considered an evolving universal intelligence. If so, it is an emergent property of spacetime as is every thing. But seemingly-separate things are a construction of our minds [maya, illusion], an overlay of what is essentially one unbroken movement – a dynamic verb, not a group of nouns.

The largest component of our corporeal existence is the vacuous space between the atoms that make up our physical bodies which are far from solid from the quantum perspective. We are undergird and literally in-formed by that pervasive infinite informational flow.

Could this be the ancient Greek’s “universal harmonious wisdom” resonating as human consciousness? If so, are we listening to its integrative message? ...in terms of our paradigms, our technology, our ecology, our ethics? The bottom line is that tapping this soulful source, both through aesthetic and technological means may be the key to our survival as a species.

Commonly translated as ‘mind’ or ‘intellect’, the Greek word ‘*nous*’ is a key term in the philosophies of Plato, Aristotle and Plotinus. What gives *nous* its special significance there is not primarily its dictionary meaning - other nouns in Greek can also signify the mind - but the value attributed to its activity and to the metaphysical status of things that are ‘noetic’ (intelligible and incorporeal) as distinct from being perceptible and corporeal. In Plato’s later dialogues, and more systematically in Aristotle and Plotinus, *nous* is not only the highest activity of the human soul but also the divine and transcendent principle of cosmic order.

In a notoriously obscure chapter (III 5) of his work “On the Soul”, Aristotle distinguishes *nous* as ‘a capacity to become everything’ from *nous* as ‘a capacity to make everything’, in the way that light makes potential colours actual. This ‘active’ *nous*, called ‘immortal’, has often been identified with the Aristotelian Unmoved Mover, whose life is ‘a thinking of thinking’ (see

Aristotle §16). But Aristotle probably regarded human thought as being godlike rather than as being a product of the Unmoved Mover, who exists as an eternally transcendent thinker.

For Plotinus (§4), *nous* comprises 'primary reality', the domain of intelligence and intelligible beings. He construes this domain as an 'emanation' from the ineffable One, the ultimate principle of everything. Taken universally, *nous* corresponds more or less to a syncretism of Plato's Forms with Aristotle's Unmoved Mover. Everlastingly contemplating the One, *nous* is construed as an equivalence between thought thinking itself and intelligible beings as the only true thinkables. The activity of *nous* 'overflows' into 'soul', the principle of embodied life. As a lower level of reality, soul can only think things by treating them successively and separately. Human beings live primarily at the level of 'soul', but they also, by virtue of their immortal and 'undescended' self, have access to identification with *nous* and thereby to a mode of being in which thinker and thought are completely unified. In this transcendent condition, the mind is reality itself. (*Routledge Encyclopedia of Philosophy*)

Buckminster Fuller had his own notions of the morphing dynamics of energy/matter in the womb of spacetime. Fuller re-discovered nature's own pulsating flux and means of self-assembly. He lamented that classical science is based on Cartesian coordinates and the structurally incoherent cube, rather than nature's tetrahedral forms and structural tensegrity. He taught us that energy has shape...and that shape emerges from the vacuum potential. As the *Heart Sutra* implies, "form is not other than void and void is not other than form".

The special-case geometrical shape chosen arbitrarily by the engineering-structures-eschewing pure scientists for their energy-measurement accommodation, that of the cube, is structurally unstable; so much so as to be too unstable to be classified as a structure. Unwitting of this mensural shortcoming, Planck's constant inadvertently refers to the cube, implicit to the gram, as originally adopted to provide an integrated unit of weight-to-volume mensuration, as was the "knot" adopted by navigators as a velocity unit which integrates incremental time-space values.

Spacetime for scientific philosopher Fuller meant:

*526.01 There is no universal space or static space in Universe. The word space is conceptually meaningless except in reference to intervals between high-frequency events momentarily "constellar" in specific local systems. There is no shape of Universe. There is only omnidirectional, nonconceptual "out" and the specifically directioned, conceptual "in." We have time relationships but not static-space relationships.*

*Time and space are simply functions of velocity. You can examine the time increment or the space increment separately, but they are never independent of one another. Space is the absence of events, metaphysically. Space is the absence of energy events, physically. Space is the antithesis of solid. Both are misnomers. Solid(mass) refers to locals of too high an event frequency for our physical members to penetrate or conceivably tune in. Space refers to locals of an event frequency per volume too low for our apprehending equipment to tune in. Space is all the observer's untuned-in information. Space is finite as a complementary of finite Scenario Universe. As a co-occurrent, complementary function of finite but non-unitarily-conceptual and non-unitarily-tune-in-able Scenario Universe, space is finite. Space does not have definable*

