

Neurophysics of Self Awareness and Memory

Narendra Katkar

International Research Center for Fundamental Sciences (IRCFS), House No. 4-158/41, Plot Nr.41, Sai Puri, Sainikpuri, Secunderabad, 500094, Andhra Pradesh, India

Abstract All human brain parts, Biological, Bio-physiological and Biophysical, are inactive after death. Live brain is only of energetic activity. The epistemological study of pure-natural physics and fundamentals of sense perception presented to understand the foundation of Memory. With it, the electroencephalography EEG signal data of individual's waking, dream and deep sleep states are also analysed. The inspection ascertains two essential breakthroughs: A "Self induced" brain wave, related to "I" or perception self existence corresponding "Self Awareness". This signal manifests from 5 Hz and above. It is also found that the "Self Awareness" signal itself converts into earlier received signals induced by sense perception. The study also determines that the human brain does not have any information of the natural composition of the physical world.

Keywords Neurophysics, Perception, Self Awareness, Memory

1. Introduction

The following investigation concerns most fundamental nature of sense perception, memory and self awareness, relating all humans.

Few theoretical physicists have argued that classical physics is intrinsically incapable of explaining the holistic aspects of consciousness, but that quantum theory provides the missing aspects[1]. However, some physicists and philosophers consider the arguments for an important role of quantum phenomena to be unconvincing. Physicist Victor Stenger[2] characterized quantum consciousness as a "myth" having "no scientific basis" that "should take its place along with gods, unicorns and dragons."

The association of brain activity to conscious intentions was supposed to be the basis of the functional microstructure of the cerebral cortex. The nerve impulse causes the discharge of source molecules by the course of exocytosis; it was presented as a quantum mechanical model for it is based on a tunnelling process of the trigger mechanism.[3] Contemporary basic physical theory differs profoundly from classic physics on the important matter of how the consciousness of human agents enters into the structure of empirical phenomena. The new principles contradict the older idea that local mechanical processes alone can account for the structure of all observed empirical data.

Several investigations and theories relating to brain function and physics were postulated as early as in 1955, 1958 and later[4, 5].

The only acceptable point of view appears to be the one

that recognizes, both sides of reality-the quantitative and the qualitative, the physical and the psychical-as compatible with each other and can embrace them simultaneously[6]. In a complementary procedure, averaging techniques have been used to record the electrical fields generated by the brain in the willing of a movement, the promptness potential. In exquisitely designed experiments Libet has discovered that in conscious willing has a cerebral activation about 200 ms before the movement[7].

From pure basic physics point of view, a reader would be interested to know that while reading this manuscript, the words on the page are only a reflection of light. In other words, the reader receives light from the page. This reflected light induces or stimulates neuron "spike" in the brain, which re-activates the previously registered audio signals, i.e. Memory. Memory is reactivation of previously registered signals created by neuron spikes. A word, name or description of a thing already exists in Inertia in the human brain.

Except for a new word, the searched meaning is again the reflecting light of the printed word from a Dictionary page or an audio description, which is then superimposed or juxtaposed with the new word visual. This phenomenon of brain mechanism is examined in many disciples concerning memory and perception.

The Biophysical mechanism that persistently describes the neural activities of the brain and where neurons connect the nervous system to the brain, spinal cord, and the peripheral ganglia. A sensory neuron when excited by electromagnetic radiation or light or sound, other induced or external stimuli emits "spike" called electro-chemical wave which signals the brain. In fact, it is a fractional electrical charge emission can result in neurotransmission in the brain across synapses.

Normally, humans are inclined to assume that the memory functions like recording apparatus, which is a false

* Corresponding author:

Narendra.katkar@gmail.com (Narendra Katkar)

Published online at <http://journal.sapub.org/neuroscience>

Copyright © 2013 Scientific & Academic Publishing. All Rights Reserved

assumption. The molecular mechanisms essential to the induction and continuance of memory are very dynamic and consist of divergent phases covering time periods from seconds to a lifetime.[8]

The optic nerve contains retinal ganglion cell axons and support cells, leaves the eye socket orbit through the optic canal, leading towards the optic chiasm, which is situated at the base of the brain underneath the hypothalamus.[9] An axon usually transmit neuron signal, an electrical impulse away from the neuron's cell body or soma. Large numbers of axons of the optic nerve terminate in the lateral geniculate nucleus (LGN), which is the primary relay centre for visual information received from the retina and it is situated inside the thalamus of the brain[10]. The optic radiation or the geniculostriate pathway is a set of axons from relay neurons in the lateral geniculate nucleus of the thalamus suppose to transmit visual information to the visual cortex.

