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Human Consciousness - An Emergent Property of the Brain or A Fundamental Property of the Universe?

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Abstract:

This document attempts to identify the *root cause of the first-person experience*. We would be drawing on the knowledge repository of both ancient and contemporary philosophies and integrating/blending it with the know-how gained through scientific experiments and research in multiple fields including, but not limited to, quantum physics, neuroscience, astrophysics, psychology, cosmology, particle physics... *and making this knowledge accessible to non-specialists*.

The method for intellectual analysis adopted herein is based on a system of logic used by an Indic school of philosophy. It is in line with how contemporary science and philosophy conducts such analysis. The attempt is to identify valid sources of knowledge and to distinguish these from mere opinions while exploring the key question - What is the source of human consciousness i.e. the first-person experience or subjective sense of being aware of oneself and the environment.

We start with a brief overview of the two prevalent views followed by an outline of the methodology we will use for analysing them. We then define the scope of this study and share a glimpse of some unexplained experimental observations before proceeding to the basic concepts used by materialist and non-materialist frameworks for explaining human consciousness. Thereafter, we go into the details of the concept of the non-physical realm of existence as mentioned in the ancient texts and explore whether contemporary knowledge systems have inferred the presence of any abstract concept (which cannot be perceived by our senses) based on some unexplained observations in this universe. Then we look at some

approaches to gain experiential knowledge of our inner-most core or consciousness. We again go back to the ancient texts to understand what they say about the underlying and fundamental layer of reality and examine similar ideas unveiled by contemporary science. Next, we try and understand what quantum physics has discovered in the last 100 years or so and how it correlates to what the non-materialist framework says about manifested world arising from an unmanifested field of existence. We then focus our attention back to the unexplained experimental observations that we had mentioned earlier and see if the non-materialist framework is able to provide a useful explanation for the same. Finally, we discuss the most plausible inference that can be drawn - *with each new research study or experiment we are inching towards the realisation that non-materialist framework is a plausible framework for understanding human consciousness and we do not seem to have any valid reason to reject the non-materialist paradigm in favour of the materialist paradigm.*

Keywords: human consciousness, first-person experience, Universal-Consciousness, *brahman, tat tvam asi*

SOURCE OF HUMAN CONSCIOUSNESS: TWO CONFLICTING VIEWS

The on-going dispute is between

- Materialist view - consciousness is an epiphenomenon (emergent property) of the brain. This view considers that consciousness arises as an emergent property of large neuronal networks wherein the interaction of neurons forms a web sufficiently complex such as to generate and sustain conscious experiences.
- Non-materialist view - consciousness is the real and fundamental property of the universe. This view does not consider that a physical substrate generates consciousness, rather, it is the other way round. The physical world arises out of consciousness. (In fact, if we go deeper within the non-materialist framework, we will find numerous philosophies like theistic, non-dualistic, dualistic, non-theistic like Buddhism, subjective idealism and so on. While we have borrowed examples from various philosophies, as per the context of the discussion, we have consciously avoided restricting ourselves to any particular school of thought and have attempted to remain as generic as possible while presenting the arguments of non-materialist framework)

The human mind (an intricate labyrinth of thoughts, emotions and memories) has been a subject of fascination for centuries. Psychology, the scientific study of the mind and behaviour, seeks to unravel its complexities. So, to truly understand the mind, researchers decided to delve deeper into the biological machinery that drives it – the brain. This is where neuroscience, the scientific study of the nervous system, comes into play. The materialists are convinced that they can explain consciousness by understanding the details of the process of activation of

neurons in the brain because consciousness is nothing but an epiphenomenon (emergent property) of the brain.

The latest research work has demonstrated that a person's thoughts can be identified using brain scans and AI (Artificial Intelligence)¹. Another recent experiment has shown that you can even understand with reasonable accuracy the music a person is listening to by studying the brain scans in real time². Encouraged by such developments the materialists believe that they are exploring in the right direction. Neuroimaging techniques, such as functional magnetic resonance imaging (fMRI) and positron emission tomography (PET) and other advanced sciences like optogenetics, are expected to become increasingly sophisticated, enabling researchers to study the brain in unprecedented detail. This gives them the conviction that they will be able to identify exactly how human consciousness is generated in a few years from now.

As per the non-materialist framework there exists an omnipresent field of consciousness (which we will call Universal-Consciousness to differentiate it from individual's consciousness). This Universal-Consciousness, when manifested through the body-mind complex, gives rise to an individual sentient being. In other words, the sense of existence or 'beingness' is neither an intrinsic attribute nor an epiphenomenon of the biochemical activities within the body-mind complex, but, a fundamental property of the universe.

The brain, with its intricate neural networks and biochemical processes, is undoubtedly a masterpiece of nature, however, it is merely a physical apparatus in the body-mind complex. While the brain can be observed and studied through empirical means, the mind eludes such direct scrutiny. The mind is a subtle, dynamic force that shapes our reality. It is not confined to the physical brain but extends beyond it, permeating every aspect of our being. Most of the current focus of neuroscience is around measuring and understanding the different states of mind or the vividness of perceptual phenomenology through the knowledge about the functioning of the brain, its regions, and their interconnectedness.

However, the non-materialists are confident that consciousness is not a 'content of mind', and by studying the working of either the brain or the mind, in waking, dreaming or deep sleep, both normal and pathological, one cannot truly understand the consciousness. One needs to go beyond the framework of the body-mind apparatus to appreciate the material and efficient cause of consciousness.

METHODOLOGY USED

The approach used by us to assess these two conflicting view-points is broadly based on *Nyāya Darshan* – a school of philosophy whose most significant contribution to Indic philosophy is a systematic development of the theory of logic. *Nyāya Sūtra* (the foundational text of this school of philosophy) gives a detailed account of how to distinguish credible sources of knowledge from mere opinions. The first *Sūtra* (aphorism) of this text states:

pramāṇa-pramēya-samśayā-prayōjana-dṛṣṭānta-sidhdhānta-avayava-tarka-nirṇaya-vāda-jalpa-vitaṇḍā-hētvābhāsa-chala-jāti-nigrahasthānām tatvajñānānniśrēyasādhigamaḥ (1.1.1)

The highest good (*niśrēyasa*) is attained or acquired (*adhigamaḥ*) by the knowledge (*jñāna*) of the real or true nature (*tatva*) and for acquiring this knowledge *Nyāya Darshan* recognizes sixteen elements (*pramāṇa* to *nigrahasthānām*, as listed in the first *Sūtra*), which we have briefly explained below.

The *Nyāya* metaphysics emphasises that one should use credible evidence and other valid means of knowledge (*pramāṇa*) to analyse the object (thing or concept) of that valid knowledge (*pramēya*) for removal of all doubts or disputes between different view-points (*samśayā*). Existence of conflicting views about the character of the *pramēya* gives rise to the question as to which of these is the reliable view, but this doubt must not be confused with an error or false knowledge. After identifying these elements, one must clearly define the aim or scope of investigation (*prayōjana*). This process ensures that an ordinary person as well as a learned expert will have the same understanding of the conclusion arrived at the completion of the investigation and they will have the same inferences for the familiar examples which are commonly experienced by them (*dṛṣṭānta*).

