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Opinion

An Uncertain Perspective on Consciousness

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Abstract - This should be considered as an addendum to Fundamental Cosmology and Physics Beyond the Standard Model [1] and ideas from pilot/wave theory [2]. It is more accurate to say that this is a philosophical perspective that comes from common basic observations and we can give a simple demonstration of this Pilot Wave theory by showing several examples of scale invariance [3]. It is not only just at the smallest levels of quantum mechanics we can observe these properties. Consider large flocks of birds or schools of fish moving together at the human scales of perception. We may show each bird is a particle being piloted by the wave of birds in the flock. But, each bird is also a small part of the wave and has the freedom to change the waveform simultaneously, dynamically. As some might say, "That's all there is folks." A living fish or bird, with simple consciousness, can change the waveform based on internal freewill. There is something happening internally that sets life apart from that which can only be influenced externally. Life has internal dynamics. Particles interacting at the sub-atomic level have no choice in their interaction with the waveform, as this is solely influenced by its own (external) properties. Indeed there is a Markov blanket separating internal and external states. There is a repeating pattern of scale invariance when comparing brain holography theory and ADS-CFT correspondence [4], as black hole holography, as we will show.

Keywords - Uncertainty; Perception; Imagination; Decision; Hypercube; Scale invariance; Holography; Integrated information; Bio-electricity; Benzene ring; Micro-tubules; Neuron structure; Art; Science.

1 Perspective and Imagination

In our conscious experience, our perspective is almost always crystal clear, unless impaired, deliberately or otherwise. How can we possibly perceive such seemingly perfect details about an object or our environment from the actual information we receive through our senses? Our senses are really just giving fragmented, uncertain approximations about our reality [5]. The actual physical structures are just not capable of providing the clarity we think we have. The uncertainty in measurement is always there. The huge illusion is that there is no fragmentation and no uncertainty. The fuzzy image would not be useful so the brain provides a fake clear image for processing. Donald Hoffman makes an important point that there's no evolutionary advantage to perceive reality as it is. It would take way too much time and way too much energy just trying manage the almost infinite amount of information that is possible to collect [6]. We agree with his argument, there's no evolutionary advantage to perceiving reality. Additionally, Hoffman's 'network of conscious agents' can map to pilot wave theory without issue. He veers falsely instead into a philosophy of idealism, unfortunately.

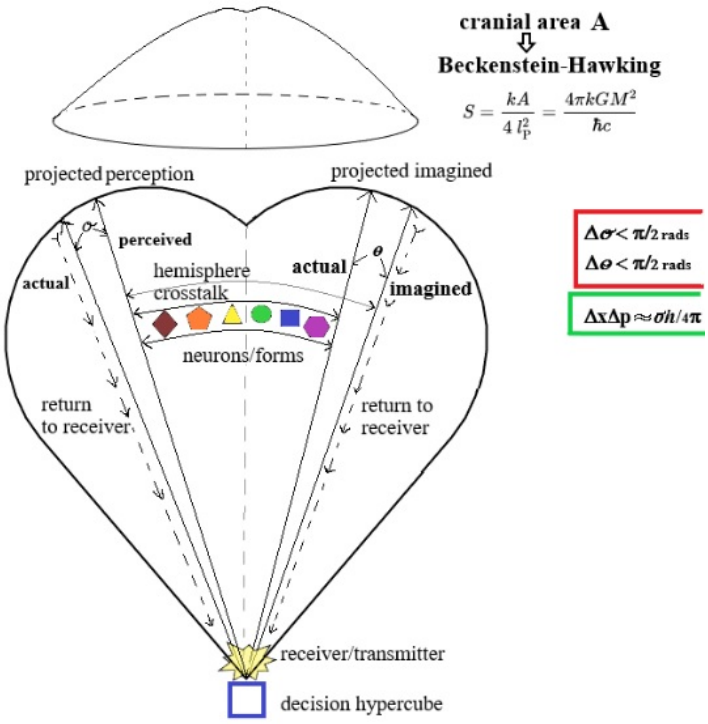

Figure 1: Uncertainty in projected perception utilized as projected imagination, relating two hemispheres and cranial area of the brain.