The critical question in cognitive neuroscience is about encoding and representation of information and mental experiences. It is not clear how the neuronal changes implicated in more intricate examples of memory, mainly declarative memory that necessitates the storage of facts and events[11].

Memory Encoding is assumed as a biological event beginning with perception, passing through the brain to hippocampus where all sensations are collected into one single experience. Encoding is accomplished with a blend of chemicals and electricity. Neurotransmitters are released when an electrical pulse crosses the synapse which connects nerve cells to other cells.[12].

From basic physics point of view, all brain activity is of sub atomic phenomenon, Whether an induced electrical discharge or internal self induced electromagnetic activity, both manifest out of atomic compositions of brain matter.

Fundamentally, there is no freely available signal, one of the atoms of sodium, potassium and calcium do discharge a small fraction of its own negative charge of the value of below 30 to above 50 milli eV.

There are about 100 billion neurons in the brain, each of which forms synapses with many other neurons. The cell fires an electrical pulse called an action potential, when the potential changes considerably. The charged atoms such as sodium, potassium and calcium direct the synaptic activity[13].

In human brain, the memory capacity is the ability to store and recollect information and experiences. Since last century, scientists have formulated multimodal theories on Memory. Studies of memory provide interdisciplinary link between Cognitive psychology and neuroscience.

Encoding of memory involves the spiking of individual neurons induced by sensory input, which persists even after the sensory input disappears. Encoding of episodic memory involves persistent changes in molecular structures that alter synaptic transmission between neurons. The persistent spiking in working memory can enhance the synaptic and cellular changes in the encoding of episodic memory.

[14, 15] Notably poor spatial resolution of Functional magnetic resonance imaging (fMRI) can directly demonstrate areas of the active brain, whereas electroencephalography (EEG) requires concentrated interpretation only to hypothesize about the areas, which are activated by a particular reaction. Mathematically, it is impossible to reconstruct a distinctive intracranial current source for a given EEG signal, as some currents produce potentials that cancel each other out, known as the inverse problem.[16]. EEG determines neural activity that occurs below the upper layers of the brain (the cortex) extremely inadequately. Further, none of the techniques used, can reach the source of brain activity or source of thought.

Hence the results are probabilistic, statistical, meaning incongruent and always in approximations in generalized assumptions.

2. Research Methodology and Research Purpose

What information of the physical world received by the brain is transduced or transmitted by neurons when charged? Where does the neurotransmission end and what form does the neurotransmitter register in the brain? In other words, what is the true nature of "Memory"?

With 10-20 system and intermediate 10% electrode positions are also used. The locations and nomenclature of these electrodes are according to the American Electroencephalographic Society. Four electrodes were given special names as T7, T8, P7, and P8. P10 which had 1, 3, 5, 7, 9, 11 for the left hemisphere which represents 10%, 20%, 30%, 40%, 50%, 60% of the Inion-to-Nasion distance correspondingly. With the understanding, that the new letters are not automatically related to the area underlying cerebral cortex. For 36 and 72 electrodes placed alternatively at F, T, C, P, O, including "A" letter positions on middle line locations on scalps of three subjects of normal life, not patients. The subjects were in the age group of 18 to 22 years. Later, a higher age group of 25 to 35 years was candidates for the EEG recordings.

These recordings were done in months of July and August 2011. The 72 electrodes data had to be rejected on account of improper placements of electrodes and too many of artifacts, which could not be properly removed.

Fortunately, there were earlier recordings available for study.

This experiment was for recollection by the subjects of three states, deep sleep, in-between waking and deep sleep, and wakeful condition. Their recollections and answers to questions were retrospectively compared and analyzed with Delta, Theta, Alpha, Beta, and Gamma waves observed in above recordings for understanding "self awareness" of individuals' vis-a-vis memory and brain frequencies.

Repeated questioning on recollection of condition in deep sleep and before and after waking up does confirm the "Self induced" signal is indeed related to old term "ego" and I exist,

including denials as well. The Self Awareness brainwave signals are active from 5Hz frequency and above and not before in 0 to 4 Hz frequencies. The Self Awareness has also a “witness” function, which then allows individual to recollect and recount. In 0 to 4 Hz frequency, the individual is in Deep Sleep and never narrates that condition.