*properties. Only systems have definable characteristics. The cognitive awareness of space derives from definition of system characteristics whose topological interrelationships inherently and coherently divide Universe into insideness microcosmic space and outsideness macrocosmic space. Systems have 32 topological characteristics. Space is the integral of all the frequencies that are too low for tune-in-ability. Space is the aggregate of all the vector equilibrium nulls of all magnitudes and frequencies of all isotropic vector matrixes always potentially articulatable in all directions from any point of origin. Space is never linear. Physics finds that Universe has no solid things surrounded by, and interspersed with, space. Life is an inventory of tuning-ins and tuning-outs of experience. Birth is the first tuning in; death may not be the last. Systems divide all of Universe. Thought divides all of Universe. Thought is inherently systemic...whose inherency always has its coherency of space. Only systems can communicate space. Space is systems-defined-and-deferred awareness of potentially tunable otherness.*

Fuller considered humanity a micro Universe; unfolding eventuation is physically irreversible yet eternally integrated with Universe. Our experience of time is relative to our mesocosmic size:

*Local variability within total order synergetically explains and defines the experience "time," which is relative size experience. The magnitude of the event characteristics is always accounted in respect to other time cycles of experiences. The cosmically permitted and experientially accommodated actuality of the individual's unique variety of sensorially differentiated local in time-space experiences also accommodates the experienceability in pure principle of individually unique physical life in concert with the only metaphysically operative, cosmically liaisoned, weightless, abstractly conceptual mind, by means of all of which physically and metaphysically coordinate experienceable principles it is experimentally discoverable how genetic programming accomplishes the "instinctive" conditioning of subconscious, brain-monitored, relative pulsation aberration and transformation controls, which are all reliably referenced entirely subconsciously to the eternally undisturbed, cosmic-coordination regularities unbeknownst to the individual biological organism "experience."*

*The only instantaneity is eternity. All temporal (temporary) equilibrium life- time-space phenomena are sequential, complementary, and orderly disequilibrium intertransformations of space-nothingness to time-somethingness, and vice versa. Both space realizations and time realizations are always of orderly asymmetric degrees of discrete magnitudes. Physics thought it had found only two kinds of acceleration: linear and angular. Accelerations are all angular, however, as we have already discovered. But physics has not been able to coordinate its mathematical models with the omnidirectional complexity of the angular acceleration, so it has used only the linear, three-dimensional, XYZ, tic-tac-toe grid in measuring and analyzing its experiments. Trying to analyze the angular accelerations exclusively with straight lines, 90-degree central angles, and no chords involves pi and other irrational constants to correct its computations, deprived as they are of conceptual models.*

## **Nonlocal Mind Paradigm**

The model of nonlocal time helps us supersede mechanistic notions of space and time. The universe is infinite, and so is the mind, not in the individual personalistic sense, but in terms of

consciousness. The Greeks conceived of the mind as both limited and infinite, human and divine. The root of this notion comes from Hermetic and occult sciences, attributed to Hermes Trismegistus. The mind is not localized nor confined to the body but extends outside it. This notion lies at the root of sympathetic magic.

The Persians were even bolder in their view that the mind could escape the confines of the physical body and create effects in the outside world. Their physician Avicenna declared, “The imagination of man can act not only on his own body but even on others and very distant bodies. It can fascinate and modify them, make them ill, or restore them to health.”

These notions were superseded by later causal and mechanistic views that came to dominate Western science and medicine. The nonlocal mind paradigm suggests we can effectively operate with the realization that consciousness can free itself from the body and can act not only on our own bodies, but nonlocally on distant things, events, and people, even if they are unconscious of the intentionality. It also suggests a new emergent healing paradigm.

This nonlocal model is perhaps the basis of such phenomena as psychosomatics, remote healing, remote viewing, and dream initiations. Physicists use the term nonlocal to describe the distant interactions of subatomic particles such as electrons. We can experience nonlocal mind spontaneously paradoxically, without losing our individuality.

It has been proven that human minds display similar interactions at a distance (Krippner, Mishlove, Radin, May, Motoyama, Sidorov). These anomalies include therapeutic rapport, telepathy, clairvoyance, precognition, visions, prophetic dreams, breakthroughs, creativity, prayer, synchronicity, medical intuition, nonlocal diagnosis, spontaneous remission, and intent mediated or paradoxical healing. Nonlocal mind erupts spontaneously, surprising, even shocking us. The mind has ultradimensional qualities unlimited by physical constraints.

“Emergence” is the process by which order appears spontaneously within a system. It is essential to understanding functional consciousness, the mind/body, subjective experience, and the healing process. When many elements of a system mingle, they form patterns among themselves as they interact.

When the mind lets go of its rational order, the old form dies and enters into unstructured chaos. The whole person emerges with a new form, embodied as a creative expression, an intuition, or as healing. Most often it is characterized by an element of novelty and surprise, since it apparently does not originate in what came before. Both healing and medical intuition are examples of emergence. It is a spontaneous solution to a problem. (Miller, 1993a)

The healing arts, from conventional medicine to alternative/complementary medicine, and from psychology to pastoral counseling are undergoing a shift from a mechanistic to a holistic paradigm. Science is actually an experimental philosophy whose highest value is empiricism, and conventional healing shares this philosophy. All new scientific theories require some unifying idea, and that idea is, by definition, metaphysical – essentially untestable.

Today's heresies are tomorrow's dogmas. In any metaphysical dispute, strong non-scientific arguments can propose new theories, which may become scientific. Speculative ideas have contributed heavily to the growth of knowledge.

