PHYSICS OF CONSCIOUSNESS AND LIFE

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PHYSICS OF CONSCIOUSNESS AND ITS MODEL MAY PROVIDE GUIDELINES TO SOLVE MANY SCIENTIFIC PROBLEMS INCLUDING QUANTUM ENIGMA

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Consciousness model assuming TCP (thought-carrying particle) and TRP (thought retaining particle) may provide guidelines to solve many scientific problems including quantum enigma.

Key words: Void, Universal mind (UM), Consciousness energy ($\in$), Thought Force (T_F), T_F(micro), T_F(macro), Though-carrying particles (TCP), Thought retaining particles TRP), Planck Energy, Quantized universal Consciousness Energy($\in_T$), Space-time continuum (STC), Universal thought frequency (UTF).

1. Introduction

Is there any relationship between the matter and consciousness? Can matter become conscious or can consciousness manifest itself in matter? The answer is always affirmative as the human being himself is the prominent example. Does this signify that consciousness is generated from the matter? The affirmative answer in this case is a type of purely mind-made concept or belief. There is no scientific proof that consciousness is originated from the matter. AI scientists think that 'minds are simply what brains do' and there always exists an inherent neural connection between the action of mind and nervous system. According to this concept of neuroscience, every physical reality is the result of a purely 'mind-made' concept having connections to nervous system. We must properly know and detect the exact 'vehicle' or 'agent' through which we are able to know. Whether consciousness is originated from the matter or not is possible to be asked and understood only in the presence of conscious mind alone. How is it possible to conclude that 'consciousness is originated from the matter' without gaining the proper knowledge of the exact characteristics of consciousness itself? Matter appears as matter only in the presence of consciousness but we do not yet know exactly what 'consciousness' itself really is. It cannot also be scientifically proved that consciousness does not originate from the matter. If 'mind' is accepted to be a type of fine matter, then and then only both the concepts about the manifestation of consciousness can be dealt with under 'materialism', otherwise everything concerning consciousness as well as mind is liable to come under 'idealism'.

Consciousness, not matter, is the ground of all existence, declares University of Oregon physicist Goswami, echoing the mystic sages of his native India. He holds that the universe is self-aware, and that consciousness creates the physical world. Calling this theory "monistic idealism", he claims it is not only "the basis of all religions worldwide" but also the correct philosophy for modern science. Materialistic dualism is the assumption that physical matter is the primary reality and that mind is separate from, but dependent upon, matter. In this view, mind is a secondary phenomena, or, to use the favored term, is an "epiphenomenon", meaning that it is some kind of separate, extra stuff that bubbles harmlessly out of brains. Monistic idealism, however, turns things around. In this position (dating back to Plato in the West, to Hinduism and Buddhism in the East), there is but one mind and it is the primary reality. Matter is an expression of mind, not separate from mind, but mind manifested materially.

We are what our minds make us. The mind is a very powerful controller of the body. Freeman J. Dyson expressed: "It appears that mind, as manifested by the capacity to make choices, is to some extent inherent in every atom. The second level is our direct human experience of our own consciousness. The third level is the entire universe. The universe as a whole is also weird, with laws of nature

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that make it hospitable to the growth of mind".

The modern cognitive neuroscientists generally accept the fact that the "mind" is not an isolated entity and the 'mind' is a 'state' created by the activities of 'brain' and nervous system. Although the mind is generally accepted to be an abstract having no spatial location or public observability, yet it is a type of 'fine matter' according to the ancient Hindu Vedanta which indicates that the universe exists along with the 'universal self-consciousness'.

The human nervous system is evolved to provide an appropriate material structure to individualize consciousness, which is a characteristic of reality, pervading all manifestations. This unbounded field of nature's 'universal self-consciousness' is not limited to an individual consciousness. Both, mind and matter, are aspects of one fundamental and underlying reality, which is called Hyponoesis or Universal Mind. Since both aspects are ultimately one and the same, interaction between these modalities is easily conceivable. The brain is the mediating link or interface between the Individual Mind and the body. By the act of self-referentiality of the Universal Mind (Hyponoesis), matter is produced (the world of physical objects). The objects or thoughts of the Universal Mind's Thinking (= Self-reflection) are the multitude of material objects. The 'individual mind' is a constituent of the universal mind (UM) which may be conceived to be originated at the 'Big Bang' from the eternal "Void", which in turn, is the source of infinite energy. The constituents of the UM as well as the 'individual mind' should logically be the ultimate constituents of the 'matter' itself as everything in this universe is a manifestation of this UM. This 'mind' may be entrapped in a 'self-organized' biological system through natural selection to exert its functions through the generated 'brain' and nervous system. And consciousness may be a process involving the quantum mechanical activities of those constituents of the mind.

The Universe exists along with the 'universal self-consciousness'. Consciousness that signifies the realization of existence is a functional state of mind, a constituent of the universal mind (UM). This UM is assumed here to be constituted by TCP (thought-carrying particles) and TRP (thought-retaining particles) which, in turn, are assumed to be the ultimate constituents of anything in this universe. These TCP & TRP are assumed to be originated from the "Void" at the 'Big Bang' to evolve the 'space-time continuum' and the UM along with the 'universal self-consciousness'. Mind is a state maintained by the quantum mechanical activities of these hypothetical TCP & TRP. Thus the 'mind' appears to be a 'state' created by 'brain' and nervous system through these postulated TCP & TRP.