The same can be taken as a test by readers by introspection, using this research and questioning, why don't we remember our condition in Deep Sleep and why do we remember few visuals as Dream and others not? There has to be self identifying signal, which is an objective frequency of self awareness. In deep sleep, that objective signal is missing.

3. Results

One extraordinary observation of brain wave patterns comprises frequencies between 0Hz to 40Hz. internally transmitted signal called “self-induced” has pulse energy propagation from 5Hz then 8–12 Hz, further 20-40 Hz and above.

From 0 to 12Hz to 40Hz and above appear in fully awake conditions. The “Self induced” data signals have content related to I, I exist, which is a physical self identity signal, including denials as well, as in I don't know, I don't see etc.. ‘I’ is “Self Awareness” though “I” is manmade audio signal within a language. The Self Awareness brainwave signals are active from 5Hz frequency and above. There are 1000s of sounds in the languages spoken around the world which correspond to “I”. Conversion of this *signal* into those induced signals is sensitivity to the world of information caused by receptor neurons.

Above statement means that the “self Awareness” signal has to convert further from 5 Hz frequency.

Though the reported 5 Hz EEG “signature” of the “I” is supposed to be universally accepted among neurologists and clinicians, as a part of the theta rhythm (5-7.5 Hz) recorded from the frontal and temporal regions of the brain, and regularly found in kids with behavioral disorders or, in general, pathological states of the brain, the presented result does correspond the normal humans brain function relating dream state and self awareness signal having 5-8Hz frequencies, which are recollected as the faint visuals perceived because of very low energies of **2.0678e-14 eV to 3.3085e-14 eV**.

Indeed, all humans' brain activity has 5-7Hz rhythms and increase further. This does not mean all humans have pathological or behavioral disorders.

Since it is not possible to enter deep in live brain to observe the source of brain or thought activity, an uncomplicated parallel is drawn from a Movie screen mechanism. The pictures of the physical world and the characters in effect are only light rays projected on the screen. They are the light frequencies on the film frames captured during shooting. The light from the projector passes through the film frames and converts according to matrix of dots into those light frequencies which were received during shooting,

these then in totality covering screen appear as images and action.

Similarly, the data created by laser light on a Compact Disc is stored in a series of tiny dents and planes (called “pits and lands”) and programmed in a spiral data track into the top of polycarbonate layer. The programmed information is read by an inbuilt infrared semiconductor laser beam of 780nm wavelength by a lens through the bottom of the polycarbonate layer. The reflected laser beam from “pits and lands” of a CD are converted into audio visual signals of the intensities of laser beams into different frequencies corresponding the “pits” dimension and remain original when reflecting off the “lands”

Indeed, the Self Awareness signal passes through the infinitesimal gap or hole within the atomic structure. This changes the frequency of Self Awareness into the frequency of the received energy, which created the gap. More precisely, the Self awareness frequency converts into the frequency, which correlates the dimension of the gap or hole in atomic structure. In other words, the Self signal becomes the signal of light reflected by the object perceived earlier.

This conversion and reversal to Self makes individual believe, having memory of the object.[17].

The normal brain function is millions of times conversion of Self Awareness into frequencies of objects and sounds perceived. When this activity is hyper and Self Awareness signal is not coming back or does not reverse, the individual mental health is disturbed. Such condition of Loss of Self Awareness creates health and behavioural problems.

Does the world around send any information of its own natural condition?

In the brain there is no projector, no light, no film to register external light, no screen to project the image of the physical world. Neither there is any mechanism of a compact disc for recording and reading. Yet, the registered light frequency codes in the nucleus of lateral geniculation, when reactivated, project faint image of the perceived world in visual cortex or primary visual cortex (V1). The image projected on the movie screen and in the brain correspond the light reflected from the bodies.

In other words, in visual perception, the reflected light from the physical world, including humans etc, does not carry any information. Indeed, the light after reflecting does not carry any physical, physiological, chemical, biological, molecular or atomic information of the body perceived. At the instant of impingement and reflection (in light speed) the initial frequency of light is changed, effectively, attenuates and changed frequency has the colour attribute. Colour and luminosity are the attributes of light. Even the light from self luminous bodies like the Sun and the Stars does not carry any information of matter composition of those bodies.

Neither there are “physical bodies” on the screen nor in the brain.

Fundamentally, the assumed memory of physical world is, in true sense, self imposed “False Memory”. This “false memory” held strongly or obsessively in the brain is conflict prone and creates disturbed mental conditions.

It can be inferred that this memory, only for practical reason, embedded in the day-to-day lives of individuals, helps organize life.[18].