How does the brain provide a clear image? The brain discards this uncertainty by a simple process of post-selection [7]. The brain removes the uncertainty, but can add it back in to imagine different outcomes. These become feedback loops. Uncertainty, deliberately introduced back into our mind's eye perception by the brain is the key to imagination. We can then introduce the angle of uncertainty from the projected to the actual geometrically. In this model cranial area and volume become factors. Then we may assume any median level consciousness has the ability to discern the Form underlying the structure of everything from irreducible bits of information. This implies there might be a relation between the size of the brain and free will, which makes sense logically. Perception curls in and imagination diverges out, the vector calculus of electromagnetism is appropriate here. This perception is realized as bio-electric fields curling in to perturb the outer perception cube. It is like six bubbles pushing in on this cube with varying strength from the senses. Have you ever had an experience where it feels like the world is pushing in from all sides?

2 Decision

The utilitarian ease of using cube geometry is hard to quantify, it just always seems to work. For example you may map any decision to the six sides of the cube. Intuitively, we should see it is not possible to perform opposing actions simultaneously. But, it is possible to perform combinations of certain actions simultaneously as long as they do not oppose, so three maximum, but usually only two, and in extreme tension or stress our decisions can be limited to only one choice, e.g. fight or flight. In this case only using two sides of the six available. Not by coincidence, this specific tension is related by scale invariant properties to temperature and electroweak symmetry breaking on the scale of the Universe, as a very interesting digression, not in the scope of this perspective. Map the six sides of the cube (left, right, forward, back, up, down) and it becomes fairly obvious this is a useful tool. Also, not by coincidence, chance cubes, dice and other geometric objects have been used to simulate uncertainty and probabilities for thousands of years. It is not surprising we can manipulate photons, if we have an understanding of the big picture presented in Fundamental Cosmology and Physics Beyond the Standard Model [Nicholson]. Photons are

their own anti-particle. All that is needed is to tweak a couple of electrons with a couple of photons. It is like a boxer shadow boxing, but using photons instead of punches. Stuart Hameroff suggests a possible molecular analog to this cube as a benzene ring, with some dipolar superposition perhaps. Using the natural geometry of the benzene ring is a good idea, but his dipolar super-position mechanic may not be realizable. These molecules may move information in what are called micro-tubules [8], though this hypothesis is in need of further testing. Here, in this model, we have the same structures working somewhat differently.

What is presented here is consistent with the philosophy of dualism. If this philosophy troubles the reader you may ignore the assertions that follow in the next few sentences as they don't affect the rest of the argument. The inner cube is our consciousness pushing out from inner space, from the other place. Call it a spiritual realm of God(s), call it an Astral plane, call it a Platonic realm of Forms, call it a Universal quantum computer, call it a Universal neural network, call it The Oppoverse. It doesn't matter what you call it. This perspective seems the most logical given what is laid out here, but this will remain controversial. Most of what makes you feel like you comes from within that tiny box, as some agent pushing out at the world with only the tiny energy of a few photons. The balance of the observed electrical activity is for the fancy light, smoke, and mirror show discussed earlier.

