



ON ADVANCES OF CONTEMPORARY PHYSICS ABOUT TOTALITY Paolo Di Sia

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Abstract:

Recent scientific research on consciousness is using a classical approach, i.e. considering it as an object similar to an elementary particle or a force field. This approach fails to grasp the subjective aspect of consciousness. Subjective experience conflicts with the figure of the observer understood in a scientific sense. Human experience deserves attention as a data whose value has ontological importance like data obtained by measurement. The evolution of life could have its informative basis in a multi-dimensional complex space; recent modelling explains how mental states would exist in the higher dimensions of this hyperspace. The mind is multi-dimensional and has the capacity for psychological phenomena. Recent models of contemporary physics integrate matter and consciousness through the use of a multi-dimensional space with particular characteristics. Space is not empty and deprived of physical properties, time is understood as a numerical order of material changes, namely movement running in space. This is opening up new perspectives for cosmology and astronomy, such as the overcoming of the Big Bang theory through a new vision of the universe in permanent dynamic equilibrium, and the origin of life as part of the universal dynamic in higher dimensions of the multi-dimensional primordial dynamic quantum vacuum.

Key Words: Universe; Contemporary Physics; Matter; (Dense and Subtle) Energy; Consciousness; Totality.

Introduction:

Scientific research, and physics in particular, is trying to fully integrate the human being into a unified description of reality. In past years, modern science made an extreme sectorization process, losing sight the holistic vision of world and of mankind. This approach has spread from the Western world in the East, moving this last away from the vision of the totality of its past, which instead was centered on this global aspect.

With the so called *hard science*, the man describes the world through scientific models and only measured phenomena are inserted into them. Individual human experiences, that cannot be objectively measured, are categorized as *unscientific* because they are beyond the reach of the scientific methodology.

The two pillars of modern physics, namely the Einstein's theory of relativity (which describes very well the macroscopic phenomena) and quantum physics (which describes very well the microscopic phenomena), are based on the concept of space-time, a four-dimensional (4D) reality composed of the three spatial dimensions and of time (Di Sia, 2015).

There are basically two ways of approaching consciousness:

- through the construction of scientific models, trying to describe it with mathematics and physics;
- the experiential research in which we experience consciousness, by regularly practicing the process of observation of thought, the existence of the self as awareness of mind.

The Quantum Vacuum Fills the Universe:

Recent studies in progress suggest that the universe may have compacted (or not) extra-dimensions, of which living beings in three-dimensional (3D) space cannot have direct experience (Di Sia, & Bhadra, 2020^a). The idea is that these extra-dimensions are a physical basis of a primordial dynamic quantum vacuum, which is multi-dimensional, and with gravity as result of its fluctuations (Di Sia, 2021^a). A 3D physical object reduces the density of the dynamic quantum vacuum by an amount equal to the amount of its energy; the vacuum fluctuations are the origin of gravity.

This variable energy density of vacuum is the origin of energy, mass and gravity; the vacuum is the direct information medium of entanglement in EPR experiments (plato.stanford.edu). Time is no longer the fourth physical dimension of space-time, but it can be considered a mathematical parameter relating to the changes occurring in space.

The linear time understood in the *past-present-future* sequence, which is what we experience in daily life, belongs to the mind. The observer in physics causes the collapse of the superposition of the wave-function through his observation (Di Sia, 2017); when he measures a given physical phenomenon, defines a duration as *emergent time*. Until the moment in which it is measured, time exists only as *fundamental time*, i.e. the numerical order of material changes occurring in space.

The vacuum is *timeless* in the sense that time is not its fourth dimension as a physical reality; it is full and what we call *full* in everyday reality, is *empty* and vice versa (Di Sia, & Bhadra, 2020^b).

On Flatness of Space and Universe:

The *National Aeronautics and Space Administration* (NASA) has confirmed through accurate measurements that the universal space seems to have Euclidean form with a margin of error of 0,4% (*wmap.gsfc.nasa.gov*), i.e. it would be flat.

If the universal space is flat and infinite, the amount of energy in the universe is infinite and therefore it should not be approached as a finite system. The *primordial dynamic space* structure of the quantum vacuum (Di Sia, 2021^a) could well replace the space-time as the fundamental arena of the universe with peculiar characteristics, such as the continuous circulation of energy from black holes to elementary particles and cosmic rays (disintegration and formation of matter).

Cosmological data relating to the redshift do not strongly demonstrate the expansion of the universe; modern research reports that the idea of an accelerating universe does not agree with astronomical observations (Zwicky, 1929; Dam, Heinesen, & Wiltshire, 2017).

Many astronomical data have shown that the observable universe does not have the size it should have according to the Big Bang theory, despite its supporters claim that this discrepancy is due to the curvature of universal space.

The Higher Dimensions of Vacuum:

The function of the primordial dynamic structure of quantum vacuum can be extended to living matter. In humans, there is constant communication among cells through coherent electromagnetic fields, which can be seen as formations of the vacuum (Del Giudice, *et al.*, 2015); these electromagnetic fields are correlated with its atomic and molecular structures. The vacuum would play an important role in intercellular communication in living organisms.

