

**Cosmic < coherence > Harmony**

**Brain << coherence >> Soul << coherence >> Mind**

**Matter <<< coherence >>> Spirit of Truth << coherence >>> Spirit**

**Material Mind << coherence >> Mind Control << coherence >> Cosmic Mind**

**Intellectually <<<< coherence >>>> Emotion Control <<<< coherence >>>> Spiritually**

**Involuntarily <<<<< coherence >>>>> Brain Control <<<<< coherence >>>>> Volitionally**

**Physical <<<<<<< coherence >>>>>>> Wisdom <<<<<<< coherence >>>>>>> Spiritual**

**Worship**

**Counsel**

**Knowledge**

**Courage**

**Understanding**

**Intuition**

**Protoplasm**

**Personalitree**



Can our physiologies influence our spiritual receptivity?  
Can we influence those physiologies to increase our spiritual receptivity?

***Fundamental Hypothesis:***

***I propose that electromagnetic energy ranges from a stationary deity which has pattern but no motion (i.e. is changeless) through the low frequency motions of matter which have non-volitional patterning, through optical frequencies which have volitionally organized patterns, up to the higher spirit energy frequencies which have eternally enduring cosmic patterns.***

***I further propose that to the extent we can pattern our electromagnetic energy to be sympathetically spiritually receptive allowing coherence and harmony with spiritual influences, our energy patterns (both material and optical) become more stable and enduring.***

In this paper, we will look for ways to explain, using physics and physiology, how the very different spirit energies might interact with our material energies. We will look for possible coherences in the electrochemical physical functions of body and brain, that might shed light on spiritual to material inter-associations. We will also look at our mindful and emotional overcontrol of these physiologies and perhaps find ways to improve our ability to detect, enhance and improve receptivity and capacity for spiritual influences.

I am not suggesting a reductionist mechanism wherein our self-consciousness and therefore our God consciousness could be reduced to the motions of matter. I think we are more than our matter. We are mind over matter but what is mind? For that matter what is spirit? Is spirit real? Is it a real force, a real power, and a real stimulus? We may not be able to find spirit substances in our material bodies, but we may be able to find some of the effects of spiritual luminosity on the solar radiometer of our mind as it influences our brain and nervous systems.



Is the Greek figure of speech “the material is the shadow of the more real spirit substance” true? How can we be materially influenced by spirit forces? How does a progressing mind yield a progressing spirit? How might we be perfect even as the “I am” is perfect?

We will explore some of our physical functions that might show evidence of spiritual influence.

## **30,000-foot Perspective**

We are under the influence of material gravity from below, and a certain spiritual gravity from above. Gravity will ensure that our dust remains under the control of material gravity but our mind, as it guides our choices, decisions, and steadfastness, may allow spiritual gravity to help transfer the seat of our material identity to our more enduring soul.

At the top is a perfect changeless God. At the bottom there is energy without pattern but with potentiality. There is a tension between these two extremes. Over time, energy patterns automatically improve their order and stability through an involuntary energy tension relieving process (with a corresponding increase in entropy, second law of thermodynamics), and continuous improvement of the organization of matter, including the encoded information in that matter, (second law of information dynamics SLID, the so called thermo-contextual interpretation, (Ref 101) up to the stage of sentience (the so called thermo-contextual interpretation). After establishing sentience, the responsibility for improvement (using energy to advance information) may be, in part, passed over to the sentient beings. Notice how slow and incremental the progress of evolution was, to achieve this sentience! At our sentient stage, we can recognize the tensions from above and using our three fundamental cosmic intuitions of causation (mind-reason), moral duty and faith, we can continue that stabilization, organization, and cooperation towards perfection. “Be you perfect even as I am perfect” may apply to us intellectually (in our lifetime) and it appears to be happening in nature (over billions of years).

## **First Causes**

There are three theories of causation:

Upward: Scientific Causation - energy-matter makes us what we are.

In this theory, everything that exists in the physical universe is dependent on the same fundamental entities and interactions (found by splitting matter apart down to the smallest currently possible scales). Living creatures can be divided into cells; cells themselves are composed of organelles; organelles can be broken down into molecules; molecules break down into atoms; atoms are comprised of electrons and atomic nuclei (quarks and gluons). These fundamental particles obey certain fundamentally inherent laws, accidentally assembling themselves into people.

Downward: Spiritual Causation - God makes us what we are.

In this theory, the fundamental laws of science are God’s preferred way of doing things and we have little or no contribution to the process.

Comparing these two theories from a logical perspective, if the physical universe were created based on a downward causation scenario, we’d see large collections of matter fragmenting into smaller structures. If it were purely an upward creation, mutual gravitation would gradually bring matter together. The universe is not described well by either scenario. Instead, our universe appears to be an amalgam of both. In my humble opinion, a more plausible combined scenario is:

Up/Down: Scientific/Spiritual Causation – Energy becomes matter and evolves into sentient beings.  
Sentient beings continue the organizational process.

We are going to examine some of the ways that we are resolving these top – down and bottom – up tensions for perfection, from both external physiological, and internal psychological perspectives, using our body (to feelingly experience) our brain (to discover, recognize and choose), and our mind (to build patterns of thinking to facilitate future improvement).

The areas we are going to investigate are:

1. Consciousness
2. Personal Consciousness and the Whole
3. Brain, Mind and Consciousness
4. Current Theories of Consciousness
5. Consciousness as a Unified Mechanism
6. Physiologies of Body Consciousness
7. Intercellular Communication
8. Epigenetics
9. Neurotransmitters
10. Homeostasis
11. Brain Waves
12. Mental Picturizations
13. Activity Regulated Cytoskeletons & Synaptic Adhesion Molecules
14. The Maturing Brain
15. Spiritual Reception
16. Spirit Influence as We Age
17. Microtubules
18. Microtubule Quantum Coherences
19. Electromagnetic Continuum
20. Spirit Substance – Hard Light
21. Physiological Continuum
22. Single and Multiple Quantum Coherences
23. Time
24. Time Consciousness
25. Multiple Physiological Clocks
26. Thought Feedback Loops
27. Near Death Experiences
28. Emotional Processes
29. Emotional Self-Mastery
30. Thought Processes
31. Sentience and God Consciousness
32. Top-Down and Bottom-Up Perspectives
33. Soul Physiology
34. Experiential Soul Fusion
35. Philosophy of the Physiology of Spiritual Influences

We are going to look for techniques to be more aware of and harmonize with spiritual influences. We will also look for ways to discover, connect, and improve the ways we think and behave in these following methodologies:

1. Magnetic coherences
  - a. Nuclear resonances
2. Electrical coherences
  - a. Electromechanical resonances
3. Combined Mechanical and Optical coherences
  - a. Microtubule (neurotubule) coherences
4. Intellectual coherences
  - a. Philosophy of the physiology of spiritual Influences
  - b. Philosophical coherences

While examining these, we may want to look for personal coherences that involve:

- a. Our actions
  - i. Serving
  - ii. Praying
  - iii. Meditating
  - iv. Worshiping
- b. Our Soul
  - i. Formation
  - ii. Growth
  - iii. Awareness
  - iv. Soul growth and transition

In this exploration, I have done the research (see references below), but the suppositions and extrapolations are mine. The statements are always open for debate, and there are no right or wrong answers to any questions that may arise and there are many areas that call for further research. None of this is unequivocally provable. That's where faith comes in but hopefully the existence of plausible mechanisms will help strengthen that faith.

## **Consciousness**

We intuitively know we are conscious, but what is consciousness? We can't discuss consciousness until we define it. We can't discuss self-consciousness, with the eventual extension to God consciousness, without having an idea of what consciousness is. We have external and internal consciousnesses. Consciousness seems to involve the process of raising entropy as it seeks the lowest energy state and a concurrent improvement in pattern.

We have external and internal consciousnesses. We have body consciousness, perspectival consciousness, volitional consciousness, narrative consciousness, and social consciousness. Our individual and collective consciousness seems to change as we mature and as we pattern the electrical signals received from our senses (sight, hearing, touch, taste, smell, proprioception, nociception - sense of pain, vestibular balance and spatial orientation) and fit them into our current mental models. Self-consciousness may be our creative interpretation of sensory input and the conversion to thought output. Perspicacity (insight) then allows us to extrapolate self-consciousness, into God consciousness.

There no such “thing” as an electron or any other “particle” for that matter. An “electron” is a mathematical construct we have invented to account for the phenomena that we call an electron. An electron is a ripple in the quantum field and it is conscious of the electric field that surrounds it. Molecules (which include electrons) function in that same electromagnetic continuum and are conscious of other molecules that surround them. There is a hierarchy of consciousnesses in the brain and body that further cascades and becomes our total consciousness. We can be materially conscious (aware of our senses), socially conscious (aware of our interactions with others) or even God conscious depending on our ability to sense our surroundings.

Where does the electricity, for these electrical signals that we are creatively patterning and modelling, come from in the first place? Our gut goes from acid to alkaline. This is analogous to charging a battery. Electricity is then used to make ATP (cellular mini batteries) in the electron transfer chain processes in each cell’s mitochondria. (Ref 29) The electric potential, stored in ATP, facilitates motion and inter/intra cellular communication. All communications involve this biochemical electricity which results in either hydrophilic (binding) or hydrophobic (repelling) interactions. Some fundamental intercellular communications are pain, effort reduction, tension relief and their corollary; pleasure seeking. As we manage the tensions between these voltage potential differences, the reptilian brain stem functions as our sensory input/output hub. It passes electrical signals on to multiple areas of the brain for storage and they send back an “intelligent” response as we continuously reflect, cross reference, and choose. I call this continuous reflection and choosing, consciousness.

Are there other types of consciousness? Consciousness is thought to be a multifaceted and complex phenomenon, and has been categorized in various ways by psychologists, neuroscientists, and philosophers. Here are some of the different categorizations or aspects of consciousness:

**Wakefulness or Arousal:** This is the most basic sense of consciousness, referring to the state of being awake and responsive to the environment, as opposed to being asleep or in a coma.

**Phenomenal Consciousness:** This involves the subjective experience or qualia — the ‘what it is like’ aspect of consciousness. It encompasses the sensations, perceptions, dreams, and feelings that are part of our experiences.

**Visual Consciousness:** Visual awareness, functioning between phenomenal consciousness and access consciousness. (Ref 25)

**Access Consciousness:** Defined by philosopher Ned Block, (Ref 73) this refers to the brain processes that make information available for verbal reporting, reasoning, and the control of behavior. It’s more about the functionality and utility of consciousness.

**Self-Consciousness:** A higher level of consciousness where one becomes aware of oneself as an individual, separate from others and the environment. It includes self-recognition and self-awareness.

**Meta-Consciousness:** Thinking about one’s own consciousness including reflecting on one’s own thoughts, feelings, and sensations.

**Narrative Consciousness:** The human capacity to link events and experiences into a chronological and meaningful story involving personal identity and memory, constructing a narrative of ‘self’ over time.

**Altered States of Consciousness:** A state that differs significantly from normal waking consciousness and can be induced in various ways, such as through meditation, hypnosis, drug use, worship, or dreams.

**Collective Consciousness:** A concept primarily used in sociology and anthropology, referring to the set of shared beliefs, ideas, attitudes, common to a social group or society.

**Non-Conscious Processes:** The mental processes that occur outside of conscious awareness, such as implicit memory, automatic skills, and subliminal perceptions.

Super-consciousness: A material aid to a subconscious reservoir of experience, which we use for inspiration and guidance at the borders of contact with the spiritual.

Cosmic Consciousness: A philosophical doctrine, referring to a higher, all-encompassing form of consciousness that connects the individual to the universe.

Each of these definitions consider different aspects of consciousness, from physiological arousal to complex reflective philosophical or cosmic perspectives. Understanding the various definitions highlights how multidimensional consciousness is.

## **Personal Consciousness and the Whole**

From our basic sense of individual consciousness, we try to become conscious of other consciousnesses. We try to sense how we influence others, and we try to sense their influence on us. From a spiritual perspective we also try to sense our relationship to things not seen. We have a general sense of Ubuntu (I am because we are).

Can we connect our electrical signals to the whole universe? Can we connect science and spirit? Can we harmonize brain functions, thoughts, sights, and insights? Can spirit give us the ability to recognize valuable influences? Is insight the shadow of spirit luminosity? Can we be conscious of God? Let's examine some of the laws of physics that might be involved in the interactions between the temporal and the eternal, the finite and the infinite, the brain and the mind, the soul and spirit.

**“A human being is part of a whole called by us the universe.” Albert Einstein**

**“Seeing the shadow does not mean holding the object.” Plato**

Let's make the first step towards sensing our place in the “whole”, seeing the light that creates our shadow, and our sense of God consciousness.

## **Brain, Mind and Consciousness**

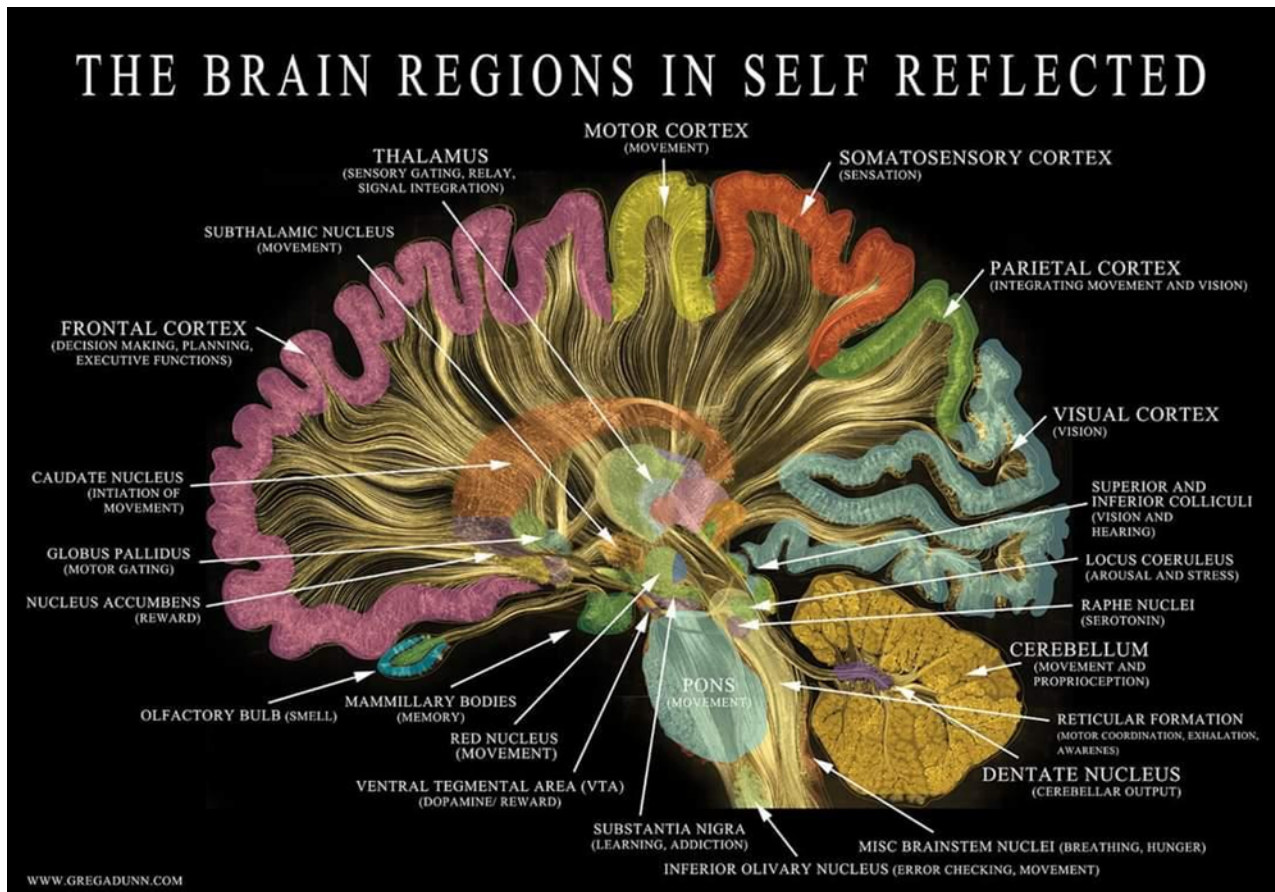
The brain acts as an objective sensor, actuator and controller and gives us our subjective perceptions. Consciousness is the base from which we operate, and we operate on a hierarchy of scales. The material makeup of the brain spans many spatial scales of organization. From genes and molecules to cells from protein complexes to ‘molecular machines’ through such as ion channels. A neuron is itself composed of computationally and functionally distinct and independent parts: its dendrites, the initial segment, the axon, and synaptic arborizations and there are many scales of organization above a neuron. Neurons connect with each other to form local neural circuits, which combine to form structures such as cortical columns. Eventually distinct anatomical and functional brain regions connect in increasing scales to the whole brain in networks of cells to networks of brain regions. (Ref 102) According to Ran Levi of Aberdeen University, the brain processes information in a “in a highly ordered way” in an eleven-dimensional configuration, with holes. This indicates that the network's neurons respond to prior inputs. They found that the brain builds and then destroys towers out of various three-dimensional building pieces. It is called the algebraic topographical hierarchy. It starts with rods (1D), then moves to planks (2D), then to cubes (3D), and then moves to more sophisticated geometries with 4D and 5D up to 11 dimensions. Activities move through the brain by building multi-dimensional sandcastles in a hierarchy of mechanical functions that cascade up to consciousness, and then, disassembles them (unless they are made more permanent). The building and destroying mechanisms are mathematically like

the Fibonacci sequence. (Ref 124) There is a hierarchy of philosophical actions that cause cascades in our higher levels of thinking that lead to levels of spiritual awareness.

Our mind differs from our brain. The brain is the material, tangible part of our body, whereas the mind is a consciousness or mindfulness of the brain's activities, and therefore, intangible. The brain harbors all the details. The mind solves the "binding problem"; the association of the parts into "gramma's face" or the Statue of Liberty. The brain and body together interactively prioritize the availability of the details, and they both have a pre-prioritized status.

Both the neurological and the intellectual hierarchies first occur in our brain and then in our mind. Let's first look at the brain.

Our brain is made up of two hemispheres. The right hemisphere acts like a parallel processor while the left acts like a serial processor and they are connected by the 300 million axonal projections of the corpus collosum. In very general terms, the right side is all about processing our present connections to sensor inputs. The left more linearly, methodically predicts our future based on our current predicament. Left brain is our "brain chatter", our self-definition, our "I am" and our "I will be". I like to think of the right side as Newtonian (macro) and the left side as Einsteinian (relativistic). The corpus collosum (and perhaps microtubules) facilitate the interactions between our stored past and our potential/predictable future.



Now let's look at the mind. Our mind differs from our brain. Our mind is more the "consciousness" or "mindfulness" of the brain's activities. Our conscious identity is not just the electrochemical status of our brain or body, nor is it just our mind. Our personal consciousness may be more the realizations of the mind, using



input from the body and brain, as it relates, harmonizes, and coheres in a superadditive analysis of their collective cooperation. Our consciousness is constantly aware of our current state, comparing that state with our past, and anticipating its consequences for our future.

“The human mind is one of the great mysteries of modern science, as we cannot sufficiently explain how the brain in general, or consciousness in particular, works. However, it’s a reasonable “null hypothesis” to presume that electricity, i.e., the flow of electrons, is the primary driver behind our perceptions that we are conscious. Although quantum effects may play a role, it’s an unnecessary complication to presume that consciousness is anything other than the flow of electricity.” **Ethan Siegel** (Ref 64)

Let’s look at some of the “unnecessary complications” of living electrochemical activities of our animal brain and body. Some of the more widely accepted biological processes include the mitochondrial electron transport chain, electron and proton tunneling in proteins, and magnetoreception. Let’s see if we can find some of those intangibles that determine how we prioritize things with the goal of becoming more spiritually minded.

The different states of the thinking, perceiving, and feeling mechanisms of the human organism have many different levels of activity:

- unconsciousness – a disrupted connectivity state of the brain.
- “cessation” – unconsciousness attained by advanced meditation. (Ref 95 & 96)
- sub consciousness – a state of suppressed brain input activity.
- deep sleep – a delta wave dominant, immune system strengthening, body repairing state of the brain.
- hypnagogia – a creative transition from wakefulness to sleep.
- light quiet sleep – a period of hypothalamus shut down, when the endocrine/hormone system link is broken.
- rapid eye movement (REM) – active dream sleep, when the noradrenaline, fight-or-flight and thermostat regulation systems are suspended.
- wakefulness – a beta wave dominant state of free will controlled thinking.
- superconsciousness - the pre-prioritized state of the brain that is not overtly involved in input analysis or decision making.

Side note: Microglia, a type of neuroglia or glial macrophage cleanup cell, and brain waste removal processes are most active during deep sleep.

Looking at our multiple states of consciousness prompts some questions. What influences these various states of our brain’s activity? What extracts, filters, or makes us more aware of our current thoughts than our stored memories or observations? How does our awareness shift from material to spiritual, from “me” to “we”, from self to selfless, from fearful to cosmic thinking? Where does our consciousness of God come from? Let’s use our creative wakefulness (and perhaps our hypnagogia and our superconsciousness) to look for some logical connections between intelligence and consciousness, between cellular interactions and spiritual growth.

## **Current Theories of Consciousness**

Do physiological processes in the brain correlate with our subjective experiences? How do the dynamics of consciousness vary with observable physiological processes? These are the top 8 theories (Ref 35, 106) of consciousness:

Integrated Information Theory: IIT - Consciousness as a Web of Information (Ref 74)

The more interconnected or integrated the system the higher the “Phi” consciousness. IIT provides a mathematical framework to quantify how much integrated information a system contains. It makes concrete predictions about which types of systems should correlate with consciousness and to what extent. Methods: This would be measurable by complex calculations of the integrated information from high-resolution images of brain activity. However, the practical calculation of  $\Phi$  is still a major challenge for complex systems such as the human brain. Recent research by Massimini et al. (2015) uses the foundations of IIT to assess states of consciousness in clinical contexts, e.g. in patients with impaired consciousness.

Higher-Order Theories: HOT - Consciousness as Self-Reflection (Ref 75)

The brain represents its own higher order of perception or mental state. Conscious experience is the result of thoughts about thoughts, self-representation or metacognition. (Ref 50)

Biological Naturalism: Consciousness as a Biological Naturalism Phenomenon (Ref 76)

An emergent biological phenomenon of purely physical biological mechanisms in the brain where specific neural correlates of consciousness (NCCs) form a minimal set of brain mechanisms when producing a particular conscious experience.

Panpsychism: The Universal Consciousness (Ref 41)

Consciousness as a fundamental property of the universe, akin to mass or charge. All physical entities, from electrons to galaxies, possess some form of consciousness or proto consciousness.

Neural Darwinism: Theory of Neuronal Group Selection. The Evolution of Consciousness

Consciousness emerging through a process of selection among groups of neurons, akin to the principles of natural selection.

Global Workspace Theory: GWT - Consciousness as a Central Information Hub (Ref 77)

Consciousness arises from the integration and sharing of information across different brain regions and functioning as a central information hub, allowing various cognitive processes to communicate and cooperate. GWT is a recursive process with meta-stability based on the hypothesis that certain states of consciousness correlate with recursive processing loops. Neuronal signals are not only processed forward but also sent back and forth between different brain regions in complex feedback loops. A certain degree of recursion could correlate with a meta-stable state that could be characteristic of certain states of consciousness. Lamme and Roelfsema (2000) proposed that recurrent processing in visual areas is necessary for conscious visual perception. Their studies show that the first wave of activation in visual areas does not correlate with conscious perception; only the recurrent feedback loops show a strong correlation with conscious experience. Methods: The analysis of connectivity patterns and information flows between different brain regions using functional MRI imaging or complex EEG analyses could provide insights into these recursive processes. For example, Boly et al. (2011) have shown that certain states of consciousness correlate with specific patterns of effective connectivity between brain regions. Recent research by Dehaene and Changeux (2011) emphasizes the importance of long-range feedback connections for certain states of consciousness.