The memory reactivations from 5Hz up to 12 Hz appear between wake-sleep states. This is the condition where an individual is neither fully awake nor in deep sleep. The narration of images, called dream, are of different intensities hence the individual can sometimes narrate those images clearly and at other times he or she cannot recollect the images.

The above two states of dream images correspond to high and low intensities of brain frequencies. Between 8 Hz and 12 Hz of brain waves do carry certain intensity of image resolution, which then, the individual recollects and narrates. The low intensity of image resolution, which appears between 5 and 8 Hz, example 7 Hz = $2.8950\text{e-}14$ eV, of brain frequency, is not clearly remembered. The individual may express indistinct recollections of some images, which are obscure visuals, manifested just after deep sleep condition. In other case, the frequencies are near to waking state as the intensity is of higher frequency, 10 Hz (actually it is $9.671\ 957\ 39(21)\ \text{Hz} = 4.1357\text{e-}14$ eV, hence the possibility of remembrance[19, 19a].

In a few other cases, due to higher frequency activity, between 8 and 12 Hz, is having energy content from $3.3085\text{e-}14\text{eV}$ to $4.9628\text{e-}14\text{eV}$ individual experiences ad-mixture of visual data which creates a non cohesive image display or dream sequence.

The energetic activity corresponding induced signals by sense perception is in fact, Consciousness is active in energetic form. In other words, "Active Consciousness is Energy".

4. Discussion

Received visual information by initial neuron signal out of an atom in the nucleus of the nerve cell, does carry with it the frequency information of externally perceived light frequencies.

The conventional description of atoms is: Sodium (Na) with Atomic Number 11 with 11 electrons and equal number of Protons including 12 Neutrons, Potassium K, and Atomic Number is 19, number of Protons and Electrons are 19 and 20 Neutrons. Chlorine Cl, Atomic Number is 17, number of Protons and Electrons are 17 and 18 Neutrons, Calcium Ca, number of Protons and Electrons are 20 with 20 Neutrons

When it is said 11, 17 or 19 and 20 Electrons, according to Quantum Mechanics, it is a "Cloud Density" corresponding to the supposed electron number.

One of the atoms of sodium, potassium and calcium releases the small fraction of its own negative charge, losing partial quantity out of electron "cloud" density of that atom.

These negative charge (neuron signals) carrying the light frequency information rest in the nucleus of lateral geniculate, with the frequency codes.

When the external stimuli re-activate these past codes, the

brain has the faint image of that physical perception. These electromagnetic frequencies are extremely weak.

Since childhood, humans are creating a self imposed embedded program through juxtapositioning descriptive audio induced (language) signals with visual light produced signal in center of brain and these reactivate as memory.

These, in pure physics terms do not represent the physical world. Indeed, the physical world does not have its own means to send its own information, either in light form or audio form.

A note of caution about mathematical or computational neuroscience, which leads to microchips and robotics research and it is extremely controversial by experimental use of implanting programmed microchip (or Nanochips) in patient's body or brain. Further there will be experiments on normal humans. All other research relating Psychology and Neuroscience is for pathological and clinical purpose. For all humans, research in understanding foundation of memory and the source of thought remains essential.

As a fundamental psychological function of brain, the audio-visual perception is taken as example to grasp the complexity of sense perception and sensory registration of memory.

The visible spectrum of the electromagnetic band, perceptible to the human eye, is around 390 to 750 nm[20]. The possible frequencies in the frequency band are in the range of 400–790 THz, which is 1.6543 eV to 3.2672 eV. The maximum sensitivity of the human eye in the green region of the visible spectrum during the day is around 555 nm = 2.2340 eV or of 540 THz = 2.2333 eV. There is a mix of multiple colours and wavelengths however the human eye responds to the visible spectrum.[21, 22, 23, 24, 25].

$$50\ \text{Hz} = 5.9958\text{e+}15\ \text{nm} = 2.0678 \times 10^{-13}\ \text{eV}$$

It is a tricky business to "convert" Hertz to voltage. Example, 50 Hz is a rate of change of voltage equal to 50 cycles of that voltage per second.

Gamma waves are neural oscillations in human brain with a frequency between 25 to 100 Hz,[26] though 40 Hz is regularly observed.[27].

$$40\ \text{Hz} = 1.6543 \times 10^{-13}\ \text{eV}$$

In case of Sound waves, the normal sound frequency appears from 250 Hz to 8-12 kHz. In human, the generally accepted standard range of audible frequencies is 20 to 20,000 Hz.

