IOSR Journal of Applied Physics (IOSR-JAP)
e-ISSN: 2278-4861.Volume 11, Issue 1 Ser. I (Jan. – Feb. 2019), PP 12-40
www.iosrjournals.org

Revised Standard Model of Physics and Origin of Biology

Dr Narayan Kumar Bhadra
Lakshmipur Swamiji Seva Sangh High School (H.S),
Gobardanga, 24 Parganas(N), West Bengal, India.

Abstract: *We study with a new conception beyond the standard model physics and about the formation of biological molecules/atoms. Our physical universe appeared by a continuous symmetry breaking of the new energy sources from 'Big Rip' Singularity[i.e. when space-time(here we consider the square of the Einstein's real space & time of the physical unfolded universe i.e., -R^2)is infinity in another phase] to the "Super Unified Gaussian Energy Group SU(11)"(that means considering the Revised Standard Model of Physics) then GUT the "Unified Gaussian Energy Group SU(5)"[i.e., the present Standard Model of Physics], i.e. in a "Particular Physical Universe" (called a narrower universe) [there may be created several type of particular " Physical Universe" in the ocean(filled with new energy sources explained details in my previous articles) of the wider universe which infinitely largest].These class of symmetry group starting from Big-Rip singularity where energy pressure and density exists[it was shown in my article "The Complex Quantum and Classical Pseudo-Tachyonic Universe", IOSR Journal of Mathematics (IOSR-JM) e-ISSN: 2278-5728,p-ISSN: 2319-765X, Volume 8, Issue 3 (Sep. - Oct. 2013), PP 15-32 www.iosrjournals.org)] and can be expressed mathematically(by using lie-algebra) as SU(5) ⊃ SU (3) × SU(2) × U(1); SU(11) ⊃ SU (5) × SU(6) × U(1); SU (23) ⊃ SU (12) × SU (11) ×U (1); SU (47) ⊃ SU(24) × SU (23) × U (1); .....so on.*
Thus we assumed that our physical universe appeared by the continuous phase-like transition creating several new energies(compared as like Gas-Vapor-Liquid states) and actually unfolded with the symmetry breaking of the Super Unified Gaussian Energy Group SU(11) [⊃ SU (6) × SU(5) × U(1)]leaving with new energy sources SU(6), called latent energy groups as explained details in my previous articles, and SU(5) [⊃ SU (3) × SU(2) × U(1)], the Gaussian Unified Energy group (GUT) and the electrodynamics U(1), which are inevitable arises particles that have the characteristics of a magnetic monopole. Monopoles are highly stable particles and once created they are not destructible. And so they would survive as relics to the present epoch.
Again our all experiments and measurements or truths/believes are mainly on the basis of "Standard Model of Physics" or "General Relativity Theory" that means any calculation or experiments made on the basis of matter universe(i.e., 4-dimensional universe where so called space-time-matter exists, although it is called real that means only for a particular purpose that counting for a complete matter body like physical universes, cluster, galaxies, stars, humans, lives, trees,…etc.) formed by the Unified Gaussian Energy Group SU(5), we called it's a narrower universe i.e., a particular physical universe where expansion and contraction both may be occurred simultaneously within the speed of light for a particular observer and hence Lorentz transformation, Time dilation,…..etc. Violations may be occurred when we go beyond the "Standard Model of Physics" of SU(5) to the "Revised Standard Model of Physics" i.e., SU(11), thus outside the physical universe, in the case of the "Wider Universe" where the energy particles were found in another phase. We illustrate the scenario with an example that when water decomposed into Hydrogen and Oxygen, the character of water are far different from the characters of hydrogen and oxygen.
Again, it was considered that the human brain and its mental aspects are associated with classical brain physiology and are also part of a quantum physical universe. The human brain conceived as an interfacing organ that not only produces mind and consciousness but also receives information. The brain or its parts of the brain are conceived as an interference hologram of incoming data and already existing data which equivalent to the subject's memory.
Thus our consciousness or intelligence is a part of the universal consciousness or intelligence.
The animate and inanimate bodies are developed or expanded in the similar manner. The physical universe expanded from so called Big-Bang singularity scheduled by the conscious energy groups SU(12), SU(6),…..etc. but the situations created slowly after the symmetry breaking of SU(23), then SU(11)……etc. then by rapidly unfolded matter energies by the symmetry breaking of the Unified Gaussian Group SU(5) by exchanging the bosons of the latent energy group of SU(6) into the bosons of SU(5) in the theory of the Super Unified Gaussian Group SU(11) and then J_k–bosons of conscious energies SU(6) are therefore tightly binding the quark-likes particles and then gradually formed protons-likes, neutron-likes,….etc. quasi-particles having masses may have been five times

that of the usual protons, neutrons,….etc or having much more new unknown particles (which are very much medical relevance for better and critical treatments) created other than Hadrons, Hyperons, Nucleons,…etc. of SU(5) and after then those unknown particles may gradually increasing their strengths like as increasing the atomic numbers of usual matter atoms and hence we may found heavy bio-molecular living matter atoms etc. and then created multiple bio-molecular cells combining with nonliving matter atoms. Thus living matters always created by the energies of the group of SU(6) together with all other atoms/elements/compound elements/mainly covalence-compounds….etc. which was formed only after the symmetry breaking of the nonliving matter energy groups of SU(5) as, encountered in condensed matter physics, e.g., in the description of the conduction electron sea, excitons, magnons, polarons, polaritons, etc. (Ashcroft & Mermin, 1976). This is very important in view of the potential importance of quantum effects in biology and in consciousness where not only are systems of many particles considered, but they function at high temperatures compared to those typically encountered in quantum physics then so called various kind of complex living cell bodies.

It should right that the actual real time measurement or calculation counting from the symmetry breaking of the Super Unified Energy Group SU(11) instead of the symmetry breaking of the Unified Energy Group (GUT) of SU(5). For lives, the real time was measured in two halves first from the fertilization by their parents(actual counting of time started) and second from the birth till to the death, although for our age(time) calculations, we ignore the first half similarly for the real time calculations of our physical universe we ignore the first half that means from the symmetry breaking of SU(11)up to the next symmetry breaking of SU(5)[although material substances created by the Unified Gaussian Group SU(5) by the directions of SU(6) with a suitable situations when it is possible to create bio-molecules that means all then chemical elements created from hydrogen, nitrogen, carbon,…etc. and with heavier elements or compound elements created by the quarks were tightly binding with gluons etc. of SU(5), and thus inanimate particles are then ready for the creation of the animates particles that means the situation when we consider to produce biological molecules or other units like single live cell then gradually multiple cells with DNA/RNA pairs, chromosome pairs,….etc. where most of the organic compounds in which are mainly constructed by the co-valence compounds or compositions or constituted like polymers which are also tightly binding by the J_k–bosons(latently)[details of J_k–bosons explained in my previous articles] of SU(6) and creating strong electromagnetic forces[in theory of SU(11) where the latent energy group of SU(6) are created so strong forces relatively the weak forces of SU(5)] (that means in comparison to the chemical elements or compounds elements of atoms/molecules etc. which are constructed by the quarks binding with gluons ….etc. are weaker than some of the unknown new particles formed by the quarks-likes binding with J_k–bosons) or creating a strong current SU(6) in the frame-work of SU(6) $\times$ U(1) like the weak force SU(2) created a weak current in the frame-work of SU(2) $\times$ U(1) are ready to dynamical situations within the living matters or cells or lives. Our physical universe expanded up to Big-Break singularity like by the directional commands with the energy group SU(6)[by exchanging 30-number of bosons of SU(6) into the 30-number of bosons of SU(5) or vice-versa by exchanging the J-bosons of SU(11)] created like so called consciousness together with all other leaving new energy sources SU(12), SU(24),…..etc. Thus we may be assumed that consciousness is not only in animates but also for inanimate (where quarks are tightly binding by the gluons forming protons, neutrons, electrons,…. etc. for nonliving matters) for which unfolded in a suitable situations like earth(where quark-like particles are tightly binding by the J_k–bosons of SU(6) for living matters) and the created residue unknown new particles other than usual particles (that means as like protons, neutrons, electrons,…..etc. which are formed by quarks with gluons) are always remained within the living and nonliving elements or compound elements or covalence compounds or polymers…..etc. as quantum gravity and everywhere which are called as vacant spaces within our universe. The above mentioned processes are always occurred continuously in the wider universe which is infinitely larges with other new energy sources. Hence in quantum theories of consciousness, it is suggested that consciousness is a fundamental property of the universe.

Energies of SU(6) created quantum gravity as well as gravitational forces which are required for the formation of a complete body with definite shape for living and nonliving matter bodies, like stars with its planets,…. etc. and living bodies with its parts,…. etc. and then so called vacant spaces are properly filled with the strong new forces of SU(6) around us and also formed like living cells with organic and inorganic elements or compounds…. etc. mainly constructed by the chemical co-valence compounds (carbon based like in earth, another planet may be silicon based etc., because carbon and silicon belongs to the same group in our periodic table) that means which

are more flexible for creating several angled atomic bonds other than rigid crystal-likes and then it is bindings with cells may operated more easily than other rigid or crystal solid bodies of elements/compound elements and hence formed as biological cells by creating with polymerizations etc. and hence then cell-divisions etc. Within the biological cells SU(6) combining with all other several elements or compound elements with different ions which are created more different waves but coherently emerging as a single wave or wave functions. Thus in the bio-molecules/atoms etc. where all material parts created by the elements/atoms of the Unified Gaussian Energy Group (GUT) of SU(5) delivering behaviors like intelligence, consciousness, mind, emotions,…. etc. with the combinations of the new energy sources of SU(6),….etc. and also created an electromagnetic force or current within the brain cells i.e., microtubules by the latent energy group SU(6) creating an electromagnetic strong force in the framework of SU(6) × U(1) with producing new unknown particles in the living mode or nonliving mode.Thus for living bodies through ion channel constituted a flow of current throughout the body carrying with charges of free electron-likes etc. and also may be similar for the case in the universe where stars atmosphere like as brain cell……etc.(taking as centre point) always controlled the whole system for example our solar system etc. The created amount of material substances by SU(5)changing by the bosons of SU(6) are always fixed for a particular nonliving/living developing bodies and hence for expansive universe or for its parts of the system till for the compilation or stable shaped. Similarly, after a certain or fixed time (age) our living bodies started like contraction. Thus, always maintaining a common system like for universe /cluster/galaxy/star/planet/animal/…..etc. those are all controlled mainly by the same energy sources of SU(6), then by others like SU(12),SU(24),……etc. with the combination of the strong force SU(3), weak force SU(2), & electrodynamics U(1) of SU(5).

Date of Submission: 14-01-2019 Date of acceptance: 31-01-2019

I. Introduction

There is no consensus yet on how the universe initially came to be, the general assumption is that perhaps an energetic fluctuation caused the universe to tunnel into the existence from quantum foam. The question of why the large energy of the universe is in a dark, i.e. not found in practical, the observed vacuum energy is so small in comparison to the scales of particle physics is known as cosmological constant problem. It is generally thought to be easier to imagine an unknown mechanism which would set vacuum parameter exactly to zero and so it can be considered that there exist several unifications from the existing physical universe. These class of symmetry group can be expressed mathematically as SU(11) ⊃ SU (5) × SU(6) × U(1); SU (23) ⊃ SU (12) × SU (11) ×U (1); SU (47) ⊃ SU(24) × SU (23) × U (1); .....so on. We can assume SU(5), the Unified Gaussian Group created our so called nonliving matter elements and together with SU(6), a new type of energy sources may be called as latent energy group created living matter and also together with all other new energies SU(12), SU(24),….created conscious elements explained details in my previous articles and with U(1) created electrodynamics force by the symmetry breaking of the energy groups. The Super Unified Gaussian Group SU(11) unfolded our physical universe instead of GUT of SU(5) and then emerged our physical universe with lives.

Source of Background Radiation: In the Super-Unified Theory SU(11), whenever there is a breakdown of SU(11) [⊃SU(5) × SU(6) × U(1)] in which contain the U(1) group, there inevitable arises particles that have the characteristics of a magnetic monopole. Monopoles are highly stable particles and once created they are not destructible. And so they would survive as relics to the present epoch. Hence we conclude the background radiation are "primordial" have arisen from discrete sources and got a powerful electromagnetic forces with the energy group SU(6).

Our physical universe actually unfolded with 10-dimensional space-time instead of 4-dimensional space-time. Real time & space and matter are exists and separately counted from unfolding the distinct physical universe. Thus our universe and its definite shaped parts or complete lives etc. expanded or developed or increased by the fixed amounts of matter elements or compounds created (matter-space-time are calculated/measured as real with respect to a particular physical universe that means it is real from Big-Bang to Big-Crunch through Big-Break singularity which are separate for distinct physical universe) then contraction after a certain periods like from Big-Break singularity then till to the another phase (death) after Big-Crunch singularity. Similar proceedings are reasonable for each cluster/galaxy/star/planet etc for nonliving matters and as well as for living matters also. For lives i.e. animal/human/tree…..etc there contraction may occurred after certain period (i.e., age or time) then till to the death after then decomposed and diminished gradually.

However, an amazing physicist furnishes answers to these old and difficult questions only in one book (there are no other articles or books on these questions published by Sean Carroll)! This incredible

accomplishment indicates the huge difference between Physics and Philosophy or Cognitive (Neuro) science! The idea is that if you want to solve rapidly some great problems (and reading very few texts on those topics) on philosophy (of mind) and cognitive (neuro) science, you need to be only physicist! Otherwise, clearly you waste your time…

Those books dwell at length on matters like "neuronal correlates of consciousness", is fail to present an actual explanation of the nature of consciousness itself. A deeper understanding of quantum structures may help to overcome the resistance against quantum theory in the field of brain research and consciousness.

There is an explanatory gap between the material structure of the brain and the mental reality of the consciousness that cannot be bridged by traditional concepts.

As was pointed out, there is a large amount of experimental and theoretical work addressing important aspects of the connection between neuro-physiological and psychological data. However, it is usually maintained that none of them has to do with the so called quantum theory.

A naturalist believes that human behaviour emerges from the complex interplay of the atoms and forces of SU(5) that make up individual human beings. You can't discover the properties of the microscopic theory just from knowing the macroscopic theory. Indeed, emergent theories can be multiply realizable: there can, in principle, be many distinct microscopic theories that are incompatible with one another but compatible with the same emergent description. Consciousness is not an illusion, even if we think it is "just" an emergent way of talking about our atoms each individually obeying the laws of physics. To say that consciousness is real and fundamental property of the universe we need to understanding something over and above the physical universe that means beyond our 4-dimensional universe or the standard model of physics i.e., GUT of SU(5), hence we needs 10-dimensional universe or the "Revised Standard Model of Physics" i.e., of SU(11) and so on as explained details in my previous articles; it is not only emergent, and also real, just like almost every other thing we've encountered in our lives. We know that protons and neutrons are made out of up quarks and down quarks, held together by gluons. The quarks and gluons, zipping around at high energies inside the protons and neutrons, are short-wavelength field vibrations. We don't need to know anything about them to talk about protons and neutrons and how they interact with each other. In the present dissertation it is very much required to understand that a "Revised Standard Model Physics" that means our so called real physical universe are actually appeared by the symmetry breaking of the Super Unified Gaussian Energy Group of SU(11) instead of Gaussian Energy Group SU(5), we found latent energy group SU(6), an essential strong new energy sources other than material unified energy group SU(5) and the electrodynamics U(1). In the theory of SU(11), it is possible to exchange any of 30(thirty) of the latent energy bosons of SU(6) into any of the 30(thirty) matter energy bosons of SU(5) or vice-versa by the exchange of the J-bosons of SU(11). Actually quark-likes are tightly binding by the J_k–bosons of the new energy source SU(6) formed various types unknown new particles/quasi particles that can formed bio-molecules/bio-atoms etc. and hence constituted bio-molecular cells then created cell division,…. etc. in the living bodies together with all kinds of other matter elements/chemical compounds which are mainly formed by the quarks and gluons of the energy of SU(5). There is an effective field theory created by the J_k-bosons by the new energy sources of SU(6) actively works within protons and neutrons etc. that are perfectly worked mechanically and well done appropriately.

The invention of all the modern techniques for experimental studies of the living brain required quantum theory, such as NMR scanners or the comprehensive computer-based data processing. That, of course, is only a secondary aspect. Much more important is that all biochemical processes are based on the emission and absorption of bosons. Moreover for systems usually termed "macroscopic", like nerve cells, the accuracy of quantum theory may become relevant in instable situations, which are a characteristic of living beings. Whenever high accuracy is required, quantum phenomena can no longer be ignored. Often, however, it will be sufficient to deal with the reduced accuracy provided by averaging a great many similar quantum processes. This may create the misunderstanding that the accuracy of quantum theory is not necessary.

The most important aspect however, is the role attributed to information in this context.

