Article

Why We Need a New Whole Approach Into the Study of Consciousness

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Abstract

After almost four centuries of philosophical and scientific research concerning the study of consciousness, it seems that it is time to step forward. We cannot have a formal definition of consciousness mainly because we still do not have a complete theory of it. Theories about consciousness abound, but we are still not sure about its ontological and epistemological ground. Thus, a new hypothesis based on quantum mechanics is presented in this paper. This new hypothesis states that consciousness does exist, that it is not a fundamental property of the entire universe and that conscious experience emerges by transformation from mind (''jeeton'') to matter ('graviton'), just like many other physical phenomena such as light, heat, sound or, color. Although this hypothesis is already based in empirical evidence, new experimental designs must be addressed to further increase our knowledge about consciousness and its relation to reality and subjective experience.

Keywords: Consciousness, *qualia*, quantum mechanics, observer, relativity, film theory of the universe, jeeton, graviton, mind, matter.

What is consciousness? Does anybody know? In fact, yes. Any person may be able to feel *what it is like* to be that person. Everybody has that private, subjective feeling of what is going on in the environment and the self. Nevertheless, as is often in the history of science, the problem may not be that simple. On the contrary, it seems to be far more complicated, including problems with its scientific definition, its ontological status, objective measurement, epistemology, and many others.

We reject to offer a formal definition of consciousness, following the advice provided by Sommerhoff (1996). First, we need a comprehensive theory of consciousness, and then, we must be able to provide an exhaustive and operative definition of this term. In fact, many types of consciousness have been proposed, such as phenomenal/access consciousness (Block, 1995), primary *versus* secondary consciousness (Edelman & Tononi, 2000), core/extended consciousness (Berkovich-Ohana & Glicksohn, 2014), and so on, suggesting the provocative idea of a non-unitary construct of consciousness (Zeki, 2003). This obscures what already is extremely fuzzy.

The study of consciousness poses so many queries which neither physics, nor neuroscience or philosophy have resolved satisfactorily yet. In principle, authors not only disagree in its

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definition, but also in its ontological status (from its non-existence to being fundamental). Furthermore, the extraordinary plethora of theories trying to explain consciousness allows us to suspect that this object of study is currently in an immature stage of science development (Wiese, 2018). On the other hand, dualism has been pointed out as a "dead end" for many authors, given that we cannot fill the *explanatory gap* (Levine, 1983) to connect subjective experience with physical-deterministic entities.

Therefore, this article focuses on a brief history of the concept of consciousness. Then, main problems of consciousness are discussed. Finally, a new hypothesis based on quantum mechanics is provided to interpret consciousness in terms of physics, which hopefully will leads us to develop a new whole approach to the unification of psychology and physics for experimental and theoretical purposes.

1. The birth of consciousness: from Philosophy to Psychology

We can probably date the first attempts into the study of consciousness back to the earliest mystical adventures, thousands of years ago, in the context of magical and religious practices (Mithen, 1998). In fact, in terms of evolution, several authors propose that critical nervous system structures for consciousness could have arisen around 500 million years ago (Feinberg & Mallatt, 2013) or, more recently, during the emergence of the mammalian brain, around 200 million years ago (Baars, 2012). However, and according to psychologist Julian Jaynes (1976), consciousness could be a more recent, learned cultural ability, since there are no words for 'consciousness' in the most remote and well preserved text of antiquity: the Iliad (~ 900-850 BC). In any case, the truth is that the concept of 'consciousness' has been documented in several historical sources since ancient times, although the terms and expressions have changed during that period (Monzavi et al., 2017).

Given that it is highly controversial to establish a concrete period of time concerning the emergence of consciousness, we can date more accurately the interest in its philosophical and scientific study. A frequently cited milestone on this topic is the 'dualism' proposed by the French philosopher René Descartes (1596-1650) in the 17th century(1641), which tried to articulate the relationship between the material part of human beings (*res extensa*) with its correlative, the immaterial mind (*res cogitans*). Subsequently, after a period of several philosophical speculations, the first laboratory of experimental psychology is founded in Leipzig by the German psychologist Wilhelm Wundt (1832-1920). There, superior mental functions such as perception, memory, attention and consciousness are studied following a mixed methodology which combines introspection with mental chronometry. Nevertheless, at the beginning of the 20th century, pessimism surrounding the scientific study of cognitive processes replaces these initial attempts in favor of behaviorism, and consciousness was relegated to ostracism for almost a century (Searle, 1992).

