

"Exploring the Physiology of Cosmic Consciousness"

...more specifically, microtubules and "Orchestrated Objective Reduction" as a possible physiological mechanism for sensing spiritual influences.

First some personal background...

I had basically rejected the bible as logically inconsistent. Christianity's God didn't need me, and I did not appear to need him, either. I needed reason and mechanisms not rhetoric and magic. I needed physics not psychics. Back in 1985 the Urantia Book gave me back a rational God and it also showed me why God needed me. It also hinted at technically feasible mechanisms to accomplish this. So, after 38 years of essentially continuous reading and study, I am now starting to find some of the technically feasible mechanisms, using physics and physiology, of how material and spiritual energies might interact. Today we are going to look for some possible coherence mechanisms between the electrochemical, physical functions of our body and brain and perhaps shed light (pun intended) on these spiritual to material interactions.

Before we begin, let's take a minute to calm our minds as this may allow us to be more receptive to the worshipful problem solving needed to glimpse the complexity of Mother's handywork....

Keep in mind this is just Geoff Taylor's research coupled with my mental gymnastics here. I may make statements that sound like I am stating facts, and while the base science is supported the speculative extrapolations are mine and always open to questioning, criticism, correction, and refinement.

Spiritual influences are likely to involve all the cells in our body and dominate in the serotonin and Vegas nerve systems but first we will focus on the most dominant organ, the brain, and its associated mind functions. The brain is a tangible part of the body, whereas the mind is more of an overarching consciousness of the brain's activities and therefore, intangible. Behind the scenes, the brain has pre-prioritized memories and then the mind actively prioritizes memory associations for conscious activities. The brain is like a 3-dimensional tapestry of current and previous observations woven to make us aware of and be able to recognize patterns and associations.

Let's first differentiate *consciousness* from *mindfulness*. **Consciousness** is when we are mentally and emotionally attentive to our psychological states and physical sensations created by the external world. **Mindfulness** involves a deliberate focus on that consciousness, emphasizing acceptance and openness to whatever arises in that conscious awareness and its environment. The observer observing the observer, so to speak.

Consciousness has 8 different states.

They are:

- **unconsciousness** – disrupted connectivity of the brain.
- **sub consciousness** – a pre-established state of the brain stem and input control mechanisms.
- **hypnagogia** - the potentially creative transition from wakefulness to sleep.
- **light quiet sleep** – when hypothalamus, input mechanisms are shut down.

- **rapid eye movement (REM) sleep** – our active dream-sleep state when homeostasis regulation is suspended.
- **deep sleep** – a delta wave (up to 4 Hz) dominant, immune system strengthening, body repairing state.
- **wakefulness** – our, beta wave (12 to 40 Hz) dominant, free will controlled thinking state.
- **superconsciousness** – the pre-prioritized brain activity that is not overtly involved in input analysis, executive functioning or decision making. Our potentially God consciousness state.

Attempts to define consciousness date back to the 1600's when Thomas Hobbes (originator of passive sensing) and John Locke (with his simple and complex creative sensing concept)

These are the current 7 top rated consciousness theories:

Integrated Information Theory: IIT – Consciousness as a Web of Information

The more interconnected or integrated the system the higher the “Phi” consciousness.

Higher-Order Theories: HOT – Consciousness as Self-Reflection

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.

Biological Naturalism: Consciousness as a Biological Naturalism Phenomenon

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

Panpsychism: Consciousness as fundamental property

All physical entities, from electrons to galaxies, possess some form of consciousness or proto consciousness.