Thermodynamic Theory: Consciousness arising as a complex, self-organizing patterning of energy, information processing, energy efficiency, and entropy reduction in the evolution of complex systems capable of exhibiting intelligent behaviors and subjective experiences. (Ref 82) This includes the concept of critical transitions in neural systems. According to this approach, certain states of the brain operate near a critical point which correlates with specific states of consciousness. At this point, small changes in neural activity could correlate with large-scale, qualitative changes in consciousness. Beggs and Plenz (2003) discovered “neuronal avalanches” in the cortex that follow a power law distribution — a feature of critical systems. They argue that this critical state is optimal for information processing and storage, which may be related to certain states of consciousness. Methods: The observation of power law distributions in the size and duration of neuronal activity clusters could provide clues to such critical

transitions that correlate with changes in the state of consciousness. Hesse and Gross (2014) have developed methods to identify and quantify critical dynamics in brain networks. Recent studies by Tagliazucchi et al. (2016) show that the human brain operates closer to a critical point during wakefulness than during sleep or under anesthesia. This suggests that the critical state may be closely related to certain states of consciousness.

Quantum Consciousness Theory: Quantum Mind Theory (Ref 78)

Quantum Consciousness Theory is based on the idea that microtubules, which are tiny protein structures found within cells with DNA, can facilitate quantum computations.

Each of these theories looks at consciousness from a different perspective, each looking for the simplistic basis for that consciousness but a fundamental aspect of all these biological systems is their inherent nonlinearity. This property has far-reaching consequences for our understanding of consciousness. In biological systems, including the brain, there are virtually no true linearities. Instead, nonlinear interactions are the norm (Laughlin et al., 2000). This means that the output of such a system is not proportional to its input, and that the behavior of the overall system cannot simply be understood as the sum of its parts. This nonlinear nature of biological systems supports the idea that consciousness should be considered as an integral part of our neural systems, not as something that is “generated” causally. Complexity and non-linearity make it possible to understand qualitative changes of consciousness without having to resort to reductionist explanations. Complexity and non-linearity seem to be most apparent in the feedback loop of observations and reactions. (Ref 129)

In this exploration, although we will look at numerous mechanisms that may be involved in many of these theories, we are going to focus on the Quantum Consciousness Mind Theory, first because it has the longest reaction/reflection feedback time and secondly because I think it most closely reflects Urantia book concepts. I also like thinking of this complexity and non-linearity as existing at the intersection of the past that sets the stage, and our choices of how to act out our part. Our past created our status by normal Newtonian mechanisms, but our future is probabilistically determined by how our thoughts influence our actions. (Ref 83)

This PBS Space Time, YouTube video, “New Evidence for Quantum Effects in The Brain” will give you a good base for my suppositions:

**<https://youtube.com/watch?v=xa2Kpkksf3k&feature=shared>**

## **Consciousness as a Unified Mechanism**

Is consciousness hierarchical? Consciousness, a phenomenon central to our understanding of the human mind, and even our God consciousness, has traditionally been divided (as we saw in the preceding section) into different categories and aspects. Separate concepts such as phenomenal awareness, access awareness, self-awareness and the distinction between conscious, subconscious and super conscious processes have long shaped research and confounded philosophical discussions. Here I suggest that consciousness is a hierarchical, flexible mechanism that can take on these different states and intensities, but that it always functions on the same underlying mechanisms.

This continuous processing, with various degrees of intensity concept, provides for a more holistic simplistic approach. Different states of consciousness (e.g., wakefulness, sleep, meditation) can be understood as different configurations of the whole body’s neural network, which is continuously, seamlessly, adapting to changing demands and focus. Modes of operation coincide with degrees of unification or synchronicity (resonances with pre-established patterns).

Hierarchical consciousness allows for continuous balancing of global and local coherences. The degree of information integration can vary depending on our different states and intensities of consciousness. The flexibility of integration-differentiation enables processing of information in many different contexts. This highlights the importance of subcortical structures, especially the brainstem, for higher cognitive function. In this hierarchical perspective, these structures are initializing components. These subcortical structures such as the brainstem can act as the “accelerator”, “brake” or “disconnect” for downstream consciousness mechanisms. Consciousness is characterized by highly complex and dynamic neuronal patterns. Consciousness is associated with a high level of integrated information, reflective of the complexity of neural activity patterns. (Tononi and Edelman - 1998) and patterns in mind-altered states have shown that neuronal patterns are recognizable in states such as coma or deep anesthesia, but with reduced complexity and variability. (Demertzi et al. - 2019) Characteristic patterns of functional connectivity, especially in the default mode network and other large-scale networks, correlate strongly with the state of consciousness (Vanhaudenhuyse et al., 2010). The gradual changes in pattern complexity (Mashour et al., 2020) and the dynamics during transitions between the different states of consciousness (e.g., from wakefulness to anesthesia) support a hierarchical concept.

Said mathematically: The rate of change of consciousness is a function of the current direction of consciousness, times the current system status, times the sensor inputs, all multiplied by an exponential factor (representing the dynamics of the system e.g. the thousand-fold ballistic nature of the microtubules) complicated by an element of randomness. (Ref 133)

## **Physiologies of Body Consciousness**

Our digestive system is involved in all the above-mentioned consciousness states. Our gut (sometimes called the second brain) has capabilities that may surpass our brain’s intercommunication ability. It has its own nervous system, known as the enteric nervous system, and the cells in our body communicate with each other and have a direct pipeline to the brain via the Vagus (pneumogastric – lung heart) nerve. Our gut’s food processing mechanism moves serially from acidic to alkaline, charging the battery, and it is electrically aided by being grounded through our connection to mother earth. We eat proteins of one form (plant or animal), break them down into their constituent parts (amino acids, di and tri peptides) and then reassemble them into the configurations we need. The human body makes from 80,000 to 400,000 different types of proteins for many different purposes. The processes of using electro-motive power to extract and rebuild the necessary building blocks for the cells of our body co-evolved with us. We were designed and have evolved to be electrically active, but we also have some control in the ways we discharge the battery, and we will try to see how we can wisely direct that electrical discharge process.

Our cells communicate with each other mechanically, interacting with neighboring cells or by transferring electrically patterned peptide signaling molecules with hydrophilic (water attracting) and hydrophobic (water repelling) patterning.

Side note: Single celled bacteria (that make up more than 90% of the cells in our body) use similar signaling molecules to communicate virulence “quorum sensing” to be aware of their particular species and that of other types of bacteria. (Ref 121)

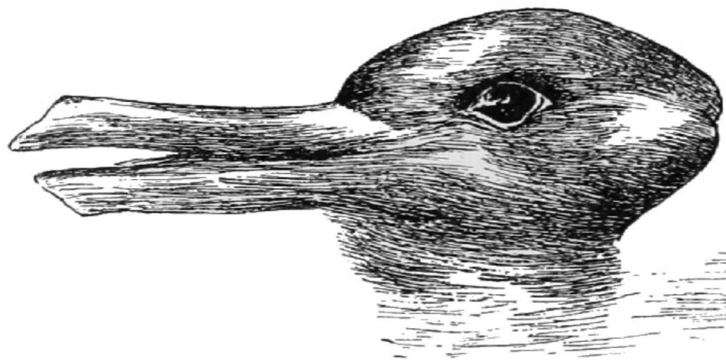
Interaction between cells is determined by the electrical surface properties (positive – negative being attractive and like charges being repelling). All cells possess a common genetic constitution, but they are influenced by their cellular environment, and their position in their nearby electrodynamic field. The thing that determines whether their DNA folds into a brain cell protein or into a gall bladder is its electrical environment. The cell's formation is controlled by an extra-biological guiding principle, called "entelechy" which literally means "the realization of potential". (Ref 48 & 94 Mike Levin Ted Talk)

Side Note: Stem cells have the entelechy for the manufacture of every kind of cell. Young children have the ability to regrow a lost limb, but we lose this ability as we age.

Peptides form the basis of non-immune system signaling molecules and there are up to seventy different types of peptides. Peptides are small portions of digested or manufactured proteins, and form signaling molecules like endorphins (Ref 13), hormones, and neurotransmitters. These signaling messenger molecules connect the cells of the body's endocrine (bodily functions), and nervous systems, cascading electro-chemical messages between cells, along nerves, up the spinal cord, to the brain stem, the amygdala, the hypothalamus, the thalamus, the pineal and pituitary glands, and then on to other areas of the brain for appropriate responses. These peptides form the base of the periaqueductal gray (PAG) area of the brain stem which is the hub for self-awareness and pain mitigation. This is also the hub for our qualia, the internal and subjective sense of our perceptions, the introspectively accessible aspect of our brain. The physical processes in the brain that give rise to "what is it like" or subjective experiences, is called the "qualia". Qualia is our self-organizing, self-referring and self-actualizing psychosomatic network that gives us our intrinsic properties of experiences (think sub- and superconsciousness). Peptides manage the biochemical overcontrol of our 34,000 possible emotions (Ref 80) and play a crucial role in assisting our qualia and the activities of our immune system, by integrating mental, emotional, biological activities and eventually our spiritual wellbeing. They change or predict our behaviors, affect our moods, and color our unique emotional tone (Ref 20) and interestingly, there are no hard-wired emotion control circuits in the brain. Emotional responses, as measured by our heart rate variability HRV, are controllable. The physical heart is responsive to our emotions. For example, excessive fight or flight triggers "tokosubo" cardio myopathy, "broken heart" syndrome.

Peptide-based compounds cause chemical reactions and as these reactions cascade along nerves, their "critical first stop" is the brain stem and medial limbic region of the brain (including the pineal gland) where they are sorted and prioritized before furtherance to the neocortex for responses or for memory storage. Sensory inputs are dealt with via the amygdala and the sympathetic (fight or flight accelerator) nervous system and balanced by the parasympathetic (think Vagus heart-lung) nervous system which regulates "rest and digest" "calm down" functions.

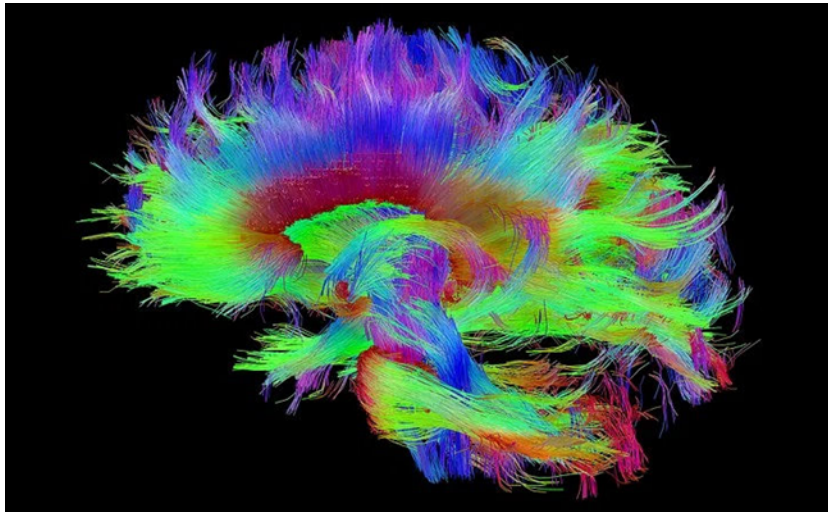
There are  $86 \times 10^{10}$  neurons transmitting signals at about 120 m/s or 275 mph. There are  $100 \times 10^{14}$  synapses of which 250,000 are firing at any one moment. If we think of the synapses as the pixels of a camera and the firing rate as the number of pixels that are changing from frame to frame, then the refresh rate of the image occurs at  $(100 \times 10^{14}) / 250,000) / 275 = 1,454,545$  frames per hour or 24,242 per second. To handle the continuum of signals, the brain has constant communication between its 86 billion neurons and its 100 trillion synapses. This is 10 to the millionth power of possible states, so the flow of information is more like constantly moving three dimensional images. As a tiny example of this, the brain can form a three-dimensional image from the electrochemical signals received as light from an object hits dozens of parallel stacked “pigment” disks in the rods (for detecting dim light) and cones (red, green and blue/ultraviolet) of the retina (Ref 86). This process is called phototransduction. Each disk has a seething liquidity of receptor molecules (rhodopsin) moving in a “random” manner. If more than 6 light molecules are triggered within half a second it sets off a cascade with a nearby molecules in this semi liquid sea, transferring a small signaling molecule amplifying the signal and it takes billions upon billions of photons to create an image. Similarly, other cells in the body have “random” motion collisions with neighboring cells or they transfer messenger molecules which determine their interactions. In the case of the eye, these interactions cascade electrochemical signals in a chain reaction down the optic nerve to the visual cortex of the brain which creates the visual image, but our conscious image is made up of much more than just the visual image. Our conscious image includes everything that is happening, along with all our previous models, memories, related thoughts, qualia, gut actions, reactions, current and future intents. It is interesting to note that there are ten times as many neural connections coming back from the various cortex areas of the brain, as there are going out from it, so the mid brain is sharing the current inputs with all other associated areas of the brain for continuous reflection, cross referencing, model building and choosing. In effect, we are continuously observing and relating our current self with our past self. (Ref 10) That we can perceive this ambiguous image in one of two ways is like the quantum superposition of states where it is only “fixed” once observed. (Ref 103)



Is it a Duck looking left or a Rabbit looking right?

Side note: The most important part of the brain, the neo-cortex, is almost the same everywhere. It manifests material uniformity.

Side note: Up to 30% of the brain is used primarily for adapting, deciding, reasoning, and planning.



**Brain Wiring Networks**

## **Intercellular Communication**

Intercellular communication is not limited to the brain. Communication between individual cells is facilitated by cellular cytoskeletal structures (the hardware of cells), eicosanoids (in the immune system) and nerve cells (neurons). Cytoskeletal structures are in all cells, including neurons. They include microtubules and they are used to transport information and move substances to various parts of the cell. They also work closely with neighboring cells, rapidly changing their molecular structures, and intermediate filaments. (Ref 84)

It is important to distinguish between neurons and nerves. A neuron is an individual cell that processes and transmits information through electrochemical signals whereas a nerve is a bundle of axons (the long, slender projections of neurons) in the nervous system. So, while neurons are individual cells that carry nerve impulses, nerves are bundles of these neurons.

Let's first look at nerves of which there are two types, sensory (incoming) and motor (outgoing). Nerves are made up of many sections varying in length from 0.1 mm to a meter and there are millions of miles of them in our brain. Nerve stimulation has a trigger voltage below which there is no response and above that voltage the nerve fires. Peptide neurotransmitters are chemical messengers that are released to communicate (fire), unidirectionally, between nerve segments.

The actual electrical energy that "fires" a neuron, also known as an action potential, is created by the movement of ions across the neuron's cell membrane. Here's a step-by-step breakdown of the process:

**Resting State:** When a neuron is not sending signals, it is in a resting state. During this state, the inside of the neuron has a negative charge relative to the outside due to the distribution of different ions across the cell membrane.

**Depolarization:** When a neuron receives a signal strong enough to pass a certain threshold, it triggers an action potential. This process, known as depolarization, involves the opening of sodium channels in the neuron's membrane, allowing positively charged sodium ions to rush into the neuron.

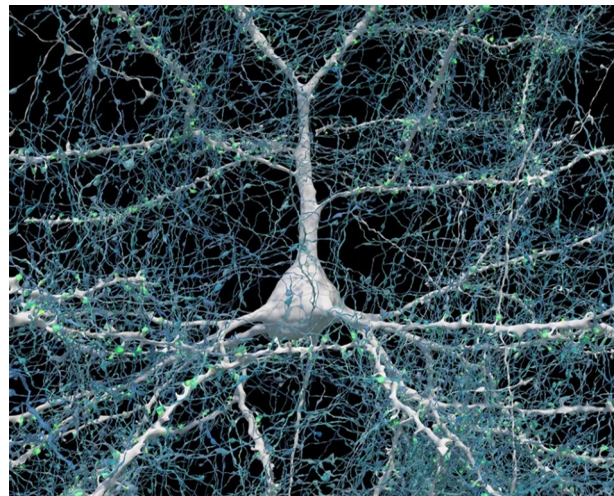
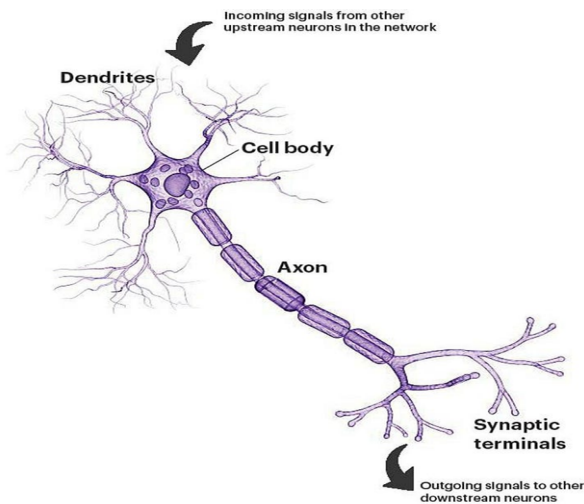
**Propagation of the Action Potential:** The influx of sodium ions changes the electrical charge inside the cell, causing the action potential to propagate along the length of the neuron's axon.

**Repolarization:** After the action potential has passed, potassium channels in the neuron's membrane open, allowing positively charged potassium ions to flow out of the neuron. This helps restore the negative charge inside the neuron.

**Refractory Period:** After an action potential, there is a brief refractory period during which the neuron cannot fire again. During this time, the sodium-potassium pump works to restore the original distribution of ions across the neuron's membrane.

It's important to note that while this process involves the movement of ions, it is fundamentally different from how traditional electricity is generated. Traditional electricity is generated by the movement of free electrons, but the electricity generated by neurons results from the motion of sodium and potassium ions across the cell membrane.

The voltage and frequency of firing encodes the information as it is transmitted via the peptides and action potential along the nerve. Each segment intercommunicates at their intersections and these intersections do not actually touch, instead, they have a 40-nanometer gap between them called the synapse. At each synapse, are the synaptic vesicles which contain these peptide neurotransmitters.



## Single Neuron

Neurotransmitters (which control the concentrations of sodium and potassium ions) are prepositioned at each synapse as a function of our emotional predisposition and transfer their influence as they are released. Their concentrations can be changed by two main processes: epigenetic methylation (the replacement of a methyl group in place of a hydrogen atom on the appropriate DNA gene segment) and our emotional self-mastery. An example of epigenetic modification would be when a gene is modified to make the enzyme catechol-O-methyltransferase (COMT) which breaks down the neurotransmitters, dopamine, epinephrine, and norepinephrine.



The chemicals that are released from a synapse when triggered are a function of the genetic and epigenetically modified synapse chamber shape and their current electrical status. Their electrical predisposition (which is influenced by previous activity) is determined by the local concentrations of calcium, potassium, and sodium ions (Ref 47) in and around, the neurotransmitter chamber itself. For example, abrineurin (BDNF or Brain-Derived Neurotrophic Factor) is a signaling protein that can enhance neuroplasticity, and its levels can be boosted by exercise (Ref 15), ketosis, magnesium (L-Threonate) intake and good sleep. (Ref 57) One emotional condition, fear, involves the presence of calcitonin, a gene-related peptide, which is created by all fears and this peptide relays signals to other areas of the mid brain. Fear, with its related animal facial expressions and mannerisms, is mediated by dopamine from the amygdala. (Ref 9)

Side Note: The gene Microcephalin (MCPH1) regulates brain size. It has evolved under “strong positive selection” in the human evolutionary lineage. This means that, once introduced, the microcephalin gene (and changes to it like that one that occurred 37,000 years ago) spread rapidly, which generally indicates some specific survival advantage or strong preference.

Side note: Current research shows that fears can only be mitigated by building new stronger neural chemical pathways rather than trying to ignore the old ones.

## Epigenetics

Let’s look more closely at epi (above) genetics. Epigenetic changes occur at the molecular, DNA level, making them difficult to observe directly, however, their effects can sometimes be observed in the form of changes in physical traits or health conditions.

Here are some examples:

**Pregnancy Diet:** The foods a biological mother eats while pregnant can cause epigenetic changes in the developing fetus. These changes can potentially affect the child’s health and physical traits.

**Early Life Trauma:** Experiences of trauma at a young age can lead to epigenetic changes that may manifest later in life such as mental health issues or other health conditions.

**Cancer:** Alcohol can disrupt the methylation processes, and those epigenetic changes can play a role in the development of some cancers (Ref 132). For instance, an epigenetic change that silences a tumor suppressor gene could lead to uncontrolled cellular growth.

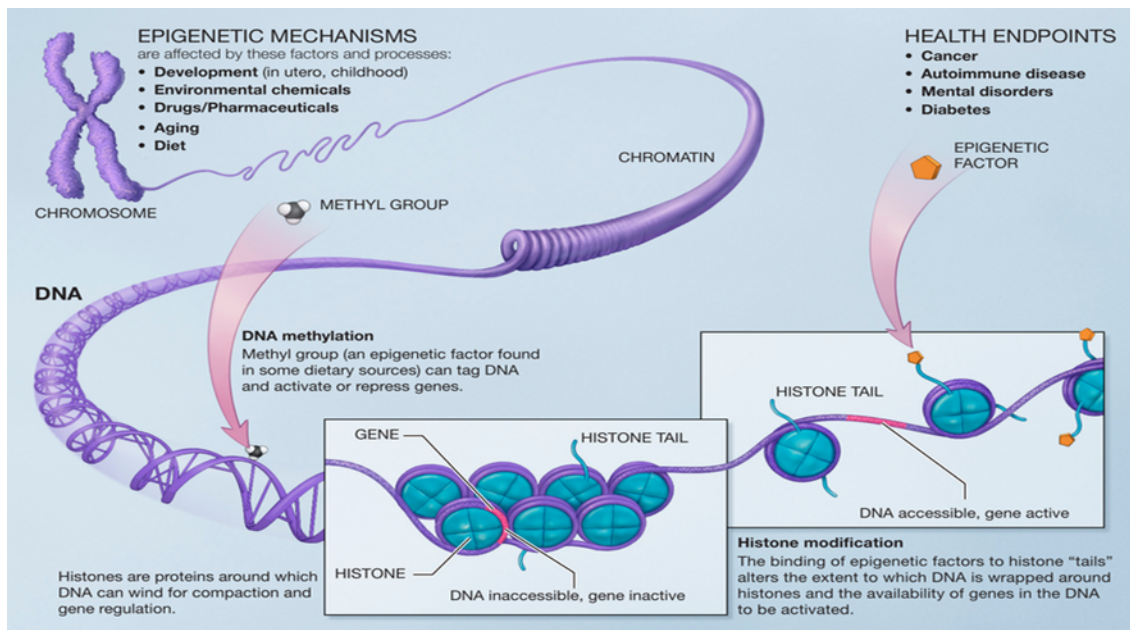
**Cell Differentiation:** Epigenetic changes are also responsible for cell differentiation, where cells with the same DNA become different types of cells (like skin cells, liver cells, brain cells, etc.) based on which genes are turned “on” or “off”.

Note that while these changes can be influenced by environmental factors and lifestyle choices, they do not involve changes to the underlying DNA sequence. Instead, they involve modifications to how the DNA is “read” by the body.