The fluctuations of vacuum in the higher dimensions in a living organism are stronger than in the dead organism itself. Fluctuations in the form of electromagnetic field at the time of death were measured, finding biophotons emissions by 10 to 100 times stronger than the biophotons emission of the living organism (Slawinski, 2005; Bhadra, & Di Sia, 2019). This emission cannot affect the mass of the dead organism, since the emission of biophotons does not alter the atoms at nuclear level, responsible for the possible mass variation of a body.

Experiments aimed at evaluating and verifying variations in the mass of a living organism at the moment of death have been carried out and repeated, finding a small finite measured difference of the living mass (of order of 3×10^{-4} % of the living mass); this kind of experiments remains controversial from a scientific point of view, but they have focused attention on the idea that the soul has a weight (Hollander, 2001; Masayoshi, 2009).

Obtained experimental data show that gravity is stronger in a living organism than in the same dead one. This type of experiments would therefore in the direction of the existence of higher dimensional levels of the primordial quantum vacuum (Di Sia, 2021^a).

It is not possible to exclude to date that the separation between the molecular structure and the higher dimensional levels of the vacuum requires more time than that found in this kind of experiments; this time interval could be longer and thus change the weight difference.

The mass of the living organism would have therefore two components:

- its *ordinary mass*, measured with the usual methods;
- a *second component* due to the fluctuations of the primordial dynamic vacuum at higher dimensions, characteristic of a living organism, that increases the mass.

Historically, the first experiment of this type dates back to measurements performed by the physician Duncan MacDougall in 1907 with dying people. He achieved the result of about 21 grams of mass loss at the time of death (*www.nytimes.com*). The theoretical bases related to this phenomenon were not present at that time, and a basic skepticism in considering these disconnected aspects by official physical science led to a great delay.

Such ultra-dimensional quantum fluctuations exist throughout universal space and represent a physical circumstance for the development of life. This hypothesis is also in agreement with the Orchestrated Objective Reduction theory (ORCH-OR) developed by Roger Penrose and Stuart Hameroff, which connects the biomolecular processes of the brain with the basic structure of the universe (Hameroff, & Penrose, 2014).

The new idea in progress is to consider a multi-dimensional vacuum with n dimensions as primordial structure of the universe that governs the evolution of life, with consciousness and subtle energies described as energy in the various i -dimensional vacuum levels. Consciousness would therefore exist throughout the universe as its fundamental property.

The higher dimensional vacuum levels are connected with the primordial energy that Chinese medicine called *Qi* and Indian medicine *Prana* (Stenudd, 2015).

Experience, Mindfulness and Consciousness:

The figure of the *observer* is at the center of today's physics, but it has not been adequately assessed that observation is what gives duration to the movement observed in space; without observation, there is no duration.

The observer can witness the *outer* space, where physical objects exist, but also the *inner* space, where mental objects exist. If outer and inner spaces are the same space, the question has no solution in the current canonical scientific approach. The observer is able to observe both spaces, therefore he is beyond both ones.

In the multi-dimensional primordial dynamic quantum vacuum, consciousness is a reality described in the *n*-dimensional space, in which the mind and also 3D physical objects exist. The question of the Hameroff-Penrose model about what conscious moments are, is answered with the model of the *primordial dynamic space* structure: conscious moments are the experience of an observer who is still stuck in the concept of *past-present-future* linear time, i.e. a creation of his own mind.

In consciousness there is always and only the *now*; the duration is the result of the observer's measurement; we cannot therefore reach the center of experience using the classic scientific instruments of measurement. The consciousness is beyond the *observer - observed* dualism.

Scientific measuring apparatuses are 3D and therefore cannot be able to *directly* measure the consciousness, which is both *multi-dimensional* and *non-physical*. Consciousness can be described through photons with a frequency potentially infinity existing in this *n*-dimensional complex-type space. By decreasing the frequency, we descend towards the lower dimensions of our outer space, coming to the 3D reality of mind and matter. The mind is able to build a model of consciousness indicating the path; the individual experience must follow the path leading to the *experience of consciousness*.

Consciousness at Higher Dimensions and Psychological Phenomena:

The four dimensions of space-time of modern physics can be considered as effects of a more fundamental higher-dimensional and timeless reality, a primordial dynamic quantum vacuum with variable density and with non-local properties, able to provide a unifying vision of the forces of Nature known to date, and in addition describing the subtle energies.

Microtubules would obtain information via biophotons by the quantum vacuum, idea supported by recent research suggesting that they would use a binary system for storing information (Craddock, Tuszynski, & Hameroff, 2012). Biophotons have spin angular momentum and this allow the transport of information; it is in relation to intention, consciousness and entanglement (Persinger, Dotta, Saroka, & Scott, 2013).