The brain is a place, where permanent feedback processes take place. An action of information is possible only in instable situations. In theories of non-linear dynamic phenomena, here permanently situations arise commonly denoted as bifurcation points. At least in such situations, the accuracy of quantum theory can no longer be ignored. In those situations, meaningful information can act as a steering agent. Such situations are constantly and ubiquitously encountered in the body. This implies that the material or energetically carriers of the information are of less importance than the meaningful contents. Here the respective meaning is coded in a receiver-specific way, being, for example, different for the various types of cells in the body. The decryption of those codes is a wide and important field of research, directly relevant to human health issues. The meaning of hard information is strictly to be distinguished from the material or energetic carriers involved in the processing of information. Many previous concepts resort to magic formulas, such as "emergence" or "functional link", which, however, obscure the fact that an actual understanding of the essence of "consciousness" is thereby not afforded. This applies also to the comprehensive and valuable studies on the correlations between activities in

brain regions and the conscious experience of visual, auditory, and mental impressions. Of course, one can simply require that "consciousness" is a well-known phenomenon, but obviously the acknowledgment of its existence does not make obsolete the need for a scientific foundation. ART (Adaptive Resonance Theory) clarifies key brain processes from which conscious experiences emerge. It predicts a functional link between processes of Consciousness, Learning, Expectation, Attention, Resonance, and Synchrony (the CLEARS processes). It is just a step from here to propose that those experiences which can attract our attention and guide our future lives after being learned are also among the ones that are conscious. Support for the predicted link between resonance and consciousness comes from many modelling studies wherein the parametric properties of brain resonances map onto parametric properties of conscious behavioural experiences in the simulated experiments. Indeed, without such a linking hypothesis between brain mechanisms and behavioural functions, no theory of consciousness can be fully tested [Grossberg (2013), p. 2, 3].

II. Wave Function Collapse and Quantum Coherence

Quantum theory is the most fundamental theory of matter known today. The three main levels of quantum representation are determined by the extent to which the continuous variables of classical physics are converted to discrete variables, otherwise known as quantization. Newton's equations of motion were replaced by the Schrodinger (in the non-relativistic case) and Dirac (in the relativistic case) equations governing the time evolution of the wave functions describing the motion of microscopic objects such as elementary particles. In the explanation of my theory it is required to choose the Wheeler DeWitt wave equations instead of Schrodinger wave equations in the case of wider universe as explained. It was shown that the requirement of the normalizability of the quantum state of the universe, satisfying the Wheeler-DeWitt equation, implies the disappearance of this quantum state at the Big-Brake singularity. Thus, this result looks as confirming the hypothesis that in the frame-work of quantum cosmology the singularities can disappear. Similarly the properties of the solutions of the Wheeler-DeWitt equations for different cosmological models, connected in some way with dark-energy hypothesis as the Big-Rip singularity has given analogous result, for well definiteness of the Hamiltonian by introducing a pseudo-space RI(complex space-time details in my all other articles namely ["The Complex Model Of The Quantum Universe", IOSR Journal of Mathematics (IOSR-JM) ISSN: 2278-5728. Volume 4, Issue 1 (Nov. - Dec. 2012), PP 20-33 www.iosrjournals.org].Quantum field theory is a second-quantized theory in which all particle properties, field properties and interactions are discrete except for those due to gravity. Quantum gravity is an incomplete third-quantized theory in which gravity is also made discrete. In quantum physics, objects possess both a wave aspect and a particle aspect, a view of the physical world known as the principle of wave-particle duality, or complementarities. The wave function of a particle describes the probability of ending a particle in a spatial location, thus information about the particle is described probabilistically rather than deterministically. The superposition forming by the wave functions implying that quantum particles exist in multiple spatial locations and states simultaneously. When a measurement is made, one of the multiple states is chosen and the quantum superposition of states ends being reduced to a classical state in a process known as the collapse of the wave function. Another aspect of quantum theory is that when two consecutive measurements are made on certain pairs of variables, called complementary variables, there is a fundamental limitation on the precision of the two measurements. Thus, there is no state in which both complementary variables can be defined simultaneously with arbitrary accuracy. This property is known as the Heisenberg uncertainty principle. This is a manifestation of the inherent inability to determine simultaneously the expectation values of two complementary physical observables, for example, angle and angular momentum, two independent spin components and, perhaps most importantly, energy and time such that the uncertainties in the two variables satisfy: $Et > h=4$. While quantum mechanics was developed with elementary particles in mind by the Gaussian energy group SU(5), its subsequent applications extended its validity to systems of many particles such as those encountered in condensed matter physics, e.g., in the description of the conduction electron sea, excitons, magnons, polarons, polaritons, etc. (Ashcroft & Mermin, 1976). This is very important in view of the potential importance of quantum effects in biology and in consciousness where not only are systems of many particles considered, but they function at high temperatures compared to those typically encountered in quantum physics the entropy in a given co-moving volume stays constant in adiabatic expansion. In the entropy was conserved then we would have RT = constant, where R is the scale factor. The types of quantum many-body systems studied by condensed matter physics exhibit macroscopic physical properties called collective excitations. A system of many particles under specific conditions cannot be separated into individual wave functions for each particle rather it is described by a single wave function describing its collective behaviour when energies of SU(6) created quantum gravity as well as gravitational forces with some unknown new particle tightly binding by the J_k–bosons which required for the formation of the collective excitations. This physical property is called quantum coherence and it is characterized by individual particles losing their separate identities such that the entire system acts as a whole. Measurements made on one particle cause the collapse of the entire wave function for the system, resulting in an

instantaneous effect for all particles no matter where they are spatially located. Particles that were once unified in a common quantum state remain physically connected even at a distance. This interaction over distance is referred to as non-local quantum entanglement.

III. De-coherence Problem

De-coherence occurs when such a system interacts with its environment in an irreversible thermodynamic way resulting in different particles in the quantum superposition no longer being able to interfere with one another. Importantly, the description of solids such as crystals or semi-conductor requires a proper introduction of energy quantization even at definite temperature T. It can be shown that quantum nature of solids manifests itself at temperatures up to the characteristic value, TD, called the Debye temperature, which depends on the size of the solid and its rigidity, which determines the propagation velocity of the sound waves (phonons). As a consequence of collective behaviour of many-body systems, hallmarks of quantum mechanics can be seen in the properties of macroscopic objects such as crystals or Ferro-magnets, even above room temperature. There are also more exotic direct manifestations of quantum behaviour in macroscopic systems such as superconductors (with no measurable resistance to electrical current and ideal diamagnetism) or super fluids (with no viscosity and infinite vortices). Functional dependence of properties such as specific heat and magnetic susceptibility is different in the quantum and classical regimes. However, these latter two examples have so far been limited to rather low temperatures. Yet a precise location of the boundary (in terms of size and temperature) between quantum and classical regimes is still under debate. This is why it is required to need an extensions of quantum mechanics with symmetry breaking from Super Unified Gaussian Energy Group SUT of SU(11) [$\supset$ SU (5) $\times$ SU(6) $\times$ U(1)] [Revised Standard Model of Physics], where it is possible to create an electromagnetic forces by SU(6) in the framework of SU(6) $\times$ U(1) and with new unknown particles were tightly bindings by the latent energy bosons of SU(6) instead of only by the Standard Model of Physics GUT of SU(5) and an entropy in a given co-moving volume stays constant in the adiabatic expansion, although there we found a weak neutral current by SU(2) in the framework of SU(2) $\times$ U(1) included biological living matters with cognitive processes, pose a major challenge. However, it should be kept in mind that Nature has had millions of years of evolution and immense numbers of replicas of experiments at its disposal to arrive at solutions to these very difficult problems.

With the examples provided above, we have tried to make a case for the role of quantum effects in biology. However, there are strong arguments calling for caution in making such claims due to a serious and fundamental problem involving effects such as coherence, entanglement, superposition, etc. The major issue is how such systems avoid de-coherence due to environmental interactions, in particular thermal effects at physiological temperatures. Specifically, thermal noise at such high temperatures (by physical standards) is expected to lead to de-coherence manifested by the creation of mixed states and an eventual transition to classical behaviour. Therefore, the main question is how biological systems could find a way to reduce de-coherence to allow quantum effects to persist for sufficiently long times to assist in such tasks as quantum search algorithms or tunnelling phenomena. Quantum de-coherence has been recently the subject of keen interest of physicists and information scientists working in the area of quantum computation. A quest to build quantum computers has been underway over the past two decades or so in order to vastly increase the computational power and speed using coherent quantum states as basic logical units. De-coherence represents a source of computational error, so the idea is to design architectures that minimize the impact of de-coherence. In the case of quantum computation de-coherence is a source of error that grows with the temperature of the environment necessitating the use of extremely low temperatures for quantum computation such as those found in superconductors or cold atom traps. Therefore, living cells at first glance appear to be a very challenging system in which to look for quantum effects, since they function at relatively high temperatures, are present in an aqueous environment and are subjected to thermal and environmental noises. In spite of preliminary calculations indicating very short de-coherence times in living cells, there are some reasons to believe biological systems may be not as susceptible to de-coherence as expected. An important aspect which is often overlooked is that biological systems are highly non-linear, are open to external influences, and operate far from thermodynamic equilibrium, all these aspects put them in a different category than most physical systems considered for comparison. It was explained in details in my previous published article [THE COMPLEX QUANTUM-STATE OF BLACK-HOLE AND THERMOSTATISTICS, IOSR Journal of Mathematics (IOSR-JM) e-ISSN: 2278-3008, p-ISSN: 2319-7676. Volume X, Issue X (Sep. – Oct. 2013), PP 01-00, www.iosrjournals.org], that there exit a flatness of the universe between 10-dimensional universe to 7-dimensional universe. Hence there is a link with an extremely fine tuning of the universe to the flat (k = 0) model. If this tuning was not there, the universe could either have gone into a collapse (k = 1) or an expansion to infinity (k = -1) in time scales of the order of 10-35s that were characteristic of the GUT era of SU(5).

Now the entropy in a given co-moving volume stays constant in adiabatic expansion. In the entropy was conserved then we would have RT = constant, where R is the scale factor and in the black-hole problem T =

1019GeV. However, we found that in the flatness problem in this hypothesis led to fine tuning while for the horizon problem it gave an extremely small size of homogeneity. It therefore appears that the trouble of black-hole lies between 10-dimensional to 7-dimensional flat universe and it could be resolved if the adiabatic assumption were violated at this stage. So, we conclude that, within the event horizon from 10-dimensional super-gravity stage, there are mainly two stages, one at the very early stage, were flatness then closed and as well as rotational stages for black-hole. So, in the late time, we have a symmetry breaking of the energy group SU(11) [SUT] of the flat universe at 7-dimensional space-time and gave three fundamental energy groups SU(6), SU(5) and U(1) within the horizon, where U(1) being a charge particle.

The physics of open, non-equilibrium non-linear systems is still poorly understood and many surprising properties may be discovered including their quantum behaviour. More detailed calculations lead to less pessimistic results. For instance, Cai.et al. (2010) studied two-spin quantum systems driven from equilibrium which exhibited coherence even when subjected to thermal noise. Leggett (2002) investigated a spin-boson model coupled to low-frequency phonons and found extended de-coherence times as well as a mismatch between the immediate and distant environment effects on the quantum system which would lead to prolonged coherence at low acoustic frequencies. It is important to stress that biological systems may generally operate at the classical regime except for some, specifically engineered modes of behaviour that avoid quantum de-coherence due to the environment. At least two ways exist through which de-coherence can be diminished for long enough time periods in order to enable the role of quantum processes in biology. First, a biological subsystem can be screened or isolated from the de-cohering environment enabling its operation in the quantum regime. In this connection, thermodynamic gradients may effectively lead to temperature reduction in local areas such as is the case with the slow release of ATP energy in actomyosin complexes leading to an effective temperature of only 1:6 103 K. Unlike ordinary laboratory thermodynamic systems, a star is made hotter, not by adding energy, but by removing it. We consider the change takes place by the latent energy group SU(6) into the matter energy group of SU(5) of the super unified group SU(11) and vice-versa that means energies of SU(6) plays fundamental role for the creations of living matters and hence for everything. So, initially heat can be found from internal energy of the thermo-statistical particles. Second, de-coherence-free spaces may be created within the Hilbert space where coupling of the system to the environment does not exist. This is a consequence of the quantum Zeno effect where a paradoxical result is obtained such that strong coupling of some degrees of freedom to the environment allows other degrees of freedom to produce coherent superposition and persistent entanglement (Davies, 2004). An example of this effect is a double-well potential in 1D where a particle is placed in the ground state of one well leading to a repeated tunnelling through the barrier generating specific oscillations. Placing the particle in an excited state will result in a different frequency of these oscillations. Creating an initial superposition state of the ground and excited state leads to an evolution of a complicated combination of oscillating states gradually getting out of phase. Paradoxically, allowing the oscillating particle to interact with a thermal bath forces the various oscillations into synchrony maintaining partial coherence of the system as a direct consequence of environmental interactions. Finally, the basic premise that quantum states are destroyed by increased temperature is of limited validity if one considers the possibility, for example, of laser-like coherent pumping suggested to occur in biological systems with periodic structural arrangements such as microtubules (Frohlich, 1968). Perhaps more importantly, recent experimental evidence shows that quantum spin transfer between quantum dots is more efficient at room temperature than at absolute zero (Ouyang & Awschalom, 2003). The key aspect in these experiments is that the temperature enhanced quantum effect occurs via a benzene ring, an organic molecule with delocalized electron charge density. Also, experiments have shown quantum wave behaviour of biological porphyry in molecules (Hackermüller et al., 2003). By analogy, in living cells de-localizable electrons in aromatic amino acids, for example, may allow proteins to harness thermal environmental energy to promote, rather than destroy, quantum states. Quantum interactions among tryptophan in hydrophobic pockets (non-polar, water excluding intra-protein regions) govern protein folding (Klein-Seetharaman et al., 2002) and similar effects appear to mediate potassium channel function (Jiang et al., 2003). Faster time scales may inform processes at slower time scales about rapid processes taking place at a small spatial level. Finally in this connection, special attention must be paid to the structural hierarchical organization of biological systems which in turn translates into an interlocking hierarchy of time scales. Amazingly neural rhythms operate on time scales that vary from milliseconds to seconds, synchronize the forebrain and are mediated by neurotransmitter systems such as acetylcholine, nor epinephrine, and serotonin (Woolf et al., 2010). The neurotransmitter systems further fluctuate according to endogenous, circadian rhythms that also fluctuate according to the season of the year, which ultimately leads to an enormous range of time scales spanning between 8 and 10 orders of magnitude or even more if atomic fluctuations are included. Since neural events at the millisecond time scale can affect neural states at the circadian level, by extension it is entirely possible that quantum states at the ps scale could affect neural activity at the millisecond scale and above. Hence, it is not necessarily a requirement for MT information processing to avoid de-coherence up to millisecond time scales to have effects on neural events. It is essential that multiple oscillators be interdependent and sensitive to redundant

patterns. Such interdependence might enable events operating at the shortest time scales and tapping into quantum mechanisms to affect larger scale events. Once again, coupling between scales and amplification effects may offer a solution to some of these issues.

IV. Chemistry to Quantum Biology

Extensions of quantum mechanics to chemical compounds and chemical reactions proved to be exceedingly successful and an entire field of quantum chemistry was developed as a consequence. In order to understand the creation of chemical bonds, especially covalent bonds in which electrons are shared between atoms of a molecule, a quantum mechanical wave function must be introduced into the formalism. All chemistry including biochemistry is based on the creation and destruction of bonds between atoms and hence on quantum interactions, so living systems, like non-living systems, depend on quantum states at the level of chemical bonds. The same can be said about biochemical reactions taking place in the brain such as ligament binding to receptors sending signals through neurons. However, these types of quantum physical properties found in living systems are considered due to the bindings by the J_k–bosons of the new energy source SU(6). In particular, the unitary oneness and inability of living systems have suggested that higher level quantum properties such as Bose–Einstein condensation, quantum coherent superposition, entanglement where explain some of the more enigmatic features of life in general and consciousness in particular. In the present dissertation we consider the quark-like particles are tightly binding by the J_k–bosons of the new energy source SU(6) in the theory of Super Unified Gaussian Group SUT of SU(11) created much more strong new unknown particles may be assumed as proton-likes, neutron-likes,…etc. much more several characters created bio-molecules like as hydrogen to heavy atomic numbers elements or compound elements and also created an strong electromagnetic forces or currents by SU(6) in the frame-work of $SU(6) \times U(1)$ including all other necessary energy groups SU(12), SU(24),….etc. as explained before may be required for dynamic of the living bodies to operate in biological systems with consciousness, minds,….etc. creating from single cell live body to multiple cells bodies by together with quarks of SU(5) are tightly binding by the gluons of SU(3) formed protons, neutrons, electrons,…etc. of the chemical atoms or molecules and mainly co-valence compound elements specifically Carbon & Hydrogen based elements, Nitrogen,…etc. of the nonliving matters with a weak electromagnetic force created by the weak force of SU(2) in the frame-work of $SU(2) \times U(1)$.