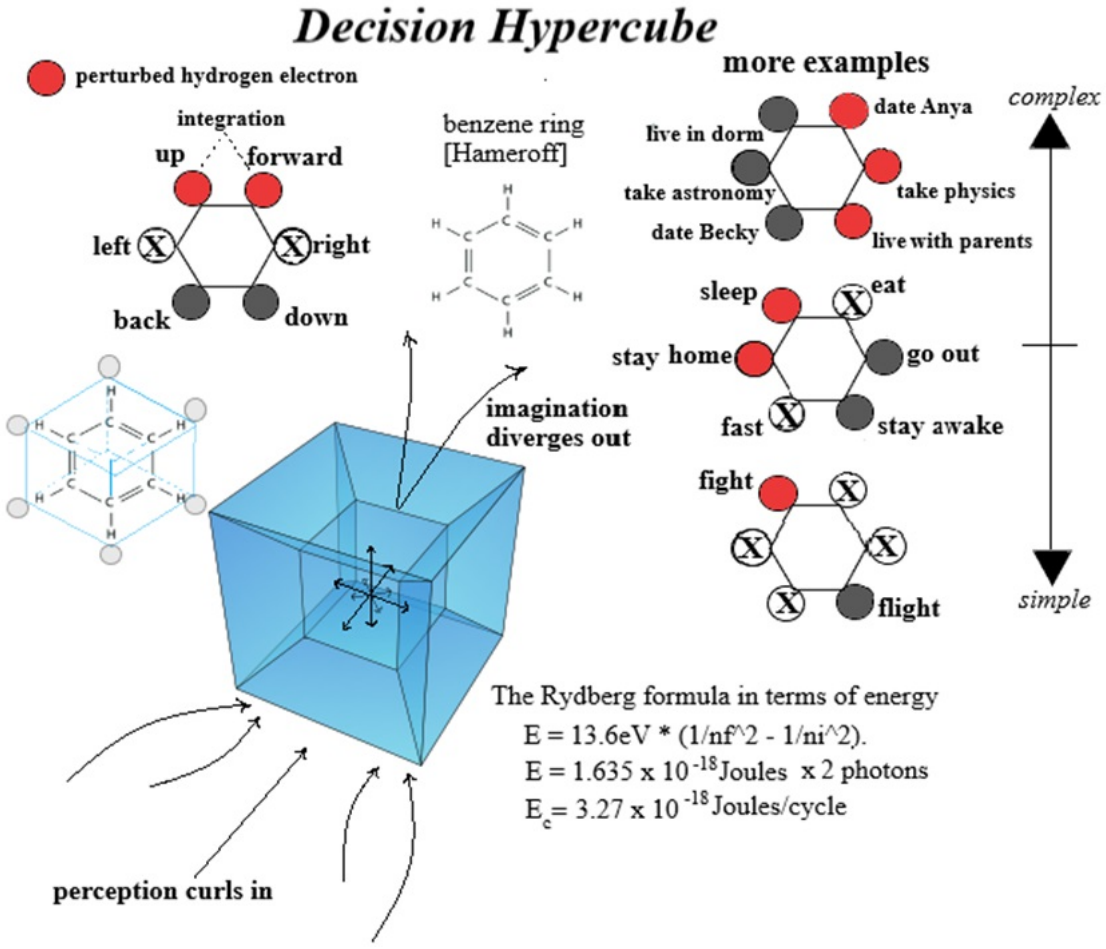

Figure 2: Mapping the sides of a cube to decisions, analogous to benzene rings and bio-electric fields. Calculating energy of consciousness with Rydberg

3 Process

We should describe brain holography as a simultaneous, dynamic process. As we discussed earlier, all senses have a sight analog. They're all collected in the brain stem through structures shaped in such ways to receive these inputs [9]. These are analog bio-electric

inputs. These inputs are the first step in brain holography as they are re-projected onto the smooth inner surface of the skull, along the outer surface of the brain using a type of photo-electric effect glow. Chromatophors are not needed. Super radiance has been observed in micro-tubules. It is like a movie screen, where the bigger, flatter, smoother and whiter it is, the better the projection resolution. The key to understanding the imagination is that we can have a projected prediction that is different from what our actual perception tells us. So that indicates another step. There is a second step where the where the signal is processed and reprocessed back and forth. There's an interaction as hemisphere cross talk where there is processing, computing and coming up with deviations to the actual and producing projections as predictions. This process continues; step one, then step two and this repeats simultaneously and dynamically just like everything else. It has been long discussed that the brain hemispheres serve different functions, and this is shown clearly in illustration and process. We can have a description of dreams based on this brain holography theory. When we sleep the senses are disconnected, the first step of perception. However, the second step continues when we dream. We keep projecting, processing and imagining and that's what dreams are. We can now fully imagine this dynamic liquid brain space. We can see remnants of that liquid space when when we're awakened from a dream, as the remnants of that dream seem like the fading ripples in a pond, as perception is turned on. There is a cymatics experiment and demonstration possible utilizing a light source, a sound source, a concave bowl of liquid which reflects and projects an image onto a screen. This is a demonstration of part of brain holography.