The frequencies and wavelengths of spectral colours appear as: Red 400–484 THz 620–750 nm, orange 484–508 THz 590–620 nm, yellow 508–526 THz 570–590 nm, green 526–606 THz 495–570 nm, cyan 606–630 THz 476–495 nm, blue 631–668 THz 450–475 nm and violet 668–789 THz 380–450 nm.

Above frequencies are not permanent, in nature, the light reflects from millions of natural bodies and man made structures, which makes it loose its energy content and change in frequency.

The reflected light has to pass through many biophysical layers of human eye. The mechanism of visual perception by

human eye is well known. The light in millions of frequencies from the physical environment strikes thin blanket of liquid moisture (tears) at the frontage of the eye.

Passing through the material composition of human eye, the optic nerve sends the visual signals to the visual centre in the back of the brain where the experience of vision occurs. The light, reflected from an object, entering the eye, focused, and transformed into electro-chemical signals arrives into the brain and construed as an image.

“Attenuation”, is a decrease in property or gradual loss in intensity as energy wave flux or a beam of particles, as the distance from the source increases, due to interaction with medium, scattering, spreading in three dimensions, even without interaction.

Hence, the initial energy of Neuron Spike during its trajectory to the lateral geniculation nucleus in human brain attenuates considerably, i.e. decrease in the voltage field with the square of distance it travels, the incoming signal itself reaches a Zero Frequency (ZF) or in **Inertial** condition.

If looked further and deeper, it reaches in between atomic composition inside the cell nucleus. Within the atomic composition, the incoming signal is “**Energy in Rest**”, creating an infinitesimal gap or hole within the atomic structure.

Any source of energetic activity has a condition of inactivity, called **Energy in Inertia**, which can be called “Energy in Zero Frequency” (EZF).

The supposed memory of physical world was tested simply by asking the individual to walk in one's own house by closed eyes, where every object is in memory held by the individual as his/her own known physical environment.

The individual could not walk freely more than three steps in bedroom to bathroom or in sitting (drawing) room to kitchen or in other places.

This establishes that there really is “No Information of Physical World” in the brain and it also elucidated that by open eyes, the light frequencies from each object of one's own environment invoked the previously available frequency codes, giving individual a sense of assurance of having “knowledge” of physical surrounding to move freely.

The theoretical proposition as, “The Brain Is Both Neurocomputer and Quantum Computer” by Stuart R. Hameroff[28, 29] and related ideas are already published.[30, 31, 32, 33]. These thoughts are more about extrinsic nature and not in-depth intrinsic.

With frequency codes in Zero state since early life, infancy, childhood and adult, the individual brain is encoded with billions of frequency signals created by incoming electromagnetic audio visual frequencies, also by other sensory perception.

It won't be a too farfetched conclusion, if it is acknowledged that the human being is living with a self imposed program, making it a “Naturobot”.

The five sense organs are the programming tools[34].

In human beings, the neural oscillation of the brain waves are investigated by electroencephalography (EEG) called invasive detection through single-unit recordings.

Intracellular neural oscillations are observed in sub threshold of the membrane potential of the waves,[35]. Yet another device, Magneto Encephalography (MEG) is used to observe synchronous activity of large numbers of neurons.

According to basic physics mentioned earlier, the initial charge emission does in fact activate or excites other atoms in immediate vicinity, which appears as a network of Neurons activity.

Whichever may be the cell, as described in five divisions of neurons within the retina, which are photoreceptor cells, bipolar cells, ganglion cells, horizontal cells, and amacrine cells. The basic circuitry of the retina suppose to incorporate a three-neuron chain consisting of the photoreceptor, a rod or cone, bipolar cell, and the ganglion cell and the first action potential seems to occur in the retinal ganglion cell, which is the direct path to transmit the visual information to the brain,[36, 37,], which again must be understood as a subatomic emission out of one of the atoms in the cell composition, either out of calcium atom or potassium or sodium atom.

Samples of EEG signals show distribution of electromagnetic radiation of energy emissions. The amounts of energy observed are delta waves. A delta wave produced from deep sleep called slow-wave sleep is a high amplitude brain wave with a frequency of oscillation between 0–4 hertz[38, 39,] and Alpha of 8–12 Hz detected strongest neural activity in the occipital lobe during awake and relaxed condition. Theta wave is of 4–8 Hz[40], Beta is of 13–30 Hz and Gamma waves in 30–70 to 100 Hz frequency band[41, 42]. The brain activity or Mu waves are electromagnetic oscillations in the frequency range of 8–13 Hz and appear in bursts of at 9–11 Hz.[43, 44].