These TCP and TRP behave, in general, like "biophotons" [1, 2] in any living system and like other photons in any non-living system in the universe. A photon cannot show any measurable mass. Although TCP & TRP behave, in general, like photons or bio-photons, yet they may be mathematically allotted a mass (m_T) equivalent to 5.5×10^{-37} g or 3.09×10^{-13} GeV. The quantized universal consciousness energy which itself is the quantized energy ($\in_T$) of the TCP radiated from the radiant mass of the universe is the energy responsible for causing the "thought force" (T_F). Thus the 'thought' which is the action of mind is a typical 'force' being carried by the TCP and this "thought force" (T_F) is applicable not only to any biological system but also to any inanimate object as well. Further, the TCP being the carrier of the T_F should function, in this special case, as 'bosons' when TRP would have to behave like 'fermions'. Expressions for "consciousness energy" and "thought force" along with the wavelength, mass and time period of the TCP have been derived and applied to different biological species. The quantized universal consciousness energy ($\in_T$) approximates the universal temperature signifying a sort of order in the universe. What was previously called "ether" for a universal medium has now become a universal wave of "quantum fields" (published in 'physics today' in February, 1999 by Frank Wilczek of the Institute of Advanced Study, Princeton, N. J., USA). This, in turn, is found to signify the existence of postulated T_F (micro) & T_F (macro) due to the existence of the activity of the hypothetical TCP in the presence of TRP.

In our proposition, these postulated TCP & TRP behave sometimes like 'free particles' and sometimes like 'waves' as it happens in the case of 'light' which can take the form of electromagnetic waves or of particles. We are encouraged to propose that 'consciousness' is nothing but a 'mental light' by which even a blind person can recognize an object by touching it.

A psychophysical hypothesis is necessary to provide a bridge between consciousness along with mind and matter. A second hypothesis is necessary to link consciousness with experience. Analy-

sis of consciousness and light yields many interesting and compelling parallelisms that are useful in trying to develop a theory of consciousness. Both consciousness (thought) and light (waves and photons) function as `carriers' of information and action, and both appear to be self-referential.

In the mathematical model for consciousness presented here, consciousness is thought to be a 'mental light' that is postulated to be a `carrier' of consciousness and is the basis for a psychophysical hypothesis of consciousness. The proposed model can provide guidelines to bridge the phenomenon of consciousness with the so-called `hard problem' of experience as well as the 'binding problem'. Consciousness can be operationally defined as: 1) 'self-organized' awareness of causation, 2) self referential and integrative, and 3) a determinant of our experience of reality. Consciousness is not limited in this context to 'simply' an on-off biological mechanism, to an observational effect or to qualia. The developed model holds potentially profound and challenging implications. It may possibly lead to a quantum theory of consciousness: 1) A common psychophysical threshold can be approximated based on the quantum mechanical action of the postulated TCP and TRP. 2) A compelling complementarity of consciousness emerges through the quantum mechanical activities of TCP and TRP, the active constituents of 'mind' and that is based on one's consciously chosen or unconsciously conditioned frame of reference. 3) This model is also responsive to Bell's conclusion that an `extra element' must be introduced before the collapse of the quantum wave.

2. Requirement of New Physics to explain the evolution of 'life, mind and consciousness' and their relations to matter

Professor N. David Mermin of Cornell University has, in the February 2001 issue of 'Physics Today', asked the following questions:

"Are fundamental theories still based on super-positions of states that evolve unitarily, or have the basic principle of quantum mechanics been replaced? If quantum mechanics has survived, have people reached a consensus on the solution to the interpretive problems, or have they simply ceased to view them as problems needing a solution? If quantum mechanics has not survived, has the theory that replaced it clarified these puzzles, or do people find it equally or even more mysterious? Has any progress been made in understanding the nature of conscious experience or how the mind affects the body, and does quantum mechanics or its successor play a fundamental role in that understanding? Did quarks turn out to be elementary or composite? If composite, did the candidates for their constituents turn out to be elementary or composite? Or do we have a better way of looking at these phenomena?"

Scientists are not yet able to understand **how the brain works to make the mind.** What they know about the brain is that it has got neurons that communicate across synapses by releasing a neurotransmitter, and that generates electrical impulses, and the receiving neuron then talks to its neighbours the same way. If the mind depends on the brain, then all aspects of the mind are going to depend on these simple electrical, chemical processes. If we should one day understand the chemical and electrical processes in the brain completely, would this explain mind? Would this understanding account for all faculties including intelligence, consciousness, emotion, and volition?