However, quantum effects are commonly claimed to be washed out at scales larger than individual atoms or sub-atomic particles, at warm temperatures, and in aqueous media which provide a noisy environment for particle interactions. Thus the likelihood of quantum states playing functional roles at microscopic or macroscopic scales in warm/wet and noisy biological systems seems problematic at face value due to environmental de-coherence effects. As stated above, it is reasonable to expect that evolution through the process of natural selection over billions of years of experimentation and countless parallel attempts of trial and error may have solved the de-coherence problem so that microscopic/macroscopic quantum states are essential features of biological systems. If organized quantum states exist in cells, they are presumably integrated among their components and organelles by the above mentioned new energy sources with quasi particles, electromagnetic forces or bosons like as polaritons……etc. Conversely, collective quantum states of cells may lead to entanglements between cells and coherence over organs and tissues conducting by those new energy sources explained as above, e.g., the entire brain or regions of the brain. This brings another important issue to the fore, namely the hierarchical multi-scale organization of living matter must have a means of not only integrating information across scale but also an efficient way of altering noise must be present. Schrodinger's famous book what is Life? (Schrodinger, 1944), paved the way for the birth of molecular biology in the 1950s. More than half a century later, the hope that quantum mechanics would elegantly explain life processes. So distinctively and comprehensively, has not materialized yet. In spite of the rapid progress in the use of classical physics methodology to meso-scale systems of relevance to biology, there have been persistent claims that quantum mechanics can and should play a fundamental role in biology. For example, biological coherence could emerge through coherent superposition by the wave function collapsed, tunneling and entanglement. It is very interesting in the first stage like gaseous state of the universe as explained in my articles remaining the symmetry of SU(23)[$\supset SU(12) \times SU(11) \times U(1)$] the character of the universe are far different from

the second stage when the symmetry breaking of SU(11)[$\supset$ SU (5) $\times$ SU(6) $\times$ U(1)] got three different energy sources as explained in my articles[**The Complex Quantum-State of Consciousness**, *IOSR Journal of Applied Physics (IOSR-JAP) e-ISSN: 2278-4861.Volume 9, Issue 1 Ver. II (Jan. – Feb. 2017), PP 57-93, www.iosrjournals.org]*.We illustrate the scenario with an example, where the character of water is far different from the character of hydrogen and oxygen when it is decomposed. Similarly for our universe in the second phase(that means unfolded from 10-dimensions space-times) it had been explained that the states of vapor-like phase explained in my articles i.e., from the symmetry breaking the SUT of SU(11), where quark-likes particles are tightly binding by the plenty of Jk–bosons in the early stage much created for the requirements of biological molecules [those new unknown particles are very much medical relevance for better and critical treatments because these are good or bad lives like many kinds of virus/bacteria,…etc. always created randomly which may be good/bad for us] or matter atoms,…etc. and thus creating strong electromagnetic forces by SU(6) in the framework of SU(6) $\times$ U(1), formed living matters together all elements which are created by the symmetry breaking of the Unified Gaussian Energy Group SU(5), [formed by that of the strong forces SU(3), weak forces SU(2) & electrodynamics U(1) of the GUT] formed like solid matter particles hydrogen to heavy particles, after then J_k–bosons always remaining in the form of latent energy particles, whenever quarks of GUT are binding by the gluons formed proton, neutrons…..etc. of the matter (solid) atoms/ elements/chemical compound elements, etc]which by exchanging the bosons of SU(6) into the bosons of SU(5)and then tightly binding between all elements/covalent compound/polymers……etc. These claims range from plausible ideas like quantum-assisted protein conformational changes to more speculative suggestions, such as the genetic code having its origin in quantum computation algorithms, or quantum-mediated cognitive processing in the brain.

Unfortunately, biological systems are so large and complex compared to standard physical systems that it is hard to separate or pure quantum effects from a large number of essentially classical processes that are also present. There is thus plenty of scope for disagreement about the extent to which life in general and cognition in particular utilizes non-trivial quantum processes. Why should quantum mechanics be relevant to life and consciousness, beyond explaining the basic structure and interaction of molecules of matter atoms formed by the energy group of SU(5)? For one, quantum effects of present can facilitate processes that are either too slow or impossible according to classical physics or insufficient of quantum physics and thus for explaining biological system we need to go beyond the present standard model of physics that means we need a "Revised Standard Model of Physics" staring from the symmetry breaking of the Super Unified Gaussian Energy Group SU(11) instead of the Gaussian unified group(GUT) of SU(5). Properties such as discreteness, quantum tunneling, superposition, wave function collapsed and entanglement produce novel and unexpected phenomena due to the present conception of the scientists remained within the GUT model of SU(5). Given that the basic processes of biology take place at a molecular level, harnessing quantum effects does not seem a priori implausible. Quantum coherence, collective modes of excitation and condensation phenomena also other attractive features that could shed light on the mechanisms of robustness and integrity of biological organisms, especially the amazing power of the human brain.

Since both physics and chemistry crucially depends on the power of quantum mechanics to provide fundamental insights into the world around us, it is natural to inquire whether biology others examples of phenomena where quantum mechanics is the only viable explanation. This is indeed becoming increasingly clear although examples of quantum effects in biology can so far be considered only a minor part of life processes as we know them. Below, we provide a brief overview of the efforts to apply quantum principles to biology.

V. Excess production of J_k bosons in the early universe:

Let us denote the mass of the J–bosons by m_J, and its coupling strength by α_J. The coupling strength depending on what type of particle J is of SU(11), let us denoted by $\Gamma_{e'}$ the rate of collisions that do not conserve the number of J_k bosons, i.e. collisions in which the J–boson is involved. Denote the characteristic decay rate of the J–boson by Γ_J, we thus have three time scales to play with: Γ_J^{-1}, $\Gamma_{e'}^{-1}$ and H_I^{-1}

At the earliest epochs, with constant temperature >10^{19} GeV, the latent energy was the strongest force between the various constituents of the universe. Other interactions were

unimportant under the hypothesis of asymptotic freedom. As the universe continued to changing phase and its constant temperature dropped there was a phase when gravity as well as latent force become weaker while the other interactions still remained unimportant. Thus for $T \leq 10^{19}$ GeV, the particles remained essentially free for some time.

During this phase, it becomes necessary to examine the nature of distribution, functions are as follows. Assuming ideal gas approximation and thermodynamic equilibrium, it is then possible to write down the distribution functions of any given species of particles. Let us use the symbol L to denote typical species (L = 1, 2, 3….). Thus $n_L(P)dp$ denotes the number density of species in the momentum range (P, P + dP), where

$$\mathbf{n_L(P) = \frac{g_L}{2\pi^2\hbar^3}\, P^2\left[EXP\,\frac{E_L(P)-\mu_L}{KT} - 1\right]^{-1}}$$

Where T = the temperature of the distribution, g_L = the number of spin states of the species, k = the Boltzmann constant and $\mathbf{E_L^2 = c'^2P^2 + m_L^2c'^2}$ is the energy corresponding to rest mass m_L of a typical particle. The quantity μ_L is the chemical potential of the species L. We set $\mu_L = 0$, $g_L = 1$, $m_L = 0$, for J_k bosons. Since particles and antiparticles annihilate in pairs and produce J_k bosons their chemical potentials are equal and opposite. Again we saw that for $T \leq T_J$ the distribution function cannot preserve its form under changing phase. Thus it may get distorted from its equilibrium form. Now of the various species in the very early universe, the J–bosons are probably the most massive. Thus, provided they have a high enough value T_J, there is a chance that the J bosons will first dropout of equilibrium. For this to happen, however, it is also necessary that they have not all decayed by then. The collision rate $\Gamma_{c'} \approx \alpha_J << \Gamma_J$. A comparison of the three rates shows that

$$\Gamma_{c'} < \Gamma_J < H_I$$

Soon after gravity became weak that means the amount of equivalent energy is not adequate then the changing phase of the universe with the essentially no interaction between the species.

VI. Brain Functioning and Coherence

Almost a century ago, Gurvitsch introduced the concept of bio-photons and attempted to elucidate embryology through the action of so-called morphogenic fields, a yet unproven hypothesis (Beloussov et al., 1997). Following in his footsteps, Popp and his collaborators demonstrated that photons (bosons), or electromagnetic energy quanta can be both absorbed and emitted by DNA molecules and this involves low intensity ultraviolet ranges of the spectrum (Cohen & Popp, 1997). Albrecht-Buehler (1995) demonstrated experimentally that living cells perceive infrared electromagnetic waves with a peak of their sensitivity close to the wavelength of 1000 nm. He hypothesized the mitochondria, by proton transfer involved in energy production, release photons. Conversely, centrioles, dubbed by him the eye of the cell, are intricately structured to absorb these photons and trigger a signaling cascade. Albrecht-Buehler (1995) has been advocating a theory of cell functioning based on his conviction that the centriole plays the key role in orchestrating cellular activities by being both an eye and a brain of the cell. Cell movement is not random but directed and intentional. This is a crucial characteristic that distinguishes living from nonliving matter. We assumed that the living matter constructed by the energy sources of SU(6), SU(3), SU(2), U(1) where SU(6) plying a fundamental role having 35-numbers of Jk–bosons out of which 5-bosons are neutral binding with quark-likes particle formed much more new unknown particles relevance with biological molecules and created a strong electromagnetic forces with U(1) and similarly other new energy sources like SU(12), SU(24),….etc. may also created electromagnetic forces together may created like consciousness, intelligence,…etc. Thus it is not possible to controlled the living cells arbitrarily only by energy power of SU(6) although it may be created an strong electromagnetic force in the frame-work of $SU(6) \times U(1)$ maintaining a crucial role for living cells by creating a strong current, as well as also for non living matter, but non living matter constructed only by the energy sources of strong force SU(3), weak force SU(2) and electrodynamics U(1) and also created a weak electromagnetic force

in the frame-work of SU(2) × U(1). Hence an electromagnetic signals coming from the environments or from outside may be absorbed and emitted by DNA molecules that mean can be react with living cells and also our consciousness, intelligences….etc. Cells control the movement of every part of their body. In medical sciences by using the bindings of quark-likes by Jk–bosons producing with several type of new unknown particles which may be formed valuable medicines with new elements forming with the proton-likes, neutron-likes,....etc. or an important energy therapy by creating strong electromagnetic forces or currents with SU(6) in the frame-work of SU(6) × U(1) for the prevention(or not any scope to produced from the very beginning of the birth or carriage) of unwanted cell-divisions like cancer,.....etc. and protected us from critical illness and hence we may got a good healthy situations for human bodies and other lives. Thus it is very convenient to say about the participation of the strong neutral currents or electromagnetic forces occurs in the field of Super-Unified Group SU(11) [⊃ SU(6) × SU(5) × U(1)], i.e. specially in the frame-work SU(6) × U(1), where SU(6) having 35-numberbosons, out of which five bosons namely $\mathbf{J_{K3}}$, $\mathbf{J_{K8}}$, $\mathbf{J_{K15}}$, $\mathbf{J_{K24}}$, $\mathbf{J_{K35}}$, corresponding to the five diagonal matrices. The strong neutral current created by SU(6) with U(1) are likely to be compared with the weak neutral current created by the framework of SU(2) × U(1) of the unified group SU(5) [⊃ SU(3) × SU(2) × U(1)], where SU(2) does not directly involve with electric, it still seems to demand charged bosons $\mathbf{W_1}$ **and** $\mathbf{W_2}$**.** This circumstances prompted efforts to link it with an electromagnetic interaction. This link achieved via SU(2) × U(1) frame-work originally proposed by A. Salam and S. Weinberg and sometimes called the electro-weak interaction. The link brings the photon (which is a boson), closer to three particles $\mathbf{W_1}$, $\mathbf{W_2}$ & $\mathbf{W_3}$, where $\mathbf{W_1}$, $\mathbf{W_2}$ are two opposite charged particles and the third ($\mathbf{W_3}$) neutral. In this unified picture it is more convenient to say that another neutral particle $\mathbf{Z^0}$ instead of $\mathbf{W_3}$, $\mathbf{Z^0}$ has zero mass and charge, just like the photon. However, the photon does not interact with the neutrino while the $\mathbf{Z^0}$ does. The exchange of $\mathbf{Z^0}$ does not alter electric charge, and hence such an interaction is called a neutral current interaction. In this we found Hadrons Hyperons, Nucleons etc. quarks tightly binding with gluons formed proton, neutrons etc. Similarly, if we go beyond the standard model of physics i.e. in the symmetry theory of SU(11), we see there are five neutral particles of the latent energy group SU(6), in which two pairs, namely $\mathbf{J_{K3}}$, $\mathbf{J_{K8}}$ and $\mathbf{J_{K15}}$, $\mathbf{J_{K24}}$ were interchanged without any colour changes, but the neutral particle $\mathbf{J_{K35}}$, like as $\mathbf{Z^0}$ also create a strong neutral current as SU(6) is very strong i.e. electromagnetic interaction through the frame-work via SU(6)×U(1), may be called as pseudo-electromagnetic interaction which may responsible for living matter or cells or cells-division,…etc. with the consciousness sensory together with material weak electromagnetic interaction achieved via the frame-work of SU(2) × U(1). This type of electromagnetic forces formed in the frame-work of SU(6)×U(1) may be used for the treatment in medical sciences where it is required for the prevention of unwanted cells-division like as cancer,….etc. where it is required energy therapy. We observe that, towards unification of SU(3), SU(2), U(1), the strength of weak force gradually increases while strength of strong force gradually decreases and ultimately we found the unified group SU(5). So, in the theory of SU(11) i.e. in another phase we found quark-like & lepton-like particles, which may be five times of each quark [i.e. u-quark, d-quark,…..etc. of the standard model of physics of the unified group SU(5)] or each of five different quarks [namely, {$\boldsymbol{u_1}$, $\boldsymbol{u_2}$,….,$\boldsymbol{u_5}$}-quarks, {$\boldsymbol{d_1}$, $\boldsymbol{d_2}$,…..,$\boldsymbol{d_5}$}-quarks,…etc.]. Thus $\mathbf{Z^0}$-like neutral particle of SU(6) like zero mass & charges instead of $\boldsymbol{J_{K35}}$ interact with other particles of SU(5) creating strong neutral current with conscious sensory information system also there may be possible to created new particles binding by the Jk–bosons of SU(6) with quark-likes and formed heavy new unknown particles [may be as 5-times of the usual protons, neutrons,…etc. which are created by the GUT energy group of SU(5)] protons-likes, neutrons-likes,….etc. which are naturally unstable and there may be created much more many others unknown new particles and an electromagnetic forces in the frame-work of SU(6)×U(1) which are solely responsible for living cells. We may remembered that was said by the **Royal Raymond Rife** (May 16, 1888 – August 5, 1971) was an American inventor reported after his experiments that a 'beam ray' device of his invention could weaken or destroy the pathogens by energetically exciting destructive resonances in their constituent chemicals. Rife claimed to have documented a "Mortal Oscillatory Rate" for various pathogenic organisms, and to be able to destroy the organisms by vibrating them at this particular rate.