There are two kinds of DNA; nuclear DNA located in the nucleus of all our eukaryote cells, and it usually has two copies per cell, and maternal DNA, located in the cell’s mitochondria, which contains 100 to 1,000 copies per cell. These DNAs are made up of two 1.8-meter-long strands of small nitrogen-containing nucleoside

compounds; adenine (A), cytosine (C), guanine (G), and thymine (T). We can choose to be reactive or proactive in gene expression using epigenetic reprogramming and our emotional control.

DNA is present in most of the cells in our body and the thing that determines whether it acts like a brain cell or gall bladder is the way it is folded. DNA is made up of segments called gene segments and the combinations of these patterns are called its “gene expression” or “allele”. The complete gene expression is called your epigenome. There are parts of the DNA that are called “supergenes”, and these segments are not open for modification but there are three things that can control DNA’s collective gene expression; its electrical environment, small DNA segments called “enhancers” and methylation “tagging.” These change the final folded shape, and the final folded shape determines the protein’s function, i.e. whether it is a brain cell or a gall bladder.

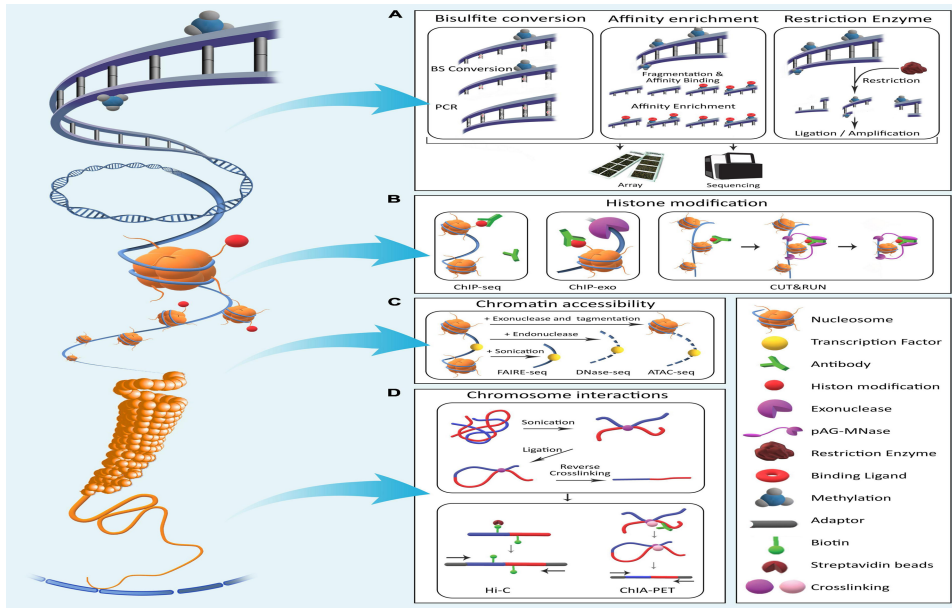


## Epigenetic DNA Tagging

It is estimated that neurons in the human brain have over 4000 unique enhancers and 10 to 50-fold more glial cells (non-neuronal cells that do not produce electrical impulses) which are not shared by other primates. (Ref 81) Human neurons are more densely packed and consume more energy per neuron than other animals (6 Kcal per billion neurons). Gene expression (the DNA folding pattern) determines which proteins are produced and that shape can be changed by the addition of methyl groups at strategic locations along the DNA strands but there are three other major methods of “epi” (above) genetic tagging or modification: histone acetylation (adding an acetyl group to histone proteins), chromatin compaction (wrapping the DNA around another protein) and nuclear organization (spatially arranging the chromosomes).

There are long-term gene expressions (think brain or gall bladder) and short-term ones, like when some comment angers you. An emotional response causes changes in the gene expression of certain cells, which does things like increase your heart rate, blood pressure, adjust your breathing, tense your muscles, or stand the hair up on the back of your neck.

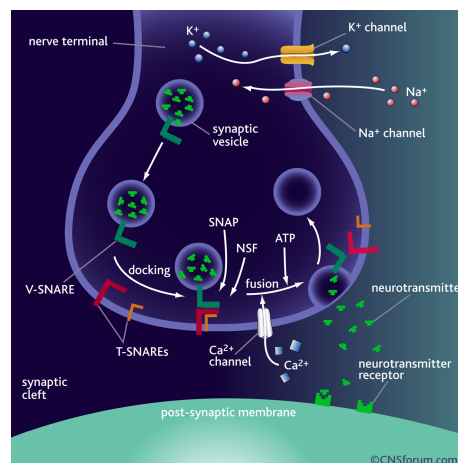
Side note: Recent research, direct current-actuated regulation technology or DART (Ref 36), uses direct-current voltages to change gene expression.



## Epigenetic change techniques

## Neurotransmitters

The chemicals that are prepositioned at each of our nerve synapses are called neurotransmitters and they determine our predetermined thought and emotional tendencies.



## Synapse

The electrical environment of synapses and the associated neurotransmitters, plus their epigenetics, determine their manufacture and release. Some of their main influences are as follows:

**Serotonin (95% of which comes from the gut):** anxiety, current happiness, sense of wellbeing, appetite, mood, memory, and sleep.

**Dopamine:** unexpected benefit, motivation, pleasure, future happiness

Note: Alcohol or sugar levels increase dopamine levels by activating the nucleus accumbens (pleasure/reward center) and this sets the “current expectation level” above which dopamine is then released. This is called “The Pleasure Trap” or addiction. (Ref 53) Alcohol is a carcinogen through 5 different mechanisms. (Ref 132)

**Glutamate and Gamma-Aminobutyric Acid (GABA):** balance, excitement versus the urge to be calm.

Note: The blend of these determines our level of maturity and is the most active of the neurotransmitters.

**Norepinephrine** (aka - noradrenaline): alertness, arousal, attention, cognitive function, and stress reactions

**Acetylcholine:** focus, learning and memory, parasympathetic (against emotion) nervous system

**Oxytocin** (a hormone and a neuropeptide with more pronounced, prolonged effect): orgasm, social recognition, pair bonding, anxiety, group bias

**Endorphin** (neuropeptide): current pleasure, self-esteem

**Neurotensin** (neuropeptide): like dopamine, but specifically for the differentiation of “good” from “bad” thoughts (stems from a survival perspective but may be involved with moral choices as well)

**Melatonin** (hormone): circadian rhythm (primarily from the pineal gland)

Cells in the synapse areas fall into two categories, neurotransmitters (function) and glial (protectors) except for glutamate astrocytes that function as both. Extracellular glutamate stimulates Ca<sup>2+</sup> release from the astrocytes’ intracellular stores, which triggers glutamate release from astrocytes to the adjacent neurons. (Ref 135)

Evolution gets huge credit here for the process led to intricate channels in our cell walls that creatively change shape with electrical potentials to open and close allowing the flow of these motivating chemicals in this dynamic environment. The flow through the cell walls of the chambers and their surrounding conditions are affected by previous stresses, anxieties, and fears of the future (among other things).

By consistent, free will choice, we can slowly, incrementally, change our neurotransmitter predispositions.

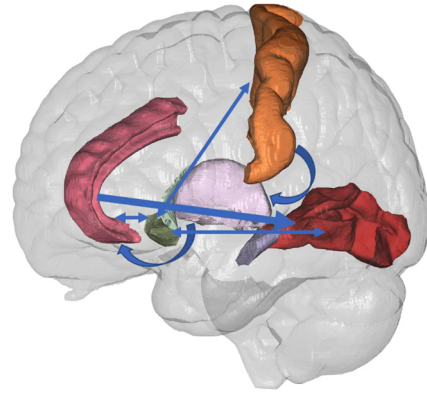
## Homeostasis

A major component in maintaining homeostasis and equanimity, is the hypothalamic-pituitary-adrenal (HPA) axis (Ref 43), which is an intricate, robust, neuroendocrine (nerve triggered hormone release) mechanism, that has similar physical attributes to neurons. It mediates the effects of stressors by regulating metabolic, immune responses, and the autonomic nervous system (ANS). The HPA (Ref 16) cascades signals down endocrine pathways that respond to negative feedback loops involving the hypothalamus, anterior pituitary gland, and adrenal glands.

Anxiety puts us in a constant fight or flight response state resulting in long term reductions of noradrenaline, so we become less attentive and less engaged. The antidote is a reset strategy that brings your amygdala and locus coeruleus back to homeostasis by a balance of calm, meditative behavior or group worship and focused physical and mental exercise. (Ref 93)

Pain and the use of drugs (poisons with one beneficial side effect) to mitigate pain is a classic case of misinterpretation. Dramatic neural activity is interpreted by the brain as a need to pay attention. We can mitigate pain by distraction. Opioids don’t block pain; they over stimulate the pleasure centers of the brain to

distract the senses. We can distract the brain's focus on pain physiologically, with vibration, cold or other mental activities.



### **Distraction Antitheses**

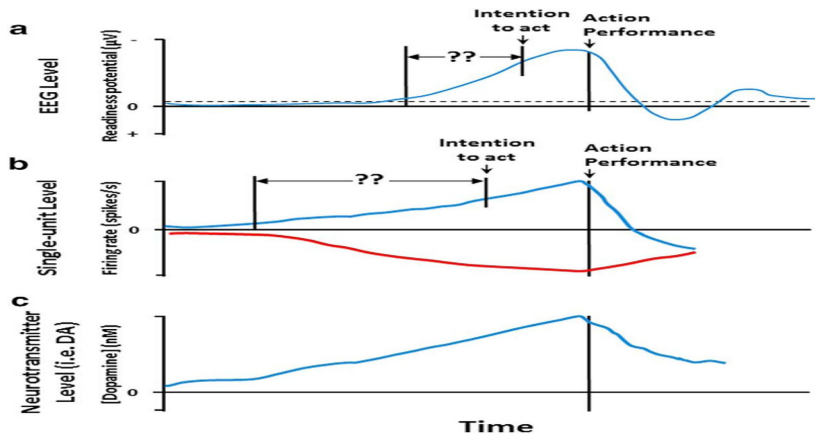
Pain is fundamentally subjective. (Ref 136) Peak alpha wave frequency and corticomotor excitability as measured by transcranial magnetic stimulation, is predictive who would experience more pain. Corticomotor excitability represents how quickly a signal gets from the cortex to the part of the brain that controls our muscles. There's a standard survey called the "pain catastrophizing scale" that is used to quantify the psychological impact of pain. Certain individuals tend to ruminate on pain more, or have more anxiety about the idea of pain, or feel helpless to manage that pain. At the moment of pain, psychology is a slave to biology and not the other way around, but we can influence how we will react to future pain.

Our initial emotional conditions relate to our calmness, which in turn relates to our trust in stable, unchangeable things, like God. Above this calm or frenetic initial electrical energy state, there is an on/off, nerve firing, transmission mechanism. The intensity and duration of the firing voltage, and frequency of firing repetition determines which neurotransmitters are released from the synapses. High voltage, high frequency, longer duration stimulations, are involved in more intense reactions and can be calmed by low, meditative, prayerlike or worshipful frequencies. Prayers may be likened to recharging our cellular batteries by focusing on what is important and worship may be tuning our thoughts to be receptive to cosmic thinking.

### **Brain Waves**

Benjamin Libet conducted experiments (Ref 71) that demonstrated that we unconsciously think about an action, up to 300 milliseconds before we are conscious of that thought. This implies that our superconsciousness or mid mind is the precursor of our conscious thoughts. Imagine this preemptive action happening at all our brain wave frequencies from the lowest at 4 Hz up to our highest functioning range of over 100 Hz.

All this precursive, thought triggering, neuro-peptide electro chemical activity eventually shows up as brain waves and these individual excitations cascade in waves of various overlapping scales of neural avalanches (thoughts).



**One pulse of a neuron firing.**

The lowest, delta wave frequencies, those experienced in deep meditation (Ref 21, 38) and worship, generally have the highest amplitudes, and interestingly, are the dominant frequencies in a young child's brain.

The higher frequencies and more entrenched ways of thinking (as the neurons become myelinated – coated to speed up transmissions) become dominant by age 25, except in perhaps periods of meditation, true worship, and deep sleep.

Electro-chemical signals between each nerve segment are triggered at 5 to 50 times per second and a propagation signal ripples along the nerve as a wave of action potential. These ripples of action along the nerve are a pulse above the base voltage, and they shuttle the electrical pulses at between 200Hz and 300Hz. On a related note (pun intended) the frequency of this wave of action potential varies for individual events and equates to musical notes between G 196Hz and D 294Hz. This may be why music is often relaxing, and it is interesting to note that live music is more effective in producing positive amygdala (think emotional) neurofeedback. (Ref 23, 54)

Electrical activity of the brain is usually divided into three categories:

1. Spontaneous activity
2. Evoked potential activity
3. Single neuron events

Spontaneous activity is measured on the scalp or on the brain and is called the electroencephalogram. This signal goes from under 1 Hz to about 100 Hz and this activity goes on continuously in the living individual.

Evoked potentials are those components of the EEG that arise in response to a stimulus (electric, auditory, visual, or spiritual) and these signals are usually below the noise level and therefore not readily distinguished. One must use signal averaging to “see” these over the background noise.

Single-neuron events can only be examined using microelectrodes which impale the cells of interest. These include neurotubule events.

Our spontaneous brain activities (Ref 6,7) are quite frenetic, as can be seen in a typical electroencephalogram, EEG, snapshot of the electric fields emanating from the brain's activities. The electrically associated and

massively cross-correlated bio electrically initiated signals of all the brain's synaptic interactions can be grouped and parsed into ranges reflecting their general functions as follows:

**Gamma** (40 to 100 Hz not shown) – involved in recent **intellectual activity**.

**Beta** (12 to 40 Hz) – involved in **executive functioning**.

**Alpha** (8 to 12 Hz) - involved in **relaxed cognitive functioning**.

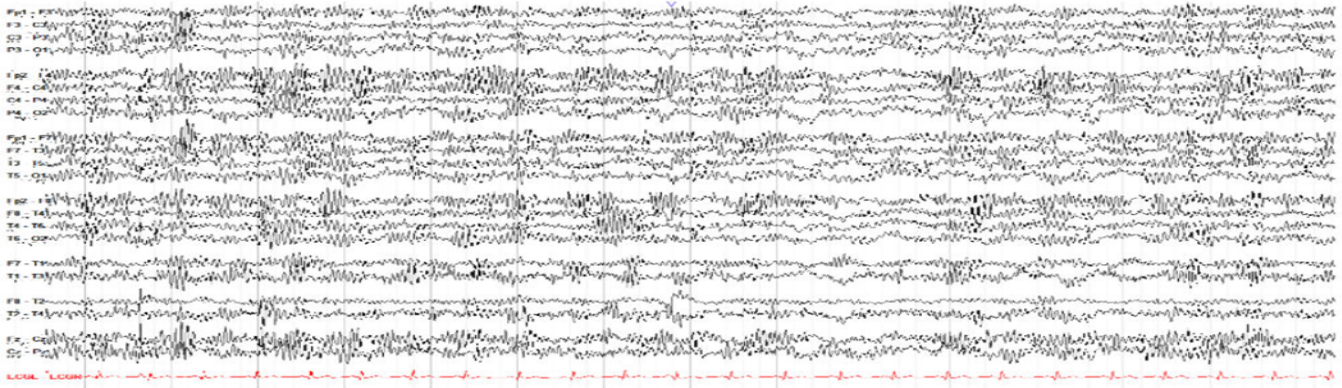
**Theta** (4 to 8 Hz) - involved in light **meditation** and sleep.

**Delta** (0 to 4 Hz) - involved in **deep meditation**.

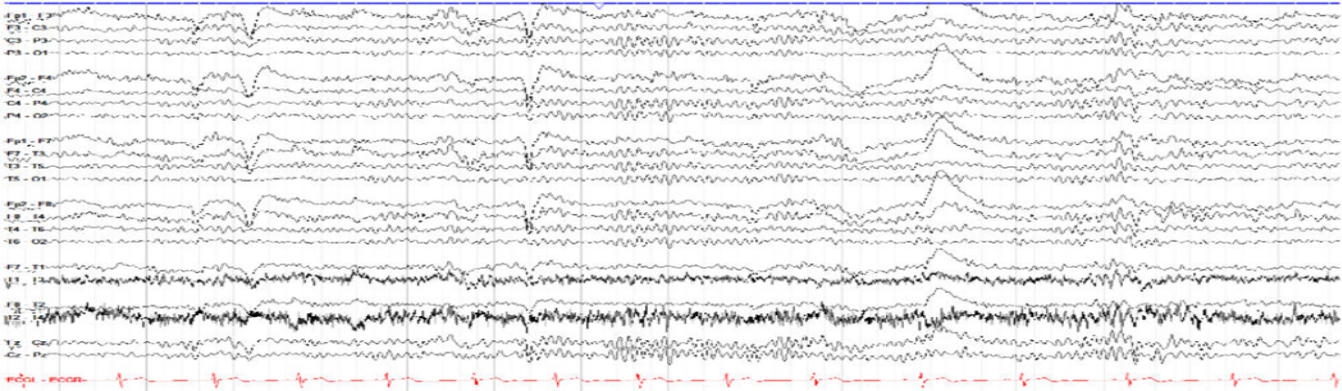
Voltage variations have a drift velocity of charge carriers (generalized patterning) that flow at about 1 – 2 mm per sec (0.006 ft/sec). Voltages in the electroencephalogram images shown here represent +/- 30 micro-Volts above the much higher action potential ripple voltage base (initial conditions) of -70 milli-volts. It may be that when we lower the base voltage, when we are calm, we make the “signal pattern” (+/- 30 micro volts) more “visible”.

Nearly all our cells can generate electricity, but electrons don't flow like a wire, instead, a chemical ion with a certain charge jumps from one cell to the next and between one myelin insulated axon segment to the next until it reaches its destination. The myelin sheath is typically about 100 microns long, with 1-to-2-micron gaps between them. The speed of signals without the myelin is subsonic but myelinated signals seem to be entangled with photons released by the tricarboxylic acid cycle that releases a cascade of infrared photons that couple to the vibrations of the carbon hydrogen bonds in the lipid molecules of the myelin exciting them to a higher energy state releasing more photons. (Ref 98) The speed at which these electrical signals travel can vary greatly, depending on the type of neuron and whether the neuron is myelinated, but speeds range from 1 to 100 meters per second.

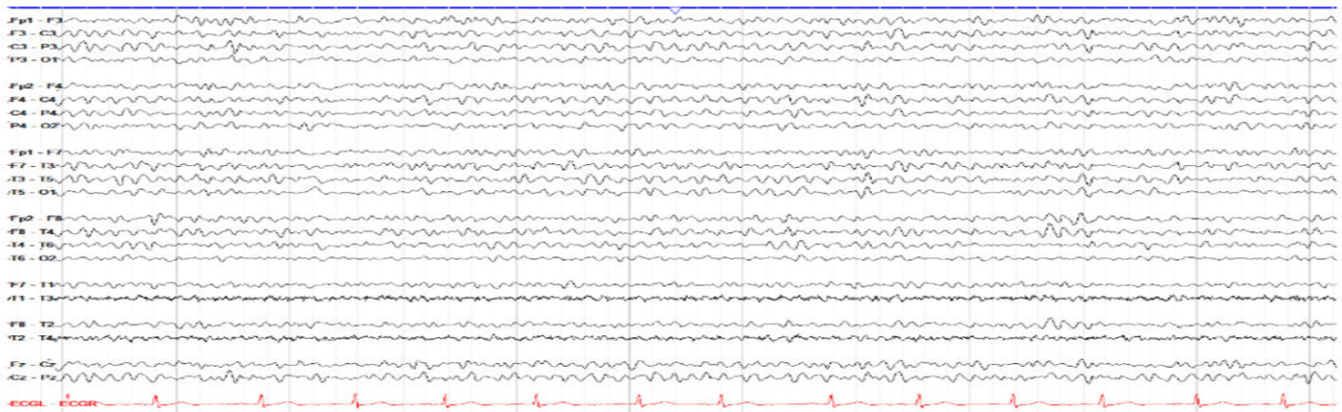
# Electroencephalogram



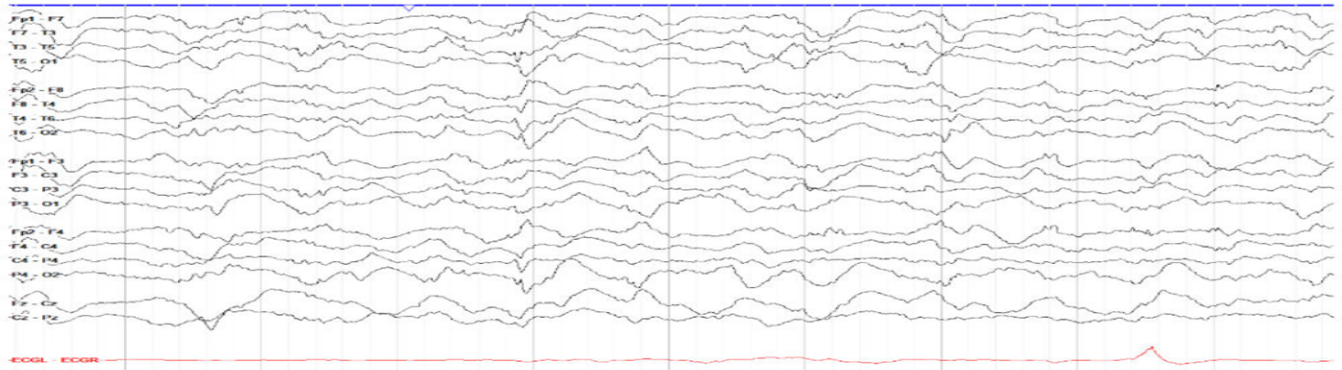
Delta Theta Alpha **Beta** Beta (12 to 40 Hz)



Delta Theta **Alpha** Alpha (8 to 12 Hz) Beta

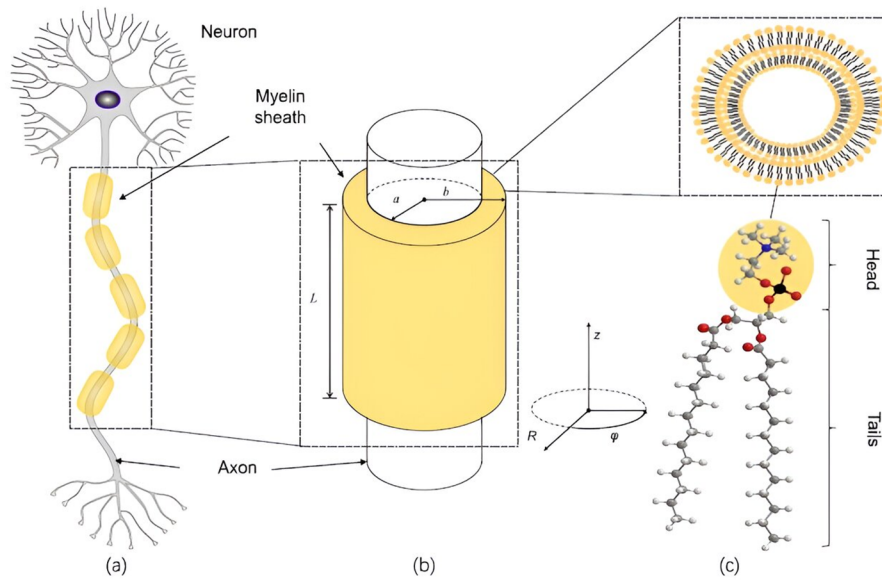


Delta **Theta** Theta (4 to 8 Hz) Alpha Beta

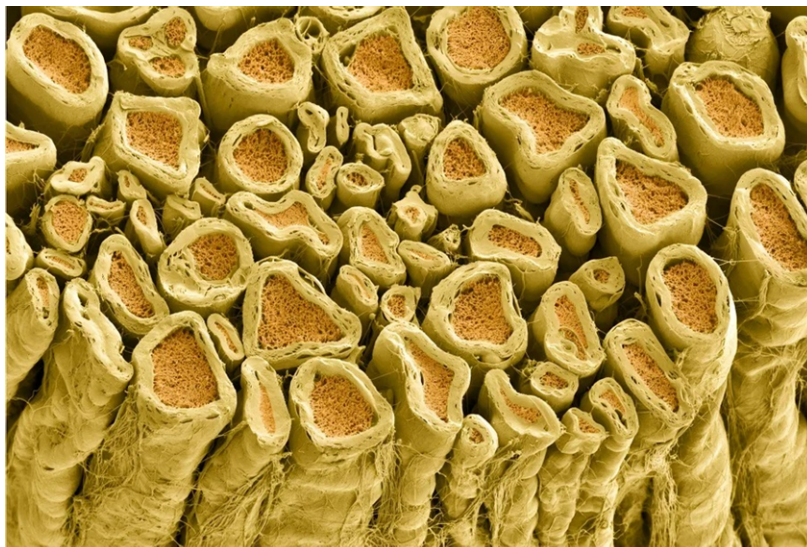


**Delta** Delta (0 to 4 Hz) Theta Alpha Beta





### Myelin Sheaths over Nerve Axons



### Rat Brain Nerves with Myelin Coatings

The myelin sheath, as a cylindrical cavity, facilitates the generation of entangled photon pairs. (Ref 108) Researchers in August of this year discovered that the specific vibration of C-H bonds in lipid molecules within the myelin sheath can produce entangled photons. Given the abundance of these bonds in neurons, this mechanism could be a significant source of quantum entanglement within the nervous system. This discovery hints at a possible explanation for how the brain utilizes quantum entanglement for information transfer, potentially explaining the synchronized neuronal activity crucial for consciousness.

