THE LIGHT ENCODED DNA FILAMENT, MORPHIC RESONANCE, AND QUANTUM BIOLOGY

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What is life? This is a question shared universally by nearly all of us. For scientists in particular it is a fundamental question, in fact it formed the title of Erwin Schrödinger's 1944 book – *What is Life?* Erwin Schrödinger was a physicist who is one of the fathers of quantum mechanics and his book is perhaps one of the first published treatises concerning the quantum physics of biology, which forms the basis for the subject of Quantum Biology. Regarding biological processes in light of quantum physics elucidates phenomenology that has evaded descriptions by mainstream science, which has relied almost exclusively on classical mechanics to describe biological systems.

Formative Causation - the Morphogenetic Field

The science of biology is nearing an empass with current theoretical models, because it is approaching the level of description that necessitates quantum mechanical and Field theories. In order to examine the deeper levels of reality new-paradigm science is needed. One such theory that beautifully describes many phenomena that have evaded adequate scientific descriptions thus far is Rupert Sheldrake's theory of morphic resonance – the theory of formative causation. This describes the process of morphogenesis being driven by a non-physical force from a morphogenetic field.

This is the science of conformation – and it is critical to understanding how information from the Field (a.k.a. the vacuum, the ether, the implicate order, the Cosmic Plenum, superspace, the Akasha, etc) is accessed. How important is the science of conformation? Erwin Schrödinger elucidated it in a brilliant flash of insight with the following statement: "what we observe as material bodies and forces are nothing but *shapes* and variations in the *structure* of space" (emphasis mine). This would require some explanation for many, because the classical description of space is something that is empty, however to many scientists the technical term space, and even vacuum, is far from being an empty medium.

Even at a temperature of absolute zero, when all forms of energy should be gone, each point in space (the smallest quanta of space being a volume based on the planck length) contains a quantum harmonic oscillator that vibrates with the zero-point energy of the ground state for the Field. Physicist Nassim Haramein has described how a volume of the vacuum the size of a proton contains an energy density equivalent to all of the mass in the Universe. This exemplifies how the Universe is holofractal, in that a subatomic particle potentially contains the imprint of the whole Universe, and that there are many dimensional layers to the Universe, where this infinite energy density is distributed.

As for what has been expounded by Rupert Sheldrake - the Theory of Morphic Resonance so closely models the actual processes driving the formation of all levels of organization that when it is properly understood it becomes self-evident. In regards to biological systems, it explains the formative causes of evolution, embryonic development, thoughts, behaviors, and even many metaphysical phenomena. I find the theory's ability to explain how thoughts work particularly insightful.

Biomolecular Quantum Communication

Imaging brain activity through functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) reveals 4-dimensional space-time patterns of electrical activity produced by the action potentials of billions of neurons. Electrical propagation along diverse pathways of such networks produces specific patterns of activity that have been clearly correlated to physical and sentient states. But one of the most elusive questions within neurobiology is how this electrical activity can produce what we experience as thoughts, behaviors, and memories. The reason it is so difficult for neurobiologist to address this question is because it is completely perplexing from a purely physical point of view, which scientists have been inclined to restrict themselves to in their investigation of Nature. Indeed, sentience will never be explained by the physical delineation of brain activity because it

is a non-physical phenomenon – the brain only acts as an interface for the purely energetic aspects of sentience to be transduced into the physical experience.

This means that the brain has never produced a thought, and never will, because that is not what the brain does. Thoughts exist as ideas within the morphogenetic field – and a specific program of thoughts is a behavior within the morphogenetic field – so behaviors are a higher nested morphic structure of thoughts. Remember that the morphogenetic field is simply a categorization of the Information field, which is a part of the Unified Field. So it is a non-physical component of the mind that accesses the non-physical Information field - this can be referred to as the higher mind.

The impetus for all ideas occur within the higher mind - whereby they are transduced to the brain and elicit the action potentials that produce specific 4-dimensional patterns of electrical activity. These space-time patterns tune into a program of ideas within the morphogenetic field through morphic resonance and allow the physical mind to perceive them as thoughts.