Since most of these signals are visual and audio frequencies, the observed energy emissions are indeed electromagnetic light phenomenon. The observed data on surface level of the brain are the after effects of internal initial emissions.

Normally, adult human EEG signal is about 10 μ V to 100 μ V (millionth of a Volt) in amplitude when measured from the scalp[45]. It is about 10–20 mV (millivolt) when measured from subdural electrodes.

Electrocorticography (ECoG), subdural electrodes or intracranial EEG (iEEG), is the practice of using electrodes placed directly on the exposed surface of the brain to record electrical activity from the cerebral cortex.

The extreme low energies of 10 to 100 micro volt and 10 to 20 milli volt have a very short life time of a few millionth of a second to few milli seconds, which are not measurable from inside the brain structure, neither the trajectories of the induced signals of 0.03 to 0.05 eV can be observed. Because voltage fields drops on its trajectory, there is gradual loss of extrinsic energy content. The activity from deeper level is not detectable[46].

All memory activation is dependent on a stimulus. A single external stimulus or even a self induced becomes the cause of re-activation of latent memory. In fact, the Self Awareness signal converts into that inactive signal.

The signal travels around 3 to 5 centimetres inside brain and terminates or dissipates in atomic structure, creating infinitesimal hole. Fortunately, the signals dissipate, otherwise they will excite billions of atoms, which in return will radiate and brain will become degenerate and burn off. In such case, Human being, after developing five senses, will not survive, even child hood.

In all biophysical investigations, there is an assumption of what is called "Memory", relates to biological material, generally cellular and molecular matter. Though, it is known that the activity in brain is of electrical emission and electromagnetic frequencies, which are subatomic phenomenon. All bio-physiological observations are "after effects" of source activity from inner most part of the brain, which is beyond or deeper than cellular or molecular level and further deep from atomic composition. It is also crucial to understand that there is no perception of received electrical signal by the individual brain; neither there is perception of where that signal terminates.

The cellular theories will lead to misconceptions and absurd experiments of extracting cells of a Dead person's brain and injecting into a Living brain, to see, if the dead persons Memory can be activated or induced in living brain.

5. Conclusions

Human brain parts are inactive after death. Biology, Bio-physiology and Biophysics has no role. Live brain was only energetic activity.

Above research concerns all humans. It would be recommended that certain basic understanding of this research is taken as mandatory course after college and as specialization after graduation, and should be included in regular curriculum. Doctoral and post doctoral research is always possible. A specialized training session should also be organized for all ranks of military cadre.

Some part of brain research should be taken for further research, example, to discover the "stimulus" of disturbing (memory in patients) frequencies and to correct by creating new innocuous stimulus from natural environment with non conformist attitude.

The brain has only light and sound frequency codes, carried by induced signals, including stimulations from other senses, which travel through atomic composition of brain material and dissipate, creating tiny gaps or holes in atomic structure. These are within the cellular and molecular composition in the interior of the brain.

The true nature of Memory is the transformation or conversions of Self Awareness signal into those frequencies by passing through the infinitesimal gap in atomic structure created by earlier received signals.

Indeed, in human brain, there is only one Self Awareness signal of frequencies between 5Hz to 100Hz, which transforms itself, millions of times into previously received signals.

It is possible that Self Awareness signal does exist below

5 Hz, in 1 to 4Hz frequencies. The better understanding of this phenomenon would be that the Self Awareness in 1 to 4Hz is subjective and not converting in objective signals. Above 5Hz, the Self Awareness is transforming in objective frequencies and also having subjective function as witnessing, which declares, I exist, I see, I know etc; and even in the negations.

The research continues for keeping Self Awareness Frequency cut-off from conversion into objective signals during wakeful state, which will lead to Ultra or Suprasensory Perception (if mastery achieved).

The human brain does not have any information of the natural composition of the physical world; neither the objects of perception send any information of their own natural and original composition. The names and other description is man's invention in languages, which are sound frequencies. When these two aspects are held or juxtaposed in brain, the individual thinks that he or she knows the object.

Apart from practical purpose for self orientation, this "memory" is not true knowledge.

A little deeper understanding of human brain function reveals that the conventional term called "Memory" does not exist. The active human brain is an extraordinary "Game of Energy".