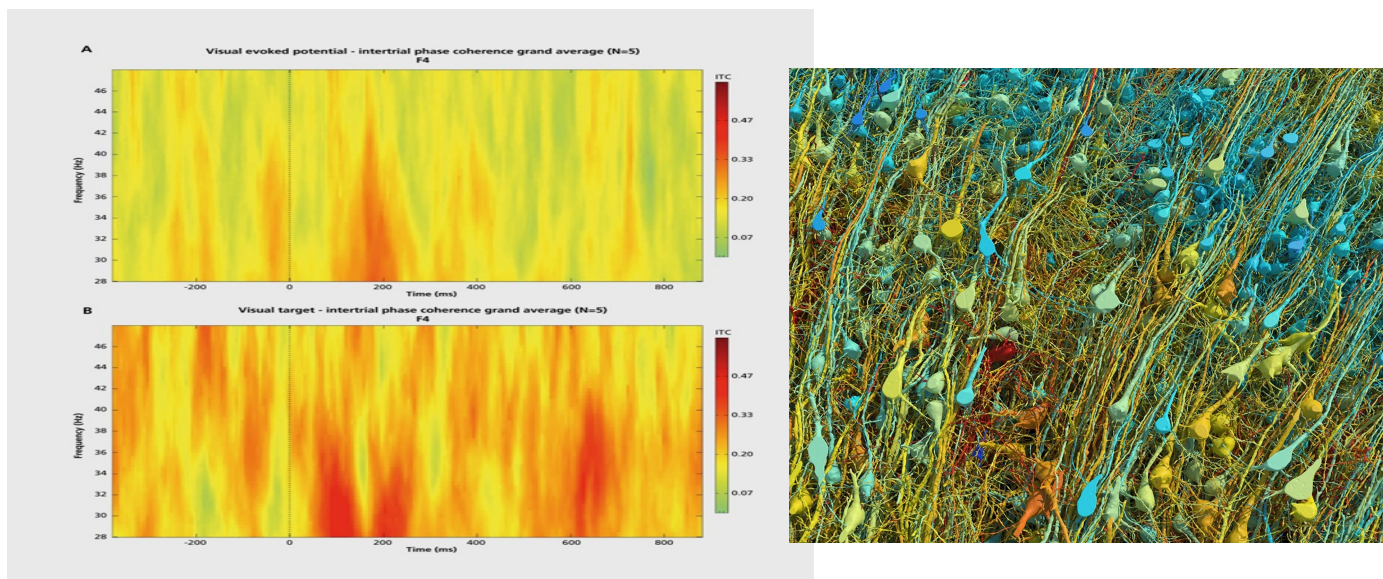
It is interesting to note that science finds no trace of myelin in the ancestral line that preceded the arrival of vertebrates, animals with backbones. (Ref 99) “Apparently”, a virus infected a vertebrate ancestor, slipping the

genetic instructions for making myelin into its DNA. The evolutionary phenomenon represents an example of the term “suddenly” used 96 times by *The Urantia Book* and what scientists refer to as “punctuated equilibrium”, reflecting a speedy specialization pattern of significant evolutionary change. (Ref 62.) Curiously, myelin is wrapped around nerve fibers by entirely different cells in the body (Schwann cells) than in the brain (oligodendrocytes) and astonishingly, 40 percent of the DNA in mammals consists of remnants of these retroviral “infections”.

In the Thought Changer phase (before the solidification of the myelin sheaths) Delta waves and massive cross communication between nerves dominate. The delta wave frequencies (0 to 8 Hz) can be replicated in a deep meditative state, or worship. Perhaps complete parental trust in God would allow slower thinking and more cross communication between brain cells. Perhaps being humble, like a curious child, fascinated by discovering new things, or by enjoying a particularly soothing piece of music, we can regain that childlike faith.

## Mental Picturizations

A published study in *Science Advances* in April 2022 shows that the brain passes information like waves throughout the brain. Picture a three-dimensional volumetric cascade of electro chemical excitations. The waves of particle interactions within this volume cascade into more wavelets of activity that move and create more ripples in the mind pool. Wave peaks and troughs interfere or augment and influence other neurons. Our thoughts are cross correlated in any one memory (smells, relationships, expectations etc.).

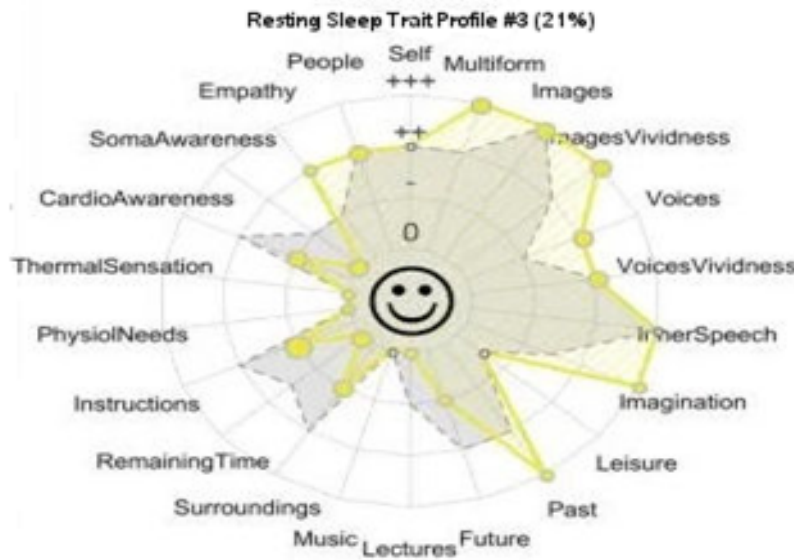


**Two-dimensional image slice of three-dimensional brain activity**

It may not be so much the dominance of a single frequency, as it is the harmonies of all the frequencies that give us the total picture. When we look at the complexity and unorganized nature of the EEG traces, you can see the way the electrical activity clusters spatially and how challenging the task of the Soul is. The larger red areas in the above two-dimensional slice represent stronger thought drivers.

As these patterns are influenced by, and tend to align with, cosmic patterns, and the precursors to our reflective thinking, these will adjust our material reality via emotional and epigenetic management, as our neural activities try to harmonize, amplify, and align these 3-dimensional volumetric images.

Recent research (Ref 52) done on the brain at rest by Cremona, Joliot and Mellet (2023) derived “thought profiles” from a cluster analysis of data from nearly 1,800 French university students. In addition to “tried-and-true” measures, this group completed a novel survey of resting-state personality dynamics, the ReSQ 2.0 and found core pathological character traits or brain picturization groupings. (Ref 52)

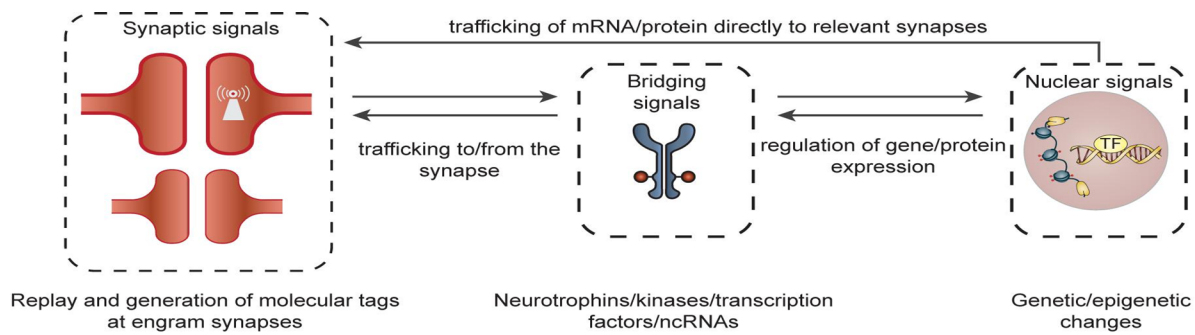


Scientist Pulin Gong at the University of Sydney also found spiral patterns that exhibited intricate and complex dynamics, moving across the brain’s surface while rotating around central points, known as phase singularities. (Ref 34)

If we think of the soul as a holographic fragment of God, each fragment of God, as it steps out of infinity and into finity, could be thought of as a low-resolution image of God and the whole of creation. To improve the resolution of the image we have of God, we can cumulatively add our own low-res image perspectives with other people’s images and understandings, to get higher and higher resolutions and visualizations of the overall image. With each perspective we get a better understanding of material creation and the forces behind it.

### **Activity Regulated Cytoskeleton Peptides & Synaptic Adhesion Molecules ARCs and SAMs**

At the base of life itself is RNA. Ribonucleic acid (RNA) is a polymeric molecule that is essential for most biological functions, either by performing the function itself (non-coding RNA) or by forming a template to produce proteins (messenger RNA) where the information from one cell is packaged and communicated to nearby cells. RNA, ribonucleic, DNA, deoxyribonucleic, are both nucleic acids and nucleic acids are one of the four major macromolecules essential for all known forms of life. (Ref 27, 115)



## mRNA Process

Communication between brain cells is essential and is aided by activity regulated cytoskeleton (ARC) peptides which are proteins in our brains that spread information through a messenger RNA (mRNA) like process. These Arc's encapsulate the mRNA within its shell, protecting it from degradation. Neurons release these extracellular vesicles (EVs). This phenomenon mirrors how viruses carry genes inside their protective capsids and show up in the Devonian age as the first function of neuron-like memory activity. (Ref 88) Within a cell, mRNA carries the genetic instructions from the DNA in the nucleus to the ribosome, the site of protein synthesis. The ribosome then translates these genetic instructions into proteins.

There are also SAMs that are like a peptide glue that cement our nano-scale neural networks. The mRNA molecules carry genetic information and make special proteins that change the firing voltage at synaptic junctions and influence the combinations of inputs from other nerves.

*For memories, neurons that fire together wire together, and neurons that fire out of sync, fail to link.*

Cementing our memories is a complex process and is still an intense field of investigation. (Ref 117) Out of all the possible energy states, the system will converge (be SAM glued) to a local electrical minimum, also called a local attractor state. Local attractor minima states are existing memories and influence our future ways of thinking.

ARCs influence local electrical minimum by causing a protein to fold in a specific manner, called a capsid which moves from neuron to neuron creating preferred pathways. This process of RNA sharing exchanges information between synapses for specific functions such as memory correlation and then SAMs strengthen and confirm these relationships. (Ref 107)

These established relationships primarily impact the synapse receptors found in the brain, and they are the foundation of human cognition and intelligence (Ref 44).

Some of these foundational areas of the brain are as follows:

**Frontal lobe:** Voluntary movement, attention, short term memory tasks, *motivation*, planning, and speech.

**Parietal lobe:** Proprioceptive and mechanoreceptive, involved in language processing.

**Temporal lobe:** *Decoding sensory input* (visual and auditory) into *derived meanings for retention* of visual memory and language comprehension.

**Occipital lobe:** Taste, visceral, pain and vestibular functions.

**Limbic lobe:** *Emotions*, modulation of visceral and autonomic functions, *learning and memory*.

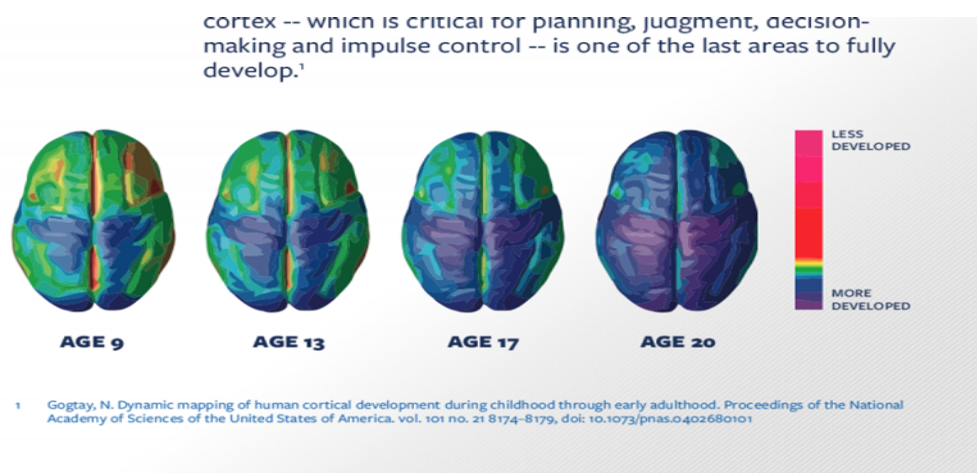
The Soul is likely most interested in those functions shown in *bold italics* since these are ones that help us grow our souls in trying intellectual and testing social situations.

It is interesting to note that the dominant frequencies for the lobes of likely Soul influence range from 10Hz to 23Hz. The frontal lobe (motivation) is 22 to 23Hz and the temporal lobes (derived meanings) are: superior 10Hz, middle 23Hz, inferior 10Hz.

## The Maturing Brain

Maturing areas of the brain include the frontal and parietal lobes, the insula, and the subcortical structures. But a more interesting feature of the maturing brain involves the “white matter” that gradually envelopes the nerve cells in all these areas. This “white matter” coats and insulates the active transmission portions of the nerves by the formation of the myelin sheaths we talked about earlier.

These onion skin like protein insulative coatings thicken with age and allow much faster information propagation but limit their cross communication as the pathways become more defined and we become more fixed in our ways of thinking. We are defining the preferred voltage pathways, and the corresponding voltages required to “get out of the rut”. Before these insulating sheaths formed (up to about age 25) our thoughts are slower, much more cross connected, more influenced by emotions, socialized thoughts, and highly influenced by peer pressure.



## Adolescent Brain

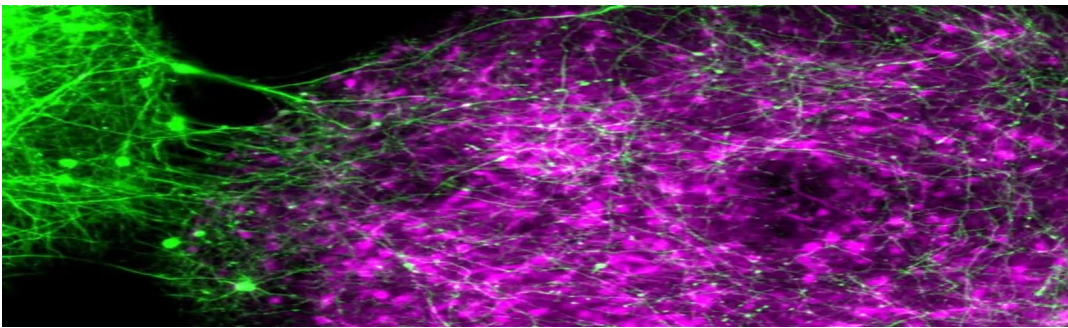
In our early “formative” and presumably more trusting, stress-free years, the child’s brain is more open to learning (e.g., walking, talking, socially interacting). What we are forming are our basic 4 million neural connections called your “connectome”, and this forming or patterning continues up to about age 25 after which this neuroplasticity slows down. It is interesting to note that the balance of glutamate to GABA, (excitement versus the urge to be calm) changes throughout childhood and into adolescence, as glutamate levels increase then level off as adulthood approaches.

## Spiritual Reception

Related to early child brain plasticity is reception of spirit influence, and receptivity is likely related to our first moral (interpersonal) decisions. This then begs the question: What peptides in the brain are involved in moral and other interpersonal choices? What parts of the brain are involved in moral sensitivity, emotion, motivation, cooperation, ethics, respect, and the differentiation of good and evil or other altruistic behaviors? What is different about the child brain? Moritz Köster's research published in Science Direct in 2021 shows that young children's "4–5 Hz theta rhythm" (Ref 51) increases when they meet unexpected events.

**"Give me a child until he is 7, and I will show you the man." Aristotle**

One neurotransmitter that comes into play at this early age is neurotensin. Neurotensin is a neuropeptide that functions like dopamine in that it acts like a reward for appropriate behavior, but specifically for the differentiation of "good" from "bad" thoughts. Like dopamine it establishes a threshold level and then "rewards" when behaviors elevate above the current level of behavior. It stems from a survival perspective where we learned which behaviors benefitted our survivability but at our stage of evolution may now be more involved with moral and cosmic choices. It is interesting to note that this "reward for improved thinking" mechanism is built into our basic thinking processes. As we age, we are establishing our preconceived opinions, settled ideas, and long-standing prejudices. After 25 perhaps the "old dog", Zen teaching applies: "A full cup cannot take on more water."



**New neurons grow from one area and connect into another.**

Even with age, our ability to evolve or "take on more water" is still possible because our brain produces up to 700 new neurons a day and these new neurons, plus epigenetics and our free will emotional control, allow us to change our thinking habits. Our brain's ability to adapt involves several mechanisms and this neuroplasticity helps us to shape and fine tune our receptivity. Adaptability, cross pollination and growth mechanisms involve many physiologies including microtubules, microtubule-associated proteins and activity regulated cytoskeleton peptide proteins.

There is an area of the brain which specifically deals with tenacity and willpower. It is called the anterior midcingulate cortex. It is involved in certain higher-level functions, such as attention allocation, reward anticipation, decision-making, impulse control, performance monitoring, error detection, and emotion control. It grows with the challenges that are found between the anvil of justice, the hammer of suffering, and the necessity for anguish and fear.

## Spirit Influences as We Age

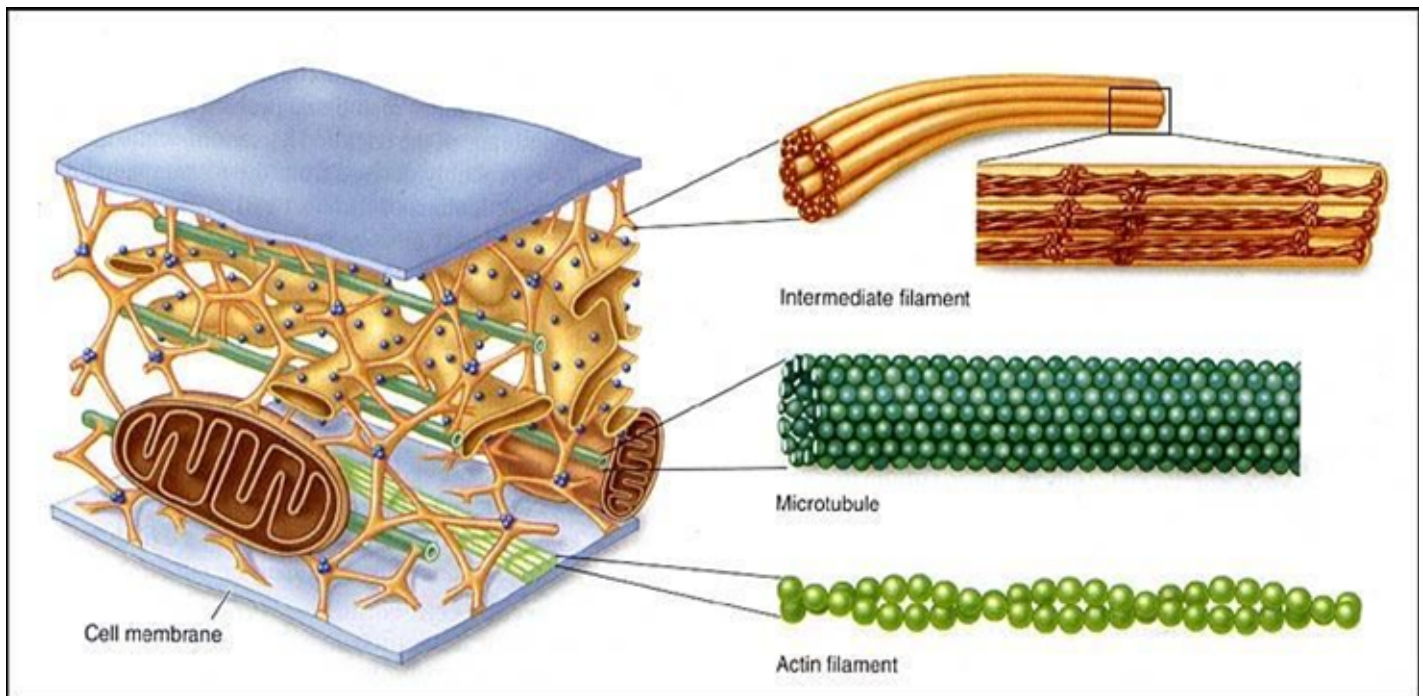
Whether young, mid-life or old, some brain functions are similar. Let's look for common denominators of how spiritual influences might interact at the fundamental level of human thinking, and how we can help that process. Let's think about how the pure spirit influences, might influence us in this material, electrochemical milieu.

How can we get a wise co-ordination of material and spiritual forces to augment cosmic visualizations? How might we provide favorable conditions like loyalty, sincerity, humility, and patience that may be the fulcrums for spirit growth? How might we calm the white noise cacophony and lower those voltage thresholds that might allow us to cross pollenate our thinking?

Perhaps when we spend time in silent receptivity, we afford the indwelling spirit influences the better opportunity to speak to the listening soul. Perhaps then we are emulating the delta dominant wave state of early childhood which would allow extra processing time and interassociation of thoughts which would afford any spiritual influences a better opportunity for communication to our soul or superconsciousness. Perhaps this will help us to be more open to child-like learning.

## Microtubules

One of our main anatomical features, functioning at all ages and giving us time for silent receptivity, between sensor inputs and our reactions, are microtubules. Microtubules are hollow fiber tubes, with uniquely arranged molecules, which are filled with saltwater, and which form the basic structure and communication mechanism between our cells.