Rather than discouraging exploration of fringe areas of knowledge, this awareness makes it mandatory we explore all possible modalities and anomalies without prejudice, no matter how unconventional. Even extraordinary subjects may be approached with rigorous protocols. Though subjectivity is unwelcome in science, we can study the subjective nature of experience (qualia) in various ways. The process of healing is one such subjective experience.

The alchemists, who were students of consciousness in matter, created an elixir of life, a "medicine of philosophers", a cure-all or panacea. What the modern world yearns for is a "meta-syn," or visionary synthesis rooted not in a mechanistic model but one using nature's own forms of self-organization.

This model is based on the peculiar characteristics of nonlocality and probability of quantum physics, rather than classical Newtonian mechanics. Hopefully, the new model has the power to resonate with our whole being and propel us into a more effective healing paradigm. Emergent healing is actually a treatment philosophy, rooted in a worldview born from our current understanding of the nature of Reality.

Health is the natural outcome of a meaningful life, not just absence of symptoms. It means a comprehension of the complexities of life that is deeper than the conventional worldview of cause and effect. It proposes that consciousness is the foundation of reality. We do not exist independently from the universe, but the exact nature of that seamless connection is unknown.

Rooted in relativity, quantum, holographic and chaos theories, a nonlocal metaphysical context suggests such a paradigm shift from the purely causal healing model. The interactive field (psychodynamic field) present in healing situations can be amplified intentionally through therapeutic entrainment, or resonant feedback playing off the unified field (universal field). Nonlocal mind operates at the most fundamental level.

## **The Whole Sum Cosmos**

There is a pre-physical, unobservable domain of potentiality in quantum theory. It is the basis of fundamental interconnectedness and wholeness of Reality. This cosmos is, indeed, greater than the Whole SUM of its parts.

Theories of the physical vacuum will eventually prove useful in understanding life. For example, it may link biology and consciousness. Rather than an inconsequential epiphenomenon, consciousness is a causal factor in biology. The body is a colloidal suspension that can act like an amorphous liquid crystal, resonating and superconducting in a variety of ways.

Biophysics contends that more in terms of conceptual integration may be learned from the study of life than from the study of nonliving matter. More than molecular biology or bioengineering

technology, it is its own field of fundamental research in physics. Its own epistemological and philosophical understanding aims at understanding not just mastering life

Quantum mechanics determined the primacy of the inseparable whole. Holism is intrinsic to any quantum theory for biology. Descriptions of isolated systems are permissible only under experimental conditions. Holistic properties are defined mathematically in EPR [Einstein-Podolsky-Rosen] correlations. It implies fundamental interconnectedness within the organism, between organisms, and with the environment.

Holistic biophysics is therefore an integrative subject, a specialized but transdisciplinary pursuit. Quantum biology must refer to non-equilibrium thermodynamics, since organisms are open systems best described by complexity. Issues include coherence, macroscopic quantum states, nonlocal interactions, nonlinearity, communication networks, self-organization and regulation, field models, interconnectedness, and consciousness. Field-thinking and field-models are central to bioelectromagnetics.

## **The Nature of Nothing**

The vacuum is filled with virtual photons whose motion constitutes the “zero-point energy”. This “cosmic zero” may be related to consciousness in some as-yet-unknown way. ZPE fluctuates because this fundamental domain is not smooth but consists of virtual particles boiling into and evaporating out of existence. But where did all these photons in the vacuum originate from? They originated on all the other particles throughout the universe, according to physicist Claude Swanson (2003).

All the charged particles in the cosmos are doing the same jitterbug dance that causes electrons to radiate and absorb photons like crazy. Zero-point energy is made up of photons created by all those electrons in distant stars. Virtual photons in space are created by the motions of other electrons, mainly by “distant matter,” Each zigzag of a local electron is actually a communication between it and distant matter.

The local forces of physics have their origin in the distant matter of space. This amount of matter increases as the square of the distance away. There are enough electrons in cosmos to create the vacuum energy we measure, and to absorb all the photons produced by local particles. We are connected to the distant matter and forces that arise from this connection.

The distant matter of the universe can be displaced or disturbed in different patterns, called “modes”. They resemble the vibrational modes of a bell when it vibrates after it is struck. These fundamental vibrational modes can be excited and can resonate. These modes have symmetry and can interact with geometric shapes.

It is possible for every local, nearby electron (or any other particle) to interact with the distant matter virtually instantaneously. Radiation can travel backward in time as well as forwards. Photons which travel backwards in time are called “advanced waves.” Photons which travel forward in time are called “retarded waves.”

As we look further away in space, we are also looking backward through time into deep time. Feynman-Wheeler suggested as electrons zig zag, they create photons which radiate away traveling forward in time. Later, it is absorbed by electrons in the distant matter which accelerate and in turn radiate a photon which travels backward in time [actually spacetime], converging back at the original electron's location almost simultaneously with the first photon's radiation.