Collaboration and funding could be encouraging for above research, including research in creating devices and communications systems, which would work on above presented brain frequencies.

REFERENCES

- [1] Searle, John, "The Mystery of Consciousness" The New York Review of Books. pp. 53-88. 1997.
- [2] Stenger, Victor, "The Myth of Quantum Consciousness", *The Humanist* Vol 53 No 3, 1992. pp. 13-15[1]
- [3] Schwartz, M. Jeffrey Henry P. Stapp and Mario Beauregard: Quantum physics in neuroscience and psychology: a neurophysical model of mind-brain interaction: Phil. Trans. R. Soc. B, 2004.
- [4] Bohm, D. J. A new theory of the relationship of mind to matter. Phil. Psychol. 3, 271-286. Bohm, D. & Hiley, D. J. 1993 The undivided universe. London: Routledge. 1990.
- [5] Bohr, N. "Atomic physics and human knowledge", New York: Wiley. Bohr, N. "Essays on atomic physics and human knowledge", New York: Wiley. 1958, 1963
- [6] Pauli, Wolfgang, the influence of archetypal ideas on the scientific theories of Kepler. The Interpretation of nature and the psyche. London: Routledge & Kegan Paul, 1955
- [7] General discussion: Roland, P. E., Larsen, B., Lassen, N. A. & Skinhold, E. J. Neurophysiol. 43, 118-136, 1980
- [8] Schwarzel, M. & Muller, U., "Dynamic Memory Networks", "Cellular and Molecular Life Science", 2006
- [9] Colman, Andrew M. (*Oxford Dictionary of Psychology* (2nd