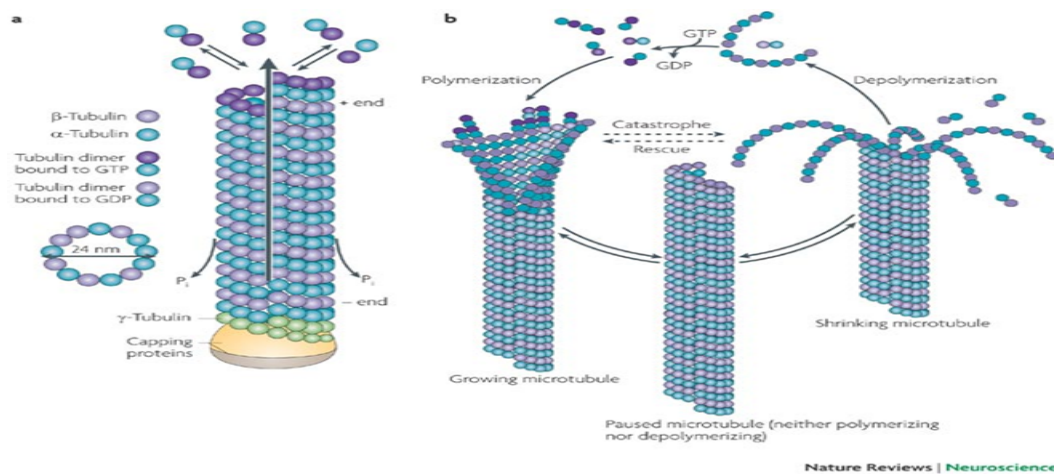


## Microtubules

Microtubules constantly grow or shrink in length from 0.000004 in (0.1  $\mu\text{m}$ ) to 0.002 in (50  $\mu\text{m}$ ) by a dynamically unstable process called treadmilling (technically, guanosine triphosphate hydrolysis) wherein the dimers (individual peptides) are lost at the negatively charged end, and more are added at the positively charged “centrosome” end.

The growth rate depends on several factors, including the concentrations of the tubulin, the presence of microtubule-associated proteins (and/or tau proteins), and intracellular electrical environmental conditions. Under certain physiological conditions, neurotubules can grow at up to 10  $\mu\text{m}/\text{minute}$ , with an average of about 5  $\mu\text{m}/\text{min}$  under optimal conditions.

Growth is offset by dynamic instability, meaning that the microtubules undergo phases of growth and shrinkage, which influences their overall behavior. Specific growth rate can also vary by region (e.g., axons versus dendrites) and developmental stage, as neurons modulate their cytoskeletal dynamics during growth and repair.



## Treadmilling

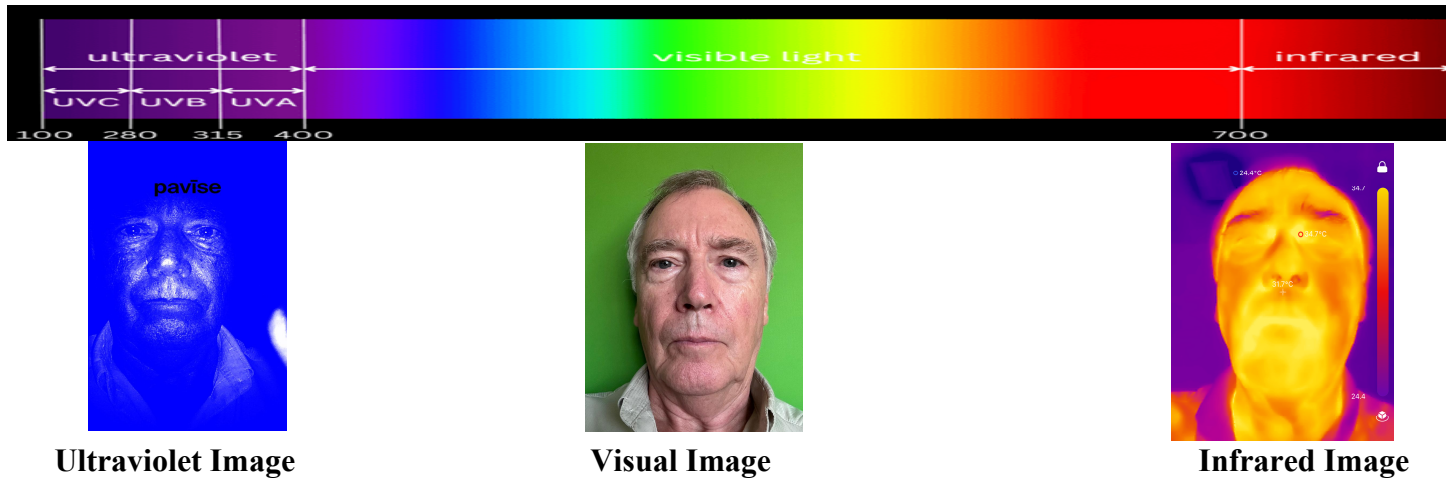
The tubes are made up of thirteen individual heterodimer (joined but different) tubulin polypeptide filaments, arranged in parallel, around a circular salt water filled cavity. (Ref 46) The filaments have a distinct electrical polarity that can generate an internally coherent (integrated), soliton (self-sustaining), electromagnetic field (Ref 12, 37) along each of the 13 filaments, and collectively these tubules are sufficiently insulated from neighboring cells to prevent electrical interference (short circuiting) facilitating decoherences (not being influenced by neighboring electric activities) in the order of  $10^{-6}$  seconds (approx. 1 M hertz).

Microtubules are found in all eukaryotic cells (cells with our DNA in the nucleus) so this strengthening and weakening of the cellular intercommunication process is going on throughout the body although we are probably most aware of its influence in the brain where these microtubules are called neurotubules.

Microtubules, being made up of crystal-like protein dimers surrounding the partially electrically conductive water filled inner core, shuttle the electrical pulses from cell to cell as the pulses move down the individual filamentary strands by a process of cascading luminescence and the length of the tube causes a delay in the propagation called “delayed luminescence”. The signals along the tubules resonate at twelve frequencies clustered in 4 ranges: kilohertz, megahertz, gigahertz, and terahertz frequencies. Specifically, 100–400 KHz, 10–30 MHz, 100–200 MHz, in the mechanical vibration range, 1-20 GHz (11.8-to-5.9-inch wavelength) in the

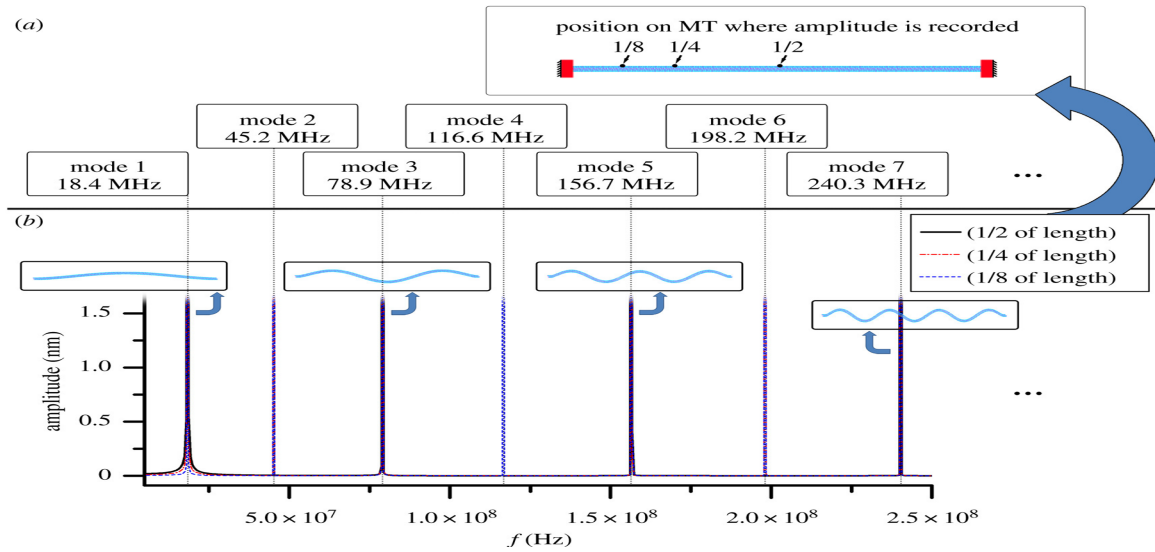


radio wave range, and at 526 and 686  $\text{cm}^{-1}$  (THz) in the heat, far infrared range (molecular bond stretching and bending) and 276 and 334 nm in the ultraviolet (electron jump) range.

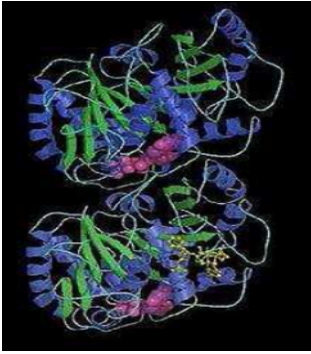


Note that in the ultraviolet image above the frequency of the UV has been limited by using a bandpass filter with a peak frequency of 335nm meaning that it represents primarily the contributions from the higher of the two microtubule UV frequencies (334 nm).

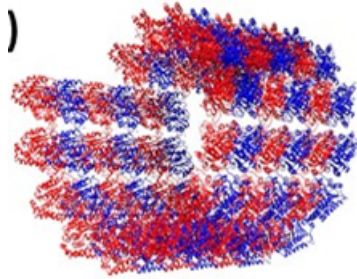
It is interesting to note that at certain frequencies the conductivity of microtubules increases in a highly nonlinear “ballistic” manner by a factor of 1000. This electro-mechanical MHz frequency range interacting with the electro-optical range (Ref 14), may be where we “delicately touch” (and perhaps cohere with) souls?



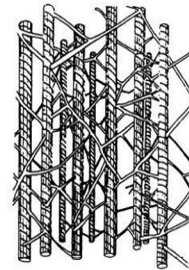
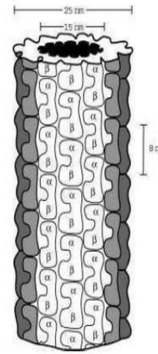
**Mechanical Vibrational Frequencies of Microtubules**



**Individual Tubulin Dimer**



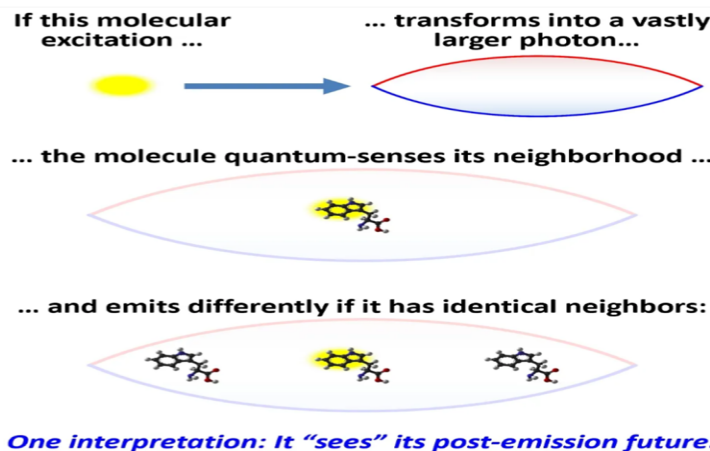
**A & B Tubulin Dimers make up the walls**



**MAPs cross connect**

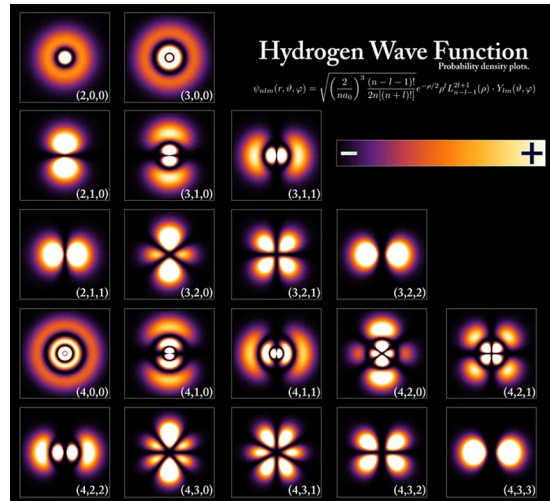
Microtubules communicate between all cells with DNA but function most poignantly in the medial temporal lobe of the brain as a facilitator of cross-communication between brain cells. This is analogous to the cross communication of the child brain before the formation of the insulative myelin sheaths, but this cross communication is now controlled by the free will of our thoughts (think of this as the coordination of material light, intellectual insight, and spirit luminosity).

There are about 40,000 A and B dimers that make up the individual tubulin filaments and they have alternating current (AC) polarities with transistor like electrodynamic properties allowing their energies to be amplified and to harmonize with other energies by a form of electro-optical coherence. (Ref 60 & 90) Moreover, the transmitted ac power and the transient fluorescence decay (single photon count) are independent of the microtubule length. Even more remarkable is the fact that the whole microtubule is more conductive than any single protein molecule that makes up the microtubule. The microtubule's vibrational peaks condense to a single mode which controls the emergence of the electronic/optical properties and facilitates automated noise alleviation. Thus, a monomolecular saltwater channel residing inside the protein cylinder displays an unprecedented control in governing the electronic and optical properties of the microtubule. This provides for bioluminescent optical coherence which happens when a wave travelling down the filament, splits into two or more separate streams (in this case cascading down neighboring filaments) and then these streams interact with each other in a phenomenon called superradiance and sub-radiant eigenmodes. Superradiance means that they act both individually, collectively and coherently, as if it were a single cell (like how a LASER works). A sub-radiant eigenmode means it displays transparent optical properties in nontransparent media (Ref 92). It is also hypothesized that since photons travel at the speed of light (essentially being outside of time) they can sense their surroundings and anticipate the field into which they are propagating.



## Photon Sense

It is interesting to note that there are three essential amino acid molecules in our body, isoleucine and tryptophan (both used to make proteins), and l' arginine, that are also bioluminescent and are involved in biological signaling, like in the neurotransmitter serotonin. The primary ingredients of the tubulin are a sequence of amino acids, including tryptophan and they form a unique scaffolding as one of the primary structures in microtubules. The tryptophan in the microtubule with its strong ultraviolet absorption, assisted by its significant absorption/emission differences form an ideal fluorescent reporter of biomolecular dynamics. It is also highly sensitive to its protein, solvent, and electrostatic environments. (Ref 91 & 92)



## Multiple Patterns of Possible Interaction Mechanisms

The organization and patterning of the time delays both along and between tubules, allows them to function as information modifiers. Because microtubules are arranged in specific patterns and because they are connected by microtubule-associated proteins (MAP1, MAP2 and tau proteins) which act through a process of phosphorylation, and because their interconnected “nodes” tune or “orchestrate” the optical oscillations in what is called “Orchestrated Objective Reduction” (Ref 1, 2, 3,) they may form the basis for our self-consciousness.

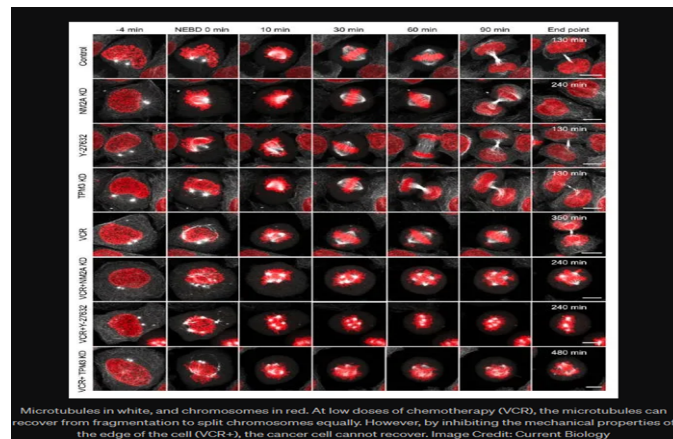
A single brain microtubule’s protein arrangement symmetry allows it to act as a nanowire where the conducting state is written in the wire itself enabling it to store and process approximately 500 distinct bits of information with 2 pico amp resolution between 1 nano amp and 1 pico amp activation currents in an almost hysteresis free fashion. (Ref 89) Rings of these microtubules then form qubits (quantum oscillating dipoles) since they are superpositioned (situated vertically on top of one another) in resonant rings and in helical pathways throughout the lattices of the microtubules. Depending on the orientation of the electric fields to the microtubule (or actin filament) axis, there could be three types of ionic waves generated: (a) Longitudinal waves propagating along the protein polymer’s surface where the polymer acts like a conducting electrical cable with its inherent resistance and capacitance. (b) Helical waves propagating around and along each protein polymer, and there could be three or five such waves propagating simultaneously corresponding to the 3-start or 5-start geometry of a microtubule. (c) Radial waves propagating perpendicularly to the protein polymer surface. If an electric field is oriented at an angle to the polymer axis, all these wave types may be generated simultaneously. This allows the microtubule to function as a qubit that can carry information in more than just a binary manner. Theoretically they can encode information in an infinite number of ways.

Orchestrated Objective Reduction is presumed to function in discrete tiny units of time related to the Plank scale of  $10^{-35}$  seconds, that collapse mesoscopic (intermediately sized) objects on a timescale relevant to neural processing.

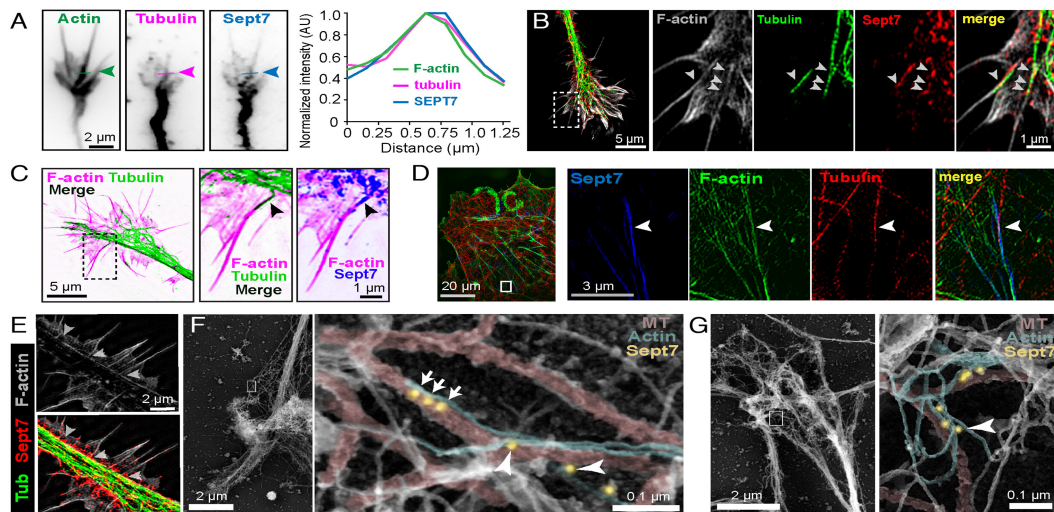
Since microtubules can respond to four octaves of vibration (mechanical, radio, heat, ultraviolet) they may facilitate up stepping or down stepping of the higher frequencies between our low frequency materially functional ranges and higher morontial frequencies. At their lowest electric energy frequencies, they vibrate due to their molecular charge separation, and at the highest frequencies they vibrate due to their electron or nuclear spins. This “orchestra” not only gives us a time delay between a sensory input, but it also affords us the overview of our reaction to that input. It is a kind of pre-consciousness which allows for the consciousness of our consciousness. It does this by introducing a time delay of up to 500 milli seconds between the electrical impulses from the sensors (proprioception, vision, auditory, tactile, vestibular, interoception, and taste inputs etc.) and the post processing of these stimulations.

Side note - olfactory stimulations, smells, go directly to the frontal lobes.

Microtubules also play a critical role in axonal transport (movement of mitochondria, lipids, synaptic vesicles, proteins, and other organelles to and from a neuron's cell body), neuron structure, and plasticity, and when altered, lead to neurodegeneration. Microtubule abnormalities are heavily implicated in Alzheimer's disease pathology.



**Microtubules and chromosomes interact at every cell division.**



### Septins and Actins (binding proteins)

Septins colocalize with overlapping microtubules (Ref 40) and together with actin filaments facilitate intercellular crosstalk.

## Microtubule - Quantum Coherence

Electromechanical energy interacts with electro optical energy in microtubules in a coordinated fashion by reversibly exchanging energy for momentum, back and forth. Two things are “conserved”: momentum (linear and rotational) and energy. Energy is eternal but it can be temporarily transformed into momentum. This looks like discontinuous mechanical motion but the continuous can’t be reduced to discontinuous. You can’t separate the part from the whole. Neither can you separate the parts of the body from the whole body nor the whole body from the universe. At the quantum level, things directly act as aspects of the whole and they derive their very definition and meaning from that whole. In our case, the soul, being a fragment of the spiritual whole, and the quark, being a part of the material whole, may be our localized presentations of the two “wholes” (material and spiritual). One possible overlapping continuum between material, temporal, transcendental, spiritual energies and “the whole” is quantum electromagnetic energy. (Ref 33) Let’s look at those areas of the brain and nervous system that function at the quantum level. The probabilistic quantum level has some interesting overlaps with the timelessness of spirit energy like, time simultaneity, quantum tunnelling, and action at a distance. (Ref 8, 110)

Electron quantum tunnelling, for example, is associated with ferritin in the substantia nigra pars compacta (SNc) midbrain dopaminergic neurons, as well as all other areas of the body where iron byproducts are found. Ferritin has unique properties that provide for an electron switching mechanism using a Coulomb blockade mechanism (different arrangements make for different conductivities). Normally electrons carry a negative charge and repel each other. However, when electrons tunnel between quantum wells, like those formed in the core of ferritin, they can experience collisions with other electrons that result from the electrons trying to tunnel to the same place. Because only one electron can occupy a space (has ubiety), a second electron that also tries to occupy that space will be repulsed. Ferritin acts as an electron switch that is sensitive to its surrounding electric field. (Ref 111)

The “whole” has meanings at every hierarchical subsystem. The universal system has been called many things; the ether, the quantum field, the quantum vacuum, the metric field, Higgs condensate, a cosmic superconductor,

or even an overall instructional interaction where matter tells spacetime how to curve and spacetime tells matter how to move.

The Quantum Consciousness Theory states that the quantum phenomena such as those occurring in microtubules, facilitated by their unique properties, involves quantum mechanisms, such as quantum tunnelling (boring through things that would normally appear as impenetrable), superposition (which says that a quantum system can exist in multiple states simultaneously until it is measured or observed), entanglement (which describes a quantum connection between particles that persists regardless of the distance separating them) uncertainty (which states that certain pairs of physical properties, such as position and momentum, cannot be simultaneously measured with arbitrary precision) and wave-particle duality (where photons, for example are particles but behave like waves). These phenomena all allow for the generation of consciousness in ways that classical physics cannot explain. It supports the idea that particles exist in a state of entangled probability until observed.

Side note: Neurons individually transmit at about 100 m/s and there are 100 billion neurons x 200 firings per second x 1,000 connections each = 20,000,000,000,000,000 bits of info being transmitted per second, so thought/mind/pattern functions are well above the speed of light and therefore could be functioning outside of time.

Microtubules have an ability for quantum superposition creating their ability to exist in multiple states simultaneously until a measurement or observation is made, at which point the system collapses into one definite state. Quantum entanglement occurs when particles (because they come from the same source) become interconnected in such a way that the state of one particle directly influences the state of another, even when they are separated by vast distances. They demonstrate the reciprocal interaction between field and particle. This quantum coherence is an area where classical mechanical behaviors overlap with the wholistic ones and may involve our interface with spirit energies (Ref 119).