Instant coupling, the concept of photons traveling backward in time equally balanced by those going forward in time, is deeply embedded in contemporary physics. When electrons point toward one another, their velocities create an interaction over huge distances that is narrow and intense. They push one another backwards at near the speed of light.

Mutual interaction leads to a finite exchange of energy and momentum in the form of a very sharply spiked photon, a photon "pulse". It is these photons that make up the "zero-point energy" of space. The coupled photons produce a very, sharp, short pulse or spike of electromagnetic energy at the smallest unit of energy exchange. Every interaction between electrons consists of one or more photon pulses.

At the Planck scale, space-time structure of the universe begins to break up. Smaller scales than this make inertia and position meaningless. Synchronizing the phases of the photon pulse combines them into "wave trains" or "quantum wave packets", actually made up of many photon pulses from elementary exchanges between electrons.

Interestingly, this means the electrons are communicating both forward and backward in time, much like in the quantum handshake of Cramer's transactional model of QM. They send and receive signals across the universe virtually instantly.

Each quantum photon consists of many photon pulses, which are collectively the ZPE of the vacuum of space (Swanson). Electrons can synchronize together in a collective effect and undergo a "phase transition." Random motions are then superimposed on synchronized motions and collective oscillation occurs, which is a long range temporal order.

## **Quantum Jitterbug**

Each particle sees itself in the center, surrounded by distant matter. The central electron only sees an electron out at the edge when their velocities line up and this only occurs when they are "in sync." The key is when their periodic motions remain in step with each other. In this "phase locking" all electrons in the coupled system orbit around their average position at the same frequency. This is the womb of quantum mechanics, but we don't see the inner workings, just the "fuzzy ball" of probability on the outside.

The phase conditions for stable orbits [Higgs' Phase] will only be right at certain spots. The places at which stable orbits can occur will form a regular array resembling "crystal structure" at very small scales in space, so electrons actually "jump" from one such point to another.

Frequency has a very definite physical meaning. It is the rate at which the electrons (or any particles) orbit their center of mass location.

Electrons are either in phase and able to see and interact with each other, or out of phase and therefore effectively invisible and unable to exert force on one another. Unsynchronized particles appear as “quantum noise.” Other nearby parallel dimensions normally only interact with ours through quantum noise. However, consciousness appears to interact across these parallel dimensions.

Coherence between parallel realities can be thought of as hyperdimensional structure which crosses dimensions. It is nonphysical yet has physical manifestations. Higher dimensional structures can be designed which, by their shape and topology, are stable. Such forms may be a possible model for consciousness and the soul. The hypercube is one such hyperdimensional structure that has a long mystical tradition (Merkabah; Cube of Space, Flower of Life, Star Tetrahedron).

The key is to understand what makes up these higher dimensional geometrical structures. The answer is phase variation in spacetime. Normal space is “in phase” from point to point at this deep level, but it experiences small departures from the common resonant phase of all particles. These departures can become systematic. When mapped in spacetime they can form three-dimensional and higher dimensional geometric structures. These “phase structures” can cross several parallel universes, and become the physical basis for “subtle energy” and paranormal phenomena.

Electromagnetic waves are a collection of synchronized photons of different frequency and amplitude. Radiation is constantly pouring in and flowing out, balancing on average. The electron goes forward and backward in a seemingly random pattern in space and time, in order to balance all the radiation coming in and flowing out.

This balanced radiation pattern is analogous to the interference pattern of a hologram. A 3-D pattern of energy created by regions of interference is what we see as an image. There is creative and destructive interference. An electron and every particle is a “hologram,” produced as the result of the actions of the electron to preserve the balance of energy (Miller et al, 1973).

To be more than ethereal like a technologically produced hologram, it must have mass created by including the photons traveling backwards in time from the future. This is a 4-Dimensional hologram, which is an integral aspect of every particle and real physical object.

## **Biophoton Emission**

If we want to manipulate the particle, electron or whatever, all we need to do is manipulate its 4-D hologram. The brain is a holographic structure which makes an ideal antenna for receiving holographic wave patterns. The brain processes information holographically. This supports the idea that the brain may be a sender and receiver of holographic signals.

“Bose particles” are photons which like to be in the same state; they become entangled or entrained, sharing a frequency. The body creates coherent light. In the cell structure of the body there are membranes which act as conductors of microwave, infrared and visible light. These structures store coherent photons [biophotons] which play a fundamental role in life processes.

Our bodies use light and coherent vibrations to carry out many life processes. The stored coherent photons can be shaped and controlled to affect external photons and external vibrational patterns. The Bose principle extends the idea of entrainment to our own hyperdimensional being. Because of Bose statistics, these patterns or structures of energy simulate other “mirror” structures in the distant matter.

Brainwaves show that the brain becomes more synchronized and coherent in meditation. Based on our 4-D holographic model, the mind has enormous power to affect reality. 4-D type holographic signals are primary communications, “in-formation”.

The DNA in our cells can naturally produce coherent waves, which contain both forward-time traveling waves and matching backward-time traveling waves in phase conjugation. They generate coupled photons which radiate out along the axis of the double helix in both directions [biophoton emission].