Similarly, memories are produced by the same kind of 4-dimenionsal patterns of electrical activity. The specific patterns of neural activity tune into distinct morphic fields that contain the information which produces images corresponding to a past event. This means that memories are really not recorded anywhere in the way that we tend to think they are. Instead they are created anew each time in the present moment. The genesis of new neural pathways for the conduction of electrical patterns that can tune into different areas of the Information field can be observed happening rapidly through the formation of physical sub-synaptic structures called spines.

Spines can be produced and retracted rapidly, giving the brain a high degree of plasticity and allowing it to remodel and rewire itself faster than is required through production of entirely new synapses and in some cases whole new neurons. In fact, what we call learning, or when we feel that we have grasped a new concept, it is because spines have been generated that produce novel synaptic contacts allowing different patterns of electrical activity to occur that can tune into different morphic resonances. But the perception itself does not occur within the physical brain – perception is only facilitated by it, because it is the consciousness that perceives, and consciousness does not occur within the brain, consciousness is only restricted by it.

This is perhaps one of the most elusive questions within science – how is consciousness produced? And again it is a question that will never be answered using the old-paradigm science, because consciousness is not produced by physical phenomenon, consciousness is primary and fundamental to all of existence. It is a pre-requisite to existence itself – because without conscious awareness how can something be said to exist - what would differentiate it from non-existence if it is completely unperceived? Tying to imagine something existing that is unperceived is similar to trying to imagine non-existence – it can't be done.

There have been very few attempts to scientifically explain the supposed physical processes by which consciousness is produced (remembering that within the consensus-paradigm all phenomena must be explained by physical processes). The scientific community has largely been content with assuming that consciousness is an emergent aspect of highly complex neural networks, specifically those comprising

the neocortex of the human brain. This has actually led to some productive avenues of inquiry, in that it has promoted some to think beyond the normal self-imposed restrictions and entertain theories of quantum mechanical processes within the biological context to explain the emergence of consciousness.

Roger Penrose in collaboration with Stuart Hameroff developed a theory in which the delocalized pi electrons within microtubules are sufficiently sheltered from environmental fluctuations that they can maintain a quantum superposition of their wavefunction. Microtubules are filaments within cells that form a supporting matrix known as the cytoskeleton and are involved in signal and chemical transduction through the cell. They theorized that the collapse of the quantum wavefunction of the pi electrons could produce subneuronal processing of information and be the source of consciousness within the brain.

As a wavefunction the electrons can form a quantum coherent state known as a Bose-Einstein condensate. In this state all of the electrons essentially behave as a single particle, or more precisely as a single correlated wavefunction, with non-local entanglement that allows for quasi-instantaneous transfer of information. During normal modes of brain activity, such as the electrical activity that produces beta oscillations, these states are exceedingly fleeting. However, when a person sufficiently isolates themselves from environmental perturbations, such as in a meditative state in which visual, auditory, and cognitive stimuli are reduced to a minimum, the electrical activity of the brain can enter into a brain-wave pattern known as the Gamma oscillation. The Gamma oscillation is characterized by synchronized spatiotemporal action potentials that sweep through the entire brain back and forth 40 times a second. In this state the Bose-Einstein condensate can be maintained and coherently entangle with the pi electrons within the microtubules found in virtually every cell of the body. The body becomes one quantum coherent whole, and the individual experiences a feeling of oneness. This macroscopic biological quantum coherent state also allows the individual to tune specifically into hyperspace and access information directly from the Field. Additionally microtubules, and many other biopolymers such as DNA, can form soliton waves that can produce many particle-like phenomena such as phonons and Bose-Einstein condensates. This again would be a form of non-classical communication and quantum functionality within the biological system.

Normally when a wavefunction is interrogated by a physicist it collapses and the definite position or momentum of the quanta can be determined. This is known as subjective reduction, and it is called subjective because it requires the consciousness of the observer. The challenge for Roger Penrose was attempting to describe the genesis of consciousness through the collapse of the wavefunction, and not the collapse of the wavefunction through conscious observation. He therefore came up with the concept of objective reduction, in which the wavefunction collapses after exceeding a threshold in space-time curvature. This would be an effect of quantum gravity, and would be truly astounding in that it marriages quantum mechanics, special relativity, and molecular biology into the explanation of a given phenomenon.