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

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

Global Workspace Theory: Consciousness as a Central Information Hub

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.

and the one I like, the one we will be focusing on today:

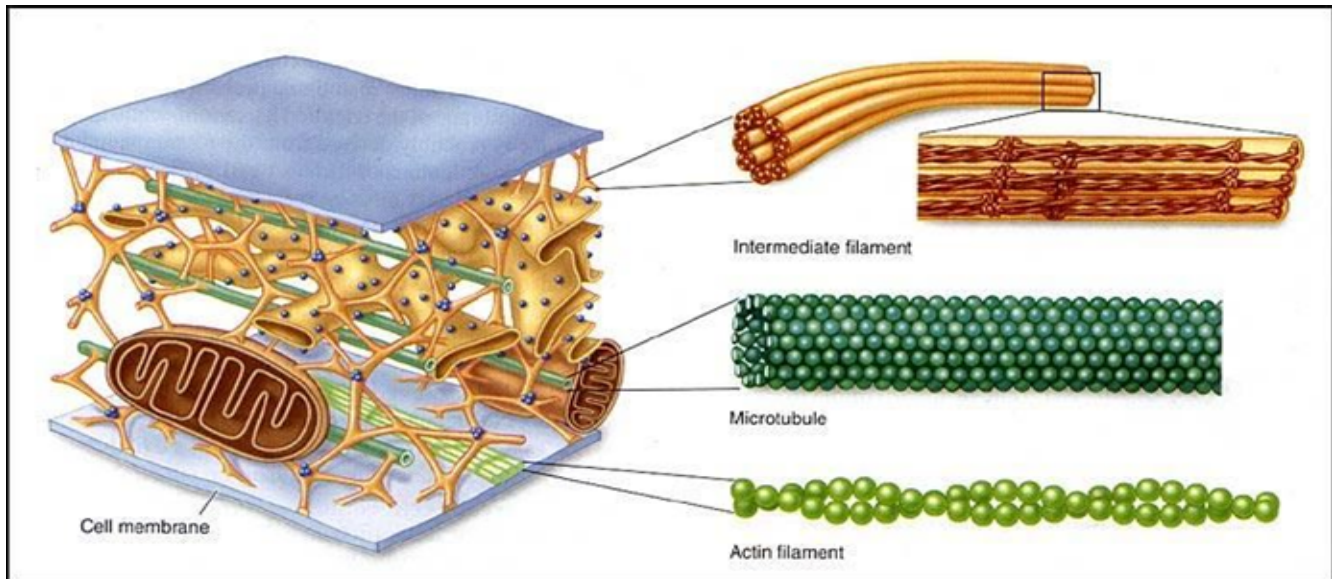
Quantum Consciousness Theory: The Quantum Mind Theory

This theory is based on the idea that microtubules (which are tiny protein structures found in cells that have our DNA) can facilitate quantum coherences.

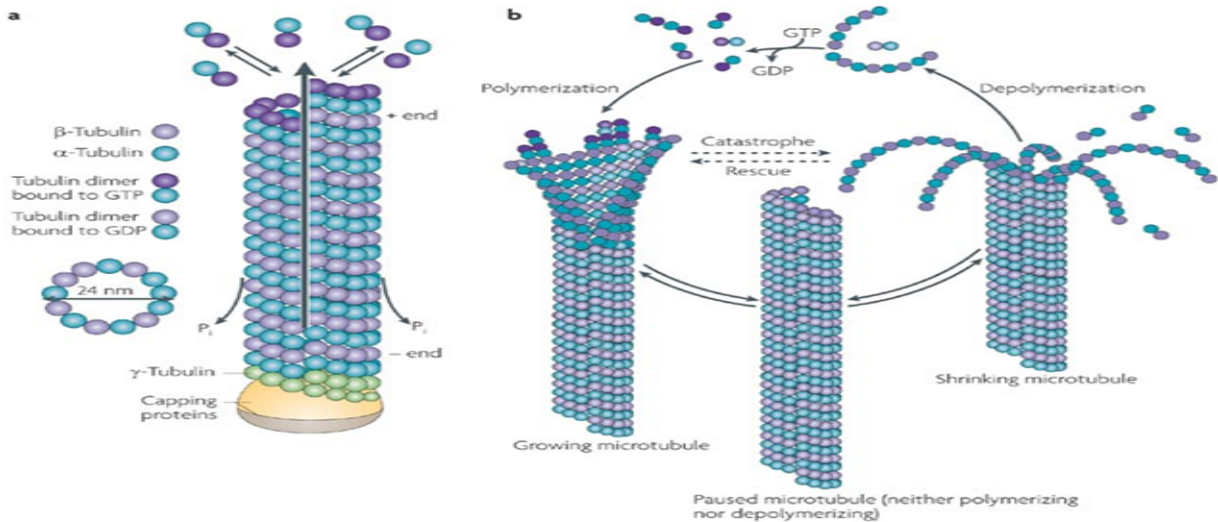
The Quantum Consciousness theory **works best with my causality thinking, and I think, fits best with The Urantia Book** (mind as mediator between spirit and matter) concepts.

