Bridging Observer and Observed

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Abstract

In scientific research we are using the observer's ability of being conscious of scientific models of the universe and of the universe itself. The observer distinguishes clearly between the scientific model and the physical reality. It is not yet known exactly who/what is the observer. On the basis of his ability of being conscious, here, the observer is treated as consciousness itself. Penrose describes consciousness as a result of quantum gravity acting on the neurons of the brain. Consciousness is non-local; it does not exist exclusively in the brain. Herein, the idea is introduced that consciousness is a basic frequency of quantum space. Human brain has the ability to "connect" and harmonize with consciousness. Profound harmonization with consciousness allows the brain/mind to clearly distinguish between scientific models of the universe and universe itself.

Introduction

Penrose and Hameroff described consciousness as a result of quantum gravity acting on neurons of the brain (1). In accordance with Penrose-Hameroff idea of human consciousness being deeply related to quantum gravity a hypothesis presented here is that consciousness is a basic frequency of quanta of space QS that build quantum space. QS vibrates at the "basic frequency" $0{,}19*10^{44}\,s^{-1}$ have a "basic energy" given by $Eqs = 1{,}26*10^{10}\,J$ and change their electrical charge from positive to negative in a Planck time $5{,}39*10^{-44}\,s$. Neurons of the human brain have ability to interact with this basic vibration of cosmic space and harmonize with it (2).

Information Transfer Consciousness-Matter

Consciousness is here described a basic frequency of quanta of space QS that have a size of Planck $1{,}6*10^{-35}\,m$. The size of an atom hasa range of $10^{-10}\,m$. The question here is, how extremely small QS can communicate with an atom that builds up molecules constituting living cells of neurons. One can predict the existence of some hypothetical quanta transferring consciousness as basic frequency of QS into atoms. Several experiments have been conducted, showing an unknown energy entering into a living organism during its growth, and leaving it at the time of death. It seems that this energy is spread out in space and additionally concentrated in living organisms. Additional concentration increases the mass of a living organism regarding to the mass of this same dead organism.

Herein, an experiment is discussed in detail, which shows that the mass of an organic organism is different from the living mass. We used a closed system to eliminate any possible external effect on the test object. Preliminary experiments were carried out in June 1987 at the Biotechnical Faculty, Ljubljana, Slovenia. Measurements were performed using a Mettler Zurich M5 scale. Six test tubes were filled with three milliliters of a water solution containing meat and sugar. Four test tubes were used and a fungus was put into two of the test-tubes. All test tubes were

then welded airtight. The weight difference between test tubes was measured for ten days. After three days of growth the weight of the test tubes containing the fungus increased to 34 micrograms (on average) and remained unchanged for the last seven days. The experiment was carried out in a sterile environment. It showed an increase in the living biomass by incorporating nonliving organic substances, which could be represented by the following equation:

$$m_{organic} + dm = m_{living} ,$$

$m_{organic}$ is the mass of organic substances, dm is the change in mass for the entire system, and m_{living} is the mass of living organisms.

In another experiment, two test tubes were filled with 5 grams of Californian worms and distilled water. All test tubes were then welded airtight. The weight difference between test tubes was measured for 5 hours. By the end of the first hour there was no considerable difference but by the end of the second and third hour the mass increased by 4.5 micrograms on average. It then remained stable for the next two hours, most likely due to the fact that there were no more living organisms. This change in mass resulting from the change of organisms from a living condition to a nonliving one could be shown with the following equation:

$$m_{living} = m_{nonliving} + dm .$$

These experiments were repeated from August to September 1988 at the Faculty for Natural Science and Technology, Ljubljana. Two Mettler Zurich scales type H20T were used in the measurements. The obtained results were identical.

In another experiment, a test tube was filled with 70 grams of live Californian worms, while a smaller test tube was filled with 0.25 ml of 36% water solution of formaldehyde and put inside the larger tube. The control test tube contained 70 ml of distilled water and also a smaller test tube of formaldehyde. Both test tubes were welded, wiped clean with 70% ethanol and put into the weighing chamber of the balance. Approximately one hour was given for acclimatization. Later both test tubes were measured three times at five minute intervals. Then the test tubes were turned upside down to spill the solution of formaldehyde, and again measured seven times at fifteen minute intervals. The weight of the test tube with worms was found to have increased by 60 micrograms on average in the first three minutes after poisoning, and then went down. Fifteen minutes after poisoning the weight diminished by 93.6 micrograms on average.