General view for the manifestation of consciousness:

Big Bang→Universe→ Fields + Particles & Antiparticles + STC→Matter and Fields + STC→Life as well as consciousness + Matter and Fields + STC

Our view for the manifestation of consciousness:

Big Bang→TCP, TRP & Anti-TRP + STC→Universe + Universal Mind with universal self-consciousness + TCP , TRP & Anti-TRP +STC → TCP , TRP & Anti-TRP +STC + UTF + Universal Mind with universal self-consciousness→ Matter and Fields + Life as well as consciousness +TCP & TRP + STC + UTF + Universal Mind with universal self-consciousness (where TCP is the origin of all the fields and TRP is the origin of all the matter particles and anti-TRP is the origin of all the anti-particles).

3. Testability for the existence of the TCP and TRP

It is fair to say that we have not observed the graviton whose existence is taken for granted. However, we propose here to verify the existence of the possible particles of the field of consciousness

by different ways.

Transformation of energy waves into consciousness require an intermediate material stage, probably in the model of energy to matter and then from matter to the onset of consciousness in biological organisms. The brain as a biological system converts the energy waves into chemical energy in the material form through the highly electrolytic neuro-chemicals. These chemicals get ionized in various degrees depending upon the energy input, coming out as information wave of specific length and frequency of the TCP, and facilitating the transport of information to different segments of the brain for interpretation. The quantized energy of the TCP is 4.95×10^{-16} erg $\cong \in_T$, the 'quantized universal consciousness energy'. The electrical activities inside the brain during the processing of information can be detected through Positron Emission Tomography and Magnetic Resonance Imaging as well as fMRI in a target to find out the presence and role of hypothetical TCP & TRP.

Nuclear physicists designed RHIC (Relativistic Heavy Ion Collider) at Brookheaven National Laboratory in Upton, New York and collided pairs of gold nuclei at high energies and observed the particles that sprayed from the impact point (published in the 14 January 2002 print issue of the journal, 'Physical Review Letters'). They detected fewer particles than standard theory predicts, suggesting that a tiny blob of unbound quarks and gluons may have been created. Studying the data from millions of these high-energy collisions, RHIC scientists will be able to gather definitive evidence that quark-gluon plasma (QGP) was formed. Along with hints of success, the physicists are also confronting a number of riddles. For instance, **some particle jets are emerging in ways that defy expectations.** Dr Steven L. Manly, a physicist at the University of Rochester said, "It may be that we have an actual clue that something fundamental is different, something we just don't understand yet". While most particles fly out with little energy — hindered, it seems, by the dense plasma — **others have more than theory predicts**. "The created matter is very opaque, very dense", said Dr Wit Busza of MIT. "**Also something new seems to be happening. I'm not sure what. Nature is telling us that there is some underlying simplicity here that we don't understand at the moment**". Within a short span of time, scientists may detect the 'origin' of this QGP which may indicate the existence of the postulated TCP & TRP.

The researchers may, in this way, through the utilization of 'nanotechnology' and 'femtochemistry' ultimately find out the existence and role of postulated TCP & TRP which are assumed here to be originated from the eternal 'void' at the Big Bang to form the UM.

4. Our view of mind as well as consciousness and their characteristics

The basic mystery of the mind is how does it emerge from pure matter? As per the Nobel laureate scientist Francis Crick the mind as well as consciousness is nothing but a pack of nerve cells. How do those units that are made of tiny particles, give rise to the unique and essentially private, experience called consciousness? Do the particles that constitute our brain determine what we think and do? Or, are we free to have our own will? According to David Bohm [3], quantum physics indicates that behind our physical reality everything in this universe is interconnected at a fundamental level by an 'unbroken wholeness' involving 'consciousness'.

In our proposition, the mind is nothing but a state maintained through a continuous stream of finer "thought particles" which are termed as TCP and TRP. These TCP and TRP are conceived to be originated at the 'Big Bang' from the "Void" [4, 5, 6], which is the source of infinite energy [4, 5].

It is our view that the 'individual mind' being a constituent of the universal mind (UM) is entrapped in a 'self-organized' biological system through natural selection to exert its functions through the generated 'brain' and nervous system. And consciousness is a process involving the quantum mechanical activities of these postulated TCP and TRP of the mind. These TCP & TRP govern the activities of neurons that are simply the equipment used to generate consciousness and awareness. The modern mind has been developed through natural selection to get its present shape in the inherent presence of 'universal self-consciousness'. It appears that inanimate matter itself cannot generate 'consciousness' without the inherent existence of 'universal self-consciousness'.

The mind-brain and brain-body links which are addressed by psychology, cognitive science, neuroscience and neurophysiology may be ultimately governed by the quantum mechanical activities of these postulated TCP & TRP. Consciousness that signifies the realization of existence is a

functional state of mind. This mind, in turn, exerts its functions through the 'instrument' called 'brain' with the help of TCP and TRP. The more the development of the organized brain, the more the degree of manifestation of 'consciousness'.

It is highly probable that the Void (≅ **SOUL**) exerts its functions through the finer instrument called '**MIND**', a constituent of the UM. This 'mind', in turn, exerts its functions through the "brain" (with the help of TCP & TRP) in the biological systems in order to grasp this physical universe, of course, in the inherent presence of "consciousness". This 'consciousness' is created and maintained by the quantum mechanical activities of TCP & TRP.