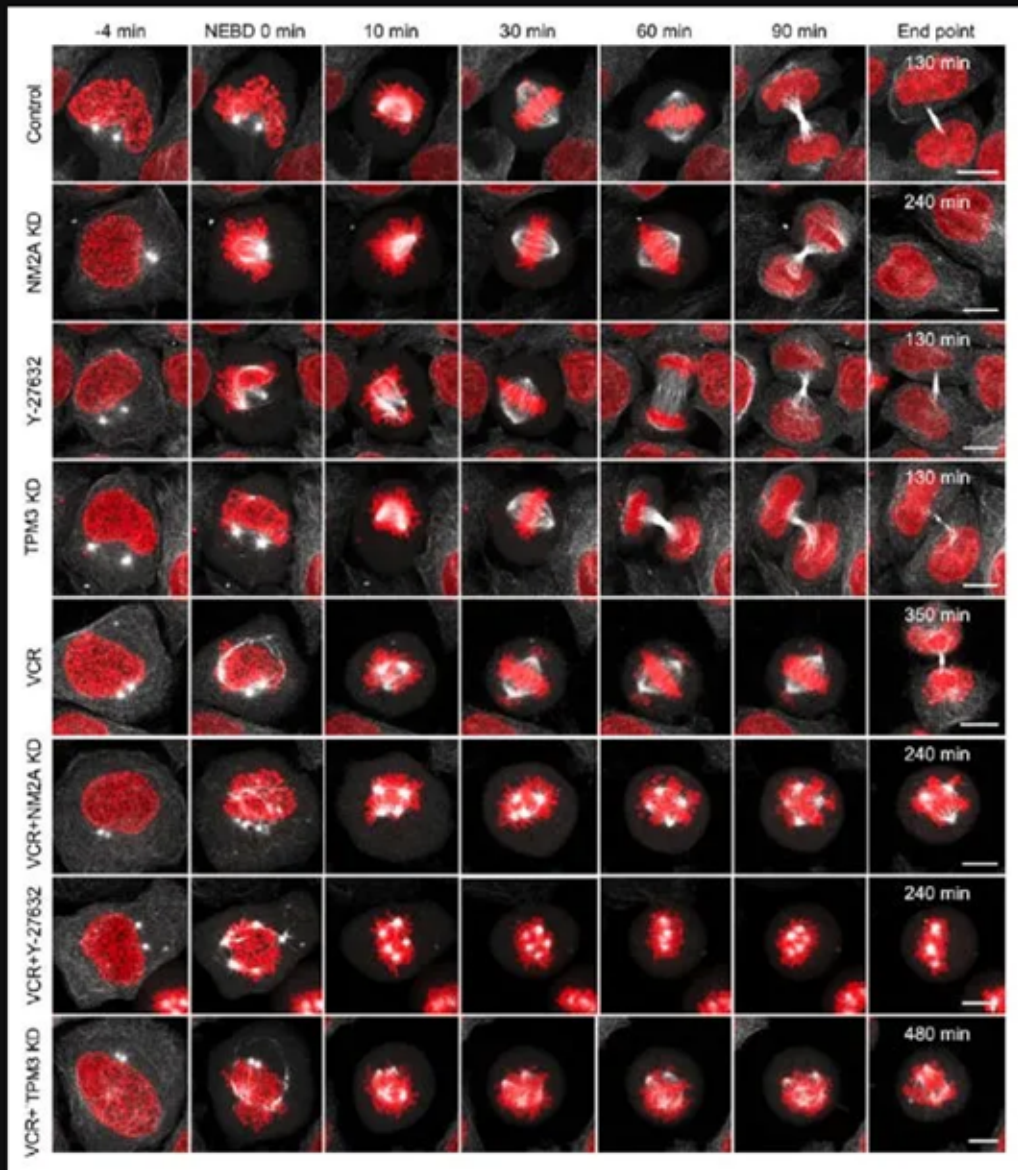
Let's look at the basis for this quantum coherence, microtubules.