To arrive at any valid conclusion (*sidhdhānta*) one needs to use logical argument of statements using inferential reasoning. *Nyāya*'s methodology of inference involves a combination of induction and deduction where the conclusion is obtained from two linked premises. This can be done in an unbiased manner by appreciating the members of syllogism (*avayava*) and the process of hypothetical reasoning (*tarka*). So long as the premises of the syllogism are true and the syllogism is correctly structured, the conclusion will be true.

The removal of doubts and the settlement of the dispute between alternate view-points, with a wish to establish the truth (*nirṇaya*), should be done by discussion (*vāda*) rather than by debate. The purpose of discussion is to come to the truth of the proposition under consideration. In *vāda*, it is not necessary to establish one's own thesis, it is enough to submit one's views for examination in order to ascertain the truth. The usual procedure is to maintain the thesis by means of right knowledge (*pramāṇa*) and to counter-thesis by the means of logical reasoning (*tarka*).

This is in contrast to other devices of debate that one usually employs as a means for self-defence with the sole purpose of gaining victory over the other party and with no desire to either gain further knowledge or to establish one's own position. These include vigorous verbal disputation (*jalpa*), wrangling or unnecessary objections (*vitaṇḍā*), fallacious reasoning (*hētvābhāsa*), casuistry or clever but unfair reasoning like play of

words, generalisation or invalidating a word used in a particular context by taking it literally when it was used metaphorically (*chala*) and futile rejoinder or sophisticated refutation (*jāti*). They involve mere attacks on the opposite side by offering frivolous objections as means of protecting one's knowledge which has not yet matured to a full blossomed conviction. When one does not understand or misunderstands the arguments stated by the opponent, one eventually loses the debate (*nigrahassthānām*).

Doubt is the result of first impression and gives impetus to investigation in order to ascertain the truth. Everything should be questioned and not accepted simply on face value, however, endlessly questioning for the sake of questioning is also not useful for coming to an acceptable conclusion. 'Ascertainment' is unnecessary in the case of direct perception or the verbal testimony of a trustworthy authority. However, in the absence of these, one has to rely on confutation (*tarka*) which is a method of attaining knowledge of the truth about an unknown or uncertain thing by comparing and then gradually eliminating all the competing suppositions. This is not a method which ascertains, determines and verifies a theory. It simply eliminates all other contesting theories to the supposition it supports; after which truth is established through the application of various means of accurate or valid knowledge (*pramāṇa*). One can take help of a combination of multiple sources of valid knowledge or epistemic positions which includes perception (*Pratyaksha*), inference (*Anumāṇa*), comparison and analogy (*Upamāṇa*) and testimony of past or present reliable experts (*Śabda*). Apart from these four *pramāṇas*, some other philosophical schools mention two more *pramāṇas* – postulation or derivation from circumstances (*Arthāpatti*) and non-perception, negative/cognitive proof (*Anupalabdhi*).

We have decided to use this methodology to investigate the root-cause or source of human consciousness.

Since there is no purpose in entering into a discussion if one party is ignorant about the subject being investigated or the terminology being used by the other party, hence, we have tried to elaborate all unfamiliar concepts and terms used by us in this document.

SCOPE

The scope of this study is limited to exploring whether consciousness is an emergent brain phenomenon or it is a fundamental property of the universe that is more deeply connected to the fabric of reality than generally accepted.

This work does not attempt to

- Provide any detailed theory or mechanism of how Universal-Consciousness and/or individual's consciousness operates
- List down the practical applications of the concept of Universal-Consciousness i.e. how it can change our lives or impact the current technologies

- Carry out a comparative analysis of various consciousness philosophies

UNEXPLAINED EXPERIMENTAL OBSERVATIONS

Materialism (a framework that has been able to provide a good understanding of things that are manifested in our visual world of experience) tells us that everything that exists in the universe is the result of matter energy interactions. It also proclaims that empirical sciences and formal mathematics are the only tools with which we can discern the true nature of reality.

Hence, while analysing which of the two paradigms is useful in providing a satisfactory explanation of various observed phenomena with respect to human consciousness, we have decided to restrict ourselves to empirical experiments which have been conducted in a scientific manner and have been replicated in more than one laboratory.

Multiple experiments have shown that desired response can be spiked through hopeful expectancy. The most well-known of these experiments are the ones on Placebo effect. Both materialists and non-materialists agree that the human consciousness or thoughts have a role to play in the placebo effect. Nevertheless, these experiments cannot be used to determine whether consciousness is an emergent property of the brain or a fundamental property of the universe because the placebo effect is observed in the same body-mind complex with which the human consciousness is associated.

It is a known fact that electromagnetic waves are generated during the activation of neurons in the brain. However, these waves cannot be detected beyond a few centimetres from the skull despite using special devices like EEG, MEG etc³. As a result, it is highly unlikely that these waves could impact entities which are not in the ‘immediate vicinity of the brain’ (by immediate vicinity we mean within a few centimetres’ radius from the brain/skull). So, even if we have one replicable experiment which demonstrates a link between (i) human intent/thought and (ii) impact on the physical world or other body-mind complex(es), which are at a considerable distance from one another, then, we have a valid case for exploring alternate root-causes of consciousness.

We know that mind-matter interaction research and parapsychology studies have demonstrated through a wide range of scientifically conducted experiments that a statistically significant correlation exists between human intent/thought and impact on the physical world or other body-mind complex(es). While it is a fact that many of the results and anecdotes cannot be reproduced on demand, but a sufficient number of experiments have been replicated so as to ensure that under the structure of meta-analysis there is no chance of the results being attributable strictly to accident.

Some of these results have been replicated according to standards that are higher than those used for pharmaceutical and social science studies. Hence, there is a sufficient case for exploring alternate theories of the material and efficient cause of human consciousness.

Before continuing further on our investigation by exploring other fields of contemporary research, let us first understand the basic terminology and concepts used by the materialist and non-materialist paradigms. For this, we will take help of one of the oldest surviving non-materialist philosophies – the ancient Indic philosophy (which itself is a bouquet of a number of similar philosophies like *nyāya*, *sāṅkhya*, *yoga*, *vedānta* etc.). The concepts used in other ancient and contemporary non-materialist philosophies are very similar to those described in ancient Indic philosophy and, hence, we can use it as a basis for our discussion, without any loss of generality.

OUR BODY-MIND COMPLEX AND CONSCIOUSNESS

According to Indic philosophy, considering ourselves as just a physical body of bones, muscles, blood etc., does not help in appreciating the true nature of our ‘beingness’. A useful way of understanding our existence is to consider our body-mind complex as a system of three bodies consisting of five layers or sheaths which are illumined by the reflected consciousness (the reflection of the witness-consciousness or the Universal-Consciousness).

The witness-consciousness, which is reflected by the subtle body, is ultimately responsible for converting the body-mind complex into a living and experiencing sentient being (*jeeva*). The three bodies or five sheaths are mere tools which help the witness-consciousness to experience the presence or absence of the universe.