Thus anything and everything (including 'mind') being ultimately composed of these hypothetical TCP & TRP should have some sort of 'mind' as Dyson indicated. 'Consciousness' may thus be defined as the 'self-organized' capability of any living being to activate TCP and TRP, the constituents of the mind, and to exert its functions. What can generate, maintain and activate TCP and TRP is called "animate" having 'active consciousness' and what cannot is called "inanimate", i.e., devoid of active consciousness. As anything inanimate does neither have the power to activate the TCP and TRP nor have the capability to catalyze the activity of TCP and TRP, so it cannot generate 'consciousness'. On the contrary, anything animate has the 'self-organized' power to generate, activate and catalyze the activity of TCP and TRP in order to generate and maintain 'consciousness' along with the 'vital living force'. This 'consciousness' itself is acting as an inter-linking agent between the animate and inanimate through the activity of TCP & TRP.

Quantum physics has discovered a seamless fabric of intertwining threads of energy. We live in `an unimaginable ocean of waves and frequencies of TCP & TRP projected out from a deeper order of existence, out of which reality is constructed.

The reigning tenet of quantum mechanics is the uncertainty principle. A consequence of the uncertainty principle is that the presence of an observer or experimenter determines the outcome of the observation or experiment. Simply stated, this means there is no objective reality; you 'create' what you see through the quantum mechanical activities of these postulated TCP & TRP which are assumed here to be the active constituents of mind as well as any matter.

How could an object's existence depend upon the act of observation? This may be due to the fact that an object's existence as well as the act of observation through the prevailing 'consciousness' is totally dependent on the existence of the quantum mechanical activities of these postulated TCP & TRP which are the ultimate constituents of any matter as well as the mind. Thus, the entire Universe or the particles in it may be 'connected' in some way through the existence of these postulated TCP & TRP. And the 'spooky action-at-a-distance' may thus be built in nature through the probable existence of these hypothetical TCP & TRP. David Bohm calls this the "Implicate Order" that may be maintained through the quantum mechanical activities of these hypothetical TCP & TRP. Quantum enigma can be explained by accepting the existence of the quantum mechanical activities of these postulated TCP & TRP.

If consciousness is a fundamental part of reality manifesting from the quantum world, the unified field—the common source of everything, should also possess the attribute of consciousness. Otherwise, contrary to the tradition of science, we would have to introduce something external to the laws of nature, such as a metaphysical explanation for consciousness. Since the quantum world of unified field pervades all manifest phenomena, consciousness should be expected to do likewise. Here the implications of modern quantum physics parallel the cognitive knowledge of the ancient Vedic seers. According to them, consciousness is not an emergent property of matter that comes into existence only through the functioning of the human nervous system. Instead, consciousness is a characteristic of reality, pervading all manifestations. This unbounded field of nature's 'universal self-consciousness' is not limited to an individual consciousness. From this viewpoint, the role of the human nervous system is to provide an appropriate material structure to individualize consciousness.

5. How to develop a mathematical model for consciousness?

The debatable point is how can something without a spatial location interact at a specific location in the brain by firing a particular neuron inside the brain? Physicists have been puzzled with the idea of matter being moved around by anything other than the real forces, in particular, forces that

have origins in other material particles. The problem can be solved only if physical laws can be derived to establish a relationship between consciousness with other well-defined matter.

The science of the mind may be connected with the science of the body. The mind is an all-purpose computer responding impartially to the world around it; and this mind had, through natural selection, evolved to respond in a particular way to particular environmental circumstances. Humans are 'adaptation executors' carrying out programs written into the mind's machinery long ago. "The machinery does not know its own programming", said Cosmides and Tooby, intellectual leading evolutionary psychologists at the University of California at Santa Barbara. The evolutionary psychologists see the mind as pre-programmed, made up of specialized mechanisms — 'modules' or 'organs'. The evolutionary psychologists argue that their job is to approach the mind as an ancient engineering project, developing and testing out hypotheses about what 'designed problems' needed solving. Such an approach offers a badly needed bridge between psychology and the natural sciences.

Such a plausible bridge between psychology and the natural sciences can be achieved through the presently proposed and developed 'consciousness model'.

In this model, the universe is assumed to be composed of Space-time continuum and TCP & TRP in the inherent presence of 'universal self-consciousness'. Here, 'consciousness' has been treated as a form of energy like light. Hence, in this proposition, the overall total energy (E_T) of the universe is not zero but equals the 'quantized universal consciousness energy' ($\in_T$), i.e.,

$$E_T = E_{Mu} + (-E_{Gu}) + \in_T \qquad (1)$$

where E_T = total energy of the universe, E_{Mu}= positive energy represented by the total matter content of the universe, $-E_{Gu}$= negative energy represented by the gravitational field of the universe, $\in_T$ = quantized universal consciousness energy.

S.W.Hawking [8] expressed that the negative gravitational energy exactly cancels the positive energy represented by the matter supposing the universe to be approximately uniform and smooth in space.