2. Considering the dubious ontological status of consciousness: Dennett versus Chalmers

In 1995 Australian philosopher David Chalmers (1995a) stated that there are two main problems when facing the study of consciousness: the easy and the hard problem. The *easy problem* of consciousness refers to the flow of information along the neural pathways in the brain. This is a tough task, but contemporary neuroscience is equipped with appropriate methodological and epistemological tools to face it (Kandel, 2013). The *hard problem*, for its part, tries to explain "how physical processes in the brain give rise to subjective experience" (Chalmers, 1995b, p. 2). If any problem qualifies as *the problem* of consciousness, it is this one. Given that phenomenological experience could not be reducible to physical processes, and assuming that consciousness exists, then, a fundamental theory of consciousness is a logical consequence of this reasoning: consciousness is a fundamental property of the universe, such as mass, space-time or charge, and because of that, it does not require explanation: it is (Travis, 2021).

More recent versions of this 'fundamental consciousness' can be found elsewhere (Monzavi et al., 2017; Prentner, 2018). Leaving aside their differences, all of them agree in that consciousness is not *explanandum*, but *explanans*, the cornerstone of a real science of consciousness. And this idea is compatible with a scientific approach. In fact, *Integrated Information Theory* (Tononi & Koch, 2015) claims that consciousness is an intrinsic property of any physical system, determined by its causal properties. Following that, consciousness is everywhere in the universe, but distributed in different degrees depending on the complexity of any given system.

Nevertheless, the ontological status of consciousness has been questioned by many authors. For example, philosopher Daniel Dennett (1991) supports that consciousness is an illusion; therefore, any attempt to explain consciousness as real falls into what he baptized the *Cartesian theater,* a neodualism in which there is always some *homunculus* at the end. In the same vein, other neuroscientists like Michael Graziano (2015) explain consciousness in terms of a brain trick, a product of awareness attribution process in the context of social perception.

Once again, as we can see, consciousness swings from being fundamental to a residual epiphenomenon or even an unreal illusion arising from a brain's mirrors game. Can we dare to provide a definition of something that we certainly still doubt is real?

3. The irruption of neuroscience: the signatures of consciousness

An astonishing hypothesis was proposed at the very end of the 20th century: "you're nothing but a pack of neurons" (Crick, 1994, p. 3). That claim was the trigger for a race towards the quest of the neurobiological basis of consciousness (Koch, 2004). Since then, many attempts have been made to explain the emergence of consciousness as a function of neuronal firing (Brogaard & Gatzia, 2016; Miller, 2005). At present, the efforts are gathered around the signature of consciousness, that is, what happens in the brain when a person, or animal, has a conscious experience. Using different cognitive paradigms, electrophysiological recordings and

neuroimaging techniques, some findings can be obtained. For example, there is strong evidence that coordinated activity in the fronto-parietal areas is needed to achieve a conscious experience of 'something', whether visual, auditory or haptic (Corbetta & Shulman, 2002; Lamme, 2003; Laureys, 2005; Rohaut & Naccache, 2017). This cortical activation should be accompanied by an intense and massive activation of lay-distance areas involving thalamo-cortical networks and correlated with P300 wave recorded via evoked potentials (Bollini et al., 2017; Dehaene, 2014; García-Castro, 2021). Also, the synchronization of information must rely on a sudden burst of high frequency oscillations (~ 40 Hz) (Crick & Koch, 1990; Llinas & Ribary, 1993; Singer, 1995; Ward, 2011). For a deeper revision of the neurobiological correlates of consciousness, the reader is invited to consult Sattin et al. (2021).

But it seems that neuroscience is trying to solve only one part of the problem, once again, the 'easy' problem of consciousness. Following Ned Block's distinction between *phenomenal consciousness* and *consciousness-access*(Block, 1995), the former keeps always out of the picture, that is, the private and subjective experience, whereas all these neural correlates could be nothing but neural activity related to cognitive contents available as 'consciousness-access' to perform motor, language or perceptual actions. But the subjective experience (*qualia*) is not necessary to perform any of these functions(Chalmers, 1995a). In fact, there are plenty of cognitive activities, some of them as complex as mental arithmetic, decoding semantic meaning, attention or error detection, that can be performed in absence of conscious processing of information (Dehaene, 2014). Still, there is always something elusive to the realm of science. Also, these studies are correlative, and because of that, we cannot be sure of the directionality of causality, much less, conclude that brain activity is producing the phenomenal conscious experience(Chalmers, 2000; Noë & Thompson, 2004).