The presentation at IC23 also included, **activity regulated cytoskeleton peptide proteins, synaptic adhesion molecules, DNA enhancers, multiple types of epigenetic manipulations, homeostasis, the hypothalamic-pituitary-adrenal axis, ventromedial prefrontal cortex, several types of electromagnetic and optical quantum coherences, time consciousness, controlled emotional responses** (the IC23 paper and video is on my web site ubgeoff.com) but for this spotlight we are going to focus on Microtubules.



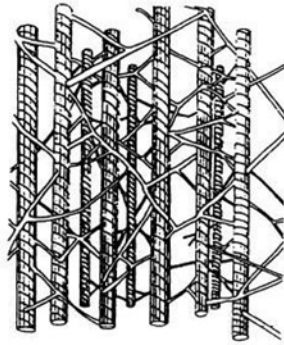
Microtubules are tiny cylinders about 20 nm in diameter (for reference human hair is 100,000 nm) that are part of a cell's cytoskeletal structure, and they also connect to neighboring cells. They function to determine cell shape, cell movement, intracellular transport of organelles, and facilitate the separation of chromosomes during mitosis (cell division).





Microtubules in white, and chromosomes in red. At low doses of chemotherapy (VCR), the microtubules can recover from fragmentation to split chromosomes equally. However, by inhibiting the mechanical properties of the edge of the cell (VCR+), the cancer cell cannot recover. Image Credit: Current Biology

Microtubules are constantly growing or shrinking in length from 0.000004 in (0.1 μm) to 0.002 in (50 μm) by a dynamically unstable process called treadmilling (technically guanosine triphosphate, hydrolysis) where the dimers (individual peptides) are lost at the negatively charged end and more are added at the positively charged "centrosome" end. The tubes are made up of 13 individual heterodimer (joined but different) tubulin polypeptide filaments, arranged in parallel around a circular salt water filled cavity. They have a distinct electrical polarity that can generate an internally coherent, self-sustaining (soliton), electromagnetic field along each of the 13 filaments, and collectively these tubules are sufficiently insulated from neighboring cells to prevent electrical interference facilitating decoherences (not being influenced by neighboring electric activities) in the order of 10^{-6} seconds.