Therefore,

$$E_T = \in_T = m_T V_T c \cong m_T c^2 = h\nu_T \qquad (2)$$

[$\because V_T$, the velocity of the TCP $\cong$ c, the free-space velocity of light], where m_T = quantized mass of the TCP, and ν_T = frequency of the TCP.

Modern scientists think that 'consciousness' is a sort of 'unified field'. Then it is evident that the manifestation of 'consciousness' is operated by its 'field particles'. In our proposition, these field particles are assumed to be TCP like 'bosons' which should accompany its fermion partner to be called TRP to maintain the concept of the so-called 'supersymmetry'. In the so-called 'supersymmetry, for every known fermion particle there exists an (as yet undetected) boson particle, and vice versa.

The quantized energy of the said TCP can be formulated through dimensional analysis as

$$\in_T = hc/\lambda_T = (h^3 c^5 m/V_{pr})^{1/4} \qquad (3)$$

The equation for the quantized universal consciousness energy ($\in_T$) which itself is the quantized energy ($\in_T$) of the TCP radiated from 1.16025×10^{53} g, the calculated radiant mass of the universe through Stephan-Boltzmann formula [9] is

$$\in_T = (h^3 c^5 m/V_{pr})^{1/4} = 4.95 \times 10^{-16} \text{ erg} \qquad (3A)$$

The quantized energy, $\in_T$ of the TCP radiated from the radiant mass of the universe is

$$\in_T = 4.95 \times 10^{-16} \text{erg} \equiv 3.08 \times 10^{-4} \text{ eV} \equiv 3.08^{o} \text{K} \quad [\because 10^{-4} \text{ eV} \cong 1^{o} \text{K}] \text{ [10].}$$

The value of the 3.08^{o}K approximates the universal temperature corresponding to the microwave background radiation temperature reported by Penzias and Wilson [11]. This universal temperature (3^{o}K) corresponding to the microwave background radiation is, in our view, due to the quantized

energy ($\in_T$) of the TCP = 4.95 x 10^{-16} erg ≡ 3.08 x 10^{-4}eV ≡ 0.4018 cm which is the calculated λ_T of the TCP radiated from the radiant mass (=1.16025 x 10^{53}g) of the universe.

On the other hand, when $\in_T$ is formulated like Planck energy [12], E_p, by incorporating physical constants like h, c, G (Newton's gravitational constants), H_o and V_{pr}, we get

$$\in_T = 1/4\pi(h^3c^8 / G\, H_o\, V_{pr})^{1/4} = 4.7142 \times 10^{-16}\ \text{erg} \qquad (4)$$

Thus,

$\in_T$ = 4.7142 x 10^{-16} erg ≡ 2.8 x 10^{-4} eV ≡ 2.8^{o} K ≡ Microwave background radiation ≅ 2.73^{0}K .

Further, $\in_T$ may also be expressed as

$$\in_T = (3/11)\pi(h^3c^8 / GH_o\, V_{pr})^{1/4} = 4.927 \times 10^{-16}\ \text{erg} \qquad (5)$$

Here (3/11)π factor is incorporated because11 is generally accepted to be the maximum number of dimensions with which this physical universe is thought to be related and 3 is for the three-dimensional space only.

All these three expressions for $\in_T$ ultimately yield more or less the same value. A sort of relationship is thus observed between the 'quantized universal consciousness energy' ($\in_T$) and the universal temperature corresponding to the microwave background radiation temperature.

6. Thought Force

"Life" is a state of 'flux' that is being maintained by a typical form of energy which is found to be the 'consciousness' itself which, in turn, causes the generation and maintenance of the "vital living force" through the activities of TCP and TRP. The "life" may thus be defined as a state of functional manifestation of the quantized universal consciousness energy ($\in_T$). Thus,

$$\text{Life} = f(\in_T) = f(m_T V_T c) = f(m_T c^2) \qquad (6)$$

It is provocative to note that the characteristics of this quantized universal consciousness energy ($\in_T$) is more or less the same as those of "light" as it can be shown that

$$\in_T \propto c \quad \text{or} \quad \in_T = Kc \qquad (7)$$

where c = free-space velocity of light, and K= h/λ_T , where λ_T = wavelength of the TCP radiated from the radiant mass of the universe and h = Planck's quantum constant.

Light travels fast and far, but even the light stops at a black hole. A black hole is a star that is so massive that it collapses to a practically no volume under its own gravity. The gravitational force in a black hole is so intense that even light cannot escape from it. The apparent origin of "physical time" appears to be related with the origin of evolution of 'light' and its evolved velocity (c) as 'time' (as well as 'space') becomes zero at the inside singularity of a black hole. Thus, the velocity of light (c) as well as 'space-time' is always related with 'consciousness' which is conjectured here to be the 'mental light'.

As the quantized universal consciousness energy ($\in_T$) is the energy responsible for generating the T_F (thought force), so T_F may be expressed as

$$T_F = \in_T / D_i \qquad (8)$$

where D_i = Interacting distance.

The TCP being the carrier of the T_F would have to behave, in this special case, like 'bosons' when TRP would have to function as 'fermions'. In our proposition, these postulated TCP & TRP behave sometimes like 'free particles' and sometimes like 'waves' as it happens in the case of 'light' for which 'consciousness' may be thought to be a type of 'mental light'.