While the theory is very exciting, it may not be necessary to explain the genesis of consciousness if consciousness is fundamental and primary to all phenomena. So while the collapse of the quantum wavefunction within the microtubules wouldn't explain the origenesis of consciousness, it can be

applied to explain many other biological phenomena. For example, it is through the quantum level that every thought, feeling, and experience is transmitted to the level of consciousness that is our individualized fraction. This information is transmitted through the quantum wavefunction that is superimposed between two discrete levels of reality – spacetime and hyperspace – allowing the exchange of information between the two levels.

The same type of delocalized electrons found within the microtubules that form the quantum superposition are also found within the DNA molecule, and there is a continuous connection throughout the entire body through the microtubules to the nuclear DNA from cell to cell.

The Light Encoded DNA Filament

The shifting electron density of the electrical dipole produces harmonic oscillations of the pi electrons within the center of the microtubules or the DNA. This is the source of the electromagnetic filament that runs all through the center of these polymers, because oscillating charges produce magnetic fields, and oscillating magnetic fields produce electrical fields, which produce electromagnetic waves or in common terminology – light. This is a light encoded filament, which is the information carrying strand of the DNA! A number of scientific experiments have detected and revealed the presence of these light strands – the light body of the biological organism.

The empirical exemplification of the light body goes all the way back to experiments performed in the 1920s by Russian scientist Alexander Gurwitsch, who amazingly connected the ultraweak electromagnetic emission of organisms to developmental processes of the morphogenetic field! He called them mitogenic rays; however, without actual empirical investigation into the matter the scientific community simply rejected the notion because it was considered outside the bounds of the materialistic paradigm. It has not been until relatively recently that experiments have been performed investigating the matter and have indeed confirmed intra and intercellular communication via electromagnetic emissions.

Electromagnetic Transformation of DNA

One of the most definitive experiments thus far to demonstrate the primary role of the light encoded DNA filament was performed by Luc Montagnier, who was awarded the Nobel Prize for his work in demonstrating HIV to be the etiological agent of AIDS. In this experiment a specific electromagnetic signal emitted by a pathogenic bacterial culture was shown to remain even after all biological material was removed from the culture medium.

When a non-pathogenic strain of the same bacterial species was placed into the culture medium with the electromagnetic frequency it was transformed into the pathogenic strain and began to emit the same signature signal as the previous strain. The strain had essentially been

transformed by the electromagnetic frequency, which means that it was specifically acting on the DNA molecule of the non-pathogenic strain - "re-coding" it.

All biomolecules are intimately complexed to water, and indeed water occupies an essential role in the functionality of all living molecules. This is why water is so essential to life; it is not just an inert medium for biochemical reactions to occur in. So, Luc Montagnier hypothesized that the electromagnetic frequencies were being retained in aqueous nanostructures – complex conformational arrangements of macromolecular water. Not only does water adopt a unique pattern to the conformation of biomolecules (as well as directly influence the precise 3-dimensional shape during formation of the biomolecules), it is also responsible for much of the electrical activity of the biomolecules because of the interaction with its dipole moment.

The Epiphany – Morphic Resonance and DNA Conformations

When the protein-coding segments of DNA – the genes – are compared across species there is a high level of conservation, meaning that all of life shares the same molecular tool kit – with only minor differences being observed, in that the genes are homologous. The same genes that make the molecular and structural machinery of a fruit fly are found in a human. However, these genes are primarily involved in producing molecular machinery - and their high degree of homology and conservation shows that they are not the *cause* of differences in species and individuals. The sections of the DNA that are responsible for producing these differences have been known for a long-time, because they are what are used to identify species and individuals! Restriction-fragment length polymorphisms are produced from the unique sections of the DNA (the polymorphic segments) when the polymer is cut up (restriction digests by endonuclease enzymes), and produce what is referred to as the "DNA fingerprint". This is what is used to identify specific species, sub-species, clades, and all the way down to individuals. This should have been a big clue – if you're looking for what makes a species different from any other species, the sections of the DNA that are used to identify a particular species or individual would be a good place to start!