This last experiment was repeated twelve times. The standard deviation amounted to 16 micrograms. The pressure in both test tubes was one atmosphere for the entire duration of the experiment, the temperature also remained unchanged. Neither the pressure nor the temperature could have therefore been the cause for the change in weight.

In 1997, results of the experiments were published in the "Newsletter" no. 18–19 of the Monterey Institute for Study of Alternative Healing Arts, California. On March 3rd 1998, Dr. Shiuji Inomata from Japan informed the editor (S. Savva) that Dr. Kaoru Kavada got similar results using rats as the experimental organism, again in a closed system.

Experiments obtained at the time of death of living organisms show that the bio-photon emission at death is 10 to 100 times bigger than with a healthy organism (3).

The mass difference life/death and an increase of the bio-photon emission at death show some unknown energy leaving the organism when it transforms from living to dead stage. In Chinese traditional medicine this energy is called Qi, in Indian traditional medicine it is called Prana. The Qi/Prana energy is the flow of energy connecting consciousness and the nerve system of living organisms.

The missing link between the size of consciousness and the size of an atom could be "dark energy". Dark energy is hypothetical energy spread out in the universal space that could be additionally concentrated in living organisms and cause of mass difference life/death (4).

Another interesting thesis of information transfer between consciousness and brain was provided by the Indian researcher Moninder Singh Modgil. In his article *Geometry of Time, Axiom of Choice and Neuro-Biological Quantum Zeno Effect* he proposes the following solution: "Existence of a very small micro-mini-black-hole in brain is predicted as a space-time structural interface between consciousness and brain, whose vaporization explains mass-loss reported in weighing experiments, conducting during the moments of death" (5).

Further research will give more experimental data about the physical basis of information transfer consciousness – life. The realization of an experiment with dying humans is technically difficult. The mass difference life/death seems to be present with all living organisms. Experiment with fungus and worms ought to be repeated independently in two separate laboratories.

Since matter exists in quantum space where consciousness is the basic frequency of QS matter has a tendency to develop into conscious living organisms in the entire universe. Evolution of life is converging towards the basic frequency of quantum space. Consciousness plays an active role in the process of evolution. Development of life on planet Earth is a consistent part of cosmic dynamics that runs in the whole universe (6).

Relation between Observer/Consciousness, Time and Motion

In the universe observer observes material change in space. Time as a part of space cannot be observed. According to Gödel time is not part of space. Fourth coordinate of space-time is spatial too (7).

Quantum gravity describes cosmic space as granular. Space is made out of quanta of space QS volume of Planck (8). Prevalent idea in physics is that cosmic space has three spatial dimensions and one temporal dimension. It is difficult to imagine that quanta of space QS have three spatial dimensions and one temporal dimension. Fourth dimension of quanta of space QS is spatial too. Experimental data confirms that with clocks we measure a frequency $\gamma(s^{-1})$, velocity $v(ms^{-1})$ and numerical order $n...n+1...n+2...n+3$ of material changes that occur in a quantum space. Physical time that is run of clocks ("tick" of clocks) is not a part of quantum space in which change occurs. With clocks we do not measure time as a fourth dimension of space. Quantum space itself is timeless. Space-time is mathematical model merely were fourth coordinate X4 is a product of imaginary number i, light speed and number t that represents "tick" of clock: X4 = i x c t.

Time as a run of clocks is derived from motion. Motion is primary physical reality. Time as a run of clocks is man made secondary physical reality for measuring motion (9).

We experience motion and stream of changes that run in timeless quantum space in the inner linear time that is based in neuronal activity of the brain. Research done in 2003 introduces idea that part of the brain is creating linear time: “The brain is the “local” creator of time, space, and space-time as our special maps of the reality we “observe” and participate in.” (10). Research done in 2005 shows that consequent experience of changes in a “past-present-future” perspective is a result of neuronal dynamics in certain areas of the brain (11).