Eminent scientists like Chris Quigg [13], Steven Weinberg [14] and Donald H. Perkins [15] reported that there would have to exist a new class of "extra strong" interaction which would be

stronger than the existing SNF (strong nuclear force) along with the existence of a new class of 'long-range weakest' force which would be weaker even than the gravitational force (G_F).

It is found through the postulated TCP and TRP that

T_F (micro) $\cong 10^5$ SNF $\cong 10^{43}$ $G_F \cong$ 59.78 dyne $\cong 37.32 \times 10^3$ GeV $\cong$ Strongest interaction (at Di $\approx 10^{-18}$ cm, the calculated radius of a TCP or TRP).

T_F (macro) $\cong 10^{-3}$ $G_F \cong 10^{-41}$ SNF $\cong 3.34 \times 10^{-45}$ dyne $\cong 2.085 \times 10^{-42}$ GeV $\cong$ Long-range weakest interaction (at Di = R = radius of the present universe = $c/H_0 \approx 1.482 \times 10^{29}$ cm).

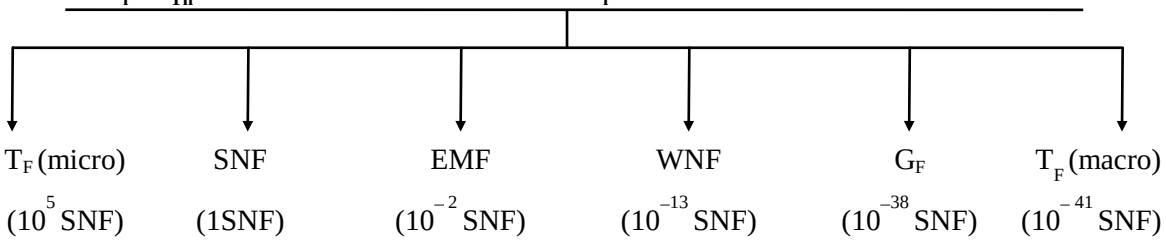
T_F itself may be found to be the original single 'unified field' which is the original common source of all the natural fields. And this T_F may be responsible for causing the manifestations of all the four fundamental fields along with both the T_F(micro) & T_F(macro). TCP may be found to be the origin of all the existing 'fields' when TRP would function as the origin of all the 'matter particles' in the universe.

Experiments conducted by Niels Birbaumer and his team at the University of Tubingen in Germany (published in 'Nature' in March, 1999), the research work of John Captain of Hahnemann Medical College in Philadelphia (published in 'Nature Neuroscience', in July, 1999) and the experiments conducted by Dana Ballard, professor of computer science, and science graduate student, Jessica Bayliss of the University of Rochester clearly signify the existence of the 'thought force' (T_F) which is assumed here to be carried by the TCP (= biophotons or photons). Further, Dr John P. Donoghue, a professor of neuroscience at Brown University has reported (in March, 2002 issue of 'Nature') that a rhesus macaque monkey can move a cursor on a computer screen just by thinking to meet the target quickly and accurately when the monkey plays the pinball game mentally. These types of experiments indicate the existence of 'thought force' that generates and controls the 'thought processes' involving the firing of neurons through the quantum mechanical activities of these postulated TCP & TRP (as bio-photons).

'Thought' of any living system is, therefore, a 'force'. Although this 'thought' is possible only in the presence of the architecture of the 'brain' as well as consciousness, yet it is to be understood that this "thought force" (T_F) is applicable not only to any biological system but also to any inanimate object as well.

Strength of interaction

(when $D_i = r_{Tn} \approx 10^{-18}$ cm in the microcosm and $D_i = R = 1.482 \times 10^{29}$ cm in the macrocosm)



Thus when $D_i = r_{Tn} = 10^{-18}$ cm in the microcosm and $D_i = R = 1.482 \times 10^{29}$ cm in the macrocosm,