Newtonian mechanics looks at past events while quantum mechanics describes the probability of future events happening. The wave property of particles appears when we start looking into the future of that particle. It is a probability wave because the future is probabilistic. Wave function collapse is what we perceive as the present moment and is what differentiates the past from the future. General relativity (GR) involves making measurements in the observed past and therefore, is predictable. Quantum mechanics (QM) attempts to make measurement predictions of the unobserved future which is unpredictable except for our free will control.

The quantum level of our material consciousness may interact with spiritual consciousness in the equivalent of the collapse of the wave function. (Ref 11)

Side note: At the center of every galaxy is a black hole which stabilizes the mass of all the stars and planets in that galaxy. Our Milky Way galaxy has a super massive black hole.

Side note: At near absolute zero (no molecular motion) matter can take on new forms (Chiral-Bose state, Bose-Einstein condensate).

So why do we care about all this? Because thoughts have biological consequences (think blood pressure, heart rate, epigenetics), but more specifically your thoughts control the growth of these microtubules and may affect your spirit receptivity.

The speed of neuron transmission from sensor input to reaction determines the thought cascade. If thoughts of hate and anger are faster than love and forgiveness, they tend to dominate. The body can't differentiate what or who you are loving or hating, it just goes into love or hate mode. So, where's the spirit influence in all this?

Quantum coherences only occur at subatomic levels and to a limited degree, in the ultraviolet (electron jump) range. The bioluminescent to mechanical cascade mechanism is made possible by the interactions of the ultraviolet resonance frequencies with the mechanical movements of the microtubules, and this allows us to cohere with non-local energies. Quantum coherence could facilitate influence from things spiritual.

It is interesting to note that scientists can make light behave like atoms and molecules by forcing different environments. They call this "hard light". (Ref 67, 68, 69) Photons normally have no mass and travel at the speed of light but researchers found that bound photons acquired a fraction of an electron's mass, and these weighed-down light particles were also relatively sluggish, traveling about 100,000 times slower than normal noninteracting photons. (Ref 130)

Let's take a little side trip here to talk about mass. What is mass? Considering that mass and energy are fundamentally the same, what differentiates them? I like to think of everything as ripples (momentum) in the electromagnetic field. Small ripples result in photons that don't protrude far enough into what scientists call the Higgs field, and they don't meet with any resistance in their travels. Matter makes a bigger bump, that protrudes into the Higgs field and is slowed down by space (the Higgs field) and appears to have mass.

Side note: Science says that the "vacuum of empty space" isn't empty. It contains gluon field fluctuations.

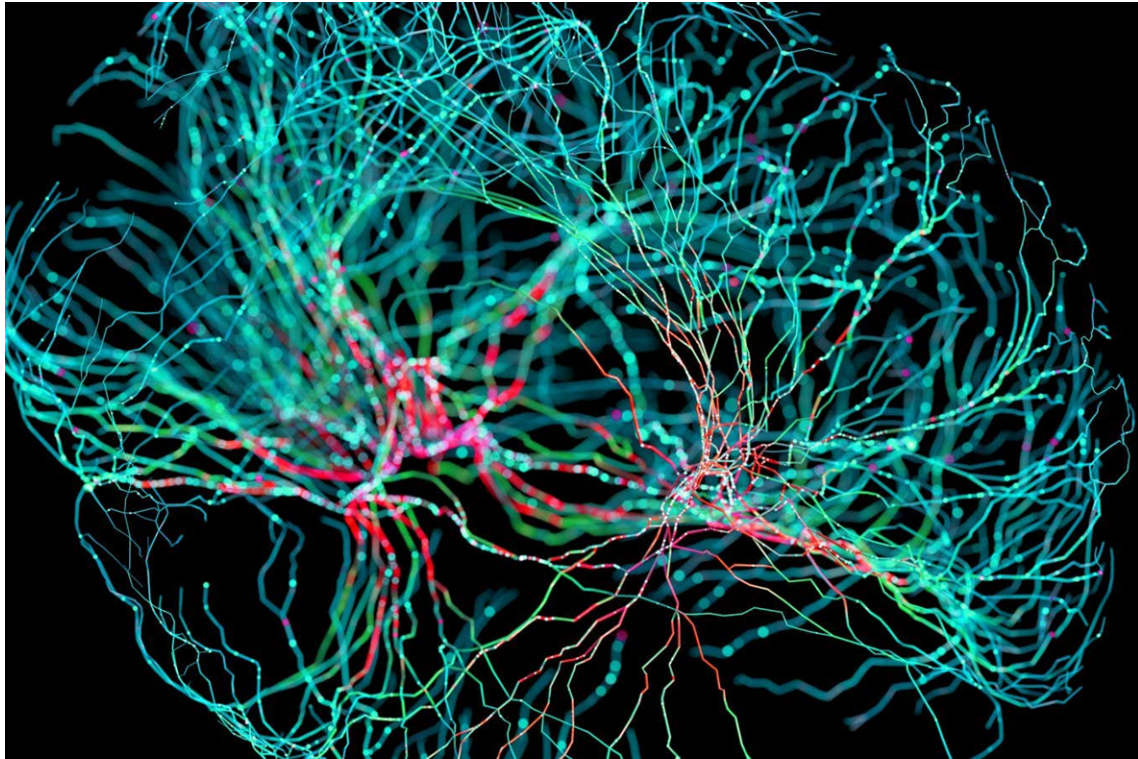
Perhaps the bioluminescence of microtubules is the halo of Adam and Eve and other holy people, as they might have had more predominant microtubules?

Perhaps the bioluminescence of the microtubules is hinting at concept of the "pilot light"?

Perhaps the bioluminescence of the microtubules is the "light of truth"?

As we said before, bioluminescence of microtubules functions most poignantly in the medial temporal lobe of the brain as a facilitator of cross-communication between brain cells. This massive cross communication is like the child brain in the Thought Changer phase, before myelin sheaths formalized and sped up our thinking patterns but these neurotubules in the brain later in life facilitate this cross communication and they are controlled by our free will. These particle interactions in the mechanical range and the quantum interactions in the optical range are not only coupled locally with each other, they are also entangled with the cosmic whole by quantum coherence.

Since at the quantum level, individual things act as an aspect of the whole and derive their very definition and function from that whole, the Quantum Consciousness Theory says that the quantum phenomena in the microtubules, facilitated by their unique electrically isolated properties, involves all these quantum mechanisms, superposition, entanglement, and wave-particle duality. This link between the atomic and material levels allows for consciousness in ways that classical physics (think mechanical brain activity) cannot explain.



### **Electric Focal Hubs in the Brain**

Microtubules, more appropriately neurotubules, hold a state until a measurement or observation is made, at which point the system collapses into one definite state (a thought). Quantum entanglement occurs when particles become interconnected in such a way that the state of one particle directly influences the state of another, even when they are separated. This can be locally in the brain or over vast distances. Quantum coherence allows for the overlapping of local mechanical behaviors with wholistic ones. This may involve our interface with our soul or the Spirit of Truth. At the quantum coherence level, our material consciousness may interact with spiritual consciousness in the equivalent of the collapse of the wave function.

Roger Penrose (originator of the OOR theory & 1990s Nobel laureate for physics) says it this way, “consciousness arises when a large number of microtubules in the brain reach a state of quantum coherence, called a “self-collapse of the wave function.”

### **Electromagnetic Continuum**

Normally energies only interact within their respective energy range, but the unique structure and function of microtubules allow them to interact across a wide range of frequencies, and all those frequencies are a part of the overall electromagnetic continuum. Let’s look at this from an overall perspective.

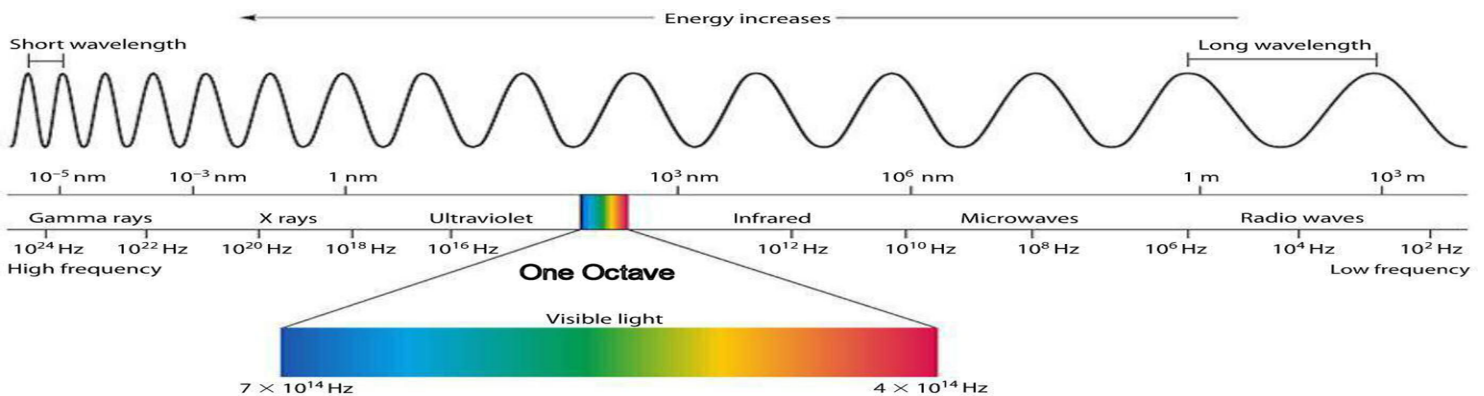
We live and move and have our being in an electromagnetic continuum and whenever anything changes in our everyday life, there is an exchange of light photon energy and the movement of charge. When objects touch, it is charge that makes contact. Whenever the atoms bond and break there is an exchange of photon energy and the movement of charge. There is a spherical geometry (Huygens’ Principle) where every point on a wave front may be considered a source of a secondary spherical wave, which spreads out spherically at the speed of light. This forms part of a continuous process because the absorption and emission of light is spontaneous. Light waves (eternal energy) are continuously interacting with the electrons (material energy) forming photon



electron couplings or dipole moments. We can think of this as a process of spherical (think tri concentric) symmetry forming and breaking. When this spherical ( $4\pi r^2$ ) symmetry breaks (becoming a dipole), it has the potential of forming a spiral. A self-limiting dead end. Nothing has lower entropy than a sphere and the absorption of light always comes before the emission relative to the reference frame of the object or life form that is radiating that light. This forms a direction in time with an uncertain future that is not totally random. There is a built-in potential for ever-greater symmetrical formation, and this can be seen in cell life and evolution.

At our stage of existence, we convert electromagnetic energy into electrochemical energy and then into motion (temporally, unidirectionally) via the transfer of electrons between chemicals. This electromagnetic transfer of electrons involves the conversion of electrical energy into waves of magnetic energy, by-directionally, without loss of energy. The stuff that makes us what we are, and how we think, involves the interchange of these two fundamental properties, energy and momentum. Material energy (motion) involves momentum and is temporal while optical energy (light) involves pure energy and is eternal. Both material, and optical mechanisms involve the movement of energy.

Side note: The more correct term when speaking of a photon is neither electrical nor magnetic. It should be electronuclear for there are two kinds of atomic fields that oscillate and generate photons, electrical fields and nuclear fields. Electrical fields have enough energy to generate photons up to and including x-rays, but only nuclear fields have enough energy to generate gamma ray photons.



### Electromagnetic Spectrum

Within each octave, energies have the inherent ability to interact. At very low frequency the interactions cause heat. Higher frequency interactions facilitate the formation of molecules. The next higher octave results in the formation of material atoms. It is my conjecture that even higher octaves are the realm of spirit material, essentially “hard light” where light acts like material atoms but is made entirely from photons.

Modern unified field theory describes the four primary forces (strong, electromagnetic, weak and gravity) and how they interact in this continuum. My supposition is that we function in the MHz and lower optical range, the soul involves the ultraviolet range (hard light comingled with matter). It is interesting to note that the cones in our eyes can still detect UV light, but we have evolved a protective mechanism to block its reception (Ref 114). If spirit energy is high frequency stuff and it is going to interact with the finite, it needs to find ways to influence using sub harmonically resonant frequency mechanisms.

The pattern and organization of the body's biological system is established and maintained by a complex electro-dynamic field. This electro-dynamic field is determined, in part, by its atomic bio-chemical components, which in turn determines the behavior and orientation of those components. This field is electrical in the physical sense and by its properties it relates the entities of the biological system in a characteristic pattern and is itself in part a result of the existence of those entities and can be influenced by the whole through coherences.

Any spirit influence is challenged to learn which frequencies in his vocabulary (likely above the  $10^{24}$  Hz range) can find sub harmonic resonances with our low frequencies. This is where the microtubules come in with their ability to interact with both light frequencies (ultraviolet in the  $10^{15}$  Hz range), and our material neurons functioning in the kilo Hz range. Microtubules, with their combined mechanical and bioluminescence mechanisms, might be a sub harmonic resonant step-down mechanism.

A spiritual psychic fulcrum might be the "Christ like" "Spirit of Truth" (watchword ... "fear not") patterning of our microtubules. We can choose what you do in the time between sensory input and your reaction, your free will intervention time. We can either remain animally, fear based, materially conscious, or we could pattern our microtubules by co-creatively focusing on fearless Christ consciousness. Our microtubules will grow and shrink as required to maintain those prechosen superconscious patterns of thinking. Evoking the "fear not" peace filled "mind of Jesus" (activating the Spirit of Truth) may allow temporary changes to microtubule lengths that facilitate temporary Christ like thinking and with repetition, these patterns might become our homeostatic norm.

**John 9:5: "While I am in the world, I am the light of the world."**

**John 8:12: "When Jesus spoke again to the people, he said, "I am the light of the world. Whoever follows me will never walk in darkness, but will have the light of life."**

The "soul" may be the ultraviolet "picture" of our bioluminescence and until spirit learns to speak directly to us, or we can quiet our mind chatter to better "see the light", the only available interactions may involve quantum coherences where the material parts of us sense being a part of the cosmic whole.

## **Spirit Substance – Hard Light**

Perhaps, in the electromagnetic ascension continuum, we move up in frequencies from matter to spirit energy formations. We might ascend from the very slow rotational energies of matter (fermions and bosons) to artificially maintained soul material, (bosons with mass), to the massless (and hence eternal) bosons of spirit energies.

**Matthew 4:16: "The people living in darkness have seen a great light; on those living in the land of the shadow of death a light has dawned."**

**Psalms 119:105: "Your word is a lamp for my feet, a light on my path."**

In support of this idea, I observe that a few universities have successfully forced light to behave like atoms with the addition of different energies, they have slowed light to have small amounts of mass (about 100 times that of an electron) and make it exhibit the natural tendencies of matter to form compounds. (Ref 67, 68) This "hard or solid light" may be our first glimpse at spirit realities.

In a further stretch of the creative imagination, I suggest that dark matter (where “dark” means unseen) is spirit material. Dark matter is found by using gravitational lens mapping, to be spatially collocated with regular matter in astronomical mapping. (Ref 70) Spirit energy may also be dark energy, but I have no hard science to back up that supposition.

## **Physiologic Continuum**

Just as there is an electromagnetic continuum, from the high frequencies of spiritual realities, down to the megahertz ranges where we function, to the stationary isle of paradise, there is also a physiological electromagnetic continuum. At the very base of our individual physical identity, there is our fundamental descriptor, our DNA. Our DNA gives us our potential. Our DNA has the potential of creating the multiplicity of proteins that make up the various cells in our bodies. Based on our DNA, each cell creates the proteins necessary to be what it is supposed to be. Some become brain cells while others become gall bladders. How does DNA know what to become? How does it know how to fold to become a brain or a bladder cell? It turns out that the electrical environment of the cell has that “knowledge”. As the cells are multiplying, as the DNA strands are unzipping, the cells are dividing. Their positions and orientations are maintained by their microtubules, and they are influenced by the electric fields that surround them. Their folding is also modified by epigenetic manipulations of the local electric field, and this determines what proteins are being formed. In other words, the same DNA folding in the brain electrical milieu becomes brain cells and those folding in the bladder electrical patterns become bladder cells. This was experimentally demonstrated by Michael Levin (Ref 48) in his work with flatworms. Electrical intercellular communication is facilitated in part by microtubules because of their electrical surface charges. This intercellular communication based on its electrical interactions, not only determines what is being formed but it also establishes the cell’s cooperation with neighboring cells.

Side note: Cancer cells are still the original cells (brain or bladder), but they have stopped communicating with neighboring cells. (Ref 45) They have rebelled and think they can make it on their own.

Although the human body may be too large and complex to be quantum entangled in the literal sense, our subjective experiences of connection with others may often mirror this quantum phenomenon. The deep social bonds we form with loved ones, the sense of shared experiences, or moments of profound empathy where we seem to feel another’s emotions as our own, all these experiences evoke a kind of “psychological entanglement” reminiscent of quantum connections and the non-local nature of quantum entanglement finds a parallel in how we maintain these connections with others across vast distances. There is a sense of connection when thinking of a loved one far away. There is also the phenomenon of simultaneous invention where multiple people develop the same idea (kindred minds) independently, which hints at a kind of entanglement in the collective human psyche.

The sensing of our electromagnetic environment, (Ref 49) with its associated communication mechanisms, determines our flow, from DNA to protein, from cell to neighboring cell, from neighbor to neighbor, from man to God, from day to day, from year to year, from here to eternity. It’s all about local relationships. These relational senses or flows are all influenced by our body, our self-awareness, our calmness, our local focus, and our overall God consciousness. All these processes incrementally influence how we proceed and we in turn, influence the people around us, enhance our sense of connectedness, and increase our sense of cosmic citizenship, and God himself.

## Single and Multiple Quantum Coherence – SQC and MQC

First, we should define what we mean by quanta. Quanta, in physics, is a discrete quantity of energy proportional (in magnitude) to the frequency of the radiation it represents. Essentially it is the smallest transferable/exchangeable energy packet. In light it is a photon, in electromagnetism it is the gluon, in gravity, physicists are still looking for a graviton.

In the electromagnetic nature of our physiology, there may be possibilities for magnetic coherences with spiritual forces. For example, very recent research into the nature of consciousness (Ref 65, 104) found evidence of multiple quantum entanglement using fast nuclear magnetic resonance (echo planar) imaging, to study brain protein physiology. They found that the thought processing areas of the brain functioned at the quantum level and using an intermolecular approach known as multiple spin echo (boosting the initial T2 echo) they found that different areas of the brain demonstrated multiple quantum coherences. In addition, there was evidence of single quantum coherence in the cerebral fluid itself showing up in the dipole-to-dipole interactions like the normal T1 (fat enhanced) T2 (water enhanced) relaxation and rotational symmetry measurements.

Let's reflect for a moment on magnetic resonance. The magnetic resonance process involves placing the subject in a strong magnetic field and then superimposing a variable radio frequency electromagnetic field. The nuclei of the individual molecules, aligned by the strong magnetic field, are vibrated (jiggled) out of alignment, and the time taken to realign (T1 fat, and T2 water, relaxation times) are a function of the properties of their nucleus. The fact that water has a strong tendency, and most other molecules have a general tendency to align with a magnetic field, implies an overall reference field. In the magnetic resonance machine, the nuclei align with the coils, on earth the nuclei align with the earth's magnetic fields, in the universe fields align with the cosmos. We have a magnetic orientational relationship (coherence) to the cosmos.

Side note: There is also a coherence between our light sensing and our magnetic orientation. (Ref 113)

Side note: To build a reference map, time consciousness is required. To orient the map, we need a cosmic orientation. The nuclei of our cells may be providing that orientation.

By using cross-recurrence-quantification-analysis, to characterize and quantify interrelationships between nonlinear time responses, researchers also found a 300 to 450 millisecond delay between the EEG signal and the related blood flow pulse oximetry signal. (think heart mind relationships) This delay was found to be location specific and was a function of awareness and wakefulness.

Side note: Quantum coherence in microtubules is temperature dissipation limited. "Warm, wet and noisy" environments cause decoherence, so mental noise or things that raise our core body temperature and inflammation prevent coherence. Remember too, that thermoregulation stops during REM sleep so stay cool, calm, and collected. (Ref 4)

Magnetoencephalography (MEG) studies show brain oscillations of specific frequencies can be found in the cerebral cortex. For example, localized frequencies between 80 and 200 Hz have been related to epileptic seizure events. Magnetoencephalography may also demonstrate a magnetic alignment or orientation with Paradise since our cells have this tendency to exhibit a magnetic bias or orientation.

There is a "brain atlas" (voxel map) that shows the various frequencies that dominate the areas of the brain and MEG is a tool that has been used to study the dynamics and connectivity of these large-scale brain activities (as

opposed to atomic level connectivity) and their interactions with the body and its environment in functional body and other brain states. MEG measures the magnetic fields produced by the electrical activity of the brain (as measured in delta, theta, beta, gamma wave activity) using arrays of SQUIDS (superconducting quantum interference devices) or SERFs (spin exchange relaxation-free) detectors.

Remember the “random” nature of molecules transferring their signaling molecules as they bump into their neighbors? This so-called randomness may be another possible area of spirit influence, at the small-scale brain activity, and this would show up here as another form of coherence.

## **Time**

We can talk about “relaxation” times but what is time? The material ego needs time and is impatient because it feels limited by time. Spirit is eternal. The concept of an afterlife gives us patience because we will have all the time we need.

Time is a parameter. More specifically, time is only “perceived” by the analysis of motion and motion can only occur in space. Are you spatial or temporal? What part of material space is the real you? Does time allow the materially finite to coexist with the spiritually infinite?

“Now” is the intersection of “what was” and “what is yet to be”. Other than the present moment, time only exists as the apparent sequence of spatial events. It only exists as a memory or prediction in the brain or mind. We can remember the past, we can predict the future, but the intersection of the two is the only “time” real to us.

We have used different motions to measure time, burning candles, water, a pendulum, a vibrating crystal, atomic motion and given the instantaneous communication between photons, and other apparently simultaneous phenomena we should question the reality of time. IMHO time is a convenient mathematical tool to predict the future based on our observations of the past. i.e. a tool based on Newtonian observations. Our brain and mind, however, are not bound by Newtonian physics. We can choose to function at the quantum relativistic level of consciousness and incrementally nudge our future.

I have a position in space and a movement through that space. I also have a depth of personality with drives, attitudes of self-realization and reactions to my environment. I can, over time, also develop a breadth of insight, a coordinating and unifying ability, giving my life future meaning and value. It could be that I am slowly trading time (the shadow of spirit) for the real value in a light based morontia dimension as I grow my soul.

Material things change with time, truth does not. The search for truth is the search for eternal things. As we age, we have more past to refer to as we are solidifying in our minds our chosen path from the many possible paths opening to us at each moment. As we age, the present moment becomes a smaller and smaller part of our total existence. As we age, we have more experience from which to draw the wisdom required to make the right choices. Infinity is the sum of all the possible outcomes of time.

**The more you focus on the past or future - the more you miss the present. Eckhart Tole**

Our sense of indivisible unity transcends time and space.

## Time Consciousness

The entorhinal cortex (EC) is the early critical first stop area of the brainstem/midbrain and it functions as a network hub for memory, navigation, and the perception of time. For material processes, our perception of time is really our conscious perception of the previous patterns of electrical energy at multiple levels in our bodies.

To achieve the “integration of diverse elements, relationships, or values” (Webster’s definition of coherence) we need to cross-reference time and space. To relate space, the EC has grid cells that fire when we move (imaginatively or actually) that gradually build a memory map or grid reference of our location and since we measure motion by time, we need a time reference. We need time references for all relationships, even a personal relationship to our own progress. We need time for our relationships to others, and our relationship to God.