We perceive changes which occur in the universe through our eyes. Then the information about these changes is processed by the brain into inner time, and finally becomes our experience. Between perception and experience there is processing through inner time that creates a distortion of perception. However, once we become aware of the inner time, we can experience changes directly as they occur. This direct experience gives a scientist an objective view of timeless space and physical time as the running of clocks. He understands that changes exist “before” and “after” in a sense of a numerical order. The smallest unit of numerical order is “Planck time” and the largest is “one year”.

indirect experience
change – perception – processing through inner time – indirect experience

direct experience
change – perception (eyes) – direct experience

In today’s physics, the stream of change that runs in time is understood as a physical reality although there is no experimental data for such interpretation. As we experience changes through the linear inner time, we are not aware that changes run in timeless quantum space. Experimental data confirms that changes run in timeless space and with clocks we measure their frequency, velocity and numerical order.

With the discovery that physical time is the running of clocks in timeless quantum space, a new interpretation of relativity emerges. In a faster inertial system that moves in timeless space, the speed of change is slower than in a slower inertial system. With a stronger gravity the speed of change is slower than with a weaker one. The so-called “time-dilatation” means that the speed of change slows down, as well as the speed of clocks.

More and more modern researchers are challenged with the view that space-time is the fundamental arena of the universe. They point out that the mathematical model of space-time does not correspond to physical reality, and propose a “timeless space” as the arena instead. One recent paper on the subject is *A New Geometric Framework for the Foundations of Quantum Theory and the Role Played by Gravity*. Since quantum theory is inherently blind to the existence of such state-space geometries, the analysis here suggests that attempts to formulate unified theories of physics within a conventional quantum-theoretic framework are misguided, and that a

successful quantum theory of gravity should unify the causal non-Euclidean geometry of space time with the atemporal fractal geometry of state space (12).

The Einstein-Podolsky-Rosen (EPR) experiment similarly reminds us that physical space is a timeless environment. There is no discernible signal in the form of a photon travelling between A and B. The time of information transfer between A and B is essentially zero. We might infer that A and B are extended entities. The timeless space represents an immediate communication medium between the quanta A and B (13).

The timeless physical space as an “immediate information medium” resolves the causality problem of the Fermi two-atom system: “Let A and B be two atoms or, more generally, a “source” and a “detector” separated by some distance R. At t=0 A is in an excited state, B in its ground state, and no photons are present. A theorem is proved that in contrast to Einstein causality and finite signal velocity, the excitation probability of B is non-zero immediately after t=0 implications are discussed” (14). The excitation probability of B is non-zero because the space in which atoms exist is an “immediate medium of excitation”.

It can be said that certain physical phenomena are timeless, since no measurable time (no run of clocks) elapses for them to happen. For example in the article *Attosecond Ionization and Tunneling Delay Time Measurements in Helium* by Eckle et al, a conclusion is drawn that "an electron can tunnel through the potential barrier of a He atom in practically no time" (15).

What is meant here is that the timeless quantum space is an immediate medium for information (I) and energy (E) transfer. At Planck size (IE), transfers are immediate; at photon size, they move at light speed; at larger scales they move at a speed lower than the light speed.

Understanding of time here confirms a vision of Gödel who considered the fourth coordinate of space-time being spatial too. “Back in time” and “forward in time” exist only as a numerical order of changes that run in timeless quantum space. Hypothetical “traveling in time” in spaceships is out of question; one can travel in timeless quantum space only. With clocks we measure velocity and numerical order of motion of a spaceship in timeless quantum space. Universe is a timeless phenomenon where physical time is the running of clocks.