Witness-Consciousness is not a ‘verb’ and should not be confused with the act of witnessing or being aware of one’s experiences, sensations, thoughts, surroundings etc. Instead, it is a ‘noun’ for the witness/experiencer of (i.e. cause behind) all experiences of the body-mind complex. Despite being the witness/experiencer, it remains uninvolved or unattached from all experiences and their consequences.

According to *yoga* philosophy (an ancient Indic school of philosophy), the body-mind complex of a sentient being is made of

1. Gross Body (*Sthūla Sharīra*) – This body includes the tangible aspects of the sentient being - muscles, bones, organs, and all the other parts that make up the physical form. The physical body is the tool body. We need it for doing anything in this physical world.
2. Subtle Body (*Sūkshma Sharīra*) – This body is the intangible aspect of the sentient being. It is the subtler plane of existence and includes the thinking/feeling (*mann*), the

discriminating/intellectual power (*buddhi*), the memory (*chitta*) and the integrative (*ahankāra*) aspect of our individuation.

3. Causal Body (*Kāraṇa Sharīra*) – It refers to the innermost body where the creation is in the unmanifested form. The witness-consciousness or the Universal-Consciousness is covered by ignorance (*avidyā*) (just as clouds seem to cover the sun), resulting initially in the non-apprehension of our true identity and culminating in the misapprehension of the reality. This level has other names like blissful sheath, seed body and so on.

The subtle and causal bodies continue through all our lives and store impressions of all that has happened to us in this life and past lives. The causal body should not be confused with the soul because soul (a concept popular in various Abrahamic religions) does not go through the cycles of birth and death. Neither should the causal body be equated to the *ātman* or *Brahman* (Universal-Consciousness). The causal body, in a nutshell, is the ignorance (known as *avidyā* at an individual level or *Māyā* in its cosmic form). And once this veil of ignorance is removed or transcended, the sentient being attains self-realisation or enlightenment or *Moksha*.

The five layers or sheaths (*koshas*) act as a roadmap for our journey of self-discovery providing a step by step guide as we move from a grosser level to a subtler one. By understanding and working through each of these layers, we can gradually move towards a state of greater awareness and self-realization³⁸.

Gross Body (*Sthūla Sharīra*)

- *Annamaya Kosha*: Food Sheath - It is the physical body made up of matter, which includes the skin, bones, muscles, organs, and other tissues. This *kosha* is responsible for our basic survival needs, like food, water and shelter. It is through the *Annamaya Kosha* that we experience the physical world and interact with the natural environment around us³⁸.

Subtle Body (*Sūkshma Sharīra*)

- *Prāṇamaya Kosha*: Vital Sheath - It is the energy sheath of the body and is made up of the five major *prāṇas* which helping in flow of life force energy throughout the body. In other words, it plays an important part in the vital functions we need to stay alive, such as breathing, digestion, circulation, excretion³⁸.
- *Manomaya Kosha*: Mental Sheath - *Manas* means mind. This is the mental sheath of the body, and consists of our feelings, thoughts, emotions, memory and imagination. It is responsible for our cognitive functions like memory and perception and is where we process our experiences and emotions³⁸.
- *Vijnānamaya Kosha*: Intellectual Sheath - It means knowledge or wisdom. This is the sheath that sets human beings apart from animals. While both can experience

emotions and deep connections, only human beings have the intellectual ability to determine right from wrong³⁸. Our intellect, intuition and inner wisdom are all part of this sheath.

Causal Body (*Kāraṇa Sharīra*)

- *Ānandamaya Kosha*: Blissful Sheath - It is the fine veil of ignorance (*avidyā*) covering the inner-most core which is normally inaccessible to the individual. It is where we experience our interconnectedness with all things in the universe. This sheath is what allows us to feel bliss and contentment with the bliss aspect coming from the *Brahman* which this sheath is appearing to enclose.

Our true self lies hidden beneath these sheaths/layers, however, each layer feels so real that we are often deceived into believing that one of the sheaths is who we are.

Although every non-materialist philosophy does not look at the body-mind complex as a layered structure of five sheaths, but, they all agree, that there exists a clear distinction between the various biochemical activities within the body-mind complex, contents of the mind (memory, intellect, thoughts & feelings) and consciousness. The consciousness or inner-most core of the personality of the living being emanates from a fundamental, eternal, omnipresent, non-physical realm of existence which is known by different names like *Brahman*, *Purusha*, Universal-Consciousness, Supreme Cosmic Spirit...

On the other hand, the materialists argue that cognition (information processing) and internal phenomenological sensations (consciousness), including emotions, are intimately related and are not separable.

Whereas machines are precisely the sum of their parts, biological systems are always more than the sum of their parts. Complexity theory was devised by mathematicians and computer scientists in the late 20th century. It attempts to explain how many (even millions of) independent actors can unintentionally demonstrate patterned behaviour and properties that, while present in the overall system, are not present in any individual component of that system. It is one of the pillars of biosciences and helps us understand what we see in our everyday lives.

All living things follow the same four complexity rules (i) the more the interacting parts {cells, ants, people} and the greater their diversity, the greater is the complexity of the resulting system {bodies, ant colonies, cities, cultures, and civilizations} (ii) in self-organizing systems, all interactions are local (iii) negative feedback loops keep systems healthy and are necessary for their survival. Positive feedback loops exist, but they cannot predominate (iv) there must be some low-level randomness or unpredictability in every living system. However, if there is too much randomness or unpredictability, then there can be no self-organization, no greater whole. And if there is too little, then the system is unable to adapt to the environment changes.

Neuroscientists believe that phenomenological sensations are dynamical ‘modes’ of firing behaviour that (i) exist over time and over large parts of the brain’s neuron-to-neuron network and (ii) are consequences of the network-of-networks architecture, coupling the individual neuronal dynamics and the necessary time delay incurred by neuron-to-neuron transmission⁴. If something possesses these system properties, then it will have the dynamical modes and, thus, the phenomenological sensations or consciousness.

Most of the current work in neuroscience is, therefore, being done around measuring and understanding the different states of mind or the vividness of perceptual phenomenology. For example, deriving the perturbational complexity index (PCI)⁵ using the LZW complexity, administering mind-altering psychedelics⁶ like LSD, psilocybin, or DMT-based compounds⁷, and using magnetoencephalography (MEG)⁸ to study the brain activities at neuro chemistry level or even the study of the neural correlates of consciousness (NCC)⁹. The most ambitious advanced research study currently in progress is the one in which neuroscientists are attempting to slice the human brain into thousands of thin slices and then piece the scanned images back together inside a computer, and make a 3D 'atlas' of the brain¹⁰.

While most neuroscientists agree that consciousness is a by-product of the neural activities in the brain, they disagree on the mechanisms like which parts of the brain are involved in the process etc. Two rival theories of consciousness, Global Neuronal Workspace Theory (GNWT)¹¹ and Integrated Information Theory (IIT)¹², were recently tested by independent researchers in a joint experimental study spanning almost two years. However, neither of these theories could be verified, and now, the proponents of these theories would need to rethink the mechanisms they proposed in the light of the new evidence¹³.