To perceive time, the brain either needs a repeatable or stationary reference. There are a few ways to get a time reference. One would be our circadian rhythm; another would be the rhythmic pulsations (3.75 to 7.5 Hz) coming from the limbic hippocampal regions as seen in the Theta waves. Another would be the gradual buildup of different chemicals. Yet another possibility would be if the EC could reference something stationary or “outside of time”. This could be the influence of our changeless personality, our homeostasis, the timelessness of spirit influence such as a focus on the timelessness of God.

The EC with its time derived grid map, is also the main interface between the hippocampus (limbic, “fight or flight” declarative memories and spatial relationship) and the neocortex (computation, attention, thought, perception, and episodic memories). The EC-hippocampus system can time sequence the past, present, and future as related variables so it plays an important role in autobiographical, episodic, semantic, and spatial memories including their formation, consolidation, and optimization during sleep. Spiritual influence and Theta wave periodicity may both be most prominent during sleep.

The entorhinal cortex hub of the brain, with its myriads of logic circuits, continuously responds and adapts to stimuli, strengthening some connections, and weakening others. The process of intercommunicating and strengthening or weakening also involves the lengthening or shortening of cytoskeletal microtubules. (Ref 39)

We see time as the observation of things evolving and there are two kinds of time:

1. Mind time: the observation of energy/matter changing its location (motion).  
Chronos - time duration as measured by a chronometer.
2. Spiritual time: Spiritual progress or our movement towards God/unity.  
Kairos – representing information at the right or opportune time.

Our different perspectives of time tend to influence our actions. We experience time materially as a sequence of events whereas we experience time spiritually by the effects of time on our sense of peace, happiness, and security. Memories too need sequence, and we need memories to evaluate our progress. The genes in our DNA give us our geological and ancestral memory, and our life experiences give these ancestral memories, current, localized, present day, meaning. We relate our history to our current location and time sense, and then integrate that into the larger chronologic, cosmic, and timeless perspectives to give it more meaning.

Side note: Recent Alzheimer’s research has found that the EC is larger for those individuals who live longer. A larger EC can look further back in time and extrapolate further into the future.

Side Note: The Hippocampus is where Alzheimer's disease originates due to these factors: oxidative stress, vascular insults, stress, inflammation, genetics. (Ref 131)

## Multiple Physiological Clocks

The entorhinal cortex, with its relationship to theta waves and other time sensitivities give the brain a fundamental sense of time but there are many other ways to sense time. Special "time cells" in the hippocampus are linked with "place cells" by shared firing properties. Other cells measure time (like it's time to rest) by the buildup and breakdown of proteins. At the yearly level there are also biological markers of our "age". The lengths of telomeres (tails ends of our DNA strands) get shorter during cell manufacture and result in things like, grey hair facial wrinkles and even facial temperatures (cooling of the nose and cheeks). Our circadian rhythms, at the daily level, are sensed by the rotation of the earth in the brain's insular cortex region of the brain and radiation from pulsars may give our atomic nuclei a time sense for interstellar correlations. Our circadian sense of time is also related to the buildup of chemicals. In the case of daily tiredness, it is the balance between adenosine and melatonin. At the hourly level, we are aware of chemical changes (hunger, thirst etc.). Microtubules give us an awareness at the millisecond level, and nuclear spins give us a reference at the attosecond level. All these evaluations are made in the present, although the past created these current conditions.

There are also different senses of time. Mind time (material motion) and spirit time (our spiritual progress or movement Godward). Our body senses time electrochemically by relating to its surroundings, perhaps we should intellectually sense our spirit time, by sensing and relating it to a changeless God concept.

## Thought Feedback Loop

The locus coeruleus (LC, sometimes called the "Blue Spot" of the brain) is an area of the brainstem that is the primary source of neurons known as "catecholaminergic" neurons, because they produce the catecholamines, dopamine and the neuromodulator norepinephrine (Ref 110).

Side Note: The neurotransmitter norepinephrine is also made in the liver when we eat fats and is balanced by the production of insulin. An overabundance of norepinephrine is thought to be a precursor of insulin resistance and obesity. (Ref 122)

The LC is involved with our physiological responses and is critical for numerous functions including the response to stress (Ref 19), attention, emotion, motivation, decision making, learning and memory. The locus coeruleus-norepinephrine (LC-NE) system with its phasic (time sensitive) and tonic (amplitude sensitive) microtubules, functioning at the quantum level, is capable of instantaneous, as well as time-based influencing of our thought processes, and could be the basis of our reflective thinking, thought feedback loop. We are not our thoughts. We are the observers of our thoughts, and the observation of thoughts is what I call the thought feedback loop. That is: first there is the thought, then the reflection of the consequences of that thought which then triggers rethinking. Slight changes in the time delays may be one way that the soul might nudge our thinking towards mid-mind functioning. The Spirit of Truth might influence our thinking by nudging the time delays of the cascades of electron jumps as they flow through the brain on route to the executive areas, around this feedback loop, and then, more importantly, back again (times 10) for more reflective thinking. This may be

most effective at the thought precursor stage (based on our preauthorized allowances) because after that, our active free will takes full control of the thought processes. Exceptions may be in the case of deep meditation, (Ref 32, 38) and worship where the lower frequencies can be given a few more milliseconds for reflective cross pollination of our thinking.

Heterophenomenology is the study of first-person phenomena, from the third-person point of view. This may be another name for our awareness of this feedback loop, between the thought precursor, the thought, and the realization that we can (with spirit guidance) physiologically influence that self-reflective thought process.

## **Near Death Experience – NDE**

Most NDEs (Ref 17) result in positive transforming changes and sudden spiritual growth. People often report (a) separation from the body with a heightened, vast sense of consciousness and recognition of death; (b) travel to a destination; a meaningful and purposeful review of life, involving a critical analysis of all actions, intentions, and thoughts towards others; (c) a perception of being in a place that feels like “home”, and (d) a lack of time sense (e) a return to life. The near-death experience may have a spiritual result but let’s look at some of the electrochemical physiology that might be involved in this spiritual uplift. As blood flow drops, the oxygen levels which generate the cellular electric potential also drop. Also, near clinical death, there is a burst of Gamma frequency range brain activity probably related to an intercellular capacitance reduction. (Ref 72) Our intercellular communication and our thoughts, are normally separated and specifically cross connected through troughs and zones of “local minima” voltages. A reduction of available energy to maintain these voltages may facilitate massive synapse cross communication (think life review, calmness, connectedness). It may also reduce the veto power of our free will and allow the soul’s patterning to dominate our thinking. Some drugs, (Ref 30) like tryptamines (“vine of the soul” ayahuasca, psilocybin and N-Dimethyltryptamine, which are structured like serotonin, sometimes called “Spirit Molecules,”) (Ref 125), may have the similar effect of lowering the voltage walls of our thought channels allowing for decrease segmentation, longer temporal thought processing, and massive hyperconnectivity.

Rick Strassman, the first American researcher to receive government approval to study hallucinogens between 1990 and 95, as clinical associate professor of psychiatry, administered roughly 400 doses of N,N-dimethyltryptamine (DMT) to nearly 60 patients at the General Clinical Research Center of the University of New Mexico Hospital. His findings were initially confined to clinical work recording the physiological effects of DMT, such as heart rate and blood pressure, but he couldn’t deny the overwhelming religious experiences reported by participants and he reported these in his book, DMT: The Spirit Molecule. (Ref 85) Strassman also relates this to the pineal gland and near-death experiences.

**“This tiny organ, the ‘seat of the soul’ or ‘third eye’ of the ancients, might produce DMT or similar substances by simple chemical alterations of the well-known pineal hormone melatonin, or of the important brain chemical serotonin. Perhaps it is DMT, released by the pineal, that opens the mind’s eye to spiritual, or non-physical, realities.” - Strassman**

There is evidence (Ref: Robin Head of the Psychedelic Research Group within the Centre for Psychiatry at Imperial College London) that when taking drugs like psilocybin the brain’s default mode network (DMN) reverts to a childlike “selfless” state. The brain’s default mode network, which mediates self-referential behavior, moral reasoning, and imagining of the future, probably influenced by our superconsciousness, is most active during resting states (such as meditation and worship). (Ref 123)



## Emotional Processes

Emotions (Ref 18), which are controlled by peptides in the amygdala, are a function of the difference between what we anticipate and what we experience, and this is, in turn, a function of the time delayed processing of the sensory inputs that trigger those anticipations and our related reactions. Processing delays give us time to appropriately respond, rather than animalistically, immediately, reacting to those sensory inputs. This delay allows us to control our emotions, rather than having our emotions control us. Happiness results when our expectations match our experiences. Happiness evolves when we trust that whatever occurs is not only acceptable but beneficial. When we trust in the unassailability of our spirit nucleus, when we have a real faith-trust in God.

The ventromedial prefrontal cortex (vmPFC) comprises several distinct cytoarchitectonic areas in the medial temporal lobe. It is a key brain region supporting our decision-making processes, and it has been shown to be one of the main hubs of the Default Mode Network. (Ref 31) The Default Mode Network is a superconscious network activated during calm states such as meditation, hypnagogia (Ref 24) and light sleep that mediates self-referential behavior, moral reasoning, recollection, and imagining the future. The vmPFC is a relay center that provides somatic markers connecting mental representations with secondarily associated emotions. When mental representations are being compared, contrasted, selected, and singled out, it's the somatic, gut level, (think serotonin) intuitive markers that dominate. (Ref 28) One of the vmPFC's functions is to filter out the less relevant inputs, prioritize and connect the rest, in patterns for future reference.

Side note: A familiar drug, ecstasy, (MDMA or 3,4-Methylenedioxymethamphetamine) causes the continuous release of serotonin and dopamine and blocks their reuptake mechanisms causing a sense of equanimity and positive self-regard that enables the user to calmly and compassionately reexamine past events but has neurotoxicity if used more than once. (Ref 79)

Side note: French philosopher Henri Bergson said it this way: "The function of the brain and nervous system and sense organs is in the main eliminative and not productive."

Consciousness of the connection between our emotions and our memories, allows us to look before we leap, as we imagine God's plan, our participation in it, and calmly anticipate any future joy that may result from it. Emotions and our creative anticipatory imagination are influenced by curiosity (self-consciousness), aesthetics (material consciousness) and ethical sensitivity (God consciousness). The prefrontal cortex can also be an experience simulator capable of both the anticipation (looking) and the realization of the consequences of that anticipation (leaping) and their related emotional reactions (reflecting). We can simulate God's plan, our potential contribution to it, and our emotional reactions from our anticipated participation in it.

Passionate emotional involvement may be particularly useful in the zeal of execution, but we may want to limit those emotions that often distract us from God consciousness and the confidence in his ability in our preparatory thought processes.

## Emotional Self-Mastery

Our amygdala (our emotion control center) preprocesses input signals before sending them onto other parts of the brain for rational overcontrol. An emotional response causes changes in the gene expression of certain cells (which results in hormones, neurotransmitters, and other messenger molecules) which do things like increase your blood pressure, adjust your breathing, tense your muscles, or stand the hair up on the back of your neck. (Ref 22) One example of an emotional condition, fear, involves the presence of calcitonin, a gene-related peptide, which is created by all fears and this peptide relays signals to other areas of the mid brain. It is also a hormone that blocks the activity of osteocytes that break down the calcium in your bones and act within the central nervous system to inhibit gastric acid secretion. Fear is mediated by dopamine from the amygdala. Can you see how the dominoes are all influencing each other?

What things are, or were, in our control?

- our emotional state, where we are, our brain state, our current level of fear, our interpretation of the situation, our environmental memories, memory interpretations, physical status, hormone levels (testosterone and other stress hormones, calcitonin GABA, etc.), neuroplasticity, experience, epigenetic modifications.

What things do we have no control of?

- cultural or genetic predisposition and our base DNA.

There are implicit (emotional), explicit (intellectual) and functional memories in our schema or current mental model. Some implicit memories are present at birth. Our hippocampus centric, explicit memory, aided by our cognitive processes of thinking and understanding are different yet deeply interconnected to our implicit emotions, our feelings, and sensations. There is the default mode circuit, the salience circuit, the attention circuit, the negative affect circuit, the positive affect circuit, and the cognitive control circuit.

The three main areas of the brain that control our emotions are:

The amygdala which controls our emotional responses, our memory, learning, visceral and autonomic functions, from within the limbic system.

The prefrontal cortex which controls decision-making and can override our emotional responses.

The hippocampus, which controls memory formation, contributes to cognitive and emotional processing, while intricately weaving together their functionalities.

Peptides (hormones and neurotransmitters) manage the biochemical overcontrol of our emotions and play a crucial role in assisting the activities of our immune system, by integrating mental, emotional, biological activities and eventually our spiritual wellbeing. They color, predict, and change our behaviors, our moods, and our unique emotional tone. For example, the hormone ghrelin determines our hunger, insulin triggers a gain of body fat, incretin tells us we are full, and leptin responds to too much body fat. It is interesting to note that when we are obese, ghrelin and insulin stay active but leptin activity drops. The balance of hormones and neurotransmitters influence our emotions and there are no hard-wired emotion control circuits in the brain. Our emotional responses are free will controllable, but that control is incremental. Patience, determination, and consistency are required to gradually change the neurotransmitters at each nerve synapse as they relay our

emotional response signals. They are first established, and then they are modified by epigenetic methylation and our emotional predisposition. (Ref 5, 56)

Recent research by Melissa Hogenboom (Ref 63) showed that mindfulness and meditation reduced the structure of the amygdala (which indicated less stress) and an increase in the size of the cingulate cortex (indicating improved emotional control).

The main neurotransmitters which are involved in emotional responses are:

**Glutamate and Gamma-Aminobutyric acid (GABA)** gives us our balance of excitement versus the urge to be calm and ensures our homeostasis. It is improved with drugs such as Lithium (with devastating long term side effects) or with ketosis, and good sleep.

**Calcitonin** relates to our fear.

**Dopamine**, is the body's reward system, includes feeling pleasure, achieving heightened arousal, and learning, unexpected benefit, motivation, and future happiness.

**Norepinephrine, AKA noradrenaline**, relates to our sympathetic nervous system alertness.

**Opioid peptide (oxytocin)** is involved in orgasm, social recognition, pair bonding, anxiety, group bias.

**Epinephrine AKA adrenaline**, controls our fight or flight prep.

**Serotonin** (95% of which comes from the gut) controls our anxiety, current happiness, sense of wellbeing, appetite, mood, memory, and sleep.

**Purines (adenosine)** is a neuromodulator involved in suppressing arousal and improved sleep.

**Endorphin** relates to our current pleasure and self-esteem.

**Neurotensin** acts like dopamine but is more specifically for the differentiation of “good” from “bad” thoughts.

Our initial emotional conditions relate to our calmness, and our ability to handle new challenges which in turn relates to our trust in God.



### Emotional Relationships

Side Note: The drug Adderall temporarily links dopamine to noradrenaline which links focus to pleasure and we naturally link past pleasure with future goals.

## Thought Processes

Some might visualize their thinking as a linear (male) process. Others may picture it as a plainer more matrix cross referencing (female) evolution of thoughts. Our thinking may be more like volumetric sculpting, and any spiritual influence may be able to “see” the wholeness image of our thoughts, and it may be that manipulations of the time delays would give spiritual influence the ability to mold the overall dynamic sculpture. To help, we might think of changing the lighting to be more of a top-down illumination or turning up the contrast to make the shape more cosmically recognizable. This might be done by effortless attention to thought precursors (more continuous communion with God) and cooperating with the spiritual influence’s “fear not” efforts. Perhaps at times when repetitions are involved (such as in music) we can be more helpful since we have multiple chances at fine tuning that picturization. Practice with quieting the unnecessary clouding of sensory inputs from the body and minimizing non-valuable, higher frequency thoughts, may also help.

In a spiritual sense our curiosity about God consciousness and our willingness to be influenced (to share the inner life) may allow us to imagine the source of that illumination and to creatively extrapolate, from that mental spiritual safe zone, the realization of the resultant enduring peace.

The attainment of cosmologic levels of emotional equipoise, calmness, equanimity, and happiness may involve time delayed responses. It would be like *injecting a fragment of eternal timelessness* into our frenetic thinking. It can likely be encouraged by the effortless attention and the restful spiritual exertion of worship.

It may also be aided, by a truly relaxed approach to:

1. Curiosity - Hunger for harmony and thirst for beauty. Persistent attempts to discover new levels of harmonious cosmic relationships. The satisfaction associated with satiated curiosity.
2. Aesthetic appreciation - Love of the beautiful and ever-advancing appreciation of the artistic touch of all creative manifestations on all levels of reality. The calmness associated with being in beautiful surroundings.
3. Ethic sensitivity - Through the realization of truth, the appreciation of beauty, which leads to the sense of the eternal fitness of those things which impinge upon the recognition of divine goodness in Deity relations with all beings; and to the pursuit of divine reality values—to God-consciousness.

Side note: Quantum coherence occurs when particles act in a coordinated manner, effectively behaving as a single quantum system. This coordinated behavior allows for phenomena like superconductivity and superfluidity. In subjective experiences, we may find a parallel to quantum coherence in certain mental states, various mental processes align seamlessly, creating a sense of effortless action, heightened performance and a sudden down rush.

All these lead to the emotional calmness of knowing that it is a friendly universe managed by a loving father. Perhaps this is like the emotional calmness felt after primitive man discovered how to make fire or his first worship experience.

## Sentience and God Consciousness

Let’s look at the bodily functions that help our mind to calmly relate to God as creator, controller, and upholder. It is possible that time delays, combined with quantum coherence, and the other physiological processes we have talked about, are proportional to our degree of sentience, our self-consciousness, and God-consciousness.

Intuition (instinct), understanding (rationalization), courage (loyalty), knowledge (ideology), counsel (socialization), worship (zeal), wisdom (symmetry) may be related to patterning and cross communication of

brain cells. These functions would then be related to microtubule lengths, their associated time delays, (Ref 61) and their MAP patterning in the brain. Microtubules don't function until there is dissipation-less electrical energy transfer (insulation from surrounding tissue) and this is critical for allowing quantum coherence. This only occurs when microtubules are suitably insulated and are greater than  $10^{-6}$ m in length. (Ref 127) This gradually evolved from ape to homo sapiens.

For example, the Spirit of Intuition, which provides the foundation for basic survival instincts and reflexive thinking, could be seen as interacting with the brain's more primitive structures, such as the brainstem and limbic system. These areas govern instinctual responses and basic survival mechanisms, aligning with the brain's role in fostering immediate awareness and reaction to environmental stimuli. The Spirit of Understanding, which enables associative thinking and reasoning, may correspond to the brain's higher-order cognitive functions, particularly those associated with the cerebral cortex. This facilitates the ability to connect ideas and discern patterns, processes that are deeply tied to the brain's capacity for learning and memory. The Spirit of Courage, which inspires initiative and perseverance, might be linked to the brain's reward systems, such as those involving dopamine and neurotensin pathways. These systems motivate action and reinforce behaviors that align with personal survival and goals, reflecting the role of fostering determination and resilience. The Spirit of Knowledge, which supports the accumulation and application of experiential learning, could be associated with the hippocampus and other memory-related structures. These areas of the brain are crucial for storing and retrieving information, enabling mortals to build upon their experiences and apply them to new situations. The Spirit of Counsel, which fosters social cooperation and group harmony, may interact with the brain's social cognition networks, including the prefrontal cortex and regions involved in empathy and interpersonal understanding. This encourages collaboration and the ability to work effectively within a community, aligning with the neurological basis for social behavior. The Spirit of Worship, which elevates the mind toward spiritual realities and divine communion, might be linked to the brain's capacity for abstract thought and transcendental experiences. Studies on spiritual practices suggest that regions such as the parietal lobe and the default mode network are active during moments of deep reflection, prayer, or worship, potentially serving as physiological correlates with this influence. Finally, the Spirit of Wisdom, which integrates knowledge, experience, and insight into balanced decision-making, likely engages the brain's executive functions, particularly within the prefrontal cortex. This area is responsible for planning, judgment, and the synthesis of complex information, aligning with the role in guiding mortals toward higher understanding and moral discernment. The Spirit of Truth consolidates and unifies all these responses.

Are microtubule lengths related to our abilities in these areas? Are microtubule lengths related to the universal receptivity of the Spirit of Truth after Pentecost?

The Spirit of Truth may function to provide a bias superimposed on the overall patterning of these microtubules, and their associated ARC propagation time delays may function both individually and collectively. This patterning may also be a general electrical bias overlaid in the white matter surrounding the brain, together with the patterning of the microtubules themselves as influenced by the flow of ARC activity. These patterns may allow for the functioning of the Spirit of Truth and this patterning may have been derived from the patterning of Jesus' own microtubule structures as he arranged them, in his own human brain and body, 2000 years ago.

Our biases result from the lengths of the tubules and established trigger voltage thresholds which are constantly changing. The fact that we can influence the lengths of these microtubules in these para crystalline-like structures, and our calmness (think base voltages versus trigger voltages) suggests that over time, we can develop "habits of thinking" (patterning our thoughts the way Jesus did). The stable patterns of these cascade phenomena may become our religious habits of thinking and our conditioned spiritual reflexes and since we

tend to become more like the person we worship, this may be the basis for our soul growth and stabilization of purpose.

One final thought on the Spirit of Truth. Could it be that during Christ's incarnation he learned how to manage his own emotional control, biological processes and microtubule patterning? Did he learn how material body's function and how best to fine tune their physiological functions for improved spirit reception? Did he learn the patterns of neurotransmitters and neurotubule lengths best suited for the universal reception of Spiritual influences and increased spiritual influence? Can we religiously manage our own reaction patterns and emotional responses to life's situations? Can we be more Christ like?

**1 John 1:5-9: "This is the message we have heard from him and declare to you: God is light; in him there is no darkness at all. If we claim to have fellowship with him and yet walk in the darkness, we lie and do not live out the truth. But if we walk in the light, as he is in the light, we have fellowship with one another, and the blood of Jesus, his Son, purifies us from all sin."**

## **Top-Down and Bottom-Up Interpretation**

Spiritually, creator consciousness seems to proceed from thought-value, through word-meaning, to the fact of action. From our bottom-up perspective, our progress seems to proceed from facts to thoughts, to meanings and then to the value of those meanings.

Materially, this perspective might be thought of as organizing electrical energy, volitionally as we use our free will to control our thoughts and organize them to be receptive to spirit energy symmetry. Our task may be to harmonize these two reciprocal perspectives.

It seems to me that spiritual improvement involves material (think epigenetics) intellectual (think emotion) and spiritual (think faith trust) progress. Education may sharpen and unify these patterns of thought processing in our mind. Civilization may express these meanings and values; life may experience them, and religion may ennoble them. There is a calmness associated with the realization of their inevitable perfection.

During our formative years we are functioning primarily at the animal (fear your enemy) survival level. Once we have confidence in an afterlife and God's plan, our task becomes to invert this bottom-up, survival of the fittest, mentality to a top-down love our enemy, cosmic perspective. This may require that we gradually, over time, change our thinking and entrench the Jesus inverted ways of thinking. I call this the Jesus flip (think, beatitudes, inevitabilities, selflessness).

### **Matthew 5:43-48**

**"You shall love your neighbor and hate your enemy.' But I say to you, love your enemies, bless those who curse you, do good to those who hate you, and pray for those who spitefully use you and persecute you,"**

## **Soul Physiology**

It seems to me that there are two fundamentals that need to be captured to transfer our material identity to our soul. We will need our memories. What might be a mechanism to capture, at any instant, our mental patterns, material status and possibly a snapshot of our mind, for transfer/transition to heaven? Our DNA, with its epigenetic tagging and other modifications, as well as our microtubule lengths and patterning represent the

current physical status of our body, brain, and nervous system. At death (or any suitable time before death) a snapshot of this information, could be reduced to a static numeric sequence, essentially a digital or analog representation of our spiritual or soul's luminosity.