In addition, consciousness is not a unitary phenomenon, but consists of different types of processes that may be linked to different neural networks distributed along cortical and subcortical regions within the brain (Sattin et al., 2021; Shanon, 2010; Zeki, 2003). For example, there is evidence of a primitive, degraded and unconscious form of consciousness related to N1/P2a evoked potential complex, in absence of its subsequent P300 wave (Bollini et al., 2017). It is probably located in primary sensory areas, far from cortical long-distance networks. Also, it might be very short and weak, and it may be responsible for some well-known psychological effects such as 'phi phenomenon', the 'cutaneous rabbit' or the 'flash-lag' illusion (Geldard & Sherrick, 1972; Herzog et al., 2016; Kolers & von Grünau, 1976). Conversely, the immediate conscious experience which can be separated from another is delayed at least 300 milliseconds, correlated with P300 potential (ERP) measured with different cognitive experimental paradigms, and associated to strong activation of fronto-parietal networks (fMRI) (Dehaene & Changeux, 2011; Grill-Spector et al., 2000). Finally, the sense of subjective present, which can be extended from past to future, rely on working memory, runs in periods of around 30-60 seconds and must be linked to memory systems (Pöppel, 1997). Although this is highly speculative, it is an example of the extraordinary complexity of the phenomenon we agree to call *consciousness*.

Be that as it may, 'it is something like to be that 'something'' (Nagel, 1974), whether it is real or an illusion, whether it is an epiphenomenon or a fundamental property of the universe, whether it is a unitary, brain-based product or a dualistic, metaphysical and interactionist entity. And it

should be explained by science, despite needing a new epistemological framework or scientific paradigm, as has happened so often in science history (Khun, 1962).

4. Unsolvable problems of consciousness

The following is a detailed, although not exhaustive list of the main problems in the study of consciousness that remain not only unsolvable, but still very far from a satisfactory solution.

- *Consciousness versus reality*. As René Descartes might have said, the only thing we 'have' is our subjective experience. From that, everything begins, but: what certainty do we have about that 'experience'? There is a continuum from *idealism* to *materialism* that covers all possible solutions to this question. Unfortunately, neither is satisfactory yet. What we certainly know is that reality, taken as the 'ultimate reality' as in the concept of *noumenon* (Kant, 1999), is not what we perceive. In fact, studies on perception have shown that organisms have not been evolutionarily selected to perceive reality as it is, but to optimally record those stimulus configurations that are most advantageous for their adaptation to the environment and survival(Hoffman & Prakash, 2014). Also, lessons taken from quantum mechanics reveal that microphysics' reality is far more complicated than we originally have thought (Bohm & Hiley, 1975; Heisenberg, 1963).
- *The conundrum of dualism*. 'Dualism' versus 'monism' is a complete 'dead end': there is no satisfactory proposal to disentangle the question; while dualism cannot satisfactorily explain the interaction between two substances of different nature, monism has not been able to complete successfully its reductionist project. How can we ever be able to reconcile a space-time physical object as the body with some ethereal non-physical entity such as 'conscious experience'?

  If we could formulate the problem as follows:

  a) $\Phi = \psi$
  b) $\Phi \rightarrow \psi$
  c) $\Phi \leftarrow \psi$
  d) $\Phi \leftarrow \rightarrow \psi$

  beingΦ = physical events; ψ = mental states, we have these four possibilities: a) identity (monism), b) physicalism, c) panpsychism or d) dualism. Current neuroscience and other disciplines are beginning to question the traditional directionality 'brain-mind' in favor of other, more exotic approaches. Then, if brain states produce conscious experiences, we must be able to explain a plausible mechanism of interaction within a causally closed system such as the brain (Georgiev, 2013). It seems that, after at least four hundred years of fruitless proposals to solve this antinomy, it is time to move on to some daring approaches.

- *Qualia or the scent of subjective experience*. Finally, at the root of the problem of consciousness we always find the inner, private, subjective and personal experience of everyone, which independently of intersubjective judgment agreement, will always be like fingerprints: inalienable and unique. Also, inaccessible to science. Beyond the axon tracts, the exchange of neurotransmitters and the feedback/feedforward sweep mechanisms, the mysterious sensation of *what it is to feel like*(Nagel, 1974) will always remain in the air; it seems to escape, at least for the moment, the methods of modern science. What kind of neuro-computational theory could ever account for such a mysterious product, something which cannot be measured, extracted, put in a dish, analyzed or dissected?

5. A new whole approach

In the following section we are going to provide some new insights into the study of consciousness from a new hypothesis recently proposed by Kodukula (2017, 2019, 2021b).