What is DNA; where did it come from; how does it function to create life, to create us?

We have some of the biochemical answers, but we can look deeper into biophysics for our models. We propose that DNA functions in a way that correlates with holographic projection.

DNA projects a blueprint for the organism that is translated from the electrodynamic to the molecular level. Further, research strongly suggests DNA functions as a biocomputer. This DNA-wave biocomputer reads and writes genetic code and forms holographic pre-images of biostructures. We are more fundamentally electromagnetic, rather than chemical beings.

Each cell is a tiny radio transmitter capable of sending phase conjugate waves into the past and into the future. The real power of DNA and the use of phase-conjugate waves is just a matching pattern of advanced and retarded waves transmitted in phase by billions of cells. The strength of the pattern increases as the square of the number of cells acting in unison. A million cells transmitting a desired visualization in unison will have a thousand billion times more power than a single cell.

A million DNA cells broadcasting at random just produces noise. All the signals cancel out. But a million DNA cells broadcasting coherently and in unison generates a paranormal power, such as that exhibited by adepts with mindbody control.

DNA molecules of each cell can be brought into coherence by emitted light and sound (Gariaev). This enables the brain, when quiet and coherent, to combine together the signals of many DNA molecules so the desired image or visualization can be brought into being. At the core of this model is synchronous interaction of particles across great distances and time, which may explain

many paranormal effects as changes in quantum noise. This model offers a way to understand consciousness, which is much more than the physical body.

## **Integrative Biophysics of DNA**

For the time being, the twisted staircase of DNA is explored in the realms of molecular biology and biochemistry. Based on opening this world of biological organization, we can conjecture what mysteries an even deeper look at the functional basis of living matter might reveal.

This is the domain of biophysics, realm of both particle and wave interactions -- fields. It has been demonstrated that DNA is electrically conductive; much like copper wire it can carry a charge. It is believed this live-wire vital capacity may have been the charge transfer that gave life a jump-start. DNA's ability to transport charge helps minimize genetic damage from oxidation (Lawton, 2003).

The same fundamental physical laws that govern matter and the Universe also govern living organisms. Even a sound biochemical theory can be replaced by an even better, more fundamental, biophysical theory. It is still important to study properties at their own levels, not just as consequences of more fundamental scientific disciplines.

Where are we going? Who knows how future generations of man may be engineered from the 3.3 billion "letters" of the human genome? We have been looking to the genetic code for the secret of life. Perhaps we should be listening to the "genetic ode", the EM song of life that reverberates throughout our being – the audible life stream.

## **DNA as a Holographic Projector**

We are more fundamentally electromagnetic, rather than chemical beings. DNA is not only the driver of evolution but even more fundamental quantum mechanical symmetry-breaking forces (King, 2003).

In a hologram, wave fields interfere with one another to lay the foundations for the reconstruction of the image of an object. But how are the wave fields produced? The term holography comes from the Greek roots meaning "entire" and "to write". In holography, the image is projected by a coherent light source split into both an object wave and the reference wave background.

This dichotomous nature is reflected in the particle/wave nature of the DNA molecule, which can be "read out" with biophotons from chromosomes to set up a holographically produced wave field. This superposition of wave fields (object wave and reference wave) creates a wave guide for the formation of biological structure. The image is constructed according to the reference information contained in the genes. The reconstructed object wave is identical with the object

wave field. The reconstructed wave fields reproduce exactly the recorded ones (the DNA with genetic code).

Russian research in genetics led scientists to begin looking experimentally at the helical structure of DNA as a possible holographic “projector” of the DNA code. Thus, the existential blueprint described by the spiral staircase of DNA is translated into a complex EM field that guides the molecular growth of the organism. Miller, et al, suggested as much three decades ago, and outlined possible mechanisms of this quantum biohologram at both the cellular and whole organism level.

This process emerges from a domain more fundamental than the standard genetic code triplet model. Biophysics can now describe how our form emerges directly from the void, the vacuum substructure. In essence, we emerge from the cosmic void -- pre-geometrically structured nothingness. DNA is the projector of that field which sets up the stress gradients in the vacuum substructure to initiate dynamic unfolding. Genes function as holographic memories of the existential blueprint.

At the moment of ovulation there is a definite shift in the electrical fields of the body of a woman. The membrane in the follicle bursts and the egg passes down the fallopian tube. The sperm is negative with respect to the egg. When the sperm and egg unite, the membrane around the egg becomes hyperpolarized, shutting out other sperm.

It is at this moment that the electromagnetic entity is formed. The fertilized egg cell contains all the holistic information necessary to create a complete operational human being. The biohologram begins to function at conception and ceases only at death. Our contention is that the DNA at the center of each cell creates the multi-cellular creature hologram by expressing and projecting the DNA in the center of the cells

The biohologram projected by the embryonic nervous system forms a three-dimensional pattern of resonant structures. These structures behave as acoustic waves, acting as field guides for flowing matter and energy. The holograms are “read” by electromagnetic or acoustic fields that carry the gene-wave information beyond the limits of the chromosome structure. In this new understanding, DNA and the chromosome apparatus is the recording, storing, transducing, and transmitting system for genetic information at both material and physical field levels.