«If we look closely at what all these neuroscientists are attempting, we find that they plan to measure the crackling of electrical activity among neuron networks and discover which part of the brain gets activated when we have a conscious experience. It does not throw much light on what is the root cause of these experiences; whether it is the brain circuitry or it is something which is apart from the body-mind system.»³⁹ The typical problem of correlation vs causation continues to hover around such design of experiments.

There are some scientists who are exploring alternate causes of conscious experiences by going beyond neuroscience. Orchestrated Objective Reduction (Orch OR)¹⁴ model portrays consciousness as brain activities linked to fundamental ripples in spacetime geometry. It states that consciousness is likely due to quantum vibrations in microtubules deep within brain neurons as opposed to the conventionally held view that it is due to connections between neurons. In the Orch OR proposal, reduction of microtubule quantum superposition to classical output states are neither totally deterministic nor random and are influenced by a non-computable factor ingrained in fundamental spacetime. However, this not-yet-verified theory

is also exploring the source of consciousness at the brain level rather than considering consciousness to be something primary and fundamental.

THE CONCEPT OF A NON-PHYSICAL ETERNAL REALM OF EXISTENCE – UNIVERSAL-CONSCIOUSNESS

Sāṅkhya philosophy (considered by many to be the oldest school of philosophy in the world) considers everything in this universe to be made of essentially two things – (1) spirit or «the primal energy and (2) matter or the giver of form. We have to note here that matter does not mean only solid, liquid and gaseous substance but includes even those substance which do not have a form like all our thoughts, ideas, emotions, etc. These subtler planes of existence are considered matter according to the vast definition given to it in the Indic philosophies.»³⁹

To avoid any confusion with the English language terms ‘spirit’, ‘energy’ and ‘matter’, let us call these as Category 1 and Category 2. Category 1 corresponds to the non-physical aspect of existence which cannot be perceived by any instrument of measurement including our sense organs. Its presence can only be inferred. Category 2 corresponds to everything that can be perceived. For ease of understanding, we will bifurcate this category further to Category 2a – everything physical like mass (solid, liquid, gas) and energy; perceived using our sense organs, and Category 2b - subtler planes of existence like thoughts, memories, emotions, etc.; perceived using our mind.

If we map the five sheaths explained in the previous section to these categories, then we can say that *Annamaya Kosha* (Food Sheath) corresponding to the Gross Body belongs to Category 2a and the remaining four sheaths belong to Category 2b. They all experience changes or modifications and are not eternal in nature. Even though the existence of some sheaths spans across innumerable life times, they are still considered to belong to Category 2b since they are subject to changes and can be perceived by the mind.

But body-mind complex (Category 2a and 2b) remains just that – body-mind complex – until it is infused with consciousness. It then becomes a sentient being. The consciousness or the inner-most core belongs to Category 1 and it is the witness or experiencer of all experiences of the body-mind complex.

The non-materialist paradigms differ with each other on the mechanism by which Category 2 is infused by or associated with Category 1. Some believe that the Universal-Consciousness shines on the body-mind system pervading it like the fragrance of an incense in the room, some believe that it resides within the body-mind system (pineal gland or heart), some believe in a stream of consciousness flowing through different life spans, another school of thought considers such a relation as an illusion, just like the appearance of a mirage in the desert, whereas some call it dissociated alters of universal phenomenal consciousness...

But whatever be the mechanism of association of Category 1 with Category 2 to make the sentient being, all non-materialist paradigms accept the existence of an all-pervading underlying layer of reality, «which itself does not undergo any change, and from which everything in this universe manifests. It is known by different names like *Brahman*, *Purusha*, Absolute, Universal-Consciousness, Supreme Cosmic Spirit... This omnipresent field, which is apart from the mind-body system, pervades and illumines the mind-body system and is known in its functioning.»³⁹

«Despite the phenomenal manifestation of the entire material world from this ultimate layer of reality, it does not diminish a bit and remains absolute and unchanged. This powerful force, which has shaped the evolution and fate of the entire cosmos, is so vast that it outweighs everything else that we see or know. It is infinite, indestructible, eternal and independent of anything that resides within it and the manifested material world is transient or temporary in nature and depends on this omnipresent field for its existence.»³⁹

«However, the mainstream scientific paradigm, with its roots in materialism, dismisses this concept of Universal-Consciousness as a figment of imagination. It is not ready to accept the existence of some abstract field that is latent and unknowable, something that is so vast that it outweighs everything else that we see or know in this universe.»³⁹ But the same mainstream scientific community is open to the idea of three abstract concepts - dark matter, dark energy and vacuum energy. They are not perceivable by the sense organs but their presence has been inferred by quantum physicists and cosmologists based on some unexplained observations in this universe.

«Originally known as the ‘missing mass’, dark matter’s existence was first inferred in 1933 when it was discovered that the mass of all the stars in the Coma cluster of galaxies provided a very small percent of the mass needed to keep the galaxies from escaping the cluster’s gravitational pull. The reality of this missing mass remained in question for decades. Finally, in the 1970s the existence of ‘dark matter’ was confirmed¹⁵.»³⁹

«In 1998, two research teams independently discovered that the expansion of our universe is accelerating. This discovery completely changed our understanding of the universe. It showed that about 70% of the mass of our universe is in an unknown form which is now usually referred to as ‘Dark Energy’¹⁶.»³⁹

«Vacuum energy is an underlying background energy that exists in space throughout the universe. It is a special case of zero-point energy that relates to the quantum vacuum. The effects of vacuum energy can be experimentally observed in various phenomena such as spontaneous emission¹⁷, the Casimir effect¹⁸ and the Lamb shift¹⁹.»³⁹

«The idea that empty space can have an intrinsic energy associated with it and that there is no such thing as a true vacuum is seemingly unintuitive, yet, it is now scientifically established.»³⁹

Although physicists currently lack a full theoretical model for understanding zero-point energy, they suggest that it could contain a huge amount of latent energy. It is now a widely accepted fact that «the ordinary matter (which makes up all the stars, planets, galaxies and everything that we know) in this universe is less than 5 percent of the mass/energy that the universe has. The remaining 95% of the universe is made of some mysterious, invisible substance/force called dark matter/energy²⁰.»³⁹

Billions of dollars are being spent on research projects to understand these mysteries of the universe. Latest in the list is a two-tonne Euclid space telescope²¹, launched in July 2023, which is on a million-miles journey towards the Sun-Earth second Lagrange point L2 and aims to shed light on dark energy and dark matter. However, the same scientific community questions the rationale behind investing resources for investigating the concept of Universal-Consciousness. They consider Universal-Consciousness to be a figment of imagination and its associated concepts, especially causal and subtle body going through multiple rounds of birth and death, a bit too far-fetched.

«But over the past few decades some organisations have started exploring this area in depth. The Division of Perceptual Studies (DOPS)²² at University of Virginia, founded in 1967, is a highly productive university-based research group focused on studying phenomena related to consciousness functioning beyond the confines of the physical body, and phenomena that suggest the continuation of consciousness after physical death. DOPS researchers have objectively documented hundreds of cases and rigorously analysed empirical data collected regarding human experiences which suggest that consciousness may persist in detectable ways beyond bodily death.»³⁹ This implies that human consciousness cannot be an emergent property of the brain because, had it been an emergent property, it could not have outlived the brain that produced it.