These unique sections of the DNA are the non-coding segments of the DNA. The misnomer of the non-coding segments is significant, for calling these sections of the genome "junk DNA" is like calling the engine of a car the spare tire. How important are the non-coding sections of the DNA? One indication should be their prevalence in the genome. In humans 95-98% of the genome is non-coding! This is similar for some other species – yet there is a correlation between increasing organismal complexity and the amount of non-coding DNA.

For example: bacteria such as *Escherichia coli* have exceedingly little intergenic DNA. Their genomes are architecturally simplistic, being simple circular strands that are unlikely to adopt complex configurations, yet they still have approximately 4,290 genes. That's 1/5 the amount of humans, which

contain approximately 21,000 genes, and that's a microscopic bacterium! In fact *Caenorhabditis elegans*, a small worm, contains more genes than humans. However, in this context what humans do have more of is non-protein coding DNA, as can be seen by the correlation of genome size with non-coding DNA (a great deal of the large genome sizes of plants is due to polyploidy, that is multiple sets of the same chromosomes, which is sufficient to produce speciation without a single change to a protein-coding gene). The non-coding segments have three primary functions identified thus far:

- Approximately half of the non-coding genomic regions are comprised of mobile genetic elements, which modulate gene expression and can remodel the chromosomes.
- The other half is comprised of variable number tandem repeating sequences, known technically as Satellite DNA. Through specific conformational arrangements they interface with the Morphic field.
- Both of these portions of the intergenic DNA undergo expansion within the genome – this functions to increase the information-carrying capacity of the biomolecule.

Chromosomal Remodeling – Transposons and Satellite DNA

The mobile genetic elements are a highly functional portion of the non-coding DNA. It allows the DNA to respond to environmental conditions and remodel the genome, by activating the transposable elements which can translocate segments of the genome and remodel the chromosomes. Because gene regions are modular they can be translocated and still retain complete functionality, however they will be differentially expressed. This can produce punctuated and rapid speciation, a form of practically instantaneous evolution, in that it can occur over the course of a single organism's lifetime. These DNA segments are activated by high frequency radiation and therefore increases in these sources, such as that coming from cosmic rays, will cause an increase in the amount of actively transposing DNA elements.

In comparing the genomes of species classified within the lineage of great apes, such as humans and chimpanzees, the protein-coding gene regions are nearly identical, so the difference in species seems to be due to the non-coding DNA. In particular the retrotransposons called Alu elements shows evidence of playing a particular role within the human genome, as they are the most abundant elements, being found at a copy number of over a million loci.

So the modular architecture of DNA made it logical how transposable elements could function to remodel the chromosomes. However, what function could Satellite DNA serve? Given that they are simple repeating sequences that can reiterate hundreds of times? An epiphany arose when considering a particular characteristic of repeating sequences in light of the Theory of Morphic Resonance. Repeating sequences have the ability to form special DNA conformations, including tertiary and quaternary stranded DNA, as well a variety of other specific structural elements. For example, the telomere regions are composed of anywhere between 3 and 20 thousand base pair repeats of the sequence TTAGGG. This G rich region forms what is called a G-quadruplex that can form 4-stranded complexes of DNA.

The variety of conformations formed by Satellite DNA would have specific resonances with the Morphic field and would therefore be able to tune into very specific programs of information. Given that the Satellite DNA is highly specific to each individual, it means that each individual is tuning into a distinct morphogenetic pattern that is unique to them. Furthermore, because of the high plasticity of the polymer – being able to rapidly cycle through many of these conformations along the DNA molecule – it can serve to modulate the behavior of the cell, tissue, and organism through the changing resonances of morphic patterns. In addition, the characteristic of Satellite DNA to expand the number of repeating sequences increases the information-carrying capacity of the DNA molecule.

Frequency Transduction

Proceeding with the new-paradigm science, we regard the function of the biological organism as primarily being electrical in nature, and tending towards quantum coherence. This can be thought of as the "electric universe" theory of biology. Given the primary importance that electric and magnetic behavior has in the biological system, it is not surprising that DNA and several other molecules act as antennae. DNA in particular is a prime example of this – as can be seen by its molecular structure – making it characteristic of a very unique design known as a helical antenna. The long, linear polymer structure is perfectly suited for receiving and transmitting electrical impulses, while the ring formed from the cross-section of the spiraling double helix is perfect for receiving magnetic impulses.