Original Solution of Gravity without Gravitational Waves

Original solution of gravity motion is curved 4 dimensional cosmic space. Massive objects move into direction of higher curvature of space. Quantum gravity introduces idea that cosmic space is made out of grains of Planck size. If space has granular structure one can consider space also has its density. According to the second low of thermodynamics in the universe distribution of energy tends to be homogeneous. More mass in given volume of quantum space less space is dense. Less space is dense more space is curved. Massive objects move always into direction of lover density in higher curvature of quantum space. Gravitational motion of massive objects is result of change of density of quantum space. Change of density of quantum space is a physical basis for change of its curvature. Less dense is space

more space is curved. Change of density of quantum space corresponds in General Theory of Relativity to change of curvature of space. Einstein curvature tensor in General Relativity $G\mu\nu$ is in relation with density tensor $D\mu\nu$ of quantum space by equation:

$$D\mu\nu = \frac{1}{G\mu\nu} = \frac{c^4}{8\pi G * T\mu\nu}$$ wich becomes in geometrized units $$D\mu\nu = \frac{1}{8\pi T\mu\nu}$$.

Earth has tendency to move to the centre of the sun because density of quantum space is lowest at the centre of the sun. Gravitational motion of massive objects is result of change of density/curvature of quantum space. In the area where there is no change of density/curvature material object will not move as for example in a centre of stellar object or in intergalactic quantum space.

presence of mass $\rightarrow$ change of density/curvature of quantum space $\rightarrow$ gravitational motion

In General Theory of Relativity original solution for gravity is change of curvature of cosmic space. In original papers from 1916 Einstein did not mention gravitational waves. This idea arises few months later. Einstein introduces gravitational waves as space-time perturbations (16). Here wee see that there is no need to introduce gravitational waves as a physical entities that carries gravity. Gravitational motion of massive bodies is result of change of density/curvature of quantum space. This model works without gravitational waves.

Loinger considers that gravitational waves are only hypothetical and do not exist in a physical world: "The gravitational waves are non-physical sinuosities generated, in the last analysis, by undulating reference frames" (17,18).

In 1960s, Joseph Weber began his experimental work to detect gravitational waves. He was essentially alone in this field of research. Later, theoretical papers of Wheeler, Bondi, Landau and Lifshitz, Isaacson, Thorne and others, as well as experimental work of Weber, Braginski, Amaldi and others opened a new area of research in this field (19).

Gravitational waves have not yet been detected. ”To search for gravitational waves in a lab, classical or quantum mechanical detectors can be used. Despite the experiments of Weber (1960, 1969) and many others (Abramovici et al., 1992; Abramovici et al., 1996; Braginskij et al., 1972; Drever et al., 1973; Levine and Garwin, 1973; Maischberger et al., 1991; Tyson, 1973) and theoretical calculations and estimations (Braginski and Rudenko, 1970; Harry et al., 1996; Schutz, 1997), gravitational waves have never been observed directly in lab” (20).

In a centre of black holes and centre of galaxies called Active Galactic Nucleus (AGN) density of quantum space is extremely low, curvature is extremely big, gravity is extremely strong, density of mass is extremely high. In centre of black holes and AGN old mass made out of heavy atoms is transforming into fresh gas made out of elementary particles. Astronomical observations show that the centre AGN of our galaxy “eats” near stars and galaxies and from time to time throws out huge amounts of fresh gas (21).

Hawking proposes a spontaneous creation of elementary particles in gravitational field of nonstationary black holes (22).

Black holes and AGN are rejuvenating the universe. Mass made out of heavy atoms is sucked in and out is thrown fresh gas of elementary particles. Transformation of old mass in fresh elementary particles could be permanent. This would mean that universe has no beginning and no end and is a system in a permanent dynamic equilibrium.

Timeless quantum space as a fundamental arena of the universe corresponds in Indian Vedas to the concept of "shunyata". Discovering shunyata one discovers his origin that is origin of the whole universe. Self-observation and self-realization of the observer in physics is the scientific basis for a peaceful dialog between all religions of the world which all have the same goal. Self-realization has its verification in the experience itself. Conscious observer is not a believer, he is the knower.

Conclusions

Searching on relation "observer-observed" observer discovers that he has ability to be aware of the difference between his mind's models of the world and world itself. This conscious distinguishing leads to the deeper understanding of time, gravity evolution of life and universe as a system in dynamic equilibrium where conscious observer is its essential part.

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