5.1. Consciousness as a fundamental property of the universe like mass, charge or space-time.

Consciousness cannot be a physical entity like mass, charge, space, time or space-time. It is an emergent property (like smell, heat, etc.) while transforming the 'information' to 'time' to 'space' and to 'space-time' and 'mass or charge'. The universe will not contain that property. It only contains 'quantum information'. 'Living thing' or 'conscious observer' will contain that property since it is the device that processes the information. By default it is inbuilt in this huge quantum system with a loop in the direction of the process. But it is countable after a critical limit which we have named consciousness. Below this limit it is a living thing with negligible consciousness. The flow of information process through a device (in this case, a neuro-center like the brain) goes in one direction and circulates within the body of living things and comes out (Figure 1). As long as the flow continues, the living thing will contain life, and when a loop disappears the living thing will become dead. And the process will be continued with other loops.

Now the question is about *qualia*. Since there is no physical evidence of *qualia* involved in this process, it is proposed that during this process of passage of information and observation, consciousness in which *qualia* plays a role is an emergent property of this information process and is a fundamental property of time which always flows. Previous theories emphasize the role of information in the process of consciousness. While one of these theories says that information runs the activities of the universe (Shannon, 1948), the other says that consciousness emerges due to collective activities or information like a pattern (Tononi et al., 2016). This new theory of consciousness presented here (Kodukula, 2019, 2021b) synchronizes all and provides new vision to see further. It says that only processing of information runs this universe. Feelings or *qualia* – the other emerging property – are not due to this information process. There exists some sort of resistance to the process of information like 'inertia' to mass in physics. Inertia is an intrinsic property of mass due to its movement. In the same way, cognition is a resistance to the process of information passage to keep the object in a conscious state.

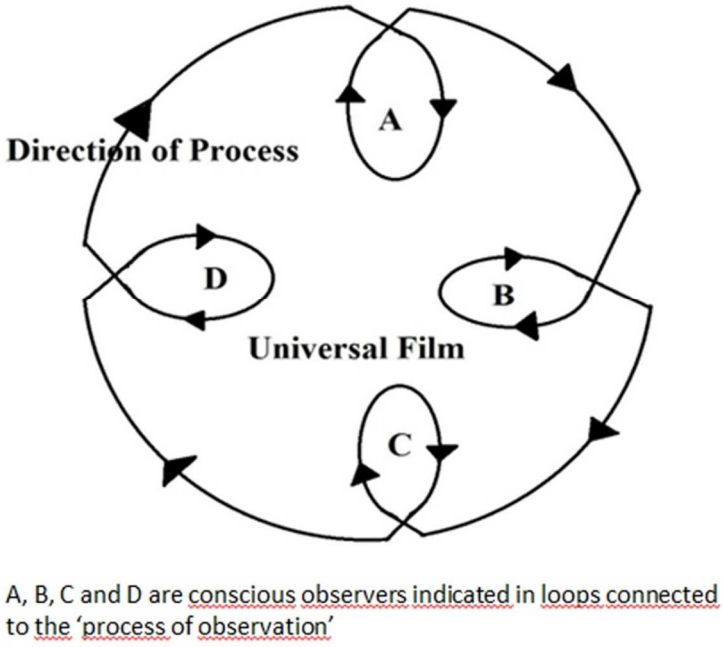

Figure 1.Showing the relation between Universal Film and conscious observer. Adapted from: Kodukula (2019).

This can be explained as: "A force 'F' is applied to mass 'm'. The mass will get an acceleration 'a' if there is no rigid support attached to that mass in the opposite direction of force". This is as per Newton's second law of classical mechanics. If support exists, there will be a reactive force opposite to force applied. In this situation, mass will not move, but according to its structure, it will contain resistance. Actually, as per Newton's first law, mass itself will have an intrinsic property called inertia. In general terms, it will have a tendency to resist its own movement. Now let us suppose that an external energy (E) is applied to mass instead of force. So the energy has to do some work (E=W) on that mass (W=FS) and pushes that mass with a force F to a distance S and F=ma is applied. In this situation, if the mass has not moved, it will have a resistance which is equally develops internal resistance equivalent to its acceleration 'a' as in the case of 'F' applied on 'm'. If 'E' is more, more mass will be created and acceleration remains constant. It means that all energy is converting into mass and at the same time its resistance is also increasing. So resistance will be there and will not affect its acceleration (its movement will be constant).

Applied to consciousness and cognition, a signal will be passed to a human brain, it encircles the body like a loop and passes to another conscious brain (Figure 1). It is explained that the signal contains information, but information is not energy. The information will be encoded to form space-time and objects on it, and moves according to the instruction of information. This flow is at a rate of 144 qubits[1]/sec (Kodukula, 2019, pp. 39–40) and one qubit contains a 10^{43} quantum states of information. Superposition of these quantum states is called a *film of the universe*. Each

[1]unit of quantum information

such film contains information and converts into objects and instructions to move that objects as the process continuous. Therefore, all the activities in this universe are simply instruction to change films that are being considered as actions of living things. Actually, it is a mechanism only. Thus, all living things will have a specific property distinguished from non-living things called life. Its movement is dependent on other movement also. So it should be aware of its own environment and, thus, it is called as consciousness. Thus a universal film contains conscious observers only. All the non-living things or objects are manifestations of this process of information. The importance of a conscious observer is emphasized in Kodukula (2021b, p. 1649).