EXPERIENTIAL KNOWLEDGE OF OUR INNER-MOST CORE OR WITNESS-CONSCIOUSNESS

Vedānta (the culmination of Vedic wisdom - the world's most ancient spiritual texts) explores in great depth the question – 'Who am I?'. It explains the relationship of the inner-most core of the sentient being (individual's consciousness) and Universal-Consciousness. This relationship has been adeptly summarised in the *mahāvākya* (The Great Saying) – '*tat tvam asi*' which translates to 'thou art that'. 'Thou' stands for individual's consciousness and 'That' stands for Universal-Consciousness. Hence, '*tat tvam asi*' states that individual's consciousness is same as Universal-Consciousness.

Before understanding whether this relationship can be demonstrated or inferred experimentally, let us understand some of the ways or techniques available to us to gain experiential knowledge of our inner-most core.

There are many thought-experiments mentioned in the ancient texts as pointers to understanding and validating the presence of witness-consciousness within us. For example, *Drig-Drishya-Viveka* is an effective methodology for gaining the direct knowledge/experience (*Aparoksh Anubhūti*) of the witness-consciousness. In this methodology of gaining valid knowledge of our inner-most core, we iteratively move from the grosser level to the subtler level of our being, exploring the nature of the Knower and the Known at each stage, until we reach the inner-most core. This method, of reaching and realizing the witness-consciousness as our inner-most core, is based on the following premise:

- There is always a Knower and a Known.
- Knower and the Known cannot be same at any given time.
- Knower is always one whereas the Known can be many.
- Knower is never changing, whereas the Known is always changing.

The experiment starts with realizing that the eyes observe several objects around us, including the body. Hence, the eyes are the Knower whereas the body and all the objects are Known. In the next stage, the experimenter realizes that the eyes also have several states - closed, open, clear vision, blurred vision, etc. These states are observed by the mind. Hence, now the eyes become the Known and mind is the Knower. As we delve deeper, we observe that the mind and its content like thoughts, feelings, emotions are also continuously changing. This means that the mind has now become the Known. However, the question is who now becomes the Knower. Clearly, there is a substratum – a True Knower that is distinct from mind and its content. The spiritual texts refer it as the witness-consciousness. The non-dualist philosophies further mention that once we realise our true nature as the witness-consciousness, there remains no distinction between the Knowledge, the Knower and the Known. The three merge into One.

The materialists argue that this is the classic case of ‘mind observing the mind’ and not a proof of the existence of an ‘entity’ beyond the mind. An oft quoted thought-experiment which is used to counter this argument is from the *Māndukya Upanishad*.

This Upanishad describes three states of consciousness, namely waking (*jāgrat*), dreaming (*svapna*), and deep sleep (*susupti*) which are in line with the states of consciousness recognised by the contemporary knowledge systems too. The question to ponder is that which part of ‘you’ is experiencing these states, especially the third state. It’s definitely not your mind because in deep sleep the mind is totally at rest. The waking state infers that we slept like a log, i.e. deep sleep state, but who/what was the witness? There is clearly some part of ‘you’ which is beyond and underlying these three states. The spiritual texts call this *Turiya* (‘the fourth’) which is witnessing the other three. As mentioned by *Gaudapada* in *Māndukya Kārikā*

nivṛtteḥ sarvaduḥkhānāmīśānaḥ prabhuravyayaḥ |
advaitaḥ sarvabhāvānām devasturyo vibhuḥ smṛtaḥ || 1:10 ||

“In it, indicated as the changeless and the Supreme Lord, there is a cessation of all miseries. It is the one without a second among all entities. It is known as the *Turiya* (Fourth), effulgent and all-pervading.”

In other words, *Turiya* is not a part of us; it is our real or true nature; it is the witness-consciousness (Universal-Consciousness) pervading or underlying the other three states - waking, dreaming and deep sleep. Calling the waking, dreaming, and deep sleep as ‘different states of consciousness’ is actually a misnomer. Those three are essentially the different states of mind and that one and only consciousness or *Turiya* is that what we truly are.

A very simplistic way of understanding this concept is to look at water (H₂O). The three states in which it is perceived by us are ice, water and steam/water vapour. Each possesses different properties, yet, there is something common in all of them which links all these three forms of water and that is their chemical composition - H₂O. In other words, the ‘true identity’ of ice, water and steam/water vapour is H₂O.

Besides these two very useful methods of self-inquiry to identify that part of ‘you’ which is the witness or experiencer of everything that your body-mind system is experiencing, there are other ways of gaining experiential knowledge of the consciousness. Some of these are meditation, *tantra* (certain modes of worship), psychedelics, trance and NDE (Near Death Experience).

One may argue that the methods explained above only help us realise that consciousness is an independent ‘entity’ and not a content of mind but these methodologies do not offer any insight on the root cause of consciousness - whether it is an emergent or a fundamental property. To appreciate the root cause of consciousness we must first understand some other aspects of Universal-Consciousness.

THE UNDERLYING AND FUNDAMENTAL LAYER OF REALITY

The *Nāsadīya Sūkta*, of the *Rig Veda* (the oldest known spiritual text of the world) describes the Ultimate Reality as follows

*nāsad āsīn no sad āsīt tadānīm nāsīd rajo no vyomā paro yat |
kim āvarīvaḥ kuha kasya śarmann ambhaḥ kim āsīd gahanam gabhīram || 1 ||*

There was neither existence nor non-existence, neither matter nor space. What covered it? Where was it? What was its purpose? What protected it? Who was the master of the cosmic water (space plasma) that was dense and deep?

*na mṛtyur āsīd amṛtam na tarhi na rātryā ahna āsīt praketaḥ |
ānīd avātām svadhayā tad ekam tasmād dhānyan na paraḥ kim canāsa || 2 ||*

There was neither death nor immortality and nothing to separate night and day, That One existed enclosed in nothingness, there was only that One and no other.

*tama āsīt tamasā gūlham agre 'praketaḥ m salilam sarvam ā idam |
tucchyenābhv apihitam yad āsīt tapasas tan mahinājāyataikam || 3 ||*

Darkness covered darkness, all this was hidden intelligence in cosmic water (Space Plasma) And the One enclosed in nothing arose from the power of heat.

*kāmas tad agre sam avartatādhi manaso retaḥ prathamam yad āsīt |
sato bandhum asati nir avindan hṛdi pratīṣyā kavayo manīṣā || 4 ||*

Desire entered and the primal seed appeared from the cosmic mind. The wise who searched deep within their heart could discern between that which is and that which is not.

*tiraścīno vitato raśmir eṣām adhaḥ svid āsīd upari svid āsīt |
retodhā āsan mahimāna āsan svadhā avastāt prayatiḥ parastāt || 5 ||*

From the primal seed sprang crisscross rays holding all the forces above and below. The strong powers made fertile forces with strength below and impulse above.