4 Integrating Information

Only when we confine and combine our ingredients in a cooking pot, in an ear, in an equation or in a sentence do they begin to gain meaning. Confinement then is the key to meaning. Isolating quantum wavelets so they can be combined is the key from quantum mechanics. From there, we can expand meaning with stories and novels, songs and albums and operas, and math axioms and extrapolations. We can manipulate our simple cooking ingredients into a complex multi-course meal. Equations must be really be equal or it is nonsense, one multiplied by one does not equal two. Harmony and discord we can recognize in good songs, stories, math and a fine meal. We will see how exactly this happens in a later section. Integrated information theory says, "Consciousness is the result of highly integrated information in the brain. This is the amount of Information generated by a complex of elements, above and beyond the information generated by it's parts"[10]. There is clear evidence of integrated information in the way our brain processes the image from the left and right eye to form a stereoscopic image. This integrated information contains information that the two separate inputs do not contain [11]. This stereoscopic image contains additional information, the sum is greater than its parts. However, this Integrated Information Theory also veers off into false reasoning but the basic mechanics of the theory work well enough for this purpose. Here we mix metaphors deliberately, as cross-indexing makes things easier. Here we can describe language, music, and math with a cooking metaphor. In language we have the letters, consonants and vowels which are the ingredients in the recipe for the shape of the words and sentences. In music, we have notes which are the ingredients for shape of the chords in our song. In math, we have the numbers which are the ingredients to create the geometric shapes and the equations that transform and describe them. In each case, we recognize the shape as one of a Form by integrating information from an ensemble of elements. Perhaps, this is the formalization Leibniz was looking for with his ideas about a universal system of language, based on combining simple unique elements to develop all the complexity needed. It was this conjecture that later led to the study of computational linguistics. Considering the ensemble, the scale of resolution matters and there are levels of emergence. Quantum Field Theory asserts that everything is made of waves [12], perhaps ever the integers and geometry as we propose, see below.