A fully grown human adult might have between 80–100 trillion cells. About 4 trillion of them do not have our own genetic material so we are not so concerned with them, but what about the information, relationships, and intercommunication patterns that the DNA modified cells have developed over our lifetime? Are they preserved and if so, how?

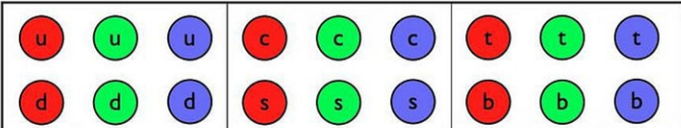

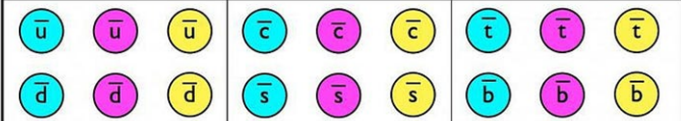


The second law of quantum complexity says that complexity, like entropy, always increases up to a local or global maximum. We are living in a locally and globally entangled reality. This is demonstrated by the life after, heat death, of a black hole where even after thermal equilibrium (heat death) complexity increases due to quantum entanglement. The investigation of possible states takes longer than the time to get to thermal equilibrium. This is analogous to computer circuit complexity in a physical system. It is like a reverse cypher code (the code required to break a cypher). It implies that after material death (material heat death), the soul could continue its search for complexity.

Side Note: This so called the "black hole information paradox" is resolved by "nonviolent nonlocality". In this scenario, the insides of black holes are connected to their outsides through "quantum nonlocality" in which correlated particles share the same quantum state (think quantum entanglement and ubiquity). (Ref 126)

Light has momentum and momentum is a vector. The so called "Poynting" vector. i.e. it has magnitude and direction. In four-dimensional Minkowski relativistic space, the equation is  $E^2 = p^2c^2 + m^2c^2$  (where  $E$  = energy,  $p$  = the magnitude of momentum,  $m$  = mass,  $c$  = speed of light in a vacuum) or more simply  $E = pc$ . The concept of momentum transcends Newtonian mechanics. Momentum is a fundamental property that is conserved in all physical systems with spatial translational symmetry according to Noether's theorem (Ref 97). Similarly, energy is a fundamental property that must be conserved in all physical systems with time translational symmetry. This implies that our biological luminescence and its associated patterns can have magnitude and direction, momentum godward after disassociation from our spatially patterned matter. This may be facilitated by our faith association with the source of our energies, God the Father.

Another factor to consider is the matter of colocation. Matter at the subatomic level is made up of fermions and bosons with mass, and photons with no mass. It is interesting to note that all Bosons start with no mass but because most can interact electrically with the Higgs field all, except the photons, gain mass. No two fermions can occupy the same quantum state simultaneously, but gluons (the particles that mediate the strong nuclear force), photons, and the Higgs boson (the so-called God particle) can. This hints at the complemental and coherent natures of matter and spirit and suggests the difference between a Father in heaven and an everywhere present, Holy Spirit.

It is also interesting to note that gluons, the smallest particles that have velocity and direction, are massless bosons. They facilitate the strong interactive force that hold the quarks together that make up the protons and neutrons. On the other extreme we have massless photons going anywhere and both extremes are functioning outside of time. (Ref 118) Photons also have geometry (shape). They are neither a wave, nor particle. They exhibit those appearances only when they are detected. They can become either a wave (time dependent ubiquitousness) or show the spatial, particle-like properties of ubiety.

	Quarks
	Leptons
	Anti-Quarks
	Anti-Leptons
	Bosons

### Fermions (top4) and Bosons (bottom line)

There are 12 different bosons (force carriers) and they are grouped to describe their three interactions.

1. The 8 gluons mediate the strong nuclear force, and act only on particles with a color charge: the quarks, antiquarks, and other gluons.
2. The 3 weak bosons, the  $W^+$ ,  $W^-$ , and  $Z^0$ , are all massive and mediate the weak nuclear force. If you can radioactively decay or be a product of a radioactive decay (including all fermions), these bosons can interact materially with you.
3. Photon  $\gamma$  has no mass and is responsible for mediating the entire electromagnetic force spectrum. All charged particles experience electromagnetic interactions, including fermions, except for the low-mass, uncharged neutrinos and antineutrinos that barely interact with anything at all. Light can change its direction because it has momentum. This change of momentum results in a force.

Speaking of fields; there is the electron field, also known as the electron-positron (e-p) field, which is a “matter field.” Its “quanta” (i.e. its packages of field energy) are the electron and the positron. This contrasts with the electric field, also known as the electromagnetic (EM) field. The quanta of the EM field are photons. Since photons have no mass, the EM is a “radiation field” rather than a “matter field.”

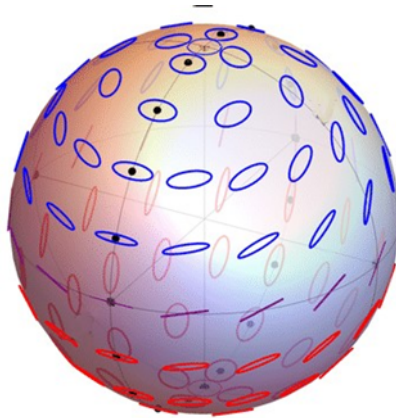
It is interesting to note that fermions have a “color charge” which is **triune** in nature (think trinity) with color combinations (e.g. red, green, and blue for quarks, and cyan, magenta, and yellow for the antiquarks). Fermions are the basic parts of the protons and neutrons that make up the nucleus of atoms and respond to magnetic fields. i.e. demonstrate a cosmological alignment tendency. The bosons however are **dualistic** (think male female, right wrong, God’s will or not) and have only varying degrees of positive or negative charge.

Side note: Chris Watson’s *Entropy Scale Factor* (ESF) theory published in *Reports in Advances of Physical Sciences* on July 19, 2023. Said there is no need for dark matter if we use entropy (total information, order vs chaos) to describe gravity. (Ref 66)

When thinking of photons, although they are particles, try not to think of them as little balls. They are small, spherical ripples in the electromagnetic (wave influenced) continuum that we (UB 42:5.14 (475.10) and Ref 100) called particles. These ripples or blobs radiate spherically in three-dimensional (time bound) space. If the photons came from the same source (say the bioluminescence of a microtubule), they are “entangled”. When you “detect” (like in the rods and cones of the eye) you not only extract the energy (flatten the bump) by that detection, but you also affect the entire wave, so this energy extraction could be observed at the other locations

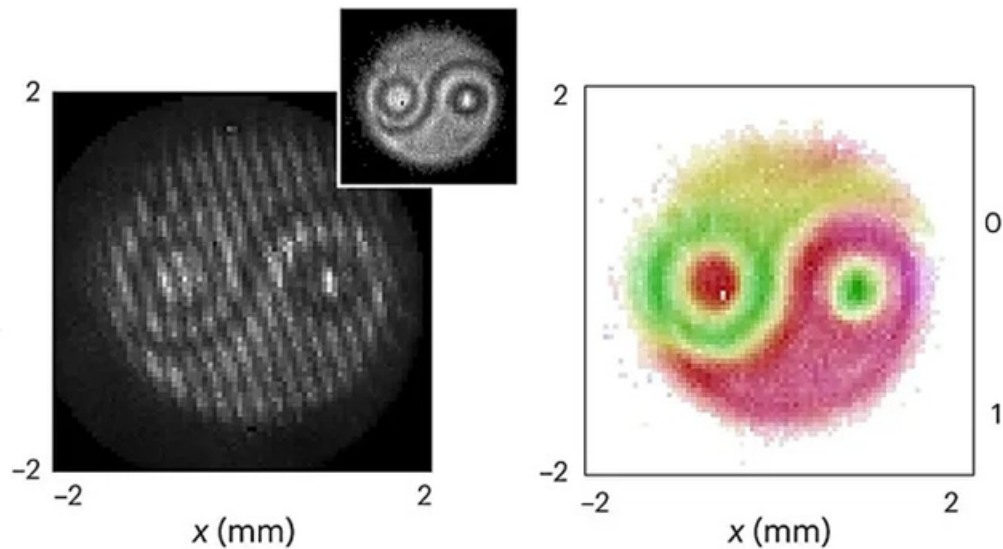


around the spherical wave pattern (think reflectivity). Studies investigating the preservation of photon entanglement in polarization after one entangled photon propagates through brain tissue, indicates that the non-local correlations between photons are maintained even through complex biological tissues. (Ref 87) This is particularly poignant in the case of microtubules because of their qubit computational functionality and their magnetic field sensitivity.



### **Poincaré sphere visualization of entangled photon states**

Thinking more about the eternal aspect of photons, this means that the degrees of freedoms of the photon, do not change with time. Microtubules emit bioluminescent photons at specific resonant frequencies in the infra-red and ultraviolet ranges and this luminescence is representative of the way we think and react to external stimulations. Photons are pure energy, have no mass and yet have momentum and photons are eternal. Photons are particles that can be influenced by the whole as demonstrated by their wavelike properties. It is possible that their light patterns (influenced by our reactions to the whole), once emitted, could be captured and might even continue after our physical mass comes to rest. It is possible that our guardian angel could detect this light pattern information, and relay it to mansion world number one while at the same time the numeric representation of our luminescent energy could be memorized (like taking a picture) and relaying the image, for initial patterning of our heavenly soul. It may also be that there is an intermediate (pre heavenly) state of the soul made up of the intermediate class of particles called hadrons that are composite particles of bosons and fermions. The word hadron comes from the Greek word “stout” or “thick” because they are analogous to molecules in that they respond to the electric force and make up our protons and neutrons. Remember how the nuclei of atoms respond to cosmic magnetic alignment? This nuclear electromagnetic alignment might have a superadditive influence on our microtubule bioluminescence.



### Reconstruction of a holographic image of two entangled photons

(Image credit: Nature Photonics, Zia et al.)

## Experiential Soul Fusion

What does it mean to experience a complete alignment, bottom to top, fear to faith, self to selfless, material to soul, me to we, 180-degree (Jesus) flip?

Our free will creative control of all our experiences may be in the quantum neuron limbic cerebral feedback loop of our consciousness, and perhaps our superconsciousness, where we *objectively* (materially) and *subjectively* (spiritually) experience the phenomenon of aspiring to be at peace and eventually, to be Godlike. Our free will control may allow spirit dominance to align our neuron activity to God's preferred path, a fusion of paths. A fusion of purposes. A fusion of minds.

What is this fusion of purposes or fusion of minds? In the physical world nuclear fusion occurs when the electromagnetic energies of two atoms get close enough to be retained by their uniting weak force releasing the extra energies that are no longer required. It takes energy to slow down fundamental energy to the electron level and the life flash of fusion may be the release of the extra energies that are no longer required.

It is conceivable that the fusion of body and soul, may be like this phenomenon, wherein patterning of our neuronal material electro-chemical energies get close enough to the patterning of the spiritual energies of our sense of God. If spiritual energy runs in similar paths as our material energies, these harmonized electro-chemical neural energies might get close enough (in the soul) to combine with our soul's energy, and both would fuse with the immediate release of the excess energy required to create coherent vibrational energy in "Chariots of fire".

### 2 Kings 2:11

**"As they were walking along and talking together, suddenly a chariot of fire and horses of fire appeared and separated the two of them, and Elijah went up to heaven in a whirlwind"**

## **2 Kings 6:17**

**And Elisha prayed, “Open his eyes, Lord, so that he may see.” Then the Lord opened the servant’s eyes, and he looked and saw the hills full of horses and chariots of fire all around Elisha.**

## **Philosophy of the Physiology of Spiritual Influences**

Just as there are two kinds of time, there are two philosophical perspectives for our approach to God. We can identify with the physical body and its material environment, or we can think from a soul base and its cosmic reality. We tend to use our external reality to evaluate our physiological progress and our philosophy, with its ability to sense cosmic influences to gauge our spiritual progress, but our true progress is in our superconscious soul mind, where our creative spiritual influence helps to transfer our identification with and attachment to, our spirit core.

The processes we have investigated are akin to applying the scientific method to our spiritual, external, and hopefully our internal philosophical progress, and this can be viewed from at least three additional perspectives:

1. Discovery of facts as extrapolation of currently known facts.
2. Developing new techniques in ourselves.
3. Observing changes in ourselves during our investigations.

These processes may be integrated, and their individual strengths will then be a function of our different experiences and their memories. Each of these growth mechanisms will build on these new experiences as we move forward and integrate them internally.

There is also an evolutionary physiology of spiritual influences. By thinking about God and the service of man, and because of previously practiced familiarity with the developing idioms of cognitive neurobiology, we can learn to discriminate by introspection, the coding vectors in our internal axonal pathways, the activation patterns across salient neural populations, and their relationships to enhance our God likeness. This kind of thinking is called Transcendent Naturalism and has a circular cause/causality paradigm that can be broken down like this:

### 1. Matter/Energy

There is a continuum between the quantum realm and the realm of classical physics when more complex forms of matter abruptly lose their quantum properties in a phenomenon called “decoherence.” Quantum properties like entanglement suddenly disappear, waveform collapses, and matter becomes measurable. Classical matter has emerged from the quantum realm via this constantly occurring decoherence. This implies that energy/matter has an emergent foundation and a coherent destiny.

### 2. Life. Sentient Autopoiesis

The circular pattern when something maintains and renews itself by regulating its own composition and conserves its own boundaries in a system of feedback loops.

### 3. Mind.

There are mechanisms involving things like the microtubules and other connection relationships that form the base of a 4E (“embodied, embedded, enacted, and extended) cognitive feedback loop. As we enhance the positive aspects of these feedback loops, we improve our spiritual receptivity.

#### 4. Culture.

Righteous minds try to ground morality in six innate, cross-cultural moral dimensions: care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, sanctity/degradation and liberty/oppression. A moral culture is determined by the point in each dimension where actions become immoral. In other words, a moral system is defined by the ‘weights’ we give across and within the dimensions to different behaviors or expressions. As the cultures evolve, more sophisticated models emerge, culminating in “wisdom” which grows out of the wisdom of the individual as it is guided by top-down insight. There is not necessarily a direct connection between how things seem and how they really are. We are mostly WEIRD (Western, Educated, Industrialized, Rich, and Democratic). We are often mistaken in our self-reporting of how things seem unless we use a top-down perspective.

Is transcendent naturalism making us wiser? What is wisdom anyway? A common wisdom model is based on multiple elements: metacognition (thinking about thinking), declarative knowledge (knowing what you know and don’t know), procedural knowledge (knowing how to do things), conditional knowledge (knowing when and how to use what you know) and moral aspirations (trying to be ‘good’). Are we improving our thinking about our thinking? Are we sure about what we “know”? Are we aspiring to be more moral. Are we becoming more loving? Let’s review what we have learned in this exploration.

### Summary

When you listen to a story or a parable, your whole brain is emotionally and intellectually immersed in the story. Stories involve context, conflict and outcome. Perhaps, when approaching life, when watching the biology of our life story unfold, we may want to immerse ourselves in the bigger story. The story of our eternal perfecting career of becoming more Godlike which at our stage may be more like the Greek translation of perfect “telios” which implies maturity and wholeness.

Dopamine, neurotensin, microtubules, MAPS, ARCs, SAMs, DNA enhancers, epigenetics, the DMN and HPA axis, the vmPFC, electromagnetic and optical quantum coherences, the consciousness of our consciousness, our creative mental picturizations, lower frequency thought cross pollination, time consciousnesses, controlled emotional responses and superconsciously patterned habits etc. are all striving for improvement, and they are all within our control. These processes are all subtle and incremental. They require effort, consistency, and faith (delayed gratification) that they will eventually work. (Ref 116)

### Take Home Anchor Points:

Perhaps these one-liners will trigger your own ideas of how to materially, incrementally change and improve the interactions with spirit influences.

1. The physical to psychological link is bidirectional
2. Your body supports your mind.

3. Your attitudes, thoughts, emotions, actions, and reactions change your electrochemical nature and spirit receptivity.
4. Patience and openness to thoughtfulness, reflection, change, may help.
5. Child-like faith and trust in God but adult like focus, may help.
6. Creatively, leap from a stable, calm, confidence in God's plan.
7. Where your thoughts go, energy flows.
8. The physical to psychological link is bidirectional.
9. Emotions make epigenetic modifications to your gene expression on an instant-by-instant basis.
10. Align your anticipations with a top down, eternal perspective.
11. Let the cosmos be the stable reference source of your electromagnetic fields.
12. Let spirit be your stable time reference for your material motion.
12. Invert your consequential thinking patterns to those of Jesus.
13. Try to be more aware of spirit time than material age.
14. Get good deep sleep, worship and meditate often.
15. Be still, and know, that processes, guiding us to find God, are unfolding as they should.

Descartes's famous saying "I think therefore I am." becomes:  
 "My thoughts improve my electro-chemical responses; therefore, I am, and I will eternally be."

—

Inputs influence your nerves, which influence your amygdala, which influences your hypothalamus, which influences the release of peptides, which influence emotional and physical responses, which influences future reactions to similar inputs either towards inner calm or chaos.

Be a positive influence.

Said differently:

**Your thoughts** guide your physiology.  
 Your physiology guides your reactions.  
 Your reactions guide your character.  
 Your character guides your values.  
 Your values guide your intent.  
 Your intent guides **your thoughts**.

Let **your Thoughts** be spiritually guided.

**Thank you.**

**Any thoughts? or are you still looking for a "philosophic miracle" to makes sense of all this?**

## **Glossary:**

### **Activity regulated cytoskeletal memory reinforcing peptides (ARCS):**

- Peptides function in an mRNA like process that lays down memory tracks and sets up the ways we process thoughts.
- Responsible for creating our "... preconceived opinions, settled ideas, and long-standing prejudices."

### **Brain Waves:**

- An electrical signal generated by a single neuron or a group of neurons sending signal(s) to another neuron or groups of neurons.

### **Coherence:**

- Systematic or logical connections or the integration of diverse elements, or relationships giving rise to a sense of values.

### **Consciousness of our consciousness:**

- Thought, realization of the thought, and reflection of the consequences of that thought.
- May also be the superconsciousness and/or soul consciousness of our wakeful consciousness.

### **Controlled emotional responses:**

- Feelingly experiencing, without allowing emotions to hijack our intentions. The ability over time to "rewire the brain" or change the preferred electrical pathways.

### **Creative picturization:**

- True creativity can happen in the mind since it circumvents antecedent causation.

### **Cytoskeleton:**

- The network of protein filaments and microtubules in the cytoplasm (the material or protoplasm within a living cell, excluding the nucleus) that controls cell shape, maintains intracellular organization, and is involved in cell movement.

### **DNA enhancers:**

- Genetically inherited and epigenetically controlled gene folding that supports higher level thinking.
- 4000 are specific to humans.

### **Electromagnetic quantum coherences:**

- May influence "random" electromagnetic interactions and motions.
- Implies that random motion is controllable by such things as, Cosmic over control, spirit influences.
- Shares "the part and the whole" functionality. E.g., Individual/Supreme, material/spiritual, experiential/existential.
- Demonstrates coherence with Paradise.

### **Epigenetics:**

- The study of controllable changes in gene function that do not involve changes in DNA sequence.

### **Epigenetic gene manipulations:**

- Modifications to DNA that influence gene folding and the resultant protein shape and function.
- Influenced by our emotions, focus and repetitions.

### **Homeostasis:**

- A relatively stable state of equilibrium or a tendency toward such a state between the different but interdependent elements or groups of elements of an organism, population, or group.

### **Microtubules:**

- Hollow tubes that connect and communicate between cells.

- Lengths increase and decrease as a function of cellular interactions.
- Lengths are proportional to the time delays between reactions and responses.
- Can only exist if hollow, electrically cored, and isolated.
- Can be influenced by quantum coherence.
- Resonances are in the mechanical, far infrared (bond stretch), and UV (electron jump) ranges.
- The two optical ranges may relate to where “delicately touch” our morontial selves.

#### **Microtubule-associated proteins (MAPS):**

- Proteins that cross connect microtubules.
- Reinforced by repetitions of thinking patterns.
- Substitutes for cross communication that resulted from myelin sheaths.
- 

#### **Neurotransmitters:**

- Chemical messengers that are made up of small amine (triangular pyramid, with the nitrogen atom at the apex) molecules, amino acids, or neuropeptides.

#### **Peptides:**

- A compound consisting of two or more amino acids linked in a chain, the carboxyl group of each acid being joined to the amino group of the next by a bond of the type -OC-NH. They are the building blocks of proteins.

#### **Quantum:**

- A discrete quantity of energy proportional in magnitude to the frequency of the radiation it represents.

#### **Slower lower frequency cross pollination:**

- Taking time to consider the social, cosmic, and eternal ramifications of thoughts.
- Equivalent to the injection of a fragment of infinity into temporality.

#### **Super consciously patterned habits of thinking:**

- Learning to use Spirit of Truth (mind of Jesus) like thinking.

#### **Synaptic Adhesion Molecules (SAMs):**

- SAMs are peptide memory glue.

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### Foot Notes

**Foot Notes:** There is a Urantia Book supported version of this thesis available on my web site [www.ubgeoff.com](http://www.ubgeoff.com) if you are interested.

**Foot Note:** Schroedinger, in his 944 Book “What is life”, argued that certain aspects of living organisms, such as both us and mutations (changes in the DNA sequence of a cell’s genome or a virus), might not be explainable by classical physics but required quantum concepts, for instance quantum leaps.

**Foot Note:** H. Fröhlich suggested in 1950 that macroscopic quantum coherent phenomena may be responsible for dissipation-free energy and signal transfer in biological systems through coherent excitations in the microwave region of the spectrum due to nonlinear couplings of biomolecular dipoles.

**Foot Note:** A.S. Davydov, proposed that solitonic excitation states may be responsible for dissipation-free energy transfer along the  $\alpha$ -helix self-trapped amide in a fashion like superconductivity: there are two kinds of excitations in the  $\alpha$ -helix: deformational oscillations in the  $\alpha$ -helix lattice, giving rise to quantized excitations (“phonons”), and internal amide excitations. The resulting non-linear coupling between these two types of excitations is a Davydov soliton, which traps the vibrational energy of the  $\alpha$ -helix and thus prevents its distortion (solitons are classical field theory configurations with finite energy).

**Foot Note:** S. Hameroff and R. Penrose, noted that one may view the tubulin protein dimer units of the microtubules as a quantum two-state system, in coherent superposition.

**Foot Note:** John Eccles proposed that each of the 40 million dendrons is linked with a mental unit, or "psychon", representing a unitary conscious experience. In willed actions and thought, psychons (Ref 42) act on dendrons and, for a moment, increase the probability of the firing of selected neurons through quantum tunneling effect in synaptic exocytosis, while in perception the reverse process takes place.

**Foot Note:** The subjective experience of intuition and sudden insight bears a striking resemblance to quantum tunneling. Just as a quantum particle can appear on the other side of an seemingly impassable barrier, the human mind can make intuitive leaps that bypass logical steps, arriving at solutions or ideas that seem to come from nowhere. (Ref103)

**Foot Note:** Neoteny (the preservation of juvenile traits) may be part of the evolutionary civilizational process that encourages reversion to the “child-like mind”.

**Foot Note:** In 2013 researchers at the University of Michigan discovered that DMT is produced in the pineal gland in live rats. It is unstable, most active during REM sleep and disappears immediately upon death.