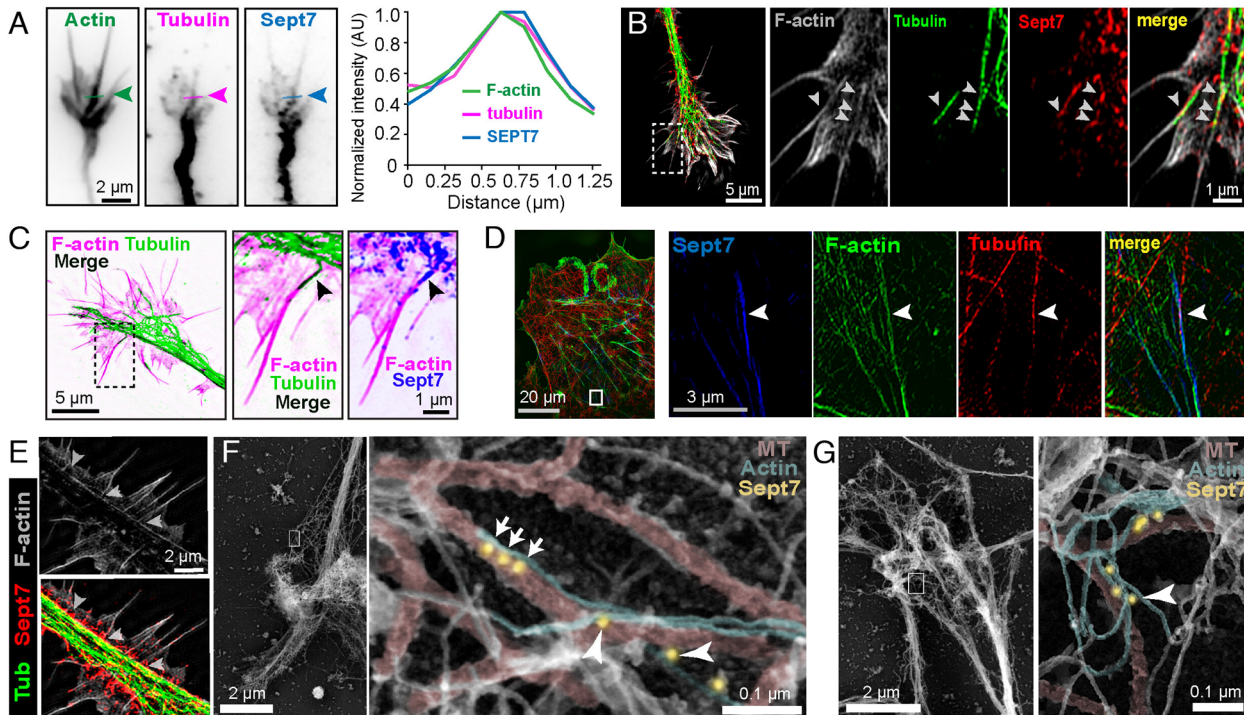


MAPs



Tubulin Dimers

(Microtubule Assisted Proteins)