For further clarity about the above description, let us consider the following example. Suppose that we have two similar conscious brains. Due to the passage of information and film change, same activities have to be done simultaneously by two conscious beings/living things. Now let us suppose one activity is a dramatic action, say the word 'cry', and another is a real situation (really cry). As per the above analysis, the first one is mechanical, that is, there will be no emotion in it. The other one is an emotion out of friction/resistance between consciousness and cognition. How can it be explained quantitatively?

As explained above, consciousness will not contain emotion, but mechanical action exists. So the 'dramatic cry' will contain a certain amount of information only to run the activities mechanically. But for the presence of 'emotion', some more information has to be processed and it should create or raise the cognitive energy so as to produce an emotional cry for the same action associated to that concerned consciousness. It is just like the conversion of additional energy or force to acceleration and to internal energy even though there is no acceleration to mass as a whole (as explained above).

Thus the emotions or even thoughts are emergent from interaction of consciousness and its resistance due to cognition. In a similar manner, *qualia* will contain additional 'qubit' information than the required to keep it alive. Different *qualias*, thoughts, emotions, etc., will have different quantum bits of information for comparison. Cry will have different number of qubits, smile will have different qubits, angry will have different and so on.

Thus we can say that the interaction between consciousness and cognition gives rise to *qualia* and the interaction between 'jeeton' (proposed quantum particle of energy-mind from the fundamental force of nature) and 'graviton' (mass-matter particle) would give rise to consciousness. This is because 'jeeton', a quantum particle from the biological force present in all living things, is associated with 'graviton', a quantum particle from the relativity system, to form consciousness. So as explained in Figure 2, the 'jeeton' contains a point space-time in relativity and superpositioned states of films in quantum coordinates. Thus 'jeeton' is a superpositioned information which will be processed through the brain by entanglement with 'graviton', creating matter in 4-dimensional relativistic space-time. The continuous circulation of this information between 'jeeton' and 'graviton' within this living thing gives rise to consciousness, which in its interaction with cognition, results in *qualia*. If a 'jeeton' is cut from the loop of this process of information, it loses entanglement with 'graviton' and the living thing will be considered dead. The detached 'jeeton' contains the information and if it gets into any situation to form into a loop and regenerate the material to entangle, it will start from the beginning to feed its own living thing device (i.e., brain), which is connected to it. It is the life

and death cycle of living things or conscious beings (Kodukula, 2019, p. 42).This leads us to consider consciousness as a required ingredient for synchronizing quantum mechanics (discrete property of space-time) and general relativity, (continuous4-dimensional space-time), where objects are created.

5.2. Consciousness can be reduced to brain activity

Consciousness is the property that differentiates between living and non-living things. Following our reasoning, as long as the flow continues, the living thing will contain life and when its loop disappears, the living thing will become dead. Here we propose that all living things must contain consciousness. In some cases conscious activity cannot be recognizable and will be treated as unconscious; that would be the vegetative or coma states (Laureys, 2005), or even being under anesthesia (Hameroff, 2018). But consciousness itself creates its own device by universal instructions and creates a structure (brain with several neuro-centers) to support or to keep information (memory) and integrate all these activities to sustain its state of consciousness. Thus, consciousness is the fundamental property by which any other events or activities will be perceived. Because of consciousness, information will become analog and will turn into collective reactions to keep up with the environment; this is what we call 'cognition', a resistance to the passing of information. This resistance or friction comes out as emotions, thoughts, perceptions, etc., which are identified as *qualia* by philosophers. For cognition, neural centers are to be formed and must be in a position to exchange the information collected by its environment. But consciousness is a property that will start to emerge while in a coherent state of information processing. Without consciousness, cognition cannot be sustained. But without cognition, consciousness can remain. Finally, the brain is like a projector, and consciousness acts through it. The information passage is from brain and forms the real objects on this 4-dimensional screen of space-time after transformation from a quantum mechanics system to a relativity system; thus, brain activity cannot produce consciousness. It is a process of transformation of quantum information and it is continuous process with the passage of time.