Furthermore, various parts of the cell can be likened to parts of the human body in their functional roles. Plasma membrane and cortex correspond to the skin and the musculature of a cell and it consists of small autonomously moving “microplasts". Their autonomy implies that cells contain a

control system preventing the autonomous units from moving independently and randomly. The bulk cytoplasm including the mitochondria, organelles and intermediate filaments comprises the actual cell body excluding the nucleus, and correspond to the guts and innards of the cell body. Its main cytoskeletal components are the intermediate filaments although microtubules traverse this compartment everywhere (Dustin, 1978). Microtubules mediate between the control center (the centriole) and the autonomous domains. The control centre detects objects and other cells by pulsating near infrared signals. In response to external electromagnetic signals, the centrosome is expected to send destabilizing signals along the array of microtubules radically emanating from it. The signal is then transducer into a mechanical or electrical wave that can propagate along the microtubules similar to action potentials along nerves. The work of Albrecht-Buehler (1995) is of great importance since it could be interpreted as providing a well-studied example of proto-consciousness at the cell level where the cell receives signals from its environment analyzes them and reacts appropriately. These signals can be electromagnetic and at least some of the processing involves quantum effects. Along these lines, McFadden (2002) proposed an electromagnetic field theory of consciousness. Almost 50 years ago Frohlich (1968) theorized that the efficiency of biological processes is largely due to quantum coherence effects which were hypothesized by him to involve the nonlinear coupling of vibrations of cellular membranes to dipole modes of the phospholipids molecules. He further postulated that a Bose–Einstein condensation phenomenon is at play leading to the occupation of a single mode of quantum excitation and an associated phenomenon of long-range order. While normally Bose–Eintein condensates are properties of systems at very low temperatures, according to Frohlich, biological systems found a way of using this effect at physiological temperatures due to the nonlinear coupling involved. Moreover, thermal energy is used to drive the process as an incoherent pump. Frohlich condensates have never been definitively demonstrated experimentally, but recently there has been renewed interest and some experimental support, at least for weak condensates (Abbott et al., 2008). The latter could play a dramatic role in chemical kinetics of far-from-equilibrium biological nano-systems. Frohlich further postulated that quantum coherence is an inherent property of living cells, which utilize it for long-range interaction purposes including synchronization of cell division processes and cell–cell recognition. It is only possible due to the excess production of J_k bosons of SU(6) in the early universe playing a key role for everything. So far only scant experimental evidence exists to support these claims. Engel et al. (2007) investigated photosynthesis from the point of view of quantum energy transfer and accomplished a major breakthrough. Photosynthesis is known to be a very complex process of light energy harvesting in which a water molecule is split by photon energy creating a set of subsequent chemical reactions. The amazing efficiency of this process is an example of evolutionary achievement by one-tuning the performance of physical systems to near perfection. Chromophores are the molecules which are the primary receptors of light that become excited and pass the excitation energy in a multi-stage process to the final reaction center which leads to charge separation. Since the photon wavelength is many times larger than the size of the molecular complex, a quantum superposition state is created which covers many excited pigment molecules with a lifetime of hundreds of femto-seconds. They investigated the process using lasers to excite and probe the pulses and the associated relaxation process of the light harvesting systems. They detected a quantum beating effect in which the maximum amplitude of the excitation repeatedly positions itself with different molecules of the complex in a coherent fashion. As a consequence, a significant speed-up of the energy transfer process is accomplished. It is important to stress that the molecular architecture of the complex is highly condensed which is suggestive of being the result of an optimized design process aimed at exploiting long-range quantum coherence processes. Proper timing used in the process allows the system to capture the coherent excitation with a greater probability compared to the one obtained if it was simply distributed according to the rules of classical statistics (Blankenship & Engel, 2010). In the light-sensitive complexes, reaction centers capture individual photons and transfer exciton energy by tunneling avoiding de-coherence even at room temperatures, which has been invoked on numerous occasions as a serious impediment to quantum biology (Tegmark, 2000) but also defended on various grounds (Hagan et al., 2002) as will be discussed below. These recent advances in the use of quantum principles to elucidate photosynthesis are very important in view of the energy transduction being a key. Since the discovery of potassium Kþ channels, a surge of interest has been aroused to explain their fascinating molecular mechanisms. These

complexes that are assembled by several proteins creating circular pores through the membrane operate in a fast and precise manner. KcsA is a potassium channel conducting Kþ ions with a high flux rate (107 108 ions per second) (MacKinnon, 2003) while selecting Kþ over Naþ with a remarkable rate of 104 to 1 (Doyle et al., 1998). It is worth noting that the difference in atomic radii of Kþ and Naþ is about 0.38 nm. In many ion-channel proteins, flow of ions through the pore is controlled by a gate, comprised of a selectivity filter that can be activated by electrical, chemical, light, thermal and/or mechanical interactions. Following the determination of an atomic resolution structure of the bacterial KcsA channel, might not be able to adequately explain such a delicate selectivity process. Vaziri & Plenio (2010) and Ganim et al. (2011) proposed a quantum coherence mechanism for the selectivity filter and studied vibrational excitations in Kþ ion-channels. They predicted that resonances at the picoseconds (ps) scale in the backbone amide groups play a role in mediating ion-conduction and ion-selectivity in the selectivity filter. Summhammer et al. (2012) also investigated the interaction of a single potassium ion within the surrounding carbonyl dipoles by analyzing solutions of the Schrodinger equation for the bacterial KcsA ion-channel. They showed that alkali ions can become highly delocalized in the filter region even at physiological temperatures. The importance of the ion channels to neurophysiology is undeniable. If ion channels can operate using the principles of quantum mechanics, then the next logical step is to demonstrate their potential interactions and entanglement which would then lead to collective quantum states in neuronal membranes. As will be discussed below, within neurons arguments can be made about the quantum behavior of their cytoskeletal filaments such as microtubules. Consequently, the cytoskeleton can interact with ion channels using quantum entanglement. Beck & Eccles (1992, 2003) argued that the process of neutro-transmitter release in the functioning of synapses is governed by the quantum uncertainty principle and involves quantum tunneling. They further suggest that the introduction of quantum indeterminacy into neurotransmitter release mechanisms would allow for human free will of action. Their notion is that a quantum process, such as an electron tunneling through an energy barrier, triggers exocytose. The sheer size of the vesicle and the large number of neurotransmitter molecules contained in it make it next to impossible to lend itself to quantum tunneling processes. Although the Beck–Eccles model contains very attractive ideas, the crux of the theory appears to be incompatible with the present-day molecular biology of vesicular neurotransmitter release (Smith, 2009). Lowenstein (2013) in his recent book made a powerful argument for the usefulness of quantum processes in receptor functions involving molecular recognition. All sensory inputs depend on this type of activity (olfaction, vision, sound, touch) and they all involve single molecules being triggers for amplification of these signals up to the neuron level and eventual brain activation. This amplification mechanism of the quantum signaling connects the microscopic and macroscopic levels which is critical to our understanding of the binding problem. At the level of organs and tissues, it has been demonstrated that the human eye is capable of detecting light at an extremely low threshold, perhaps as few as 2–3 photons at a time (Levine, 2000). Similarly, recent work of Franco et al. (2011) has provided strong arguments to claim that the sense of smell (olfaction) is based on a quantum resonant energy transfer mechanism involving vibrational degrees of freedom of aromatic molecules and receptors in the membranes of olfactory nerves. Although the foregoing examples have been in the literature for a number of years, they have not led to a widespread acceptance that quantum physics is important for biology.

VII. What is Consciousness?

To the question "What is consciousness?" the brain researcher Christof Koch responds, "Your inner experience", adding "That experience is generated somewhere in the catacombs of the cerebrum. How this comes about, is a deep mystery."

Rather cryptically, Wolf Singer speaks of a "phase transition". According to Gerhard Roth, consciousness is "a physical state sui generis obeying various particular laws of nature", however, without further specifying what those laws might be. One should expect that a new generation of young researchers would come up with new ideas. Conference of Natural Research Scientists and Physicians, speech “On the Limits of the Knowledge of Nature”: “It is definitely and forever incomprehensible that it should not be unimportant for a number of Carbon, Hydrogen, Nitrogen, Oxygen, etc. atoms how they lie and move. There is absolutely no way to understand how consciousness could emerge from their connection. As already noted, with regard to the

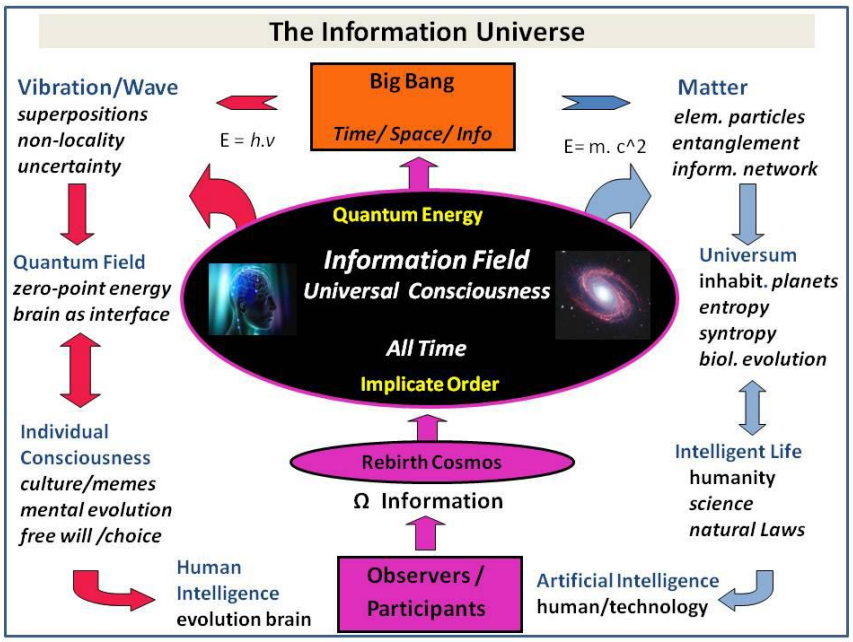
appearance of a definitely different quality namely, that of consciousness, the term emergence is often used these days. However, "emergence" is not an explanation at all, and we have to understand how to explain the new quality scientifically. All the sciences dealing with nature and, in particular, human beings, are concerned with objects full of color, diversity, and beauty. At school we learned that physics is the science of inanimate nature. By this the opposition and prejudice against the scientific explanation of consciousness have been preprogrammed. Also in this respect, quantum theory has initiated a radical change. This presently is realized by the researchers in various scientific fields. Only quantum theory can establish, why in molecules something completely different from the original atoms can emerge with entirely new characteristics. In the chemical bonding of atoms to a molecule the electrons of the atomic valence shells are 'socialized' to forming a new whole, and all that can only be explained by quantum theory. Ultimately, quantum theory also allows us to understand the great leap from inanimate matter to the area of living beings in the course of evolution. In the following we shall discuss why and how quantum theory allows ourselves to go from the physiology of the brain to a scientific understanding of the conscious and unconscious components of its information processing, which, for humans, may be designated by the term psyche.

With respect to consciousness, there is no coherent view as to what is and causes consciousness. Some neuroscientists would say that it is the connections between the neurons and the coherent firing patterns thereof. Some physicists would propose that it is connected to the measurement problem in quantum theory and thus the solution lies there. A few philosophers would suggest that it is an emergent property of the complex brain or a new kind of properties and laws are required. Philosophically, Searle argues that consciousness is an emergent biological phenomenon thus cannot be reduced to physical states in the brain. Chalmers argues that consciousness cannot be explained through reduction, because mind does not belong to the realm of matter. In order to develop a consciousness theory based on this approach, Chalmers suggests expanding science in a way still compatible with today's scientific knowledge and outlines a set of fundamental and irreducible properties to be added to space-time, mass, charge, spin etc. and a set of laws to be added to the laws of Nature. On the theoretical front, there are quite a few quantum theories of mind. Among these, Penrose's Objective Reduction ("OR") together with Hameroff's microtubule computation is perhaps the most popular, and the combination of the two produced the Orchestrated Objective Reduction ("Orch OR") in microtubules. There are also a number of theories based on conventional neuroscience. Our view on these is that whatever the final accepted version based on neuroscience ("classical physics"), it could be accepted as classically correct. The reason is that we must rely on the classical parts of the brain working according to conventional neuroscience to provide us the necessary neural components and wirings such as coherent neural firings, neurotransmitter releases and neural plasticity to support any realistic quantum activities of the brain. The situation is much like that in quantum computation where classical components form the supporting system of a quantum computer. Without these classical components, quantum computation could not be implemented at all.

At the turn of the 20th century, physics was perceived by its practitioners to be as solid as rock, only to be shaken to the core by the discovery of quantum mechanics. Today, perhaps the most dynamically expanding branch of science is molecular and cellular biology which is amassing impressive reams of data well ahead of its proper integration and deep analysis. Quantum biology is emerging gradually as a response to the challenge of explaining such important, yet poorly understood phenomena as photosynthesis, bioenergetics, vision, olfaction, bird navigation, etc. Yet, the grandest challenge of all is to explain how our brains work and, in particular, how does conscious behavior emerge from the structure and function of the human brain and its cellular and sub-cellular components.

In this article we introduce a new conception about the creation of consciousness. In quantum theories of consciousness, it is suggested that consciousness is a fundamental property of the universe. Our physical universe appeared by a continuous symmetry breaking of the new energy sources as explained in my previous articles [**The Complex Model Of The Universe**, IOSR Journal of Mathematics (IOSRJM) ISSN:2278-5728 Volume 2, Issue 4 (Sep-Oct 2012), PP 41-45 www.iosrjournals.org]. It was shown that our physical universe actually unfolded from 10-dimensional space-time that means from the symmetry breaking of the Super Unified Gaussian Energy Group SU(11) with two fundamental sub groups SU(6) called intelligence and SU(5) called Unified Gaussian Energy Group which also breaks into three forces namely the strong force SU(3),

the weak force SU(2) and the electrodynamics U(1) of the standard model of physics constituted so called matter atoms like hydrogen then gradually heavy matter particles atoms by increasing atomic numbers. In the similar manner it is to be assumed that the bio-molecules or cell divisions will be occurred by a suitable situations with the energy particles forming by the various elements of the matter energy group of SU(5) together with the new energy sources of SU(6), SU(12),…etc., formed at first single cell lives then gradually multiple cells lives increased by the process of cell divisions. There is a common system of formation for the construction of a complete identity body like human within its parts or tree within its parts similarly stars within its planets etc. It is very interesting that there exists a common system for each and every creation, for example our physical universe unfolded with 10-dimensional (so called) real space-time started[in which 30-number latent energy bosons of SU(6) changes to 30-number matter energy boson of SU(5) by exchanging the J-bosons of SU(11)] but it comprehended 4-dimensionally because the inflation occurred from Big-Bang(by increasing matter elements formed by quarks with gluon etc.) controlled by consciousness then expanded or developed till to the Big-Break singularity then contraction up-to the Big-Crunch singularity and then real space-time are being ended[according to Einstein GRT that the real time can't be defined outside the gravitating sphere] this system would be compared with the humans or any other lives where unfolded or development started from their parents(time started for calculation) then developed(body formation) till birth(then unfolded) then continuously increased all-round development till to the attaining a certain age(time) and then contraction(like from Big-Break singularity) will be occurred till death. The said systems continuing and also controlled by consciousness for lives and trees which also then controlled next generation and also similarly controlled the formation of stars with its planets etc. but it can't created the next generation because these stars etc. are formed purely by the energy group **SU(5)[SU (3) × SU(2) × U(1)]** instead of **SU(11)[⊃ SU(6) × SU (3) × SU(2) × U(1)]**. The formation of living bodies are constructed mainly on the basis of co-valence compounds namely carbon, hydrogen, nitrogen etc. that means "carbon based" instead of electro-valence compounds in the earth-like planets it may be different for others earth-like planets that means may be "silicon-based". In the live bodies the material compounds constructed by the elements of SU(5) but they are tightly binding by the bosons of the new energy group of SU(6) that means lives or humans are formed by "Quark-Like" particles with tightly binding by the Jk–bosons of SU(6)and hence two or more compounds like polymers together behaves like a single bio-atom or molecule with creating consciousness, mind,...etc. are by the strong electromagnetic forces or currents created by SU(6) in the frame-work of SU(6) × U(1) and also with an weak electromagnetic forces or currents created by the energy group SU(2) in the framework of SU(2) × U(1). When the parts of the lives or not created by the energy group SU(5) are completely failure by the energy sources of SU(6) then we called it was nonliving matters or otherwise the lives was then dead. We may assumed that the energy group SU(6) having much more fundamental role for the creation of everything of our physical universe it may be compared with "Mythological God" whenever we assumed that our-self as human having minds and consciousness. Since consciousness requires a physical substrate in the form of a living organism, and in particular the human brain, quantum biology appears to provide a natural connection between quantum physics and a quantum theory of consciousness. Classical mechanics is not an appropriate framework within which consciousness could be properly elucidated (Stapp, 1995).



Representation of the circular model on the history of our information field of the universe, with its central knowledge field or universal consciousness (in black), leading to complementary evolution of the material and mental aspects of reality (Figure taken from Meijer, 2012).

The human brain conceived as an interfacing organ that not only produces mind and consciousness but also receives information. The brain or parts of the brain are conceived as an *interference hologram* of incoming data and already existing data which equivalent to the subject's memory.

SU(6) creating strong neutral current or field with conscious sensory information system. Protons, Neutrons, electrons,…..etc. of the matter atoms(firstly produced light atom Hydrogen then gradually heavy complete atoms/molecules) formed by the "Quarks" in addition with the strong forces created by SU(3), weak forces created by SU(2) and electrodynamics U(1). Similarly in Biological molecules/atoms (firstly produced single cell live like "Protozoa" then multiple cells body of complete lives like "Humans" with its several complete body parts) formed by adding new unknown particles of the "Quark-Likes" particles were tightly binding by the so strong forces created by Jk–bosons of the latent energy group SU(6), where with respect to the relatively weak forces created by the quarks with gluons of the GUT forces of SU(5).