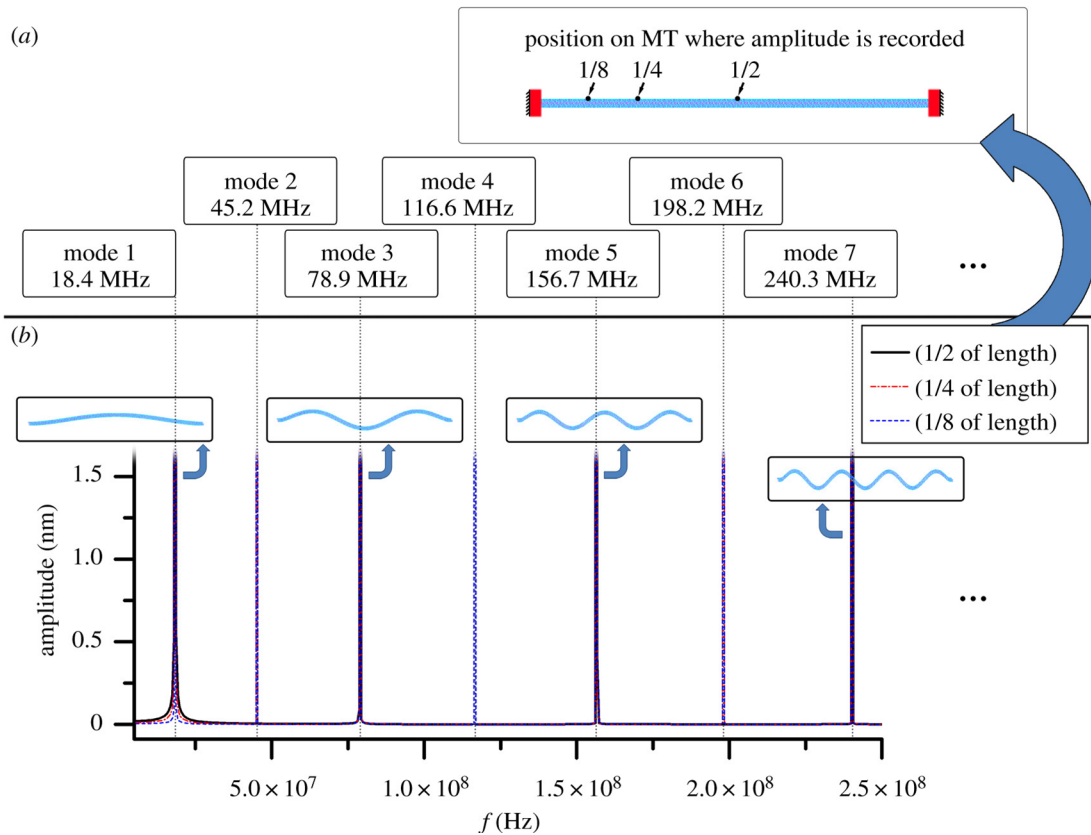


Septins and Actins (binding proteins)

Septins colocalize with overlapping microtubules and together with actin filaments facilitate intercellular crosstalk.

Microtubules are found in all eukaryotic cells (cells with our DNA in the nucleus) so this lengthening and shortening this strengthening and weakening of this cellular intercommunication process is going on throughout the whole body although we are probably most aware of its influence and its associated interconnectedness assisted by septins, actins and **microtubule assisted proteins (MAP1, MAP2 and tau proteins)** in the brain. Microtubules, being made up of crystal-like protein filaments surrounding their

electrically conductive salt water filled inner core, shuttle electrical pulses from cell to cell as the pulses move down the individual filamentary strands by a process of cascading bioluminescence and the length of the tubes cause a delay in the propagation the light signals 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, down to 708-inch wavelength) 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 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**.



Microtubule Mechanical Bending Moments

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 and shrinkage of these microtubules.

“It is to the mind of perfect poise, housed in a body of clean habits, stabilized neural energies, and balanced chemical function—when the physical, mental, and spiritual powers are in triune harmony of development—that a maximum of light and truth can be imparted...” 110:6.4

The speed of neuron transmission determines the thought cascade. If thoughts of hate and anger are faster than love and forgiveness, they dominate.

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 material bioluminescent cascade mechanism made possible by the interactions of these related resonance frequencies allows us to cohere with non-local energies. Quantum coherence could facilitate influence from the spirit of truth, God the Supreme or the universal absolute.

Because the microtubules function in both the electro-mechanical MHz frequency and the optical electro-optical ranges, this may be where we “delicately touch” (and perhaps cohere with) our morontial soul-selves and other spirit influences.

Here are a few possibilities to consider:

Perhaps morontia material is optical in nature, just above our electromechanical MHz frequency range. This could be the “... vibrations of commingled material and morontia activities ...” (189:1.1) and where material light, intellectual insight, and spirit luminosity interact. (0:6.8)

It is interesting to note that scientists can already make light behave like atoms and molecules by forcing different environments. They call this “hard light”.

Perhaps the bioluminescence of microtubules is also why Adam and Eve “gave forth a shimmer of light” as they might have had more predominant microtubules?

Perhaps the bioluminescence of the microtubules is hinting at concept of the “pilot light” of paper 107?

Perhaps this bioluminescence of the microtubules is the “light of truth”?

“Human consciousness rests gently upon the electrochemical mechanism below and delicately touches the spirit-morontia energy system above” (111:1.5)

Let’s look more closely at microtubule mechanisms.