- ed.). Oxford University Press. p. 530. ISBN 0-19-861035-1, 2006
- [10] Goodale, M.A. & Milner, A.D. Sight unseen: An exploration of conscious and unconscious vision. Oxford: Oxford University Press. 2004.
- [11] Mohs, Richard, C. "How Human Memory Works." 08 May 2007. HowStuffWorks.com. <<http://health.howstuffworks.com/human-memory.htm>> 23 February 2010.
- [12] ScienceDaily, Mimicking the Brain-In Silicon: New Computer Chip Models How Neurons Communicate With Each Other at Synapses, 2011
- [13] Jensen, O. and Lisman, J.E. Hippocampal sequence-encoding driven by a cortical multi-item working memory buffer. *Trends in Neuroscience*, 26, 696-705.2005
- [14] Fransen, E., Alonso, A.A. and Hasselmo, M.E. "simulations of the role of the muscarinic-activated calcium-sensitive non-specific cation current I(NCM) in entorhinal neuronal activity during delayed matching tasks". *Journal of neuroscience*, 22, 1081-1097.2002
- [15] Niedermeyer E. and da Silva F.L. *Electroencephalography: Basic Principles, Clinical Applications, and Related Fields*. Lippincott Williams & Wilkins. 2004
- [16] Cecie Starr: *Biology: Concepts and Applications*. Thomson Brooks/Cole. ISBN 053446226X. 2005 http://books.google.com/?id=RtSpGV_P1_0C&pg=PA94
- [17] Katkar, Narendra (): Science of self awareness and memory, *International Journal of Research Studies in Psychology*, January 2013, Volume 2 Number 1, 69-77 , 2013. <http://www.consortiacademia.org/index.php/ijrsp/article/view/110>
- [18] Katkar, Narendra (): Science of self awareness and memory, *International Journal of Research Studies in Psychology*, January 2013, Volume 2 Number 1, 69-77 , 2013. <http://www.consortiacademia.org/index.php/ijrsp/article/view/110>
- [19] Katkar, Narendra (): Science of self awareness and memory, *International Journal of Research Studies in Psychology*, January 2013, Volume 2 Number 1, 69-77 , 2013. <http://www.consortiacademia.org/index.php/ijrsp/article/view/110> (19a) <http://physics.nist.gov/cuu/Constants/energy.htm> 1
- [20] Cuthill, Innes C. "Ultraviolet vision in birds". In Peter J.B. Slater. *Advances in the Study of Behavior*. 29. Oxford, England: Academic Press. p. 161. 1997.
- [21] Cuthill, Innes C (1997). "Ultraviolet vision in birds". In Peter J.B. Slater. *Advances in the Study of Behavior*. 29. Oxford, England: Academic Press. p. 161. 1997.
- [22] Coffey, Peter: *The Science of Logic: An Inquiry Into the Principles of Accurate Thought*. Longmans.1912
- [23] Jamieson, Barrie G. M. (2007). *Reproductive Biology and Phylogeny of Birds*. Charlottesville VA: University of Virginia. p. 128. 2007.
- [24] Thomas J. Bruno, Paris D. N. Svoronos. *CRC Handbook of Fundamental Spectroscopic Correlation Charts*. CRC Press, 2005.
- [25] Reproducing Visible Spectra. Repairfaq.org. Retrieved on 2011
- [26] Hughes JR.: Gamma, fast, and ultrafast waves of the brain: their relationships with epilepsy and behavior. *Epilepsy Behav.* Jul;13(1):25-31. 2008
- [27] Ian Gold (1999). "Does 40-Hz oscillation play a role in visual consciousness?" *Consciousness and Cognition* 8 (2): 186–195.1999
- [28] Hagan, S., Hameroff, S., & Tuszynski, J.: Quantum computation in brain microtubules? Decoherence and biological feasibility. *Physical Reviews E*, 65, 061–901.2002
- [29] Hameroff, R.Stuart, "The Brain Is Both Neurocomputer and Quantum Computer" *Cognitive Science* 31 1035–1045,2007
- [30] Hameroff, S. R., & Penrose, R.: Conscious events as orchestrated spacetime selections, *Journal of Consciousness Studies*, 3, 36–53. 1996a
- [31] Hameroff, S. R., & Penrose, R. Orchestrated reduction of quantum coherence in brain microtubules: A model for consciousness. 1996b.
- [32] Hameroff, S.R., A. W. Kaszniak, & A. C. Scott: "Toward a science of consciousness II: The second Tucson discussions and debates", Cambridge, MA: MIT Press.1996
- [33] Buzsaki, György: "Cycle 9, The Gamma Buzz". *Rhythms of the brain*. Oxford. 2006
- [34] Purves, D., Augustine, G.J., Fitzpatrick, D., Hall, W.C., LaMantia, A., McNamara, J.O., White, L.E. *Neuroscience*. Fourth edition. (2008). Sinauer Associates, Sunderland, Mass. Print.
- [35] Katkar, Narendra (): Science of self awareness and memory, *International Journal of Research Studies in Psychology*, January 2013, Volume 2 Number 1, 69-77 , 2013. <http://www.consortiacademia.org/index.php/ijrsp/article/view/110>
- [36] Ramachandran, V. S. and S. Blakeslee (1998), *Phantoms in the brain: Probing the mysteries of the human mind*. William Morrow & Company, 1998.
- [37] Walker, Peter (1999). *Chambers dictionary of science and technology*. Edinburgh: Chambers. p. 312. 1999.
- [38] Kirmizialsan, E.; Bayraktaroglu, Z.; Gurvit, H.; Keskin, Y.; Emre, M.; Demiralp, T. "Comparative analysis of event-related potentials during Go/NoGo and CPT: Decomposition of electrophysiological markers of response inhibition and sustained attention". *Brain Research* 1104 (1): 114–128,2006
- [39] Cantero JL, Atienza M, Stickgold R, Kahana MJ, Madsen JR, Kocsis B: "Sleep-dependent theta oscillations in the human hippocampus and neocortex". *JOURNAL Neuroscience* 23 (34): 10897–903.2003
- [40] Berger H; Gray, CM. "Über das Elektroenkephalogramm des Menschen". *Arch Psychiatr Nervenkrankheit* 87: 527–570. 1929.
- [41] Fries P , "A mechanism for cognitive dynamics: neuronal communication through neuronal coherence". *TICS* 9: 474–480. 2001
- [42] Llinas R, Yarom Y (1986). "Oscillatory properties of guinea-pig inferior olivary neurones and their pharmacological modulation: an in vitro study". *J Physiol* 376:

- 163–182. 1986
- [43] Oberman LM, Hubbard EM, McCleery JP, Altschuler EL, Ramachandran VS, Pineda JA. "EEG evidence for mirror neuron dysfunction in autism spectrum disorders". *Cognitive Brain Research*. Jul; 24(2):190-8,2005
- [44] Churchland P, Braintrust, Princeton University Press, Chapter 6, Page 156,2011
- [45] Aurlen H., Gjerde I.O., Aarseth J. H., Karlsen B., Skeidsvoll H., Gilhus N. E. "EEG background activity described by a large computerized database." *Clinical Neurophysiology* 115 (3): 665–673,2004
- [46] Klein, S.; Thorne, B. M. *Biological psychology*. New York, N.Y.: Worth. 2006.