*ko addhā veda ka iha pra vocat kuta ājātā kuta iyaṁ viṣṛṣṭiḥ |
arvāḡ devā asya visarjanenāthā ko veda yata ābab || 6 ||*

Who can say and know where all this came from and how all this came to be? The Devas (Gods) came after all this manifested so who knows where all this came from?

*yaṁ viṣṛṣṭir yata ābabhūva yadi vā dadhe yadi vā na |
yo asyādhyakṣaḥ parame vyoman so aṅga veda yadi vā na veda || 7 ||*

Where did creation have its origin? Who is One that created it or did the One not create it? That One alone perceives all from above and knows the beginning or maybe even he does not know.

«Universal-Consciousness is the underlying and fundamental layer of reality. This all-pervading and all-encompassing field is *aparimey* (not measurable), *avyakta* (latent or not describable) and *agyey* (unknowable). There is no place where this field is not present and the entire material universe is created by it and from it; yet, it remains the same complete whole, as before, absolute and unchanged.»³⁹

While the mainstream scientific community finds the above description of Universal-Consciousness as infeasible and is «not ready to accept the existence of some abstract field that is latent and unknowable, something that is so vast that it outweighs everything else that we see or know in this universe»³⁹, yet, they are themselves advocating the presence of dark energy. We are not arguing that dark energy and Universal-Consciousness are the same but

there are a lot of uncanny similarities between the two. So, if one concept is accepted and is being explored, why is the other rejected by the same scientific community?

«Astrophysicists have experimentally confirmed that the universe is expanding and that expansion is accelerating²³. To explain the expansion, they theorised a new form of energy, one that exhibits properties that no other kind of matter or radiation or energy does – dark energy. The ‘dark’ in the name is a placeholder term that indicates that we do not know much about the true nature of this energy. Right now, it is believed to be about 70 percent of the mass/energy of the universe, but, oddly, even as the volume of the universe grows, its energy density remains remarkably constant across the universe²⁴. It is almost as if there is something uniformly present in space whose nature is not dependent on anything that resides within space. This has prompted scientists to figure that dark energy could be a large field that permeates throughout the universe or even an inherent feature of space-time itself which doesn’t dilute but rather maintains a constant energy density as time goes on.»³⁹

«Quantum physics points out that the universe is made up of continuous fluctuating fields and all particles and forces are nothing but excitations of these quantum fields²⁵. It also suggests that there seems a possibility of combining these various quantum fields into one single field, the Unified Field, from which everything else emerges - gravity, all particles, all forces, everything. String theory²⁶, and its subsequent versions like Superstring Theory²⁷ and M-Theory²⁸, is based on the fundamental concept that reality is made up of infinitesimal vibrating strings and as these strings vibrate, twist and fold, they produce effects in many tiny dimensions that we interpret as particles or forces. The Unified Field, which gives rise to these vibrating strings, is the non-material source of the material universe.»³⁹ (By material we mean something that can be measured or quantified using available tools of measurement and perceived by our senses).

In other words, the Unified Field «is an abstract unmanifested universal field that supports different waves of vibrations which appear as all the ingredients that we see in the universe. This Unified Field existed long before the universe came into existence (i.e. even before the Big Bang) and was contentedly sitting within itself, not dead, not lifeless, but reverberating within itself.»³⁹

«String theory is extraordinary as it fulfils the quest to discover the unified source of the diversified universe. Although the mathematics of the theory seems perfect, there is no way to experimentally test it at the moment. But if these discoveries of science mean anything, they can only mean the existence of Universal-Consciousness which is present and working in all things.»³⁹

MANIFESTATION OF THE MATERIAL WORLD FROM UNIVERSAL- CONSCIOUSNESS

Ancient Knowledge Systems also state that initially Universal-Consciousness «existed in the *avyakta* (latent) state, which was teeming with unmanifested energy, wherein everything was present, but, in an undifferentiated state. An oft repeated example is the seed of a tree - it has all the information of the tree that will develop from it, yet, if you open up the seed you will not find the rudiments of the tree in it. The tree is in the seed but in an undifferentiated state.»³⁹

To explain «the process of manifestation of the universe from the abstract universal field, *Sāṅkhya* philosophy, for example, takes the help of a metaphor - dualism of *Purusha* (Category 1; as explained in one of the previous sections) and *Prakriti* (Category 2). *Prakriti* refers to the basic cosmic material that is the root of everything and *Purusha* to the spirit or conscious energy that governs life»³⁹ or existence. In the process of manifestation, Category 1 (spirit or *Purusha*) takes the form and identity of Category 2 (matter or *Prakriti*) and develops under its laws. However, one should remember that it is just one of the ways (though, most common) of explaining the creation. There are alternate philosophies (like some schools of *Vedānta*) that look at dualism as illusory and consider *Brahman* (Universal-Consciousness) as both the efficient and the material cause of creation.

Particle physicists explain the quantum/sub-atomic world as follows²⁹ - The universe is «made up of continuous fluctuating fields: matter fields, whose quanta are fermions (i.e., leptons and quarks) and force/interaction fields, whose quanta are bosons (e.g. photons and gluons). These fields give rise to particles»³⁹ – both matter and force/interaction. The world that is perceivable by us is made of these particles.

We can think of these particles as events in space-time. But underneath these events is a much larger field and a lot of ‘invisible’ activities are going on ‘behind the scene’ in this field and that is why it has a strange counter intuitive behaviour, that is both startling and puzzling. For example, people like to think of propagation as a kind of a domino effect or ripple effect where information and objects go from one point to another in a very local way (locality means that for an object or energy to affect another object or energy, the two have to interact); but quantum/sub-atomic world is non-local in nature with instantaneous information travel between two points separated in space and/or time.

«As science explored deeper into the atomic and sub-atomic world, it came across several counterintuitive and paradoxical ideas like Wave Particle Duality, Collapse of Wave Function, Superposition, Decoherence, Entanglement, Tunnelling and Time Reversal. These discoveries challenged the core assumptions of classical physics and gave birth to quantum physics.»³⁹

«From the conceptual point of view quantum physics is profoundly puzzling but its mathematical formulae are much more successful in predicting the behaviour of the physical

systems than any other theory. Just as Newton's second law gives a mathematical formula to calculate the position of an object at any point of time, Schrödinger equation (which is Newton's second law's quantum counterpart) makes predictions as to what path a given physical system will take over time. It gives a wave function which describes the wave characteristics of the particle and its value at any given point of space and time is related to the likelihood of the particle being there at that time.»³⁹

«The wave function collapse (a technical term for the wave giving rise to the particle) occurs when the wave function — initially in a superposition of all possible states — reduces to a single state due to interaction with the external world. This interaction is called observation.»³⁹ On observation, the wave collapses and acquires measurable particle properties like momentum, position etc. Although not much is understood about how this interaction takes place, it is generally accepted that consciousness has some role to play in this process.

Wave Particle Duality states that light and matter behave as particles only in the presence of an observer. Before observation, they exist in the wave form. (As science delved deeper into the sub-atomic world, the idea of wave has been translated into a field - an extended distributed structure.)