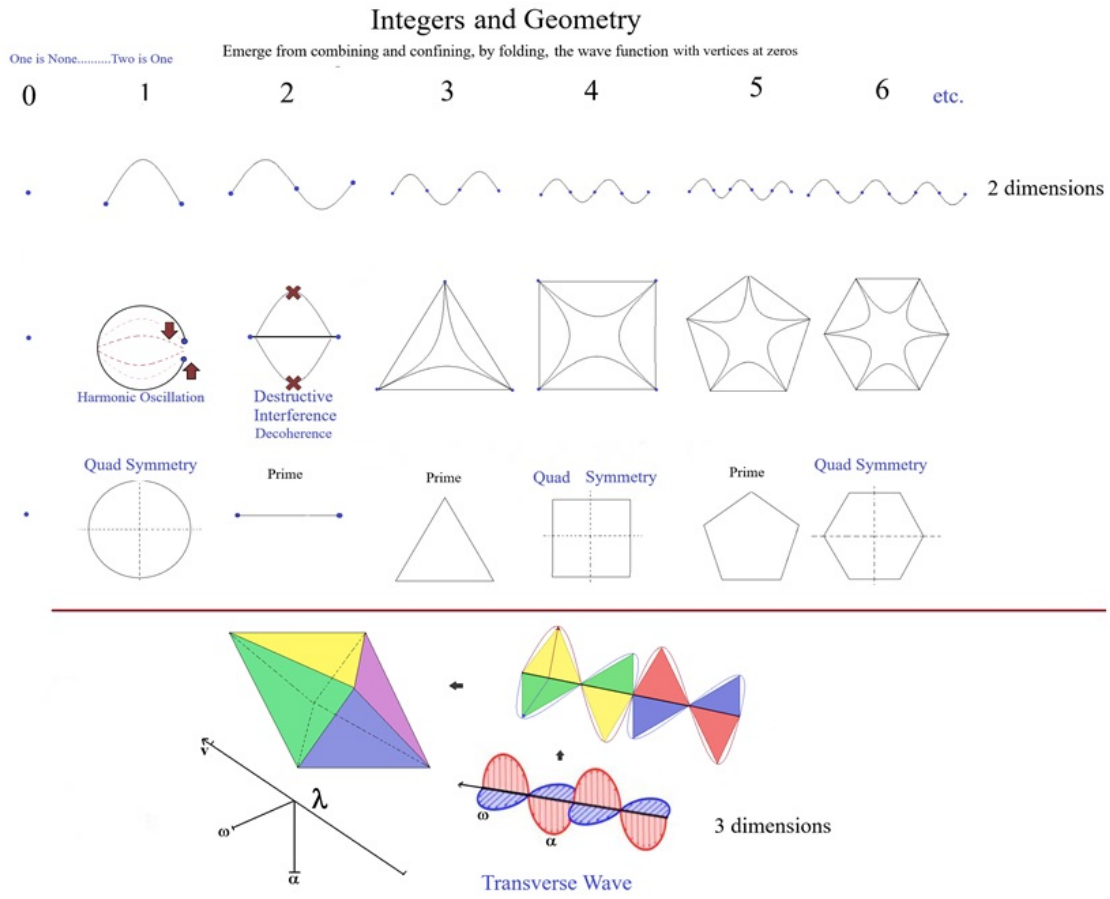

Figure 3: QFT literally, everything is made of waves in fields including information, integers and geometry. Photons as transverse waves equivalent to box waves.

Measurement and perception are an ensemble of uncertain vague impressions that are confined and combined from fractions in the brain. How can these distinct things be combined? With math, when we want to combine fractions, first we find the lowest common denominator, the LCD. In our senses sight is the largest fraction. Therefore, we can guess it's base serves as the lowest common denominator for the other senses. This makes sense, as sensory information must be first translated to transverse electromagnetic waves to be transmitted from the senses to the brain stem as usable bio-electric information. All the senses are considered different types of 'seeing" or visualizing by the brain. Sight is directly sensing electromagnetic waves with a wavelength that are in a range in the visual spectrum and converted to usable bio-electric information in the visual cortex. The inputs into the brain from the other senses are also in the form of electromagnetic waves. Psychedelic research has proven this [13]. We can confirm that under the influence of LSD or magic mushrooms, most people will experience a visual component of sound. They can see the music. Other types of synaesthesia have been shown. The Forms are visually represented as analogous to the geometric shapes and other natural geometry. Human consciousness is a special type that not only can recognize the Forms, but they can also imagine novel interpretations and then observe and judge their quality as good or bad and quantity as more or less. This is ultimately perceived as the underlying properties of the waveform with its wavelength and amplitude and from the directions of the signals.

5 Art and Science

A science will always be the best explanation for anything, right up until the instant that it isn't. If you find the waveform you can probably stop, as this is the most detailed description you can find. The sine wave, from the Fourier transform will describe the relevant quality and quantity you want to understand. It is at the root of all the sciences and art. For example,