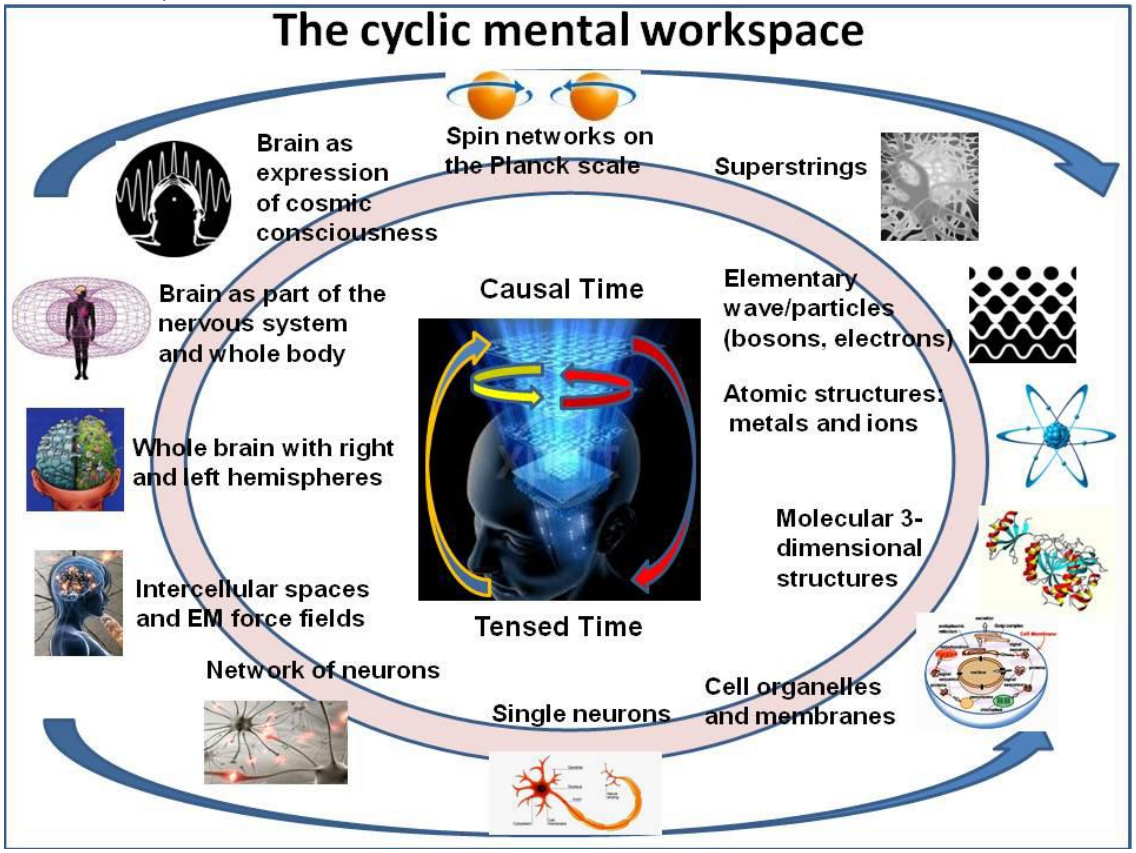
Thus completely lives like human/animal/tree/…..etc. are assumed to be created with similar way with respect to the Super Unified Gaussian Energy Group SU(11) are tightly binding by exchanging the J-bosons of SU(6) and SU(5), also creating an electromagnetic force by the energy group of SU(6) in the frame-work of SU(6)×U(1). Like in SU(5) firstly the "Hydrogen" atom then heavy atoms or compound elements(with its states of gas-vapour-liquid-solid) are formed as explained by the modern scientists.

The Cemi-field theory conceives that the electromagnetic field in the brain fine tunes the probabilities of neuron firings. The affected neurons may be a part of the larger connected assemblies, and this leads to memory and learning. In simulated networks non-synaptic neuronal interactions via the electromagnetic field and also gap junctions enhance learning. Modulation of long term potentiating by electromagnetic fields has also been demonstrated in vitro in rat hippocampus slices.

VIII. How consciousness arises from brain action

How does the brain produce consciousness? The mechanism by which the brain produces consciousness remains mysterious (Koch, 2004). The prevalent scientific view is that consciousness somehow emerges from complex computation among simple neurons which each receive and integrate synaptic inputs to a threshold for bit-like firing. The brain as network of 1011 "integrate -and-fire" neurons computing by bit-like firing and variable strength chemical synapses is the standard model for computer simulations of brain function, e.g. in the field of artificial intelligence ("AI"). The brain-as-computer view can account for non-consciousness cognitive functions including much of our mental processing and controlled behaviour. Such non-conscious cognitive processes are deemed "zombie" modes, "auto pilot" or "easy problems". The "hard problem" (Chalmers, 1996) is the question of how cognitive processes are accompanied or driven by

phenomenal conscious experience and subjective feelings, referred to by philosophers as qualia". Other issues also suggest the brain-as-computer view may be incomplete, and that, other approaches are required. The conventional brain-as-computer view fails to account for: "The hard problem". Distinctions between consciousness and non-consciousness processes are not addressed, consciousness is assumed to emerge at a critical level (neither specified testable) of computational complexity mediating otherwise non-conscious processes. Non-computable thought and understanding, as shown by Godel 's theorem (Penrose, 1980, 1994).Causal efficacy of consciousness and any semblance of free will. Because measurable brain activity corresponding to a stimulus often occurs after we have responded (seemingly consciously) to that stimulus, the brain - as-computer view depicts consciousness as epiphenomenal illusion (Dennett, 1991; 1995; Wegner, 2002). Field levels, we present one example of a potential bidirectional information flow that is based on the central role of Ca^{+2} ions under the control of various neuronal proteins. In this concept Ca^{+2} is viewed upon as an informational vehicle influencing the activity state of the neuron,(based on the data of Pereira and Furlan, 2007). Similar schemes could be imagined for other molecular mechanisms, mediating the tuning of cellular activity into large scale patterns, in the context of the creation of higher mental functions. As potential candidates, the hydrogen atom in relation to H_2O and unpaired electron spins as present in DNA, other metal ions, as well as present in $\mathbf{O_2}$ and NO molecules (if associated with membrane proteins), have been proposed (Hu and Wu, 2004).



(Figure taken from Meijer, 2012)

Potential cybernetic effects on various levels of brain organization: Starting in the upper middle part and following a sequence to the right the following elements are pictured: spin networks on the Planck scale, superstring modalities of elementary particles, elementary wave/particles (bosons, electrons), atomic structures such as metals and ions, molecular 3-dimensional structures, cell organelles and membranes, single neurons, networks of neurons, intercellular spaces and electromagnetic force fields, whole brain with right and left hemispheres, brain as part of the nervous system and whole body, and finally brain as holographic expression of cosmic consciousness. A hypothesized mental workspace is depicted in the centre with bidirectional (circular) of quantum and iso-energetic information flows. The two domains may be quantum correlated.

IX. Quantum Gravity and Consciousness

The problem of consciousness has defied conventional approaches which view the brain as a classical computer, with neurons and synapses playing the roles of bit states. Specifically, the following enigmatic features remain unexplained: (1) the hard problem of the nature of conscious experience, qualia, our inner life, (2) binding of disparate brain processes into unified concepts, objects and sense of self, (3) transition from pre-conscious processes to consciousness itself, (4) free will, or non-algorithmic (e.g., intuitive) processes, (5) subjective flow of time, (6) non-locality. Conventional neuronal-level computational approaches suggest conscious experience emerges at a critical level of complexity. Binding is proposed to be accounted for by temporal synchrony (e.g., coherent 40 Hz oscillations) but with no sense of the nature of conscious experience, temporal synchrony is merely correlative rather than explanatory. Perhaps the most potentially tractable problem is the transition from preconscious processes to consciousness itself. It is generally agreed upon that the vast majority of brain processes are non-conscious and that consciousness is the tip of an iceberg of brain activity. However no specific brain area houses consciousness; neural activity in a given area may be non-conscious at one moment, and correspond with consciousness at another. What causes the transition? The classical approach suggests a critical level of complexity results in the transition via emergence of consciousness, but again no threshold, biological correlate nor testable prediction have been put forth. Free will, subjective time flow and non-locality have not been seriously addressed by conventional approaches (except to deny their existence).

Another shortcoming of conventional approaches is that neurons and synapses are considered as simple switches, whereas real biological cells are far more complex. For example single cell organisms such as Paramecium swim, avoid obstacles and predators, learn, finding food and mates, all without possessing a single synapse. These cognitive functions can potentially be accomplished by the cell's cytoskeletal structures, primarily microtubules which will be discussed below. Inspired by the application of quantum theoretical methods to the study of the brain and other biological structures scientists began to investigate brain functioning from the microscopic level of quantum physics. Perhaps the first attempt to describe the brain using the terminology of quantum physics was made by Ricciardi & Umezawa (1967). Based on experimental observations of brain activity they proposed that the brain could be conceived of as a spatially distributed system placed into particular quantum states by stimuli from the external environment. Thus, information can be thought of as being coded into the brain in the form of meta-stable excited states representative of short-term memory. This code would then be later on transferred to the ground state of the system by means of a condensation to the ground state in the manner of Bose-Einstein condensation accounting for learning and long-term memory. This model proposes that brain functions are manifestations of spontaneous symmetry breaking in the dynamics of the brain regulated by long-range correlations. The model put forth by Ricciardi & Umezawa (1967) and Stuart et al. (1978) relating macroscopic quantum states to brain function, memory specifically, was later extended proposing that the brain is a mixed physical system (Jibu & Yasue, 1995). In this model the brain is considered to consist of two distinct interacting parts, the first part consisting of the classical electrochemical interactions of the neurons of the brain, and the second being the macroscopic quantum state responsible for the creation and maintenance of memory at a molecular level. Alternatives to computational emergence (Scott, 1995) include dualism (consciousness lies outside science), pan-protopsychism (precursors of conscious experience are fundamental, irreducible components of reality) and quantum information processing approaches (Litt et al., 2006). Major effort has been specifically placed on the explanation of the role of protein polymers and their networks located within individual cells and known collectively as the cytoskeleton (Hameroff, 1997, 1998; Hameroff & Watt, 1982). Penrose (1989, 1994) examined the relationship between consciousness and modern physics in a tour de force exposition of Turing machines, Godel's theorem, chaos, classical and quantum mechanics, thermodynamics, relativity, cosmology, quantum gravity, quasi-crystals and brain neurophysiology. He introduced mathematics as a bridge from the artificial world of computers to the natural world of physics and argued via Godel's incompleteness theorem that human consciousness is non-algorithmic, and thus that physical theories of brain function are incomplete due to their dependence on computable algorithmic laws. He further hypothesized that quantum effects play a fundamental role in the understanding of human consciousness by enabling the brain to perform non-computable operations. In his explanation of the new physics required to explain the mind and consciousness, he examined the division between classical and quantum physics, specifically the measurement problem, and related the collapse of the wave function to conscious events using the notion of objective reduction. This led to the suggestion that microtubules within neurons provide the brain with structures capable of orchestrating the collapse of the wave function via quantum information processing. This union has

been known as the Penrose–Hameroff Orchestrated Objective Reduction (Orch OR) theory (Hameroff & Penrose, 2014). The basic idea is that microtubules within the brain's neurons function as quantum computers, with microtubule protein subunits (tubulins) existing transiently in quantum superposition of two or more states (i.e., as quantum bits, or \qubits). According to Orch OR, tubulin qubits in quantum superposition interact /compute with other superpositioned tubulins in microtubule lattices (Roberts & Hyams, 1979) by nonlocal quantum entanglement, eventually reducing (collapsing) to particular classical tubulin states after 25 milliseconds or so (e.g., at 40 Hz). The quantum state reductions yield conscious perceptions and volitional choices, which then govern neuronal actions. This is essentially the same idea on which technological quantum information processing is based, except that in Orch OR the proposed qubits are tubulin protein conformations, and the reduction/collapse occurs due to a specific objective threshold (objective reduction) rather than environmental interaction. Objective reduction is a solution to the measurement problem in quantum theory, which considers the superposition of quantum states as a separation in underlying reality at its most basic level, the Planck scale. The solution involves a description of loop quantum gravity, which identifies wave function superposition as curvatures of opposite direction in space-time, and thus a separation in fundamental space-time geometry. These separations are considered unstable and reduce to a single space-time curvature once an objective threshold is reached. The theory considers a conscious event as quantum information processing, which concludes via objective state reduction. The biological conditions in the brain, including synaptic activity, are considered to influence the quantum information processing thus orchestrating the collapse of the qubits and giving rise to a conscious event. Orch OR is an attempt to place consciousness within the empirical sciences as a fundamental concept in science. The central postulate of the Orch OR theory is that the site of action of consciousness is located within the brain's microtubules which operate at the interface between classical neurophysiology and quantum gravitational forces. These are very bold claims that have found both ardent supporters and vocal critics in the scientific community. However, the enduring power of attraction of Orch OR for a solid base of support across science, philosophy and beyond is a testament to the creative influence of this work on the field. The main concerns with Orch OR can be broadly separated into the following three categories (Grush & Churchland, 1995; Koch & Hepp, 2006; Seife, 2000). (1)The empirical evidence demonstrating how the activity of a single synapse enters into the dynamics of neural assemblies is lacking, thus the relevance of quantum processes in mental phenomena remains a claim requiring validation. (2) As of yet, there appears to be no specific quantum mechanical properties needed to explain psychological and neurological phenomena. The relevance of quantum effects to the structure and function of the brain does not necessitate their involvement in explaining consciousness. Although this point can be argued in view of the hard problem.(3) Structures such as microtubules and neurons are large, high temperature systems from the quantum mechanical point of view. As such, it is next to impossible for them to remain in states of linear superposition capable of coherently interfering with one another, thus de-coherence eliminates any possibility of quantum effects playing a role in brain processes. This point has been already discussed above and is still an open issue. There have been many debates concerning whether the quantum description of consciousness is valid, realistic or needed. However, only recently have advances in nanotechnology allowing for serious empirical investigation into the biophysical workings of sub-cellular structures been made. As such, the lack of evidence in support of quantum brain theories should not be taken as proof against these theories, but rather as an area in need of careful and vigorous scientific investigation. The several enigmatic features of consciousness mentioned previously are still, for the most part, left unexplained by classical theories. The apparent ability of quantum theories to answer these questions may provide new avenues of investigation into consciousness. It is known that macroscopic quantum phenomena such as superconductivity, super fluidity and laser action exist at relatively high temperatures (albeit requiring very finely tuned conditions) and that these phenomena cannot be explained via classical means, but rather require the idea of macroscopic quantum coherence within a condensate. Therefore, it can be stated that not all phenomena observed in large-scale systems can be expected to behave classically. Thus, while the first two arguments against quantum consciousness represent a general resistance to the idea, the third is an argument of worthwhile concern. Macroscopic quantum phenomena such as superconductivity, and super fluidity require high isolation from their environment in order to avoid the effects of de-coherence. In order for such phenomena to exist in the brain, nature would need to provide mechanisms to isolate against de-coherence. The subject of de-coherence in relation to quantum information processing in microtubules particularly has been widely discussed and strong arguments have been made on both sides of the discussion. Tegmark

(2000) made a major objection specifically to the Orch-OR theory, and the notion of a quantum brain in general, based on calculations of neural de-coherence rates for both regular neuron firings and for kink-like polarization excitations in microtubules. He claimed that the degrees of freedom in the human brain should be considered classical rather than quantum. Tegmark found de-coherence time-scales for superposition of solitons moving along a microtubule of approximately 10^{-13}–10^{-11}s, which are much shorter when compared with the relevant time-scale for cognitive processes of 10^{-3}–10^{-1}s. Thus, he concluded that quantum coherence within the brain is not feasible. However, Hagan et al. (2002) pointed out that Tegmark's calculations are based on an incorrect model of the Orch-OR process. Accounting for this discrepancy, as well as for the effects that screen thermal fluctuations, such as layers of ordered water and actin gel states surrounding microtubules, Hagan et al. (2002) found new de-coherence rates of 10^{-5} –10^{-4}s that are in line with relevant dynamical times of biological phenomena. These arguments are both refuted by Rosa & Faber (2004) who find, based on de-coherence calculations, that the Orch-OR model based on gravitational collapse is incompatible with de-coherence, but that the notion of quantum phenomena in the brain are still feasible if decoherence is taken as a quantum collapse mechanism rather than a quantum gravity effect. Coherence times can be extended by counterion shielding, actin shielding, intrinsic error correction, among other properties; nonetheless, de-coherence remains as an issue (Hagan et al., 2002). However, as discussed above, recent experiments have shown room temperature quantum effects in photosynthesis (Engel et al., 2007) and conjugated polymer chains (Collini & Scholes, 2009). Nonthermal radiation at 8.085 MHz has been observed from MTs, and while not necessarily an indication of a quantum condensate or coherence, it remains a possibility (Pokorný et al., 2001). Reimers et al. (2009) and McKemmish et al. (2009) state that this radiation could only be the result of a weak condensate that could not result in the coherent motion necessary for the Penrose–Hameroff model, however their results are based on a linear chain of coupled oscillators rather than the cylindrical geometry of MTs leaving the question still open. Another issue at hand is the range of motion in tubulin dimers when they are polymerized into stable MTs, bringing into question whether intact MTs allow two potential conformations of tubulin dimers. McKemmish et al. (2009) clearly demonstrate that repeated exchanges between the GTP and GTP-bound forms of tubulin within MTs are not supported by current experimental evidence. While the conformational states are generally identified as tubulin-GTP and tubulin-GDP the Penrose–Hameroff model does not specify the precise nature of the conformational states envisaged, so alternatives remain a possibility, however the consistency of the timescales between such interactions and the Penrose–Hameroff requirements remains an open question. Clearly, these issues are not completely resolved. Thus, investigations into the quantum nature of microtubules are still badly needed. At any rate, crucial validation or falsification of Orch OR must come from experimentation. This is very challenging since the current \gold standard" in neuroscience is fMRI whose spatial resolution is on the 1 mm scale while temporal resolution is on the 1 s scale. This is orders of magnitude higher than the 1nm and1ns scales of tubulin's size/time operational dimensions as studied by molecular biophysics, let alone the quantum gravity effects hypothesized by Orch OR to be occurring on the Planck scale of space-time geometry (10^{-35} m; 10^{-44} s). This huge gap between the current experimental capabilities and the predictions made by Orch OR poses the greatest challenge to the acceptance of these tenets.