The alternating polarities of the A and B dimers, the individual cells that make up the individual microtubule filaments, allow their electromagnetic energies to harmonize at those 12 specific electromagnetic frequencies by a related form of optical coherence. This bioluminescent optical coherence occurs when a wave travelling down one filament triggers a neighboring dimer in a nearby filament, splitting the signal into separate streams cascading down the neighboring filaments. These streams then interact with each other in a phenomenon called “super radiance” meaning that they act both collectively and coherently. This cascading takes time and the organization and patterning of these time

delays between microtubules is what allows them to function as information modifiers. **These patterns and their connectedness are further assisted by microtubule-associated proteins that act to create “nodes” further tuning” the “orchestra” in what is called “Orchestrated Objective Reduction” (OOR).** Since the dimers are on top of one another as well as being in helical rings, and since their interactions are at the quantum level (meaning they interact at multiple positions and at the same time unlike a binary computer) they are functioning as “qubits” (quantum oscillating dipoles) in these superimposed resonating rings.

Optical oscillations interact with mechanical, lower frequency (MHz) energies, due to their molecular charge separation, and at the higher optical frequencies, due to their electron jumps and nuclear spins. This “orchestra” gives us a patternable time delay between a sensory input and our reaction to that input.

It may be that tubule length and their associated time delays separates us from an animalistic immediate reaction response and it may be that tubule length determines adjutant communication abilities. It is like adding a fragment of eternity into our temporality to give us a pre-consciousness which results in the consciousness of our consciousness. The “observation of our observations.” The time delay of up to 500 milli seconds (1/2 a second) between the electrical impulses from the sensors (proprioception, vision, auditory, tactile, vestibular, interoception, and taste inputs etc.) buys us time to reflect before processing these stimulations either by neighboring cells or by the various brain lobes.

“... true spiritual experience, is the experiential realization of the cosmic reality of the observation of the observation of all this relative synthesis of the energy materials of time and space.” (112:2.12)

Microtubules 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 massive cross communication of the child brain in the Thought Changer phase, before the formation of insulative myelin sheaths formalize and speed up our thinking patterns (up to about age 25 and before we establish our “preconceived notions etc.) but microtubule cross communication is now established, maintained, and controlled by our free will-controlled thoughts.**

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.

“Every impulse of every electron, thought, or spirit is an acting unit in the whole universe.” (56:10.14)

At the quantum level, individual things act as an aspect of the whole and they derive their very definition and function from that whole. One possible overlapping modality between material, temporal, transcendental, and spiritual energies are these quantum electromagnetic energy level coherences. These probabilistic quantum level coherences have some very interesting overlaps with the timelessness of spirit energy like, time simultaneity, quantum tunnelling, quantum entanglement and action at a distance.

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.

Microtubules 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 adjuster, the Spirit of Truth, the Supreme or the Absolutes. At the quantum coherence level, our material consciousness may interact with spiritual consciousness in the equivalent of the collapse of the wave function.

“The far-flung physical universe coheres in the Isle of Paradise; the intellectual universe coheres in the God of mind, the Conjoint Actor; the spiritual universe is coherent in the personality of the Eternal Son. ... Man’s Adjuster is a fragment of God and everlastingly seeks for divine unification; it coheres with, and in, the Paradise Deity of the First Source and Center.” (2:7.7)