The founding fathers of quantum physics tried to brush aside this strange counterintuitive behaviour of the quantum systems by saying that the quantum world is not real and the particle, which is real, comes into existence only on observation. Bohr, one of the founding fathers of quantum theory, said that there is no quantum world, because, to him, those kinds of behaviour did not satisfy his criteria for what should be regarded as real.

And if you also define reality as something you can touch and measure, you would have to come to the same conclusion as Bohr. This erroneous definition of reality was one of the reasons for the inconsistencies and the gaps between the materialist and non-materialist paradigms.

Materialists say that quantum systems in themselves are abstractions because they have no measurable properties. They acquire a particle state and gain measurable properties (i.e. they become real) upon interaction with a conscious entity (observation).

But that makes no sense, because, if the quantum systems are not real then how do they undergo interactions with conscious entities?

The moment we use a different terminology to explain what is happening in the sub-atomic world, the materialist and non-materialist paradigms begin to converge. The physicists defined 'Real' as something whose physical properties can be measured. If we define the word 'Real' as something which exists, and 'Manifested State' as something whose physical properties can

be measured, and ‘Unmanifested State’ as something whose physical properties cannot be measured, then quantum theory will start making sense and will not appear so puzzling.

Using this new terminology, the scientists would say that quantum systems in themselves are real and they have no measurable properties (i.e. they exist in unmanifested state) until they undergo some specific type of interactions (observations). At that stage, the unmanifested state acquires a manifested state which can be measured/perceived by a conscious/sentient being.

This is so much in line with what the *Vedānta* talks about the manifested (*sagun*) and unmanifested (*nirgun*) world. (*Vedānta* is the culmination of Vedic wisdom - the world’s most ancient spiritual texts. It is built on the foundations of the *Upanishads*, the *Brahma Sūtra* and the *Bhagavad Gītā*.) Maybe, that is why, a number of quantum physicists have said that once they studied the *Vedānta*, quantum physics started making sense to them.

«People like Einstein did not want to accept that reality exists in manifested and unmanifested form and were at unease with the role of probability and chance in quantum physics. They believed in a reality that exists ‘out there’ independently of whether it is observed or not. They were convinced that quantum physics is incomplete, only a part of the whole truth, and there is a complete theory waiting to be discovered.»³⁹

In 1935, Einstein, Podolsky and Rosen published a paper outlining a mechanism to test whether an independent objective reality exists or not. «John Bell devised an inequality in 1964 to experimentally explore this concept. The experiments, however, demonstrated that the inequality was violated indicating that Einstein’s view was incorrect. The experimental setup was questioned and some loopholes were identified. After multiple such rounds, it was finally in 2012 that the first loophole-free experiment, which violated Bell’s inequality, was successfully conducted³⁰, proving that no independent objective reality exists;»³⁹ for which the Nobel Prize in Physics was awarded in 2022³¹.

Another way of testing whether independent objective reality exists «is provided by the Leggett Garg inequality (devised in 1985). Experimental falsification of this inequality would not only falsify independent objective reality but would also confirm that quantum physics is not limited to micro-world but can also be applied to bigger objects. In Jan 2022, a team of scientists published their findings after successfully conducting the first loophole-free experiment that showed a significant amount of violation of Leggett Garg inequality³².»³⁹

These two are the most decisive experimental refutations of the notion of independent objective reality. The quantum theory, which is very similar to the concepts explained by the non-materialist philosophies, is an acceptable theory of viewing the sub-atomic world. The framework of manifested world arising from an unmanifested field of existence (which the non-materialists call The Ultimate Reality or Universal-Consciousness) is now considered as a useful framework for understanding this universe. Yet, some scepticism continues.

A question that is often asked by the materialist community is that if indeed this material world (Category 2) is 'kind of swimming' in the non-physical universal field of Universal-Consciousness (Category 1) and if indeed the material and efficient cause of all entities in this universe is Universal-Consciousness, then why are some entities animate and some inanimate? Why does the degree of consciousness in different entities vary e.g. plants display minimal consciousness, human beings display maximum and stones and rocks display none?

The answer lies in the nature/degree of association of Category 1 and Category 2. The metaphor often used to explain this is that of a mirror and light. If the mirror is clean and shiny, it reflects maximum light falling on it, whereas a dusty mirror reflects lesser light and a non-reflecting surface like mud or wood will not reflect any light. Another example of the nature/degree of association affecting the properties of various substances is available in Chemistry. Some elements are inert, some are highly reactive, some are very unstable and disintegrate (radioactive), some form ionic bonds, some form covalent bonds...yet, they are all composed of electrons, protons and neutrons. The properties displayed by each element depends on the nature of association of electrons, protons and neutrons, i.e. their number and their arrangement, within the atom.

MIND-MATTER INTERACTION AND PARAPSYCHOLOGY EXPERIMENTS

As mentioned in one of the previous sections, non-materialist paradigms claim that Universal-Consciousness is the material and efficient cause of everything in this universe. In other words, everything in this world arises from Universal-Consciousness which, in turn, implies that we are all interconnected at some level. *Vedānta* further describes the relationship of the inner-most core of the sentient being (individual's consciousness) and Universal-Consciousness using the *mahāvākya* (The Great Saying) – '*tat tvam asi*' which translates to 'thou art that'. 'Thou' stands for individual's consciousness and 'That' stands for Universal-Consciousness.

The materialists view the above statements with a lot of scepticism and say that these ideas, no matter how motivated by theory or by elegance, must stand up to experimental scrutiny. If there is no evidence to support an idea, it must be discarded.

'*Tat tvam asi*' states that the individual's consciousness is same as Universal-Consciousness. We also know that everything in this world arises from Universal-Consciousness. So, we are connected with everything else in this universe. Therefore, a person should be able to tap into this interconnection using the 'force of will' and the impact of the conscious intent should be observed in the physical world.

This impact of the conscious intent on the physical world can be and has been demonstrated experimentally³³.

Institute of Noetic Sciences (IONS)³⁴, which was established in 1973, has conducted extensive research to reveal the interconnected nature of reality through scientific exploration and personal discovery. We are sharing below a few paragraphs from a recent article³⁵ by their chief scientist, wherein he gives an overview of several well-documented experiments carried out in the last few decades that have patterns which are undeniable.

“Science involves two related efforts: methods for carefully observing and evaluating phenomena, and theoretical explanations of the resulting measurements. These endeavors are like two sides of a seesaw. Together they form the most effective way of understanding reality that humanity has devised, so far.”

“Force of will involves the use of focused intention to affect aspects of the physical world. In parapsychology, this claim has been studied on a wide range of physical targets, from the subatomic to the macroscopic. And again, we can say with some confidence that mental intention does affect aspects of the physical world. The observed effects are usually small in magnitude and appear to involve modulation of probabilistic effects rather than application of forces or fields. But it exists.”

“Of the various categories of experiments investigating intentional effects on the physical world, three classes of physical target systems stand out: tossed dice, random number generator outputs, and photon interference. The first class involves about a half-century of experiments involving the tossing of dice, from the 1930s to the 1980s. A review of all published relevant studies indicates that over time these experiments became progressively more rigorous as potential loopholes found in earlier studies were identified and closed. The most rigorously controlled studies continued to show small magnitude but statistically significant effects in experimental conditions, and null outcomes under control conditions when no one was trying to influence the outcomes.”