X. Photon and Electric Charge-Mediated Consciousness

The change of a larger group SU(11) of symmetries to the subgroup SU(6) ×SU(5) ×U(1) is spontaneous by the redistribution of energy particles from the stage like gaseous as explained previously. The above mentioned subgroup which contained the U(1) group, there inevitably arises particles (whose annihilation formed charge particles) that have the characteristics like a magnetic mono-pole. Typically, the mass of which (in energy units) may be ~ $\mathbf{10^{19}}$Gev (Plank energy). Monopoles like charge particles are highly stable particles and once created are not destructible. And so they would survive as relics to the present epoch. The explanation of the two energy group SU(5) and SU(6) of the SUT energy group SU(11), we begin with an analogy of ferromagnetism and crucial role of the Curie-temperature ($\mathbf{770^0C}$ for iron). Above this temperature a bar of iron shows no magnetism in an external field. This is because its elementary nuclear magnets are randomly aligned with no resultant magnetization. Energetically, this is the lowest state for the bar and it chooses to remain in that state as the most stable one. Bellow the Curie temperature the state of lowest energy changes to that in which all the nuclei are aligned along the bar, which develops polarity at its ends. There are two states of the same lowest energy possible, depending on which (north or south) of the two poles falls at a given end. The ultimate choice of one state apparently breaks symmetry although theoretically and inherently the symmetry is always there. In the early universe something similar-like happened to the Super Unified Theory of SU(11) and then SU(5).

Above like a critical temperature $\mathbf{T_c}$, the vacuum state, the state of lowest energy, is none other than the potential $\varphi = 0$. Below $\mathbf{T_c}$, the states of lowest energy of the thermo-statistical particles are changed. It now corresponds to a situation when φ has non-zero values. Corresponding to states of the same lowest energy, let us suppose that there exist alternative values $\boldsymbol{\varphi_i}$ (i =1, 2, 3....) which now acquire that status of vacuum. There were basic symmetry with respect to all $\boldsymbol{\varphi_i}$, but in practice the system may spontaneously acquire one of them. This is again an apparent break-down of the symmetry. The consequences of this for the very early universe are that it is divided into different domains, each with a different value of $\boldsymbol{\varphi_i}$. In this way the universe acquires discontinuities along the domain walls. These translate into highly significant discontinuities of matter distribution. The fact that we do not see such discontinuities in actuality (say in the form of large sheets of matter) is hard to explain away. This difficulty is known as the domain wall problem. The intersection of two domain walls is a linear structure known as "cosmic-string" such filamentary structure have been invoked in scenarios for galaxy form.

XI. Cognitive behaviors of single cell organisms

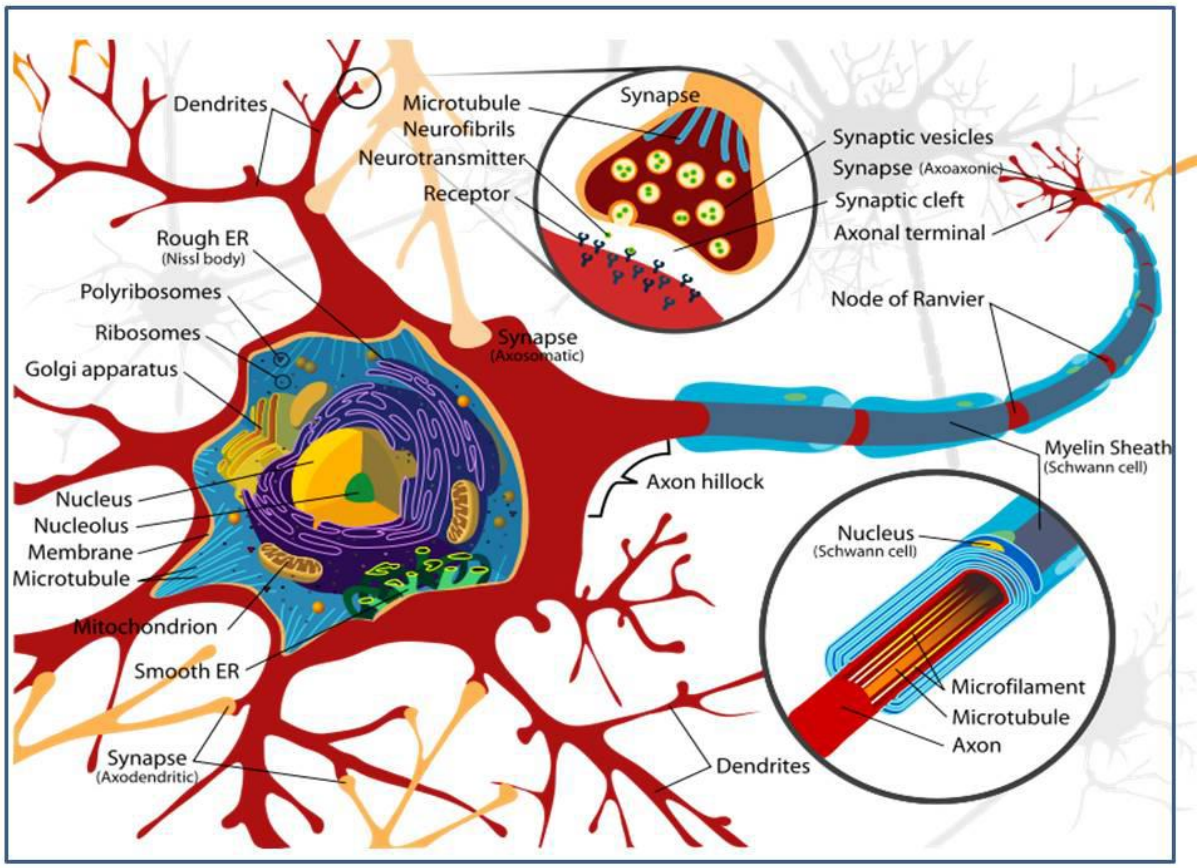
Protozoan"s like Paramecium can swim, find food and mates, learn, remember and have sex, all without synaptic computation (Sherrington, 1957). In the 1980s Penrose and Hameroff (Separately) began to address these issues, each against the grain of mainstream views. Hameroff had been intrigued by seemingly intelligent, organized activities inside cells, accomplished by protein polymers called microtubules (Hameroff and Watt, 1982; Hameroff, 1987). Major components of the cells structural cytoskeleton, microtubules also accounted for precise separation of chromosomes in cell division, complex behavior of Paramecium, and regulation of synapses within brain neurons. He assured the intelligent function and periodic lattice structure of microtubules suggested they might function as some type of bio-molecular computer. Microtubules are self-assembling polymers of the peanut-shaped protein dimer tubulin, each tubulin dimer (110,000 atomic mass unit) being composed of an alpha and beta monomer. Thirteen linear tubulin chains ("proto-filaments") align side-to-side to form hollow microtubule cylinders (25 nanometers diameter) with two types of hexagonal lattices. The A-lattice has multiple winding patterns which intersect proto-filaments at specific intervals matching the Fibonacci series found widely in nature and hence possessing a helical symmetry, which suggestively to a large-scale quantum process.

XII. Quantum Processes in Microtubules?

Empirically, a host of studies indicate that the microtubule (MT) matrix in dendrites is structurally reorganized with learning and memory. Using an associative learning paradigm combined with immune-histo-chemistry, fear conditioning to either tone or to the training context induced significant changes in the microtubule associated protein (MAP2) in circumscribed regions of the cerebral cortex or hippocampus, with alterations correlating with the type of training (Woolf et al., 1994, 1999). In terms of molecular biophysics, based on their ability to propagate signals through the neuron (Brown & Tuszynski, 1997), MTs and actin filaments can be viewed as computationally relevant nanowire networks that operate within neurons (Woolf et al., 2010). Rather than inputs to neurons being limited to causing discrete responses, this viewpoint odes the possibility of local and global neuro-plasticity, based on the cytoskeleton computing and storing templates that translate patterns of inputs across widespread synapses into the behavioral output of the neuron (Abbott & Regehr, 2004). This behavioral output of the neuron is not limited to axonal firing and dendritic integration of electrochemically mediated inputs. Instead, it includes connecting the cell nucleus with the postsynaptic density, initiating transport of receptor molecules, membrane proteins, organelles and mRNA, regulating neuritis motility, restructuring of spines and complex dendrite architecture, the lateral movement of receptor and membrane proteins of neurons, governing the availability of ion channels in the membrane and more. Potential computational modes for MTs and actin filaments are beginning to be understood (Priel et al., 2006). There is empirical evidence that shows signaling, communication and conductivity in microtubules (Gundersen & Cook, 1999) and theoretical models have demonstrated their potential for both digital and quantum information processing. Arguments for and against the existence of quantum effects in MTs are numerous. To investigate the existence of quantum computation in microtubule protein assemblies Craddock et al. (2009) modeled this system via cellular automata using both classical and quantum neighbor rules. Using a typical MT configuration and a tubulin neighborhood in a hexagon configuration, they represented the interior of tubulin electro-statically and showed that it contains two areas of positive charge separated by a negative

potential region constituting a double well potential. The position of a mobile electron within this double potential well was the determining factor for the state of an individual tubulin dimer, with transitions determined by the minimization of the systems energy associated with electrostatic interactions of neighboring electrons and thermal effects. Classically the model allows transitions for electrons with sufficient energy to overcome the potential barrier (taken as 100– 150 meV) in which the new configuration lowers the system's energy, or if the configuration raises the systems energy with a finite probability of exp(E=kT). The quantum cellular automaton model allows the electron to tunnel through the potential barrier with transitions for which the energy is lowered even if the electron does not possess the necessary energy to overcome the potential barrier. These simulations have shown that information processing at physiological temperatures is feasible provided a global clocking mechanism is present. However, it should be emphasized that many of the simulation parameters are not known empirically. Several frameworks have been proposed to reconcile the mental and the physical states. Most of these attempts start with relatively mono-disciplinary assumptions to tackle the mind-brain or mind body problem. This essay analyzes some general concepts on brain functioning based on recent neurobiological investigations and discusses these with those originating primarily in quantum mechanical approaches. More precisely: we stress the importance of both quantum and classical molecular states for higher cerebral and, by implication, mental processes. Firstly, various mind/brain concepts are discussed including emergent materialism, i.e. the idea that the interaction of the constituting components of the brain (i.e., neuronal networks or molecular communication networks in cells) creates emergent and largely unpredictable properties that ultimately produce our experience of mind. We examine the relationship between brain energy metabolism and general brain functions, and argue that they are, by and large, unrelated. We propose that brain metabolism serves to maintain a high energy state ("potential energy") and isoenergicity to ensure future activities. High energy molecular perturbations are supposed to be easily amplified to become meaningful signals for the organism. Together with the stored information, acquired during life, a "personal universe" is created.

Secondly, some recent physical-mathematical theories of mind are examined, denoted here as quantum mechanical (QM) theories, because they are largely based on quantum physics. The attractiveness of a quantum theory has been justified by its basic elements of: 1st uncertainty, that means that mental phenomena are not governed by classical physical laws of determinism and causation, so that there is room for intuition and free will; 2nd a universal consciousness with the individual consciousness as participating agents; 3rd consciousness, even seen as a non-physical entity, finally acts in the physical domain and may exert causal power; 4th explaining mental transitions from apparently non-conscious thoughts and processes to conscious ones and *vice versa*; 5th a potential difference between internal time perception and external physical time; 6th the possible non-temporality of the so called past, present and future, that would enable backward causation in which future events may affect present (and perhaps past) processes. (Figure taken from Meijer, 2012)

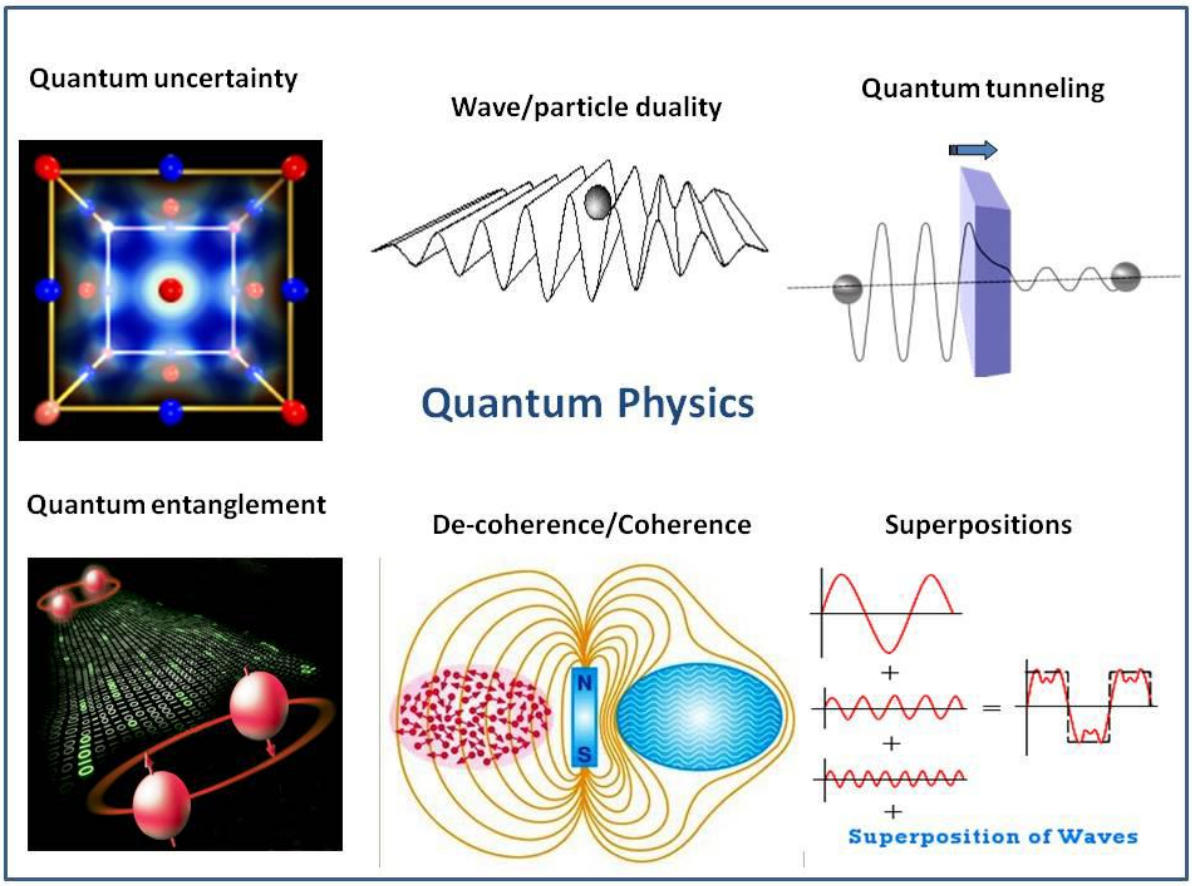


XIII. Objective Reduction

In 1989 Penrose published "The Emperor's New Mind", which was followed in 1994 by "Shadow of the Mind". Critical of AI, both books argued by appealing to Go del′s theorem and other considerations, that certain aspects of human consciousness, such as "understanding" must be beyond the scope of any computational system, i.e. "non–computable". Non-computability is a perfectly well-defined mathematical concept, but it had not previously been considered as a serious possibility for the result of physical actions. The non-computable ingredient required for human consciousness and understanding, Penrose suggested, would have to lie in an area where our current physical theories are fundamentally incomplete, though of important relevance to the scales that are pertinent to the operation of our brains. The only serious possibility was the incompleteness of quantum theory-an incompleteness that both Einstein and Schrödinger had recognized despite quantum theory having frequently been argues to represent the pinnacle of 20th century scientific achievement. Thus, incompleteness is the unresolved issue referred to as the "Gaussian Unified Theory (GUT) instead of Super Unified Gaussian Theory (SUT)", which we was consider in more detail in the present dissertation. One way to resolve it would be to provide an extension of the standard model of physics in the framework of quantum mechanics by introducing a Generalized Gaussian Energy Group (GGEG) from the Big-Rip Singularity or Revised Standard Model of Physics as explained above and Penrose introduced an objective form of quantum state reduction, termed "OR", (objective reduction). In Penrose (1989), the tentatively suggested "OR" proposal would have its onset determined by a condition referred to there as "the one-graviton criterion". However, in Penrose (1995), a much better-founded criterion was used, now sometimes referred to as the Diosi − Penrose proposal (henceforth "DP"; Diosi 1987, 1989, Penrose 1993, 1996, 2000, 2009). This is an objective physical threshold, providing a plausible lifetime for quantum superposed states. Other such OR proposals had also been put forward, from time to time (e.g. Kibble 1981, Pearle 1989, Pearle and Squires 1994, Ghirardi et al., 1986, 1990; Ghirardi 2011) as solutions to the measurement.