If we drop down another whole domain of observation from the juicy “wetware” described by chemistry and atomic structure, we enter the subatomic realm of quantum physics. At this level the behavior of matter, both organic and inorganic, is governed not by classical notions of cause and effect or even complex dynamics, but by those of quantum probability.

“Something” appears to emerge from virtually “nothing” which physicists have come to describe as a sea of infinite potential. They first called it quantum foam, then vacuum potential, or zero-point energy. We can call it the vacuum substructure. Subatomic particles wink in and out of existence on a continuous basis, like some subatomic froth. This “something” appears paradoxically in wave/particle form. This world is not transcendent to matter, but underlies it as a coherent unity, much like ecology underlies biology.

Within this context, some physicists (Miller, 1975; Bohm, 1980) have strongly suggested that the nature of reality is fundamentally analogous to that of a holographic projection. The optical process called holography uses interference patterns. Holography describes transformations of light and optical information mathematically in wave mechanical terms.

The superposition of a split beam of laser light led to the laboratory development of holograms, or recordable holographic images demonstrated by Dennis Gabor beginning in 1949. In 1971, Karl Pribram applied this metaphor to neuropsychology, suggesting it was more than analogy, that the brain actually encodes information as holograms. The pattern holds the form.

Holograms contain all the information needed to reconstruct a whole image. Holograms contain many dimensions of information in far less space, like a compressed file. They hold that information in a subtle network of interacting frequencies. Thus, shining a coherent light (reference beam) or laser through the fuzzy-looking overlapping waves of a 2-dimensional hologram can create a virtual image of a 3-dimensional figure.

The gist of the holographic paradigm is that there is a more fundamental reality. There is an invisible flux not comprised of parts, but an inseparable interconnectedness. The holographic paradigm is one of reciprocal enfolding and unfolding of patterns of information. All potential information about the universe is holographically encoded in the spectrum of frequency patterns constantly bombarding us.

In this dynamic model there are no “things”, just energetic events. This “holoflux” includes the ultimately flowing nature of what is, and all possible forms. All the objects of our world are three-dimensional images formed of standing and moving waves by electromagnetic and nuclear processes. This is the guiding matrix for self-assembly, and manipulating and organizing physical reality.

Criss-crossing patterns occur when two or more waves ripple through each other. In the transactional interpretation of quantum physics, waves of probability originate in the past, present, and future. Events manifest when waves from past and future interfere with each other in the present. That pattern creates matter and energy. The universe emerges from the rippling effects of immense numbers of criss-crossing interference waves. The geometry of the fields is more fundamental than the fields or emergent particles themselves.

Our brains mathematically construct ‘concrete’ reality by interpreting frequencies from another dimension. This information realm of meaningful, patterned primary reality transcends time and space. Thus, the brain is an embedded hologram, interpreting a holographic universe. All existence consists of embedded holograms within holograms and their interrelatedness somehow gives rise to our existence and sensory images.

Interference patterns of waves can be visualized interacting like ripples on a pond. At the quantum level they create matter and energy as we perceive them – lifelike 3-dimensional effects. Consciousness and matter share the same essence, differing by degrees of subtlety or density. There is a strong correlation between modulations of the brain’s EM field and consciousness

(Persinger, 1987; McFadden, 2002). The universe is a continuously evolving, interactively dynamic hologram.

This “Holographic Concept of Reality” was first suggested by Miller, Webb, and Dickson in 1973, and later touted by David Bohm (1980), Ken Wilber (1982), Karl Pribram (1991), Michael Talbot (1991), and others. In this holistic theory, the Universe is considered as one dynamic holomovement – a grand Unity.

The part is not only contained within the whole, the whole is contained in every part, only in lower resolution. So, following the axiom of “As Above; So Below” we can expect biology to be based on the same physical foundation of creation. Miller and Webb hypothesized precisely this in “Embryonic Holography,” also in 1973. At the time, of course, such notions were untestable. But, with continuing revolutions in technology, now we are closer to modeling and demonstrating this creative process.

## **DNA Wave Biocomputer**

The Gariaev group (1994) proposed a theory of the DNA-wave Biocomputer. They suggest (1) that there are genetic “texts”, similar to the context-dependent texts in human language. (2) The chromosome apparatus acts simultaneously both as a source and receiver of these genetic texts, respectively decoding and encoding them. (3) The chromosome continuum acts like a dynamical holographic grating, which displays or transduces weak laser light and solitonic electro-acoustic field. In other words, the code is transformed into physical matter guided by light and sound signals.

Complex information can be encoded in EM fields, as we all know from coding and decoding of television and radio signals. Even more complex information can be encoded in holographic images. DNA acts as a holographic projector of acoustic and EM information that contains the informational quintessence of the biohologram. Quantum non-locality of genetic information is fundamental.