5.3. Consciousness can be segregated into periods of time

After Einstein, the concept of time has been changed abruptly. His special theory of relativity along with Lorenz transformations clearly explained the principle of simultaneity. It is nothing but an explanation of time by making various reference frames with different time intervals into one single picture of space time. Further, his *equivalence principle* lead the concept of time to a much more profound understanding of time and concluded general relativity by the concept of space-time continuum.

Then, time can be defined as quantum states of preserving information (Kodukula, 2019), where the difference between information and energy is clearly explained. Superposition of two universal films will originate time. This is explained on the basis of physics theories. The duration of these two films is equal to Planck time. Quantum code of information will be processed through the brain like an object. During this process of information, time will be originated. The flow of information instructs all the parts of the body (taken as a biological material) to move according to the information processed. This is called a living system and it will be connected to the entire universe.

When a universal film changes, the biological system will get the information to change accordingly. Here the process is completely mechanical. Thus it will have a certain frequency. For human beings it is proposed as millions and millions of films per second ($1.85488837 \times 10^{43}$ universal film changes in one second). Depending upon this duration of universal film change, the loop within that system, which is a biological system, will process the information and reach back to the universal film. Based on this, the brain's processing speed has been calculated (144 qubits/sec). This duration of film change denotes its frequency. Thus this frequency is in synchronization with biological systems frequency. This makes the difference between a living thing and a non-living thing.

This is the only thing that can be called consciousness. Thus time is interpreted in two quantum states (future and past) and the superposition of these two states explains the present (Kodukula, 2021a, p. 1341). This time converts into space and forms space-time, which is the basic entity to form the physical or materialistic world. In this process, due to this change of quantum states within threshold time (without decoherence), consciousness will emerge and after this coherence process it will emerge as consciousness with qualia due to the interaction with cognition (physics explains it as the observation part of this process). Then, the information will become analogous on the surface of space-time. In this 4-dimensional world those impressions (information) are objects made up of space-time.

5.4. Consciousness and the nature of reality

Observation by our senses is not real (Kodukula, 2021b). Reality is in the form of quantum information and can be interpreted by quantum coordinates. While making an observation, the same coordinate system will be transformed to relativistic or Minkowski coordinates and will be observed. Consciousness is an emergent property in the transformation of a quantum coordinate system to a relativistic coordinate system. So reality will be changed into observation. So consciousness is necessary for observation. Thus consciousness will exist before observation itself. But once it is observed, it will check its correctness. If there is any drawback with the observing senses, the difference will create illusion. Thus, if all the senses fail to observe, it will create illusion, but this won't be an absence of consciousness. Consciousness still exists. And it is reality.

In 4-dimensional space-time coordinates, space will be the X axis and time is the Y axis. So every point in this coordinate system will be specified by a time and corresponding space for that time. In a quantum coordinate system space will be in the X axis and information will be in the Y axis. Separate information will be there for separate space points. But, while in transformation from quantum to relativistic, different space points will have the same information. This is due to superposition of all these information states into one mixed state. This is defined as *film of the universe*; thus a *film of the universe* is a quantum state and contains all the points with same information (Figure 2).