The specific heat of solids satisfies certain empirical relations, as embodied in the Dulong and Petit law stating that at sufficiently high temperatures, the specific heat of a solid is proportional to 3Nk, where N is the number of atoms, k the Boltzmann constant. At low temperatures, the relationship between specific heat and temperature is a cubic dependence on absolute temperature. The quantum theory of solids, as developed by Debye, was proposed to explain these empirical relations. The crucial observation in these models was the consideration of the heat capacity as associated with the vibrations of atoms in a crystalline solid. However, living organisms are essentially isothermal. Energy low in living organisms is mediated by differences in the turnover time of various metabolic processes in the cell, which occur cyclically. Demetrius (2003) has shown that the cycle time of these metabolic processes is related to the metabolic rate that is the rate at which the organism transforms the free energy of nutrients into metabolic work. The recently proposed theory of Quantum Metabolism (Demetrius, 2003) exploits the methodology of the quantum theory of solids to provide a molecular level explanation of these empirical relations. Debye (see for example Ashcroft & Mermin, 1976) considered the heat capacity as associated with the harmonic vibrations of atoms in a crystalline solid. The vibrations were treated according to quantum theory and satisfied the following tenet. The energy stored by an oscillator with frequency can only be an integral proposed by Debye, which proved to be consistent with empirical observations, assumed that the atoms in the solid execute coupled vibrations about the fixed lattice site leading to the propagation of waves in the solid and the frequencies of these vibrations span a range of values from zero to a maximum (Debye) frequency. The production of adenosine tri-phosphate (ATP), the energy currency of living organisms is mediated by the coupling of two molecular chains: (a) The redox chain, which describes the transfer of electrons between redox centers within the electrontransport chain. (b) The ATP-ase motor, which is involved in the phosphorylation of adenosine diphosphate (ADP) to ATP. There are two distinct mechanisms by which these two events are coupled: oxidative phosphorylation, which involves an electrical process, and substrate phosphorylation, which implicates a purely chemical process. The transit time of this cyclic process determines the total metabolic flux, that is, the number of proton charges released by the redox reactions. This transit time, or the metabolic cycle time, denoted, plays a fundamental role here. In oxidative phosphorylation, which occurs in the mitochondria, the electron transport between redox centers is coupled to the outward pumping of protons across the mitochondrial membrane thus generating an electrochemical gradient, called the proton motive force, p. Substrate phosphorylation, which is localized within the cytosol is driven by a set of enzymes which couple ADP phosphorylation to the electron transport chain. The molecular dynamics model proposed to investigate this coupling by electrical and chemical means assumes that the energy generated by the redox reactions can be stored in terms of coherent vibrational modes of enzymatic oscillators embedded in the cellular organelles. Quantum Metabolism rests on the notion that the enzymatic oscillations in cellular organelles and the material oscillators in crystalline solids can be analyzed in terms of the same mathematical formalism used by Debye in the quantum theory of solids. This realization is deduced from a formal correspondence between the thermodynamic variables in physical systems, and the metabolic quantities in biological processes. The principal variables in the quantum theory of solids are the specific heat, the Gibbs–Boltzmann entropy and the absolute temperature T. The fundamental unit of energy is given by E ¼ kBT, the typical thermal energy per molecule. The critical variables in the theory of Quantum Metabolism are the metabolic rate, the entropy production rate and the mean cycle time. This quantity describes the mean turnover time of the redox reactions within the cellular organelles. The fundamental unit of energy is now given by: EðÞ ¼ g. Here, the value assumed by EðÞ ¼ g depends on the mechanism, electrical or chemical, by which the electron transport chain is coupled to ADP phosphorylation. Note that since physical systems are described here at thermodynamic equilibrium, their parameters involve thermodynamic variables. Biological systems operate far from thermodynamic equilibrium (albeit close to steady states), hence their bio-energetic quantities involve fluxes, i.e., rates of change of energetic values. Demetrius (2003) introduced the term enzymatic oscillator since enzymes undergo electrochemical oscillations about their fixed positions. These oscillations are generated by the metabolic energy associated with the transfer of electrons between donor and acceptor pairs in the electron transfer chain in mitochondria. Since their power spectrum exhibits an exponent vastly different from that for random behavior, a description of the metabolic activity

involving mitochondrial proteins involves coupled quantum oscillators of the Debye type. Quantization of metabolic energy is due to integer ATP numbers being produced in the cell's mitochondria and their relatively low energy content comparable to physical quantum processes. The almost universal energy currency in biological systems is the ATP molecule. ATP synthesis in a mitochondrion or a chloroplast requires approximately 60 kJ/mol of energy delivered through electron transport reactions or absorption of photons, respectively, it is only possible when supplied by exchanging the energy of SU(6) into matter energies of SU(5). ATP hydrolysis releases 30.5 kJ/mol of free energy (E ¼ 5 1020 J), which can be viewed as a biological energy quantum. It is interesting to note that the particle-wave duality principle indicates that the wavelength of electromagnetic energy that corresponds to the biological energy quantum E can be estimated as: ¼ hc=E ¼ 9 106 m; ð2Þ which corresponds very closely to the average size of a living cell. It is also interesting to estimate the Debye temperature for the biological energy quantum assuming that enzymatic reactions involving ATP production occur in a cyclical but correlated manner in a grid or lattice reminiscent of the Debye solid. We find that TD ¼ E=kB ¼ 3 103 K and since the physiological temperature is T0 ¼ 300 K, it appears that T0=TD < 1 meaning that in the statistical sense, cellular metabolism operates in the quantum regime. This is of crucial importance since metabolism is a basic condition for sustaining life. In general, energy transduction in living systems involves three major modalities: photosynthesis (in plants and some bacteria), ion gradients and oxidative phosphorylation or glycolysis (in animal cells). If all energy transduction processes in living systems involve quantum mechanisms, then this becomes a fundamental property of living matter. The human brain is no exception. The related time course of the cerebral electrophysiological activity was described during the initiation and execution of voluntarily behaviour (e.g. movement of the fingers) by the classical experiments of Libet and later by others. This approach (**Libet 2006; Haggard 2005; Haggard and Eimer, 1999; Soon et al., 2008; Bode et al., 2011**) might be regarded as a decision making experiment and the readiness potential can be seen as to reflect the superposition state of the brain. Following regional brain activity using fMRI technology (see **Bode et al., 2011**) showed that the preparation phase in the anterior frontopolar cortex might precede the decision as much as 6 seconds. Once in the superposition state, decisions in a laboratory context are made in a very short period of time (already within 50 milliseconds; as in the **Turennout**, **1998** study) as compared to the preparation time. **Spivey and Co-workers**, **2007,** have emphasized the continuity of mind, rather than sequential states, as opposed to the quantum approach. They illustrate their ideas with decision-making experiments, showing that the subjects in an, apparently indecisive, state, stay longer indecisive when the decisions are more ambivalent, once the choice has been made, the decision is realized faster (**Pezzulo et al., 2011; Spivey 2007; 2012**). These studies show that decisions are anticipated far before the overt behaviour (**Bode et al., 2011**). These laboratory experiments are compatible with the idea that the central nervous system (the subject) develops a kind of superposition state before making the choice (the “collapse”). For the subject, the significance of artificial problem solving, is evidently modest and requires little “mind-space.” More important decisions might require a “larger space of the personal universe”, and more processing time.



New particles created by the new energy sources of SU(6),…..etc. in Super Quantum Physics theory, and then uncertainty, wave/particle duality, entanglement, coherence/de-coherence, quantum tunnelling and superposition of wave functions. (Figure taken from Meijer, 2012)

XIV. Conclusion

The basic idea is to investigate if there are other quantum network architectures that could be operating in the brain of the living body. First of all, we need to revised the standard model of physics for living matters started with the symmetry breaking of the Super Unified Gaussian Energy Group SU(11) instead of non-living matter clarified by the standard model of physics with the GUT symmetry breaking of SU(5). We introduced a series of new energy sources SU(6), SU(12),…etc. other than SU(5) i.e., SU(3), SU(2), U(1), a Generalized Gaussian Energy Group(GGEG) starting from the infinite space-time as explained in this article where it is assumed that in quantum theories of consciousness of our physical universe where these new energy sources are also responsible for creating consciousness…..etc. in the living or nonliving matters. In the theory of consciousness it is suggested that consciousness is a fundamental property of the universe. Energies of SU(6) created gravity as well as quantum gravities for the formation of a complete living and also for non-living bodies with definite shape like stars with its planets,…. etc. and living cells with its various parts and then cell divisions,…. etc. We assumed SU(6) with all other new energy sources SU(12), SU(24),…etc. created consciousness in the universe including living organic cells in planet of earth. The J_k bosons of SU(6) binding quark-likes and created forces with much more new unknown particles which are more responsible between all other chemical compounds, polymers in bimolecular cells or binding several compound elements in which different ions which are created different waves but coherently behaves like as a single wave. These J_k bosons are so strong that it changes the exotic matter fluid into ordinary matters, which are also responsible for the cell divisions and others in Bio-molecules/Atoms etc. whereas all material parts created by the elements/atoms of the Unified Gaussian energy group SU(5), that means where quarks are binding with the gluons created protons, neutrons, electrons,…etc. the matter atoms from hydrogen to heavy atoms and the so called empty space were filled with the unknown particles or quasi-

particles formed by the latent energies of SU(6) by creating a strong force. Thus our universe always filled with some new energy sources in different phase instead of nothing. A particular amount of material substances are always created by exchanging the bosons of SU(6) into the bosons of SU(5) for the particular expansive physical universe or within its parts for complete shaped like as cluster/galaxy/star/planet/animal/human/tree…..etc. hence there is no any absolute vacuum.

Thus it was shown that our consciousness or intelligences is the part of the universal consciousness or intelligences and we may consider that the human brain and its mental aspects are associated with classical brain physiology and are also part of a quantum physical universe. The human brain conceived as an interfacing organ that not only produces mind and consciousness but also receives information. The brain or parts of the brain are conceived as an *interference hologram* of incoming data and already existing data which equivalent to the subject's memory.

In quantum entanglement of the GUT in such a network could provide at least a partial answer to the binding problem of consciousness allowing for a delocalized quantum state involving many neurons. This requires a thorough understanding of quantum networks in wider sense like SUT instead of GUT. It is worth emphasizing that quantum networks may lead to quantum memories whereby entangled states would store information such as visual inputs.

We foresee major progress in bridging the gap between nano-science and consciousness in the area of nano-neuroscience where MT's, actin filaments and motor proteins connect between neurophysiology and molecular biology. Studying the neural phenomena at a nano-scale will lead to monumental breakthroughs in science and medicine in medical sciences and aid in consciousness studies. We assumed that in future by applying new energy sources creating with new unknown particles may be used for various critical treatment like cancer,….etc. in medical sciences for example applying J_k bosons of new energy sources of SU(6) binding with quark-like particles which produces new particles as protons-likes, neutrons-likes,… etc. new unknown particles are required for the preparation of the new medicine and prevented from critical diseases like as cancer, dementia, and for mental instability,….etc. That means we made valuable medicine clinically or pathologically by the proton-likes, neutron-likes,....etc. unknown particles and these particles having masses may have five times then heavy but not like in matter particle phase may be in the wave phase or any other form of the usual protons, neutrons,….etc of SU(5) although the new particles of SU(6) with quark-likes maintained wave-particle duality with the matter particles formed by quarks with gluons of SU(5) in particular temperature or having founded much more new unknown particles other than Hadrons, Hyperons, Nucleons,…etc. and using these particles may be produced with the bindings of quark-likes by Jk–bosons or using energy therapy by creating strong electromagnetic forces or currents with SU(6) in the frame-work of $SU(6) \times U(1)$ for the prevention or completely cured by resisting the unwanted cell-divisions like as cancer,…….etc. for critical illness from the very beginning of lives or human. Further possibilities involving physically-based quantum mechanisms of consciousness should also be considered. Moreover, quantum networks could generate communication channels that would transport information and process it performing complex operations. Recent experiments involving solid state physics devices based on nuclear spins demonstrated quantum information storage on the time scale of minutes or even hours is possible as demonstrated by the walt's group in their research on super-long quantum information storage using phosphorus ions in silicon (Saeedi et al., 2013). However, several challenging issues remain to be addressed. First of all, due to thermal fluctuations, a magnetic field of sufficient strength would be required to prepare the spin system in a pure enough state. On the other hand, there are no naturally occurring large magnetic fields and we also know that strong magnetic fields such as those in MRI machines do not have a significant effect on the state of consciousness of the person subjected to MRI scans. Regarding quantum communication channels, photon or boson emission and absorption is the best candidate mechanism for such phenomena. Bio-photonics is an emerging field in spite of its long history of false starts and intermittent periods of dormancy. A recent review (Cifra et al. 2014) summarizes the landscape in this field emphasizing a relatively narrow range of wavelengths between 350 nm and 1300 nm. It is also interesting to consider signal amplification and transmission over macroscopic distances along axons and dendrites of neurons. Understanding the biological basis for sustained quantum coherent superposition and entanglement would not only help to solve the enigmatic features of consciousness, but also enable future quantum information technologies.

Quantum physics indicates that consciousness is related to the awareness that an electron appears to show in the wave/particle duality (double slit experiment). Quantum physicists have shown that the electron behaves differently when being observed by a human as because there always present the latent energy group SU(6). When the electron is not being observed, the electron behaves like a wave, but when an observing instrument is placed in the experiment, the electron behaves like a particle. This experience indicates that the electron will change its behaviour/reality depending on whether or not the electron is being observed as if the electron is aware that it is being observed. This awareness is very similar, if not the same, as human awareness and may be related to the same consciousness. Thus consciousness understood if there creates lives otherwise it becomes pseudo but working always silently for the formation of our universes and then behaves like entanglement. Consciousness is, therefore, a non-material entity capable of independent, eternal existence, and not a property but in some sense may be used as property. Consciousness is not emergent, and is eternal similar to the electron and others. It can remain localized in the human brain and interact with the brain, and thereby, control the activities of the human body. While electrons in the brain behave as particles, these electrons prevent the consciousness from realizing that it is part of a larger whole. When the electrons behave as a wave, the consciousness becomes aware of its existence outside the human mind, which makes OBE and NDE possible. Whenever the electron wave function collapses, the OBE and NDE ends and the person returns to their physical body and its perception of reality similar to the collapsing of the wave function in the double slit experiment in quantum physics. During the OBE and NDE while the electron is behaving as a wave function, consciousness can leave the brain and go into an independent floating existence outside the human body where it can travel independent of space-time similar to the entangled electron.

How does the "I" or "self" or the perceived wholeness of one's world emerge from a system consisting of so many parts, billions of neurons. What creates the "Oneness" of thought processes? What creates individuality and "I"-ness or "self"? What creates feelings, free will, and creativity? The problem is solved only by making a complete total body assumed like an atom/molecule with the combination of two different characters of electro-magnetic wave functions producing in two different phases by the symmetry breaking of SU(11) & SU(5) and with creating new unknown particles then formation of biological particles, otherwise does not create such feelings etc.

Acknowledgement

The author is thankful to Prof. Subenoy Chakraborty, Department of Mathematics, Jadavpur University, Kolkata, West Bengal, India, for the discussion about the universe for my Ph.D and my friend Dr. Swapan Raha, Department of Mathematics, Viswabharati, Santiniketan, West Bengal, India.

I, also grateful to Researchgate Community, Linkdin Community, World Press Community & ORCID, and Prof. (Dr.) Dirk K.f. Meijer, Prof. Dr. Henk koppelaar, Prof. Paolo Di Sia (University of Padova, Italy), Al Fermelia, Stephen I. Ternyik, Bayarsaikhan Choisuren(Institute of Physics and Technology, Mongolia), Sidney Clouston(Clouston Energy Research, LLC), V.Netchitailo and all others for their continuously encouragements of my research progress.

References

[1]. Bhadra N.K. (2012): The complex Model of the Universe, IOSR-JM, ISSN: 2278-5728, vol.2, 4, pp-20; and The complex model of the quantum universe, ISSN: 2278-5728.IOSR Journal of Mathematics (IOSR-JM) vol.4, Issue. 1(Nov.-Dec2012),pp-20. "The Complex Quantum-State of Black-Hole and Thermo-statistics" (IOSR-JM: e-ISSN: 2278-3008, p-ISSN: 2319-7676. Volume 8, Issue 5 (Nov. –Dec. 2013), PP 01-19)]. Bhadra N K; THE COMPLEX QUANTUM AND CLASSICAL PSEUDO-TACHYONIC UNIVERSE; (IOSR-JM) e-ISSN: 2278-5728,p-ISSN: 2319-765X, Volume 8, Issue 3 (Sep. -Oct. 2013. THE COMPLEX QUANTUM-STATE OF CONSCIOUSNESS, IOSR Journal of Applied Physics (IOSR-JAP) e-ISSN: 2278-4861.Volume 9, Issue 1 Ver. II (Jan. – Feb. 2017), PP 57-93 www.iosrjournals.org. The Origin of Consciousness in the Universe-IOSR Journal of Mathematics (IOSR-JM) e-ISSN: 2278-5728, p-ISSN: 2319-765X.Volume 10,Issue 5 Ver.III (Sep-Oct.2014),PP 53 68www.iosrjournals.orgwww.iosrjournals.org 53| Page.

[2]. In Quantum Theory and Measurement, Wheeler, J. A., and zurek, W. H. (eds), Princeton University Press, 1983; Originally in Reviews of Modern Physics, 29, 454. Engel, G.S. , Calhoun, T.R. , Read, E.L., Ahn, T-K., Mancal, T. , Cheng, Y-C. , Blankenship, R.E., Fleming, G.R., (2007). Evidence for wave-like energy transfer through quantum coherence in photo synthetic systems, Nature 446: 782. Model pictures from Quantum modeling of the mental state: *the concept of a cyclic mental workspace*. by Dirk K. F. Meijer1 and Jakob Korf2.