The polarization of biophotons is the fundamental element for consciousness through a mechanism linked to the fact that the photon of the 3D quantum vacuum has a corresponding *pilot photon* in the primordial complex-type space with a dimension greater than 3. The pilot photon, deriving by the vibration of the complex-type space, has a higher information density.

These biophotons of living organisms determine the physical origin of the *bioenergy*; information originates in energy, that exists in the primordial quantum vacuum of the multi-dimensional complex-like space. Information can be associated with specific properties of the non-local 3D quantum vacuum (Firstenberg, *et al.*, 2013).

In the higher dimensional complex-type space (4D and up), the transfer of information is *immediate* and can be associated with the action of specific properties of the non-local quantum vacuum. Human minds are *entangled* and can communicate instantly through the higher dimensional complex-like space. We indicate some related examples:

Example 1: people with *remote visualization* skills have developed a direct perception beyond the linear time *past-present-future*; this linear time is a 3D activity of the human brain (Buhusi, & Meck, 2005).

Example 2: some people have developed *clairvoyance* as the observer's ability to see future events on a 3D perspective while they are already being implemented in the higher dimensional complex-like space. Experiments were performed confirming that the continuous meditation of thousands of trained individuals reduced a negative situation.

Example 3: the 23% reduction in crime in the city of Washington DC during a meditation period (Hagelin, *et al.*, 1999).

The observer, anchored in the frame of the linear psychological time, has evident limits in the understanding of phenomena such as *telepathy*, *distance vision* and *clairvoyance*.

On the Vision of Life in the Ancient Eastern:

Taoism is a view of life that also has applications in cosmology. The idea of an eternal universe is close to Eastern thought; Tao is eternal, Yin is the energy of the universal space, Yang is the energy of matter; energies are continuously transforming into each other.

The great gap between *I* and *world*, characteristic of scientific rationality, is transformed into a deep relation of unity, a *non-dual* experience. In Buddhism this experience of unity is called *Shunyata*, in Hinduism *Brahma*, in Taoism *Tao*. The great ancient cultures created their own tradition of merging into consciousness.

Canonical science fails to understand this type of unity, due to its methodological approach based solely on measurement. These new approaches to totality in modern physics, involving subtle energies, represent the ultimate vision of reality incorporating the non-dual experience in a strictly scientific approach.

The Health in Western and Ancient Eastern Medicine:

Despite the great advances of Western medicine in the healing and prevention of diseases, they are in fact constantly increasing. One of the problems of Western medicine is the total lack of attention towards these subtle energies (Chinese *Qi* and Indian *Prana*).

The global psycho-physical well-being can be guaranteed only if these subtle energies are duly taken into consideration. When the subtle levels of the biofield are tuned with Nature and consciousness, the human being is generally healthy: *harmony* of subtle levels means *health*, *disharmony* means *disease* (Shea, 2018).

The extension of the scientific research methodology consists in considering that not only the measured data are *scientific*, but even what is *experienced* is scientific. Not only what can be measured is real, but also what can be experienced.

The essence of consciousness resides in the higher dimensions of the primordial complex-type space, which does not allow us to recognize its nature with purely descriptive methods of the canonical science; the *experiential aspect* is fundamental as individual research method (*meditation*) to get closer to individual consciousness, understood as a manifestation of a unitary consciousness pervading the universe.

Consciousness is the fundamental energy of the universe and has an incomprehensible power to a mind working only at the common scientific level in the linear time frame.

Conclusions:

Recent theoretical advances are unified models of the universe, life, mind and consciousness, where all phenomena are guided by consciousness starting by the higher dimensions and moving down to the lower ones (the 3D reality) of a primordial multi-dimensional complex-like space.

Time is the numerical order of changes and exists only in 3D reality (Di Sia, 2021^b). In higher dimensions, the reality is timeless and phenomena are immediate. This recent theoretical scenario is offering a new insight into the origin of life, psychological abilities and timeless nature of consciousness.

The space-time model, where time is considered the fourth *physical* dimension of space, has no experimental evidence to date. In the equations of physics, time t , when measured by the observer, indicates the duration of changes occurring in space (Di Sia, 2018; Di Sia, 2020^a; Di Sia, 2020^b; Di Sia, 2021^c).

The variable energy of the primordial dynamic quantum vacuum is the driving force of the physical world. Consciousness is the fundamental reality of the universe acting on matter through the lower dimensions of the multi-dimensional dynamic quantum vacuum.

The universe can be considered a system in permanent dynamic equilibrium; it is a vision of the universe alternative to the Big Bang model and not contradicted by experiments. At the light of the latest astronomical experimental evidence, the idea of the universe beginning with a great initial explosion (Big Bang theory) is in fact revealing all its weaknesses.

The evolution of life in the universe is an integral part of the universal dynamics and deeply correlated with the properties of the universal space.

The current science of consciousness requires the fundamental contribution of human perception and experience, and traditional purely scientific aspects. The introduction of the methodological experience as a valid additional scientific tool allows to expand the area of research, and this is essential for the development of science and for the good of humanity and life on Earth.

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