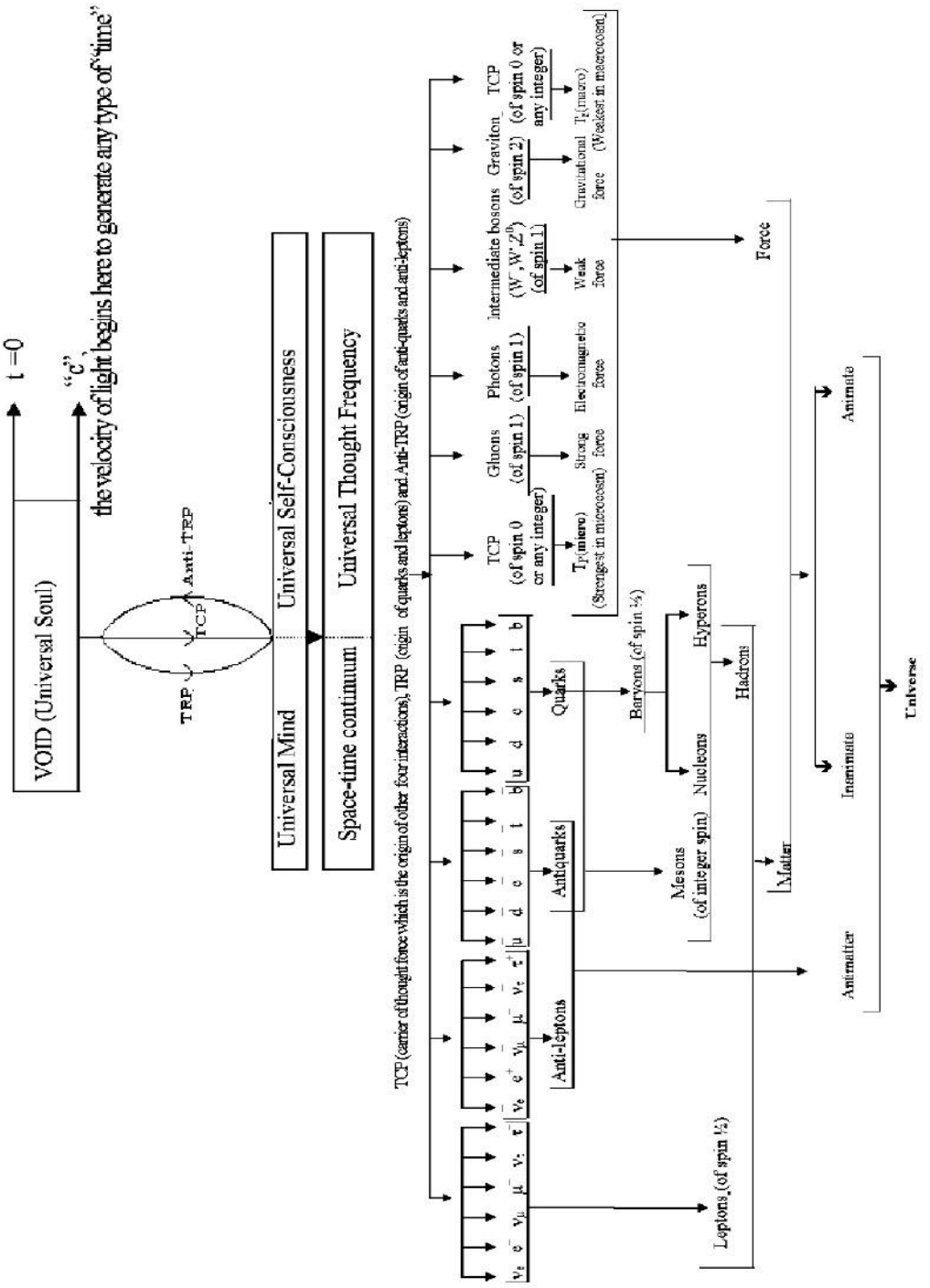
$$1\text{SNF} \equiv 10^{-5}\, T_F(\text{micro}) \equiv 10^2\, \text{EMF} \equiv 10^{13}\, \text{WNF} \equiv 10^{38}\, G_F \equiv 10^{41}\, T_F(\text{macro}).$$

Similarly, when $D_i = r_{Te} \approx 10^{-16}$ cm in the microcosm and $D_i = R = 1.482 \times 10^{29}$ cm in the macrocosm,

$$1\text{SNF} \equiv 10^{-3}\, T_F(\text{micro}) \equiv 10^2\, \text{EMF} \equiv 10^{13}\, \text{WNF} \equiv 10^{38}\, G_F \equiv 10^{41}\, T_F(\text{macro}).$$

In this way, TF is bridging the microcosm and macrocosm by the activity of TCP and TRP through the generation of a universal wave of "quantum fields" of TF(micro) & TF(macro). Further, the $\in_T$ may be found to control both the living and the non-living systems of this universe and also the universal temperature, individual consciousness, and all the natural fields including the TF too through the activity of these hypothetical TCP & TRP.

Figure 1. Evolution of the universe from the void incorporating the hypothetical TCP (Thought-carrying particles), TRP (Thought-retaining particles) and Thought Force. Laws of absolute conservation of mass, charge (and color) are to be maintained in order to develop a general theory for the unification of physics which would be freely applicable to the more general situations involving both the inanimate and animate having consciousness



7. Some critical aspects to justify the existence of TCP, TRP, T_F (Micro) and T_F (Macro)

The probability of the existence of the universal wave of 'quantum fields' (published in the February, 1999 issue of 'Physics today' by Frank Wilczek of the Institute for Advanced Study in Princeton, N.J.), the probability of the existence of the 'background sea of quantum light filling the

universe' through the 'Zero-Point Field' (published in the Physical Review, in February 1994 by Bernhard Haisch), the so-called 'spooky action-at-a-distance' and David Bohm's "wholeness and implicate order" signify the existence of postulated T_F(micro) & T_F(macro) due to the existence of the quantum mechanical activities of these hypothetical TCP & TRP which behave like 'biophotons' [1, 2] in any living system and like other photons in any non-living system in the universe. "Infraquarks", "Infra-electrons", "Bremsstrahlung" and "inverse photo-electric effect" indicate the presence of TRP & TCP. Modern experiments have probed at length scales of about 10^{-17} cm, but even at that scale there is nothing to indicate that the electron has any structure. Although, Humphrey Maris of Brown University claims that electrons can also be split into fragments called 'electrinos' in a paper published in the Journal of Low Temperature Physics, September 2000. The so-called 'branes' of the M theory may be constituted by these postulated TCP & TRP.