[3]. Abbott, L.F. & Regehr, W.G. (2004) Synaptic computation. Nature, 431, 796–803. Abbott, D., Gea-Banacloche, J., Davies, P.C.W., Hameroff, S., Zeilinger, A., Eisert, J., Wiseman, H., Bezrukov, S.M. & Frauenfelder, H. (2008) Plenary debate: Quantum effects in biology, trivial or not? Fluct. Noise Lett., 8, c5–c26. Albrecht-Buehler, G. (1995) Changes of cell behavior by near-infrared signals. Cell Motil. Cytoskeleton., 32, 299–304. Ashcroft, N.W. & Mermin, N.D. (1976) Introduction to Solid State Physics. NY: Brooks Cole. Baars, B., Banks, W.P. & Newman, J.B. (2003) Essential Sources in the Scientific Study of Consciousness. Cambridge, Massachusetts: MIT Press. Beck, F. & Eccles, J.C. (1992) Quantum aspects of brain activity and the role of consciousness, Proc. Natl. Acad.

Sci. USA, 89, 11357–11361. Beck, F. & Eccles, J.C. (2003) Quantum processes in the brain: A scientific basis of consciousness. In: N. Osaka, ed., Advances in Consciousness Research, Vol. 49,

[4]. Philadelphia: John Benjamins Publishing Company. Beloussov, L.V., Opitz, J.M. & Gilbert, S.F. (1997) Life of Alexander G. Gurwitsch and his relevant contribution to the theory of morphogenetic fields. Int. J. Dev. Biol., 41, 771–777. Blankenship, R.E. & Engel, G.S. (2010) Long-lived quantum coherence in photosynthetic complexes at physiological temperature. Proc. Natl. Acad. Sci. USA. 107, 12766–12770. Brookes, J.C., Hartoutsiou, F., Hors¯eld, A.P. & Stoneham, A.M. (2007) Could humans recognize odor by phonon assisted tunneling? Phys. Rev. Lett., 98, 038101. Brown, J.A. & Tuszynski, J.A. (1997) Dipole interactions in axonal microtubules as a mechanism of signal propagation, Phys. Rev. E, 56, 5834–5840.

[5]. Cai, J., Popescu, S. & Briegel, H.J. (2010) Dynamic entanglement in oscillating molecules and potential biological implications, Phys. Rev. E, 82, 021921. Cifra, M. & Pospisil, P. (2014) Ultra-weak photon emission from biological samples: Definition, mechanisms, properties, detection and applications. J. Photochem. Photobiol. doi: 10.1016/j.jphotobiol.2014.02.009 (in press). Cohen, S. & Popp, F.A. (1997) Biophoton emission of the human body. J. Photochem. Photobiol. B, 40, 187–189. Collini, E. & Scholes, G.D. (2009) Coherent intrachain energy migration in a conjugated polymer at room temperature. Science, 323, 369–373. Craddock, T.J.A., Beuachemin, C. & Tuszynski, J.A. (2009) Cellular automata modeling of information processing mechanisms in microtubules at biological temperature, Biosystems, 97, 28–34.

[6]. Crick, F. & Koch, C. (1990) Towards a neurobiological theory of consciousness. Sem. Neurosci., 2, 263–275. Davies, P.C.W. (2004) Does quantum mechanics play a non-trivial role in life? BioSystems 78, 69–79. Doyle, D.A., Cabral, J.A., Pfuetzner, R.A., Kuo, A., Gulbis, J.M., Cohen, S.L., Chait, B.T. & MacKinnon, R. (1998) The structure of the potassium channel: molecular basis of K+ conduction and selectivity. Science, 280, 69. Demetrius, L. (2003)

[7]. Quantum statistics and alometric scaling of organisms. Physica A, 322, 477–490. Dustin, P. (1978)

[8]. Microtubules. New York: Springer-Verlag. Engel, G.S., Calhoun, T.R., Read, E.L., Ahn, T.K., Mancal, T., Cheng, Y.C., Blankenship, R.E. & Fleming, G.R. (2007) Evidence for wavelike energy transfer through quantum coherence in photosynthetic systems. Nature, 446, 782–786. Franco, M.I., Turin, L. Mershin, A. & Skoulakis, E.M.C. (2011). Molecular vibration-sensing component in Drosophila melanogaster olfaction. Proc. Nat. Acad. Sci. USA, 108, 3797– 3802. Fr€ohlich, H. (1968) Long range coherence and energy storage in biological systems. Int. J. Quant. Chem., 2, 641–649. Ganim, Z., Tokmakoff, A. & Vaziri, A. (2011).

[9]. Vibrational excitons in ionophores; experimental probes for quantum coherence-assisted ion transport and selectivity in ion channels. New J. Phys., 13, 113030. Grifts, D.J. (2004) Introduction to Quantum Mechanics. 2nd edn. NY: Addison-Welsey. Grush, R. & Churchland, P.S. (1995). Gaps in Penrose's toilings. J. Conscious. Stud. 2, 10–29. Gundersen, G.G. & Cook, T.A. (1999) Microtubules and signal transduction. Curr. Opin. Cell Biol., 11, 81–94. Hackermüller, L., Uttenthaler, S., Hornberger, K. ,Reiger, E., Brezger, B., Zeilinger, A. & Arndt, A. (2003) Wave nature of biomolecules and fluorofullerenes. Phys. Rev. Lett. 91, 090408. Hagan, S.,

[10]. Hameroff, S.R. & Tuszynski, J.A. (2002) Quantum computation in brain microtubules: Decoherence and biological feasibility. Phys. Rev. E, 65, 61901. Hameroff, S. (1997) Ultimate Computing. Amsterdam: North Holland. Hameroff, S., (1998) Quantum computation in brain microtubules? The Penrose–Hameroff Orch OR" model of consciousness [and discussion]. Philos. Trans. R. Soc. Lond. A, 356, 1869–1896. Hameroff, S.R. & Watt, R.C. (1982) Information processing in microtubules. J. Theor. Biol., 98, 549–561. Hameroff, S. & Penrose, R. (2014) Consciousness in the universe. A review of the Orch OR" theory. Phys. Life Revi., 11, 39–78. Jiang, Y., Ruta, V., Chen, J., Lee, A. & MacKinnon, R. (2003) The principle of gating charge in a voltage-dependent Kþ channel. Nature, 423, 42–28. Jibu, M. & Yasue, K. (1995) Quantum Brain Dynamics and Consciousness: An Introduction, Advances in Consciousness Research, Vol. 3. Philadelphia: John Benjamins Publishing Company Klein-Seetharaman, J., Oikawa, M., Grimshaw, S.B., Wirmer, J., Duchardt, E., Ueda, T. Imoto, T., Smith, L.J., Dobson, C.M. & Schwalbe, H. (2002) Long-range interactions within a nonnative protein. Science, 295, 1719–1722. Koch, C. (2004) The Quest for Consciousness. Englewood, Colorado: Roberts and Company Publishers. Koch, C. & Hepp, K. (2006) Quantum mechanics in the brain. Nature, 440, 611. Leggett, A.J. (2002) Testing the limits of quantum mechanics: Motivation, state of play, prospects. J. Phys. Condens. Matter, 14, R415–R451.

[11]. Levine, M. (2000) Fundamentals of Sensation and Perception. 3rd edn. London: Oxford University Press. Litt, A., Eliasmith, C., Kroon, F.W., Weinstein, S. & Thagard, P. (2006) Is the brain a quantum computer?, Cognit. Sci., 30, 593–603. Lowenstein, W. (2013) Physics in Mind: A Quantum View of the Brain. NY: Basic Books. McFadden, J. (2002) Synchronous firing and its influence on the brain's electromagnetic field: Evidence for an electromagnetic field theory of consciousness. J. Conscious. Stud. 9, 23–50. MacKinnon, R. (2003) Potassium channels. FEBS Lett. 555, 62. McKemmish, L.K., Reimers, J.R., McKenzie, R.H., Mark, A.E. & Hush, N.S. (2009) Penrose– Hameroff orchestrated objective-reduction proposal for human consciousness is not biologically feasible. Phys. Rev. E Stat. Nonlin. Soft Matter Phys., 80, 021912. Noskov, S.Yu., Berneche, S. & Roux, B. (2004) Nature, 431, 830. Ouyang, M. & Awschalom, D.D. (2003) Coherent spin transfer between molecularly bridged quantum dots. Science, 301, 1074–1078. Penrose, R. (1989) The Emperor's New Mind. Oxford: Oxford University Press. Penrose, R. (1994) Shadows of the Mind. Oxford: Oxford University Press. Pokorný, J., Hašek, J., Jelínek, F., Šaroch, J. & Palan, B. (2001) Electromagnetic activity of yeast cells in the M phase. Electromagn. Biol. Med., 20, 371–396.

[12]. Priel, A., Tuszynski, J.A. & Cantiello, H.F. (2006) The dendritic cytoskeleton as a computational device: An hypothesis. In: J. A. Tuszynski ed., The Emerging Physics of Consciousness, New York: Springer-Verlag. Reimers, J.R., McKemmish, L.K., McKenzie, R.H., Mark, A.E. & Hush, N.S. (2009) Weak, strong, and coherent regimes of Froehlich condensation and their applications to terahertz medicine and quantum consciousness. Proc. Natl. Acad. Sci. USA, 106, 4219–4224. Ricciardi, L.M. & Umezawa, H. (1967) Brain and physics of many-body problems, Kybernetik, 4, 44–48. Roberts, K. & Hyams, J.S. (1979) Microtubules. New York: Academic Press. Rosa, L.P. & Faber, J. (2004)

[13]. Quantum models of the mind: Are they compatible with environment de-coherence? Phys. Rev. E, 70, 031902. Saeedi, K., Simmons, S., Salvail, J.Z., Dluhy, P., Riemann, H., Abrosimov, N.V., Becker, P., Pohl, H-J, Morton, J.J.L. & Thewalt, M.L.W. (2013) Room-temperature quantum bit storage exceeding 39 minutes using ionized donors in Silicon-28. Science, 342, 830–833. Santarella, R.A., Skiniotis, G., Goldie, K.N., Tittmann, P., Gross, H., Mandelkow, E.M., Mandelkow, E. & Hoenger, A. (2004) Surface-decoration of microtubules by human tau. J.

Mol. Biol., 339, 539–553. Schrodinger, E. (1944) What is Life? Cambridge, UK: Cambridge University Press. Seife, C. (2000) Cold numbers unmake the quantum mind. Science, 287, 791. Scott, A.C. (1995) Stairway to the Mind: The Controversial New Science of Consciousness.

[14]. New York: Copernicus. Smith, C.U. (2009) The `hard problem' and the quantum physicists. Part 2: Modern times. Brain Cogn., 71, 54–63. Stapp, H. (1995) Why classical mechanics cannot naturally accommodate consciousness but quantum mechanics can. Psyche, 2, 1–23. Stuart, C.I.J.M., Takahashi, Y. & Umezawa, H. (1978) On the stability and non-local properties of memory. J. Theor. Biol., 71, 605–618. Summhammer, J., Salari, V. & Bernroider, G. (2012) A quantum-mechanical description of ion motion within the containing potentials of voltage-gated ion channels. J. Integ. Neurosc. 11, 123. Tegmark, M. (2000) Importance of quantum coherence in brain processes. Phys. Rev. E, 61, 4194–4206. Tuszynski, J.A. & Woolf, N. (2006).

[15]. The path ahead. In: J.A. Tuszynski, ed. The Emerging Physics of Consciousness. New York: Springer-Verlag. Tuszynski, J.A., Hameroff, S., Sataric, M.V., Trpisova, B. & Nip, M.L.A. (1995) Ferroelectric behavior in microtubule dipole lattices: Implications for information processing, signaling and assembly/disassembly. J. Theor. Biol., 174, 371–380. Vaziri, A. & Plenio, M.B. (2010) Quantum coherence in ion channels: Resonances, transport and verification. New J. Phys., 12, 085001. Velmans, M. (1996) The Science of Consciousness: Psychological, Neuropsychological and Clinical Reviews., New York: Routledge. Vogel, D.D. (2005)

[16]. A neural network model of memory and higher cognitive functions. Int. J. Psychophysiol., 55, 3–21. Woolf, N.J. (2006) Microtubules in the cerebral cortex: Role in memory and consciousness. In: J.A. Tuszynski, ed. The Emerging Physics of Consciousness. Berlin; Heidelberg; New York: Springer, pp. 49–94. Woolf, N.J., Young, S.L., Johnson, G.V. & Fanselow, M.S. (1994) Pavlovian conditioning alters cortical microtubule-associated protein-2. Neuroreport., 9, 1045–1048. Woolf, N.J., Zinnerman, M.D. & Johnson, G.V. (1999) Hippocampal microtubule-associated protein-2 alterations with contextual memory. Brain Res., 6, 241–249. Woolf, N.J., Priel, A. & Tuszynski, J.A. (2010) Nanoneuroscience: Structural and Functional Roles of the Neuronal Cytoskeleton in Health and Disease. Heidelberg: Springer Verlag. Woolf, N.J., Craddock, T.J.A., Friesen, D.E. & Tuszynski, J.A. (2010) Neuropsychiatric illness: A case for impaired neuroplasticity and possible quantum processing derailment in microtubules. Neuroquantology, 8, 13–28.

[17]. [9 http://www.zeit.de/2013/44/christof-koch-bewusstsein-hirnforschung 10 Roth G. Geist und Bewusstsein als physikalische Zustände. In: Dresler M. (Hrsg) Kognitive Leistungen. Intelligen zund mentale Fähigkeiten im Spiegel der Neurowissenschaften. Heidelberg: Spektrum Springer; 2011: 172 11 Eckoldt, S. 20 f.]

[18]. Jones, Newell (1938-05-06). "Dread Disease Germs Destroyed By Rays, Claim Of S. D. Scientist: Cancer BlowSeen After 18-year Toil by Rife". San Diego Evening Tribune. p. 1. Kendall, Arthur Isaac, MD., PhD.; Rife, Royal, PhD. (December 1931). "Observations On Bacillus Typhosus In ItsFilterableState:APreliminary Communication"(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1658030).Californiaand WesternMedicine.XXXV(6):409–11. PMC1658030(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1658030).PMID 18741967(https://www.ncbi.nlm.nih.gov/pubmed/187. Hagan, S. Hameroff, SR, Tuszynski, JA (2002). Quantum computation in brain microtubules: Decoherence and biological feasibility. Phys. Rev. E. 65, 061901.

[19]. Haggard P (2005). Conscious intention and motor cognition. Trends Cogn Sci 9: 290–295. Haggard P, Eimer M (1999). On the relation between brain potentials and the awareness of voluntary movements. Exp Brain Res 126: 128–33. Hameroff SR, (2007). The brain is both a neurocomputer and quantum computer. Cognitive Science; 31: 1035-1045. Hameroff, SR, and Penrose, R (1996). “Conscious Events as Orchestrated Spacetime

[20]. Selections”, Journal of Consciousness Studies, 3(1): 36-53. Hamill OP, Marty A, Neher E, Sakmann B., Sigworth FJ (1981). Improved patch-clamp techniques for high resolution current recording from cells and cell-free membrane patches. Pflugers Arch, 391: 85-100 Hartmann L, Düer W and Briegel, HJ (2006). “Steady state entanglement in open and noisy quantum systems at high temperature”. Physical Review A 74, 052304 Hasson U, Ghazanfar AA, Galantucci B, Garrod S, Keysers C (2012). Brain-to-brain coupling: a mechanism for creating and sharing a social world. Trends in Cognitive Sciences, 16 (2): 114-121. Hawking S (1988). A Brief History of Time. Bantam Dell Publishing Group. Hu, H and M. Wu (2010). Current landscape and future direction of theoretical and experimental quantum brain/ mind/ consciousness research, J. Consciousn. Exploration & Research 1: 888-897. Hu H and Wu M (2004). Possible roles of neural electron spin networks in memory and consciousness. Cogprints ID 3544, see also NeuroQuantology, 2006: 5-16. Jahn RG and Dunne BJ (2004). Sensors, Filters, and the Source of Reality. Journal of Scientific

[21]. Exploration, 18(4): 547–570. Jahn RG and Dunne BJ, (2007). A modular model of mind/matter manifestations. Explore, 3:311-24, reprinted from J. Scientific. Exploration, 2001. Jensen CS, Rasmussen HB, Misonou H. (2011). Neuronal trafficking of voltage-gated potassium channels. Mol Cell Neurosci; 48: 288-297.

[22]. Pereira A (2003): The quantum mind/classical problem. NeuroQuantology, 1: 94- 118. Pereira A, Furlan FA (2007). Biomolecular Information, Brain Activity And Cognitive Function. In: ARBS Annual Rev Of Biomdical Sciences, 9: 12-29.

Dr Narayan Kumar Bhadra "Revised Standard Model of Physics and Origin of Biology”. IOSR Journal of Applied Physics (IOSR-JAP), vol. 11, no. 1, 2019, pp. 12-40.