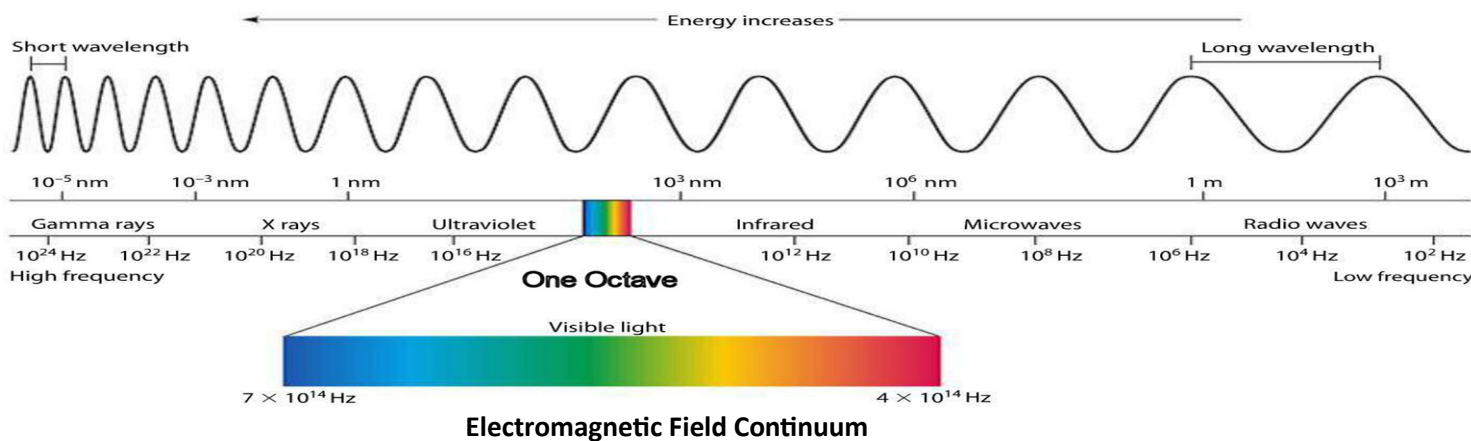
Pause?

So let’s put this in the overall electromagnetic continuum.

We live and move and have our being in an electromagnetic continuum.

“Light, heat, electricity, magnetism, chemism, energy, and matter are—in origin, nature, and destiny—one and the same thing, together with other material realities as yet undiscovered on Urantia.” (42:4.1)

According to The Urantia Book there are **100 octaves** in our local universe. Science currently is aware of **81** of them. Each of these octaves has an **inherent ability to interact when wavelengths match**. For example, a low octave interaction causes heat. Higher octaves move molecular bonds. The next higher octave moves atoms. The next, electrons.



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, morontia involves the ultraviolet range (hard light comingled with matter). Above that might be the spirit frequency ranges. Each of these ranges can be influenced by absonite and absolute patterning. If spirit energy is the high frequency stuff and it is going to interact with the finite, it needs to find ways to influence sub harmonic frequencies.

The **Thought Adjuster's challenge** then is to learn which frequencies in **his** vocabulary (likely above the 10^{24} Hz range) can find sub harmonic resonance with our low frequencies. This is where the microtubules come in with their ability to interact with both light frequencies (infrared and ultraviolet in the 10^{15} Hz range), and our material neurons functioning in the kilo Hz range. Microtubules might be down step mechanisms.

“The Thought Adjusters would like to change your feelings of fear to convictions of love and confidence; but they cannot mechanically and arbitrarily do such things; that is your task. In executing those decisions which deliver you from the fetters of fear, you literally supply the psychic fulcrum on which the Adjuster may subsequently apply a spiritual lever of uplifting and advancing illumination.” (108:5.8)

“Literally” “the psychic fulcrum” might be epigenetic “Christ like” “Spirit of Truth” patterning of microtubules. It may be that what you do in **the time between sensory input and your reaction**, your free will intervention, allows you choose to remain animally, materially conscious, or you can pattern your microtubules by co-creatively focusing on values, Christ consciousness. Your microtubules will grow and shrink as required to maintain those prechosen superconscious patterns of thinking. Evoking the “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.

The spirit of truth is **“in fact as well as in truth” (52:5.5)**

**Descartes's famous saying “I think therefore I am.” becomes:
“I think coherently, with the help of my microtubules, therefore, I am.”
And I would add ... I will be ... for an eternity.**

Thank you.