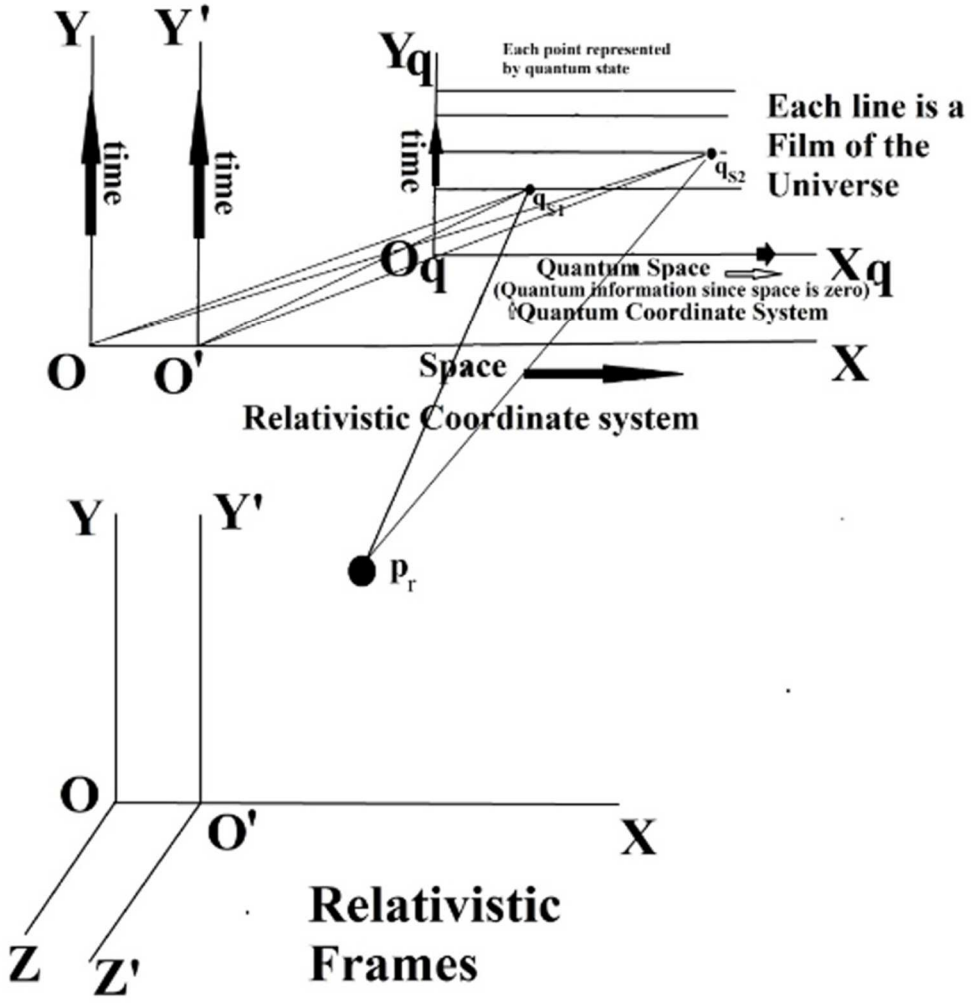

Figure 2.Transformation of quantum coordinate system to relativistic coordinate system in the process of observation. Adapted and modified from: Kodukula(2021b).

Change from one film to another will transform information analogous to events in the space time continuum, transforming information into objects for observation. While in transformation, 'double relativity' will be applied. So the result in reality will be different in observation. Illusion is a defect in the observation process.

5.5. Consciousness cannot be explained as a physical entity

As explained above, a physical body in the space-time continuum is analogous of quantum information and quantum information is an interpretation of time. Part of it will convert into a physical object which occupies space-time. But conscious experience will not be associated to it. Conscious experience emerges by this transformation, just like other phenomena such as light, heat, color or sound. So definitely, it can also be defined by some physical or chemical science

basics. Thus, we can exactly reconcile a space-time physical object in to an ethereal non-physical entity such as 'conscious experience'.

Regarding *qualia*, contemporary science is not able to calculate subjective experiences exactly. But this is due to lack of knowledge, awareness, supportive methodologies and technological developments. In fact, there is no such experience for the brain as subjective and objective. Reality is one for all and that is associated to consciousness. As explained above, it is not complete without observation by its sensory organs, so the loop that observes reality will be completed by observation. The phenomenal experience that arises in this process will vary from person to person due to the structure of its observing center which is made up of interacting frequencies, neurons and exchange of particles or chemicals.

Thus, reality is objective and is same for all in a film or in an inertial frame of reference (IFR). For example, in quantum coordinates, a photon is a space zero super positioned quantum state. But in relativistic transformation, it will have space, a space between two divided quantum states. Thus a conscious observer observes it as super positioned quantum states, and this is the final observation that we called reality. Therefore, reality is the consequence of both 'double relativity effect' and 'consciousness' on the process of observation. Regarding this effect of consciousness over observation, consider that signal velocity is $c\sqrt{2}$, but observed velocity is $\therefore v_r = v_o \gamma_r$, where (Kodukula, 2021b, pp. 1646–1648)

$$\gamma = \frac{1}{\sqrt{1} - (\frac{vo}{c\sqrt{2}})}$$

It is not possible to observe these velocities without the involvement of consciousness. Thus, the result is a proof for consciousness also.

6. Discussion and conclusions

"No problem can be solved from the level of consciousness that created it" (Gerbaulet & Henry, 2019, p. 114). It is arguable that philosophers studying consciousness have been dealing with similar paradoxes that physics found when they first started to study subatomic particles (Capra, 1974). Because of that, it is probably not a question of dualism *versus* monism, physicalism *versus* qualia or subjective *versus* objective, but to focus on a new whole perspective that allows us to overcome all these unsolvable antinomies.

Here we have presented a non-exhaustive, though fundamental list of the main problems of consciousness. Afterwards, we have proposed new insights to overcome these difficulties from a new perspective, reconsidering the current starting points. This new proposal is more than a hypothesis. It is an analysis of a few fundamental queries of philosophy of physics which could help to answer many questions about consciousness and information processing.