when surveying biology, much is learned from study of the DNA helix waveform at scale, also complex protein folding and morphology are at the cutting edge of these sciences. Various forms of spectroscopy are reduced to an analysis of the waveform. The simple sine wave is really there, at the bottom, and it appears again at various scales. This scale invariance at several emergent levels tells us that everything is running with the same toolkit. Again, quantum field theory asserts that everything is made of waves, and here we assume that to be true. What is the process of art? We observe the Form. We apply uncertainty to our observation to imagine variations to the Form by adding to it or we subtracting from it. We observe the new Form. Then, we repeat this process until we are satisfied. The variation of the Form is unique to the artist. We will give examples showing how this process transforms over time from art into science. It makes sense to first start discussing the two dimensional arts of painting and drawing. These directly emerge from our description of imagination, directly imagining variations in the form of shapes based on general geometries. We have the science of geometry but the art came first as drawing and then the geometry followed from the art. Also, as a reflection of the mind's eye, art is is basically like our description of brain holography but in reverse. Remember, the concept of music as an art emerges as we perceive sound as an analog of sight. Indeed, with all our senses, including touch, smell and taste can be represented as electromagnetic waves from the Fourier transform. Perhaps, we see sounds as the shapes that they represent as a reverse photo-electric effect...as an electric-photo effect. Great music and art in general is not all about harmony, we recognize the important distinctiveness gained by introducing manageable discord. It is this contrast between harmony and discord which provides the unique flavor of the art. "The creation and destruction of harmonic and 'statistical' tensions is essential to the maintenance of compositional drama. Any composition (or improvisation) which remains consistent and 'regular' throughout is, for me, equivalent to watching a movie with only 'good guys' in it, or eating cottage cheese." Frank Zappa. Perfectly harmonious art is clean, using only purely constructive or destructive sinusoidal wave forms. These waves are musically harmonious when added in certain natural intervals: the unison 1:1, the octave 2:1, the fifth 3:2, and the fourth 4:3. These intervals are found halving or doubling the original frequency. The art of poetry came first before the sciences of philosophy and computer science. The interplay between art and science is a dance of creativity and systematic inquiry. Historically, the arts have often preceded the sciences, serving as a precursor to scientific understanding. Music, with its intrinsic patterns and structures, can be seen as an early form of mathematics, and eventually fluid dynamics as Pythagoras and Kepler theorized with their studies of harmony. Similarly, the art of cooking and the science of chemistry share a bond, with culinary arts predating the formalization of chemical principles. Sculpture and geometry, too, share this relationship, with the tangible manipulation of forms leading to the abstract concepts of spatial mathematics, later this evolves in architecture and engineering. This evolution of knowledge reflects the dynamic nature of human understanding, where artistic intuition can guide scientific discovery and innovation. We have to remember that under the Constitution of the United States of America, the political system is based on logic and reasoning and is science. This democracy came out of the enlightenment as a political science. Our previous definition of science, that it should always be the best explanation for reality right until the instant that it isn't, most certainly applies. Our science persists and we want our democracy and our form of government to persist because we know that that's the best best thing we have right now. We never throw up our hands and give up, we work it out somehow. They sat down together using philosophy, logic and reason they created the most fair form of government imaginable, and they also put in ways to change it, in case they were wrong. It should be a dynamic system as somebody's always going to find a better way.

6 Evolution

From an evolutionary perspective we want the jump to consciousness to be isolated in the smallest increment possible. Simple cells evolve and adapted to sense the electromagnetic field waveform. This is useful for determining upstream and downstream movements towards food. A simple receiver is needed to be developed first to do this. Second it is a tiny jump evolutionary to evolve extensions to the receiver which increase its accuracy and strength called antenna, to continue our radio analog. Any measurement device that measures the waveform is going to have uncertainty attached, even this simple cell. Choices are made based on a simple binary receiver, move or don't move. The next smallest evolutionary step would be to evolve a transmitter, as it is biologically the same design as a receiver but in reverse. There is usefulness in being able to produce a visual combined picture map from multiple receivers. To do this requires they be re-transmitted as bio-electricity. When they confine and combined in a brain we can recreate a virtual version of their environment. As a possible example, Cephelopods evolved an ability to project their surroundings onto the outer surface of their skin with a combination of chromatophors and skin texture altering as camouflage. They also use this ability to communicate. Maybe, this is like our brain holography process, but in reverse. The simplest form of consciousness is one that can recognize usefulness of the Forms that they observe. This is the smallest jump possible.