The nervous system acts as a coordination mechanism that integrates DNA projection of the rest of the cells in the system, aligning these cellular holograms. The biohologram, projected by the brain, creates standing and moving electromagnetic wave patterns at different frequencies of the spectrum in order to effect different biochemical transformations. There may be specific electrostatic fields, or there may be electrodynamic field varying at various frequencies, from low (radio waves) all the way up the spectrum into visible light (biophotons) and beyond.

Genes are located on chromosomes in a linear order within the cell nucleus. Chromosomes have the ability to transform their own genetic-sign laser radiation into broadband genetic-sign radio waves (the encoded signal transforms from light to sound). The polarization of chromosome laser photons is connected non-locally and coherently to polarizations of radio waves.

Through this mechanism a new field structure is excited from the physical vacuum by an intrinsic creativity that emerges through DNA. The genome genetic and other regulatory wave

information is recorded at the polarization level of its photons and is non-locally transferred or played out through the entire biosystem by the polarization code parameter.

Only 3% of the 3 billion base pair genome encodes the physical body. The four-letter alphabet of genetic elements includes Adenine (A), Cytosine (C), Guanine (G), and Thymine (T) or Uracil (U) components of DNA, arranged in three-letter “words” that tell the cell what proteins to manufacture.

These genetic characters are distributed in the genetic text in a fractal distribution, i.e., reiterated. So, the nucleotides of DNA molecules are able to form holographic pre-images of biostructures. This process of “reading and writing” the very matter of our being manifests from the genome’s associative holographic aspect in conjunction with its quantum nonlocality.

Rapid transmission of genetic information and gene-expression unite the organism as a holistic entity embedded in the larger Whole. Gene-expression is the mechanism by which new patterns are called into being. The system works as a biocomputer – a wave biocomputer.

This biogenesis mirrors the cosmic process of creation. The holographic dynamic underlies both processes of cosmological creation and biogenesis. Chemical bonding is a consequence of the non-linear inverse square law of electromagnetic charge interaction in spacetime. Charge interaction precedes quantum chemistry perturbations of bonding energetics. Despite being genetically coded, molecules form fractal structures both in their geometry and dynamics. Generating core biochemical pathways gives rise to the fractal structures of proteins, nucleic acids and tissues.

Theories of biogenesis, such as Panspermia, are strongly supported by the fact that organic molecules and amino acids, as well as the nucleotides A, U, G, and C have been detected in meteorites. It is a fecund universe, at both the cosmic and human scale.

## **Quantum Bioholography**

The organization of any biological system is established by a complex electrodynamical field that is, in part, determined by its atomic physiochemical components. These, in part, determine the behavior and orientation of these components. This dynamic is mediated through wave-based genomes wherein DNA functions as the holographic projector of the psychophysical system – a quantum biohologram.

In the mid-1980s, physicist Peter Gariaev first noted a DNA phantom effect in his experiments. DNA was bombarded with laser light. When removed physically from the scattering chamber, its electromagnetic signature, a ghostly holographic after-image apparently remained. What is measured is light scattering from the DNA phantom fields.

No other substance has been found to emulate the effects of the DNA molecule. As long as the chamber is not disturbed, the effect is measurable for long periods of time. Evidence suggests a relationship to the phenomena of endogenous bioluminescence, liquid crystals, and

superconductivity. Bioluminescence is the emission of photons of light produced when certain energized electrons drop into a lower or ground state. Humans emit a variety of electromagnetic radiations across the emission spectrum, indicative of the energy state of the organism.

In the nuclei of each cell of the human body, the DNA (deoxyribonucleic acid) carries the structure of our whole body. It is the blueprint not only of our physical form, but also of the processes that our form undergoes in terms of survival. The primal vacuum is the matrix of our existence and proportionately our most fundamental reality. In essence, we emerge from pre-geometrically structured nothingness. DNA is the projector of that field which sets up the stress gradients in the vacuum or quantum foam to initiate the process of embryonic holography.

## **DNA Phantom**

The Gariaev group has discovered a wave-based genome and DNA phantom effect that strongly supports the holographic concept of reality. This main information channel of DNA is the same for both photons and radio waves. Superposed coherent waves of different types in the cells interact to form diffraction patterns. First, they emerge in the acoustic domain, secondly in the electromagnetic domain.

DNA seems to embody the capacity to produce a field experienced by other DNA in the body, linking all holistically together. This dynamic is linked to the cellular level via mechanisms of RNA transfer and enzymatic action in the cell. DNA and RNA are likely to be in non-local communication, possible because DNA molecules in chromosomes are in a state of substance-wave duality.

So, DNA codes an organism both through DNA matter and by DNA wave sign functions at the laser radiation level. Wave information is recorded at the polarization level of photons and is non-local. It is transferred throughout the biosystem by the polarization code parameter, eliciting holistic response patterns

Gariaev claims to have demonstrated subtle fields emerging from the quantum foam or vacuum potential, making the effect quantifiable and measurable – objective. He found the phantom effect by irradiating DNA with a target UV wavelength of 338 nm. Pojonin (1995) went on to suggest that some new field structure is being excited from the physical vacuum by an intrinsic ability that emerges through DNA.