It appears that there is a possibility of the generation of Higgs bosons through the strong interaction of TCP in the presence of TRP and this "extra strong interaction" which is often called "technicolor" is the T_F(micro) itself in the region of 10^{-18} cm, the calculated radius of a TCP or TRP.

Very exciting work on microtubules and consciousness has been presented by Hameroff and Penrose (1996, "Toward a Science of Consciousness Proceedings", MIT Press) which brings together fundamental physics and biology.

The Hameroff-Penrose conjecture is that there is a gravitationally induced quantum coherence in arrays of microtubules at the onset of consciousness. They use the time-energy uncertainty relation with a time scale ("preconscious to conscious transition time", 500 milliseconds) derived from psychological experiments to calculate that assemblies of about ten thousand neurons acting in quantum concert could mediate consciousness. Another important time scale

in this work is the nanosecond time scale associated with protein conformation changes studied by Herbert Frohlich in his prediction that cooperative quantum effects in and amongst cells would give rise to coherent oscillations in the 10^9-10^{11} Hz frequency range. This constitutes a large scale quantum biological phenomena analogous to superconductivity. It is to be noted that the frequency of TCP is 7.466×10^{10} cps.

Several researchers have suggested that quantum mechanics might be biologically relevant. An early conjecture along these lines is Fröhlich's theory (Fröhlich, 1983) that collective vibrational modes (coherent phonons) in biological membranes can create conditions similar to a Bose-Einstein condensate, leading to ordered, cooperative behaviour in which the vibrational energy is concentrated into the lowest mode. The underlying intuition is that the structures formed by Bose-Einstein condensates are the building blocks of mental life; in relation to perception they are models of the world, transforming a nice view, say, into a mental structure which represents some of the inherent qualities of that view.

8. Discussions and conclusion

It has been experimentally observed [1, 2] in the field of "biophotonics" [16, 17, 18] that living beings including human being emit microwaves constantly and regularly in a particular pattern which may be responsible for maintaining not only the 'metabolism' along with 'consciousness' but also for maintaining the universal existence. This microwave radiation is due to the emission of a type of photons usually called "biophotons" [1, 2] which, in our view, are nothing but the postulated TCP and TRP.

It can also be shown by calculation that the biological systems would have to emit microwaves having λ_T of the order of 0.4cm $\cong 10^{-4}$ eV $\cong 10^{-16}$ erg $\cong \in T$, the quantized energy of TCP radiated by the radiant mass of this universe $\cong$ the quantized universal consciousness energy.

The developed mathematical model for consciousness may provide guidelines to solve the mystery of quantum mechanics. The quantum mechanical activities of mind is found to be present at several places at a time unless it is fixed at a particular point or place. It is the same case with the quantum particle. It is highly probable that consciousness which is the quantized 'energy' of the postulated TCP is functioning as the 'primordial quantum field' which is T_F(Thought force) in our proposition. This T_F itself may be found to be the original single 'unified field' which is the original common source of all the natural fields.

Some enigmatic critical problems such as, the cause of expansion of the universe, the origin of all the existing 'fields' and 'particles', the 'biological evolution' either by the 'natural selection' or by

the 'gene mutation' etc. can be approached through this mathematical model for 'consciousness'.

In his 'Mind and Matter' (p-127) Erwin Schrodinger expressed, "It is the same elements that go to compose my mind and the world. This situation is the same for every mind and its world; in spite of the unfathomable abundance of 'cross-references' between them. The world is given to me only once, not one existing and one perceived. Subject and object are only one. The barrier between them cannot be said to have broken down as a result of recent experience in the physical sciences, for this barrier does not exist".

The evolution of 'life' having mind and consciousness is, in our view, possible purely due to the ultimate fate of the eternal Absolute (≅Void) to express itself through the UM. The natural physical laws governed by the eternal 'Void' (Absolute) cause the evolution of life with 'consciousness' through the generation of DNA and RNA by the quantum mechanical activities of these postulated TCP & TRP which are conceived to be not only the active constituents of the UM but also the ultimate constituents of anything in this universe.

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Физика сознания и ее модели как руководство к решению многих научных проблем, включая квантовую загадку

Модель сознания, включающая TCP (переносящие мысль частицы) и TRP (удерживающие мысль частицы), может предоставить новые возможности для решения многих научных проблем, включая квантовую загадку.

Ключевые слова: Пустота, Универсальный ум, энергия сознания, сила мысли (T_F), микро-T_F, макро-T_F, переносящие мысль частицы (TCP), удерживающие мысль частицы TRP), энергия Планка, квантуемая универсальная энергия сознания, пространственно-временной континуум (STC), Универсальная частота мысли (UTF).