As a prime antenna for electromagnetic radiation DNA can receive light, transduce it, compute a response, and re-emit EM signals that will have a very definite modulating effect on specific molecules or even extracellular targets. However DNA is not just restricted to receiving electromagnetic frequencies, as DNA shows structural organization characteristic of fractal antennas. This would enable it to receive and transduce Zero Point energy – allowing it to interact more directly with the Field. These subtler forms of energy would interact more directly with consciousness, and in that way could influence either the expansion or contraction of conscious awareness. This would mean that certain modular arrangements of DNA would be more conducive to conscious awareness. Conversely many re-arrangements of these chromatin modules could remodel the genome such that it is not as efficient a transducer of Zero Point energy and is therefore less conducive to conscious awareness.

When the information within light is received it can be stored, computed, and transmitted holographically by DNA. Several studies have shown the efficacy of using DNA for computations, and in fact it has been utilized to solve very specific problems that require special forms of computation, such as problems within mathematics, like the Directed Hamiltonian Path Problem (Lila Kari). Therefore it is not at all novel to suggest that DNA functions computationally, as has been demonstrate *in vitro* (in the test tube), and the computation capacity within the biological system has already been recognized with specific applications.

The computational function of DNA that has been elucidated thus far is only regarding computations of a classically operating system. But DNA has the capacity to perform quantum computations using the superposition of pi electrons within the nucleotide base pairs. The base-pairing of nucleotides is based on the affinities of pyrimidine and purine ring structures for each other. These

ring structures contain delocalized electrons that form Van Der Waals bonds giving the bonded ring structures a dipole moment. A dipole moment is a polarization of a molecule giving it a magnetic moment and a polar charge distribution. In this case the electron charge distribution can shift from a purine to a pyrimidine, or from a pyrimidine to a purine, or since this is a quantum mechanical state it can be in a superposition between the two.

Furthermore, the shifting of the dipole makes it a quantum harmonic oscillator, which produces quasiparticles known as phonons. Long-wavelength phonons produce sound, thus the light encoded strand is actually an electro-tonal filament. In addition to quantum communication and computation, this quantum entangled state may be responsible for holding the very DNA molecule together, because under classical mechanics the dynamics involved in bonding of the DNA are insufficient to maintain the double helix. However the wavelength of the phonons is equal to the size of the DNA helix, resulting in standing waves that produce a phenomenon known as phonon trapping.

The light storage capacity of DNA is possible because it is an aperiodic crystal. In an elaboration of the amazing properties of aperiodic crystals Erwin Schrodinger stated it as such:

> The most essential part of a living cell - the chromosome fiber may suitably be called an aperiodic crystal. In physics we have dealt hitherto only with periodic crystals. To a humble physicist's mind, these are very interesting and complicated objects; they constitute one of the most fascinating and complex material structures by which inanimate nature puzzles his wits. Yet, compared with the aperiodic crystal, they are rather plain and dull. The difference in structure is of the same kind as that between an ordinary wall paper in which the same pattern is repeated again and again in regular periodicity and a masterpiece of embroidery, say a Raphael tapestry, which shows no dull repetition, but an elaborate, coherent, meaningful design traced by the great master.

Erwin's description is very revealing in this case – as he likens the aperiodic crystal of DNA to a coherent and meaningfully designed masterpiece tapestry. The light storage capacity of crystals is already being utilized by scientist

Since by definition the aperiodic DNA crystal has quasiperiodicity, it is also properly referred to as a quasicrystal. It was not believed that quasicrystals were even possible until Dan Shechtman (with strong ridicule from the scientific community) proved the existence of these special solid-state materials. Certain quasicrystals display 12-fold symmetry. Quasicrystals with 12-fold symmetry are dodecagonal, if the DNA molecule where to have dodecagonal symmetry then the well-known double helix of DNA may be more energetically stable in a 12-fold energetic matrix, essentially forming 10 additional energetic-stabilizing strands. Furthermore, DNA is a very unique quasicrystal indeed, in that it is interspersed with constant periodicity, in the pattern of the tandem repeats.