Gariaev discovered the DNA Phantom Effect in 1985 when he worked in correlation spectroscopy of DNA, ribosomes and collagen in the Institute of Physics, in the Academy of Science of the USSR. He was first able to publish his results in 1991, leading to a book in 1994, *Wave Based Genome*.

He demonstrated a dynamic new field in the vacuum substructure by bombarding it with coherent laser light and coupling it to conventional electromagnetic fields. The experimental protocols for this procedure have been reproduced in Moscow from ideas developed at Stanford, and are currently in another replication by experimental physicist Louis Malklaka.

## You Turn Me on: I'm a Radio

In analyzing any complex adaptive system, we follow what happens to the information; in this case the genetic information. The quantum hologram is a dynamical translation process between acoustical and optical holograms. DNA and the genome have been identified as active “laser-like” environments.

Roughly speaking, DNA can be considered a liquid crystal gel-like state that acts on the incoming light in the manner of a solitonic lattice. A soliton is an ultra stable wave train that arises in the context of non-linear wave oscillation. Oscillations are set up when DNA acts as a rotary pendulum kindling other oscillations.

Chromosomes can transform their own genetic-sign laser radiations into broadband genetic-sign radio waves. This is the main information channel of DNA, the same for both photons and radio waves. Superposed coherent waves of different types in the cells interact to form diffraction patterns, first in the acoustic domain, then in the electromagnetic domain. The quantum hologram is the matrix of the translations between acoustical and optical holograms. The human biocomputer can be modeled through the marriage of quantum mechanical and complex dynamics.

Other researchers soon obtained similar results, and not only based on photons. Multi-frequency physical fields are now teleported. Based on this data, it's possible to suppose that photon fields, emitted by chromosomes as sign fields, can be teleported within or even outside the organism's space. The same is true for wave photon fronts, which were read from the chromosome continuum similar to reading from a multiplex hologram. If photons are transformed into radio waves through the EPR-mechanism, then this phenomenon is vital. In fact, the importance of quantum non-locality existence for a genome is hard to overestimate (Gariaev, et al, 2001).

Basic assumptions of Gariaev, et al included the following:

The genome has a capacity for quasi-consciousness so that DNA “words” produce and help in the recognition of ‘semantically meaningful phrases.’”

The DNA of chromosomes control fundamental programs of life in a dual way: as chemical matrixes and as a source of wave function and holographic memory.

Processes in the substance-wave structures of the genome can be observed and registered through the dispersion and absorption of a bipolar laser beam.

## Quantum Teleportation

The polarizations of chromosome laser photons are connected non-locally and coherently to polarizations of radio waves. The signal can be “read out” without any loss of the essential

information in the form of polarized radio waves. The genome is a quasi-hologram of light and radio waves that create the background necessary for the appropriate expression of genetic material.

Gariaev argues that the genome emits light and radio-waves whose delocalized interference patterns create calibration fields or “blueprints” for a system or organism’s spacetime organization, in a coordinated response typical of living systems. Gariaev asserts that quantum non-locality and holography is indispensable to properly explaining such realtime dynamics.

Other research suggests the fundamental interaction of internal and external fields is the right track. Joseph Jacobson (2002) at MIT, found a way to switch cells off and on with radio waves. His team also "unzipped" and manipulated DNA with a radio-frequency pulse. The same approach worked on proteins as well, and proteins orchestrate nearly all cellular chemical processes.

Thus, genes can act as quantum objects exhibiting the phenomenon of quantum non-locality/teleportation. This robust dynamic assures information super redundancy, cohesion and the organism’s integrity, and thus viability. Gariaev’s experiments suggest that DNA does indeed behave like a single quantum, which induces a “hole” temporarily in the vacuum when the DNA sample is physically removed from the vacuum chamber.

Quantum Bioholography says that DNA satisfies the principle of computer construction. It carries a copy of itself, its own blueprint, while the mechanism engineering the DNA replication is the biophotonic electromagnetic field. The “letters” of the genetic texts A, G, C, U are held invariant.

The existence of the genetic text constitutes the classical signal process of quantum teleportation. It facilitates the quantum mechanical signal processes of both the copying of the DNA as its own blueprint, and of the construction and homeostasis of the organism in a massively parallel way by means of quantum teleportation.

So, the marriage of the 50 year old study of DNA with the 50 year old science of holography has given birth to the model we call the quantum biohologram. The discovery of Gariaev of the phantom DNA and the DNA-wave biocomputer strongly suggests that this is more than a model but actually the physical mechanism for our appearance from virtually nothing. In one way you could say we “came out of nowhere.”

But here we are, nevertheless. It is solely because of our DNA’s ability to transform its genetic blueprint into a physical reality – embodying simultaneously our inherited past and our future. Sure, we can now create ersatz life, but we cannot create the fundamental elements from which it arises, which are the gift of the universe, cooked in giant supernovae aeons ago. It’s like that old joke where the scientist says to God, “We can now make an Adam out of clay” – and God says, “No, first you have to make your own dirt!”

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