7 The Hard Problem

Describe any conscious experience. Taste is an appropriate example as it demonstrates the seamless integration between the smell receptors in the nose and the taste bud receptors on and around the tongue in the mind's eye perception. What does a jalapeno taste like? The molecular shapes bond to receptors of similar shape. It is a geometric mechanical process. Essentially the food molecule waveform shape, the geometry of it, is being sensed. It's not just one wave form, it is it is each individual sine wave from the Fourier transform. These forms the brain treats as a geometric language much like a processor would use a certain computing language. Our set of internal Forms are compared against our current perception as variations to this preconceived form, and each jalapeno tastes slightly different. Then we can say it's a set of forms which are confined and combined, with each one measuring essentially sensing each waveform dynamically and each time they do this it has an uncertainty attached which we can't perceive. This uncertainty is sensing can be utilized by the brain as we can imagine deviations to the form, this is imagination and creativity. When we describe another conscious experience we can get an even better grasp of what is happening. Our neurons represent our personal collection of forms as represented as neuron structures in liquid space. Nostalgia is a complex emotion, often described as a sentimental longing for the past. It's a feeling that typically arises when we encounter something that reminds us of our formative years, which can trigger a mix of happiness and melancholy. As we age, our experiences literally shape the neural pathways in our brains, reinforcing certain memories and associations. When we recall these memories, especially those tied to our sense of identity or key developmental stages, we experience nostalgia. The concept of Forms, as mentioned, relates to the philosophical idea of abstract properties or qualities that we recognize and associate with our past experiences. These can be as tangible as a the wallpaper from our childhood home or as abstract as the smell of a carnival. The brain's plasticity means that it is constantly changing and adapting, making the mapping of the structures impossible. The notion that "space is solid time, and time is liquid space" captures the fluidity of memory and consciousness, suggesting that our experiences and recollections are not fixed but are instead dynamic and evolving. Consciousness, indeed, can be likened to sound waves traveling through the 'liquid space' of the brain, with memories and emotions rippling through our neural networks, shaping our perception of the past and present. In conclusion Laplace and Lorenz should be considered. The concept of Laplace's demon, a hypothetical entity

that could predict the future if it knew the current state of all atoms, has been a subject of philosophical debate in relation to determinism and free will. In this interpretation, which introduces elements of unpredictability and non-determinism as shown, Laplace fails. These internal quantum jumps are the essence of free will. We create our own virtual Universe internally.

References

[1] Nicholson, J.G. (2021) Fundamental Cosmology and Physics Beyond the Standard Mode, to be published

[2] Bohm, David. (1952). A Suggested Interpretation of quantum theory in terms of "hidden variables", Physical Review 85, 166

[3] H.E Stanley, L.A.N Amaral, P Gopikrishnan, P.Ch Ivanov, T.H Keitt, V Plerou, Scale invariance and universality: organizing principles in complex systems, Physica A: Statistical Mechanics and its Applications, Volume 281, Issues 1–4, 2000,Pages 60-68.

[4] Hawking, S., Maldacena, J. and Strominger, A., 2001. DeSitter entropy, quantum entanglement and AdS/CFT. Journal of High Energy Physics, 2001 (05), p.001.

[5] Dodwell, P. C. (1971). On perceptual clarity. Psychological Review, 78(4), 275–289.

[6] Hoffman, D. D., Prakash, C. (2014). Objects of consciousness. Frontiers in Psychology, 5, 577

[7] Leifer, M. S., Spekkens, R. W. (2005). Pre-and post-selection paradoxes and contextuality in quantum mechanics. Physical review letters, 95(20), 200405.

[8] Hameroff, S. (2022). Consciousness, cognition and the neuronal cytoskeleton–A new paradigm needed in neuroscience. Frontiers in Molecular Neuroscience, 15, 869935.

[9] Redgrave, P., Coizet, V. (2007). Brainstem interactions with the basal ganglia. Parkinsonism and related disorders,13, S301-S305.

[10] Tononi, G. (2017). Integrated information theory of consciousness: Some ontological considerations. The Blackwell companion to consciousness, 621-633.

[11] Gonzalez, F., Perez, R. (1998). Neural mechanisms underlying stereoscopic vision. Progress in neurobiology, 55(3), 191-224.

[12] Wilczek, F. (1999) Quantum Field Theory. American Physical Society: Peskin, M. E. (2018).An introduction to quantum field theory. CRC press.

[13] Luke, D. P., Terhune, D. B. (2013). The induction of synaesthesia with chemical agents: a systematic review. Frontiers in psychology, 4, 753.

[14] Hecht, K. T. (2000). The Photoelectric Effect: Hydrogen Atom. Quantum Mechanics (pp. 606-614). Springer.