As we have previously stated, consciousness cannot be a fundamental property of the universe, given that only living things can be conscious. All living things must contain consciousness. Information flows by interconnecting all the living things forming a loop and with a device like a brain (or an equivalent neural network). The brain will perceive and experience the things around it. In this sense, consciousness is a property that will start to emerge while in a coherent state of information processing. Thus, consciousness is fundamental and can remain without cognition. This idea is also supported by other authors (Gerbaulet & Henry, 2019; Prentner, 2018; Travis, 2021).

Concerning the time-scale processes of consciousness, most of the studies in cognitive science are from pre-Einstein's time. Time is not a mental condition, but the same as space, where both can be transformed into each other. Here it is proposed that all the points in space of the universe are condensed into one event in terms of films. When we analyze the physical meaning of quantum states at the most fundamental level, we can see that a quantum state is a universal film in which time exists, but no flow of time will be present. Flow of time exists only when a film changes into another film, arguably by a mechanism of consciousness.

Consciousness cannot be reducible to brain activity. Consciousness is prior to and can remain without cognition. Thus reality exists in transformation through the additional coordinate system called as "quantum coordinate system", that is, the transformation from a quantum coordinate system into a relativistic frame by 'double relativity effect'. Thus consciousness is needed to synchronize quantum mechanics (discrete property of space-time) and general relativity (smoothed continuous space-time).

Regarding *qualia*, it is an emergent property of this information process and is a fundamental property of time which always flows. Like many other physical phenomena (i.e., heat, sound, color) *qualia* emerge as a result of resistance to information passage through a neurobiological device like the brain. *Qualia* are nothing but a byproduct of a mechanical process of information flow. Support for this statement can be found elsewhere (Jylkkä & Railo, 2019).

This view based on quantum mechanics is supported by many researchers. For example, Hameroff and Penrose (2014) previously formulated the Orch-OR theory of consciousness, which proposes that consciousness consists of a sequence of discrete events, each being a moment of objective reduction (OR) of a quantum state, orchestrated in an appropriate way (Orch-OR) inside neuronal microtubules. In fact, the time for decoherence processing for quantum states could be compatible with conscious processes, given that they proceed in the millisecond scale in the brain (Tegmark, 2000). However, other authors such as McFadden (2007) criticizes the need to use quantum mechanics to explain consciousness, because the brain is not an optimal place for quantum coherence, considering the infinite amount of information that should be stored in a qubit. Also, many other authors have argued that the brain is not an appropriate device to carry on quantum coherence processes given the temperature, humidity, and other conditions that hinder quantum phenomena or that the strange phenomena involved in quantum processes do not, of themselves, explain why there is experience rather than not (Koch & Hepp, 2006; Prinz, 2003).

Obviously, other problems remain elusive and must be addressed by future research. For example, neurobiological basis of consciousness are still an important issue for the future. However, in this article we claim that no models or experiments on consciousness can be sustained without considering these basics at quantum level. That would be the same reasoning as if social sciences would refuse to study the neurobiological basis of behavior. They are not *contraria*, but *complementa*, and a comprehensive theory must go beyond any limits to be complete.

Also, all these proposals have the following implications for the integration of physics and psychology: the involvement of consciousness could play a vital role in the synchronization of quantum mechanics with general relativity. Observer and observation have a deeper meaning involving the concept of consciousness. Because of that, the mechanism of consciousness could play a vital role in this synchronization.

Therefore, we can finally conclude that: consciousness does exist, given that observed velocity (v_r) needs consciousness, opposed to conventional signal velocity 'c'. Two observers (or conscious states) are needed to create reality. Consciousness cannot be a fundamental property of the entire universe, but only in living things, and that will be the main constituent that shows the difference between living and non-living things. Conscious experience emerges by transformation from mind ('jeeton') to matter ('graviton'), just like many other physical phenomena such as light, heat, sound, color, etc. Information is not equal to energy; information can be transferred without energy (in a system that prevents decoherence such as a brain with series of neurons). Cognition is a resistance to the process of information passage to keep the object in a conscious state. The brain is like a quantum processor's projector, and we can calculate the processing speed of the brain to be conscious as 144 qubits/sec. Thus, consciousness is the hinge between quantum mechanics and relativity that allows having experiences of reality, based on universal films, which are quantum states that contain all the points with same information.

Because of that, new experimental paradigms inspired by these or other proposals must be designed to prove or refute the main thesis presented here. Experimental results will increase our knowledge concerning the roots of consciousness and will open new paths to go further in its clarification. It seems that it is very important to synchronize the definitions of consciousness and cognition aimed at the unification of psychology and physics for experimental purposes. Humankind must give giants leaps into the exploration of the universe, but this should be accompanied by little steps into the more radical and intimate realms of conscious experience, the fountain where everything, including the observation of the smallest particle, abounds.

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