“In the 1960s, after the development of electronic circuits that could generate and automatically record random events, dice studies declined, and electronic random number generators (RNGs) became the primary physical target used in many parapsychology laboratories around the world. By the late 1980s, hundreds of RNG experiments had been reported. Several meta-analyses have since been published to review and integrate these studies, and the results again showed small magnitude but statistically significant effects.”

“Near the turn of the 21st century, investigators began to expand this type of research into an unsolved problem in physics called the “quantum measurement problem” (QMP). This refers to an intriguing phenomenon whereby quantum objects, like photons or “particles” of light, behave differently when they are observed than when they are not observed. This effect is most readily observed in a double-slit optical system, because with that apparatus if one observes which of the two slits a photon

passes through, then the pattern of light observed on a screen after the photons go through the two slits will indicate that the photons behaved like particles. But if one does not observe the photons then the pattern of light will indicate that the photons behaved like waves.”

“This “wave-particle duality” depending on observation remains a persistent puzzle because it violates the commonsense doctrine of realism, which assumes that the physical world is completely independent of observation. This conflict thrusts into stark contrast our everyday assumptions about the nature of reality, as sometimes expressed by the question: Is the moon still there if you don’t look at it?”

“This puzzling phenomenon compelled the developers of quantum theory to deeply ponder the meaning of observation. Some, like Wolfgang Pauli, Pascual Jordan, and John von Neumann, believed that some aspect of consciousness, specifically meaning awareness, attention, and/or intention, might be key to understanding the QMP. For example, Jordan wrote, “Observations not only disturb what has to be measured, they produce it... We compel [the electron] to assume a definite position.... We ourselves produce the results of measurement.””

“This strong view of the role of consciousness in the QMP has been endorsed by many other prominent physicists, including a sizeable minority of contemporary physicists and scholars who specialize in studying the foundations of quantum theory. The prominence of those who originally proposed this idea has made the idea difficult to blithely ignore, but to many it challenges their deeply held intuition that the physical world must have been in its present form long before consciousness evolved to observe it. That resistance is, of course, based on the philosophical (and current scientific) doctrine of materialism, which assumes that consciousness evolved from matter. This is opposed to the esoteric view that consciousness is fundamental, which assumes that it was the material world that evolved, and not consciousness. Perhaps many contemporary physicists continue to resist this consciousness-related explanation of the QMP because they’ve forgotten, or never knew, that the founders of quantum theory were not merely interested in esoteric and mystical concepts, but that they used those concepts to assist in developing the mathematical formalisms of quantum theory.”

“History and philosophical preferences aside, the double-slit experiment suggests an intriguing way to explore the meaning of observation in the QMP, and in particular the possible role of consciousness. If one takes the idea that consciousness is more fundamental than the physical world, then awareness itself should transcend everyday space-time constraints, in which case conscious entities like humans may be able to become aware of anything, anywhere, by narrowing their focus of attention to a particular location. If that were possible, then in principle one could gain which-path knowledge about photons passing through a double-slit interferometer. And if that

happened, then the photon interference pattern would shift from wave-like behavior to particle-like behavior, in proportion to the degree of certainty of the information gained. The ability of humans to precisely control awareness in this way would presumably be weak and variable due to the unavoidability of mind-wandering, but it would nevertheless be a way to test the “consciousness-collapse interpretation” of quantum mechanics, where the term collapse refers to a change in the quantum wavefunction, the probabilistic wave-like description of the physical world.”

“To conduct such a test in practical terms, individuals would be invited to focus their attention toward or away from a double-slit system while holding the intention to gain information about the photons’ path. Starting in 1998, some 30 experiments based on this idea have been reported by five independent labs using different protocols, optical setups, and analytical approaches. Of those tests, 14 were reportedly statistically significant at $p < 0.05$ (two-tail), where just one or two significant results would have been expected by chance. The probability of this outcome (a rough estimate of repeatability) is associated with odds against chance beyond a billion to one. This suggests the existence of a genuine mind-matter interaction effect as proposed by John von Neumann and others.”

WHAT DOES ALL THIS REVEAL ABOUT THE ROOT CAUSE OF HUMAN CONSCIOUSNESS

Pure Sciences is now revealing many more pieces of information that are difficult to believe. For example, we all know that matter is made up of atoms, which, in turn, consist of electrons, protons and neutrons. About a century ago, physicists conducted multiple experiments and found that more than 99.9% of the atom is empty space³⁶. They discovered that almost all the mass of the atom resides in the tiny nucleus (which contains closely packed protons and neutrons) and electrons revolve around this nucleus.

A few years ago, particle physicists made another startling discovery. The sum of the mass of the three quarks that make a proton or a neutron is only about 1% of the mass of the proton or neutron. The remaining 99% of the mass comes from the massless and very high energy particles called gluons (elementary particles corresponding to strong nuclear force) that hold the quarks (elementary particles of matter i.e. proton and neutron) together³⁷. The gluons are locked up in the tiny confines of a proton or a neutron and their energy translates into what we perceive as mass (Einstein's equation $E=mc^2$).

In other words, Pure Sciences has revealed that what we perceive as matter is essentially empty space and mass is not an intrinsic property of matter. Actuality is very different from what the mind perceives as fact. The examples shared above confirm that nothing in this universe can be taken on face value.

Coming back to our key question – is consciousness an emergent property of the brain or a fundamental reality of the Universe?

The above discussions clearly show that with each new research study or experiment we are inching towards the realisation that non-materialist framework is a plausible framework for understanding our universe and we do not seem to have any valid reason to reject the non-materialist paradigm in favour of the materialist paradigm.

All current scientific know-how is, in fact, pointing towards the possibility that both the paradigms could be co-existing. This can only be possible if the materialist framework is recognized as a special case (subset) of the non-materialist framework.

Acknowledging such an inclusive framework will imply that the contemporary materialist knowledge system continues to provide a good understanding of things that are manifested in our visual world of experience whereas the spiritual knowledge system provides the explanation for all known human phenomenology including the root-cause of human consciousness.

Brief Profile of the Authors:

Anish Rakheja: An alumnus of IIT and IIM, Dr. Anish is an internationally accredited Executive Coach, Jyotish Acharya, and an eternal student of different schools of Vedanta & the Nalanda traditions of Buddhism. He holds regular classes on the Indian spiritual heritage primarily focusing on the Mind and Consciousness - both scientific and scriptural.

In recent years, Anish has been working with global leaders and executives enabling their personal journeys and deepening the awareness of their own reality. He has been the founder of multiple start-ups and is currently on the board of a few. He is also the author of the highly acclaimed ‘The Mystic Millionaire’ series, which provides a practical approach to spiritualizing our life and living.

Manish Pajan: As leadership consultant and coach, Manish is committed to helping organisations and business leaders find their next level of empowerment, growth and excellence. He regards it as his *swadharma* (one’s designated duty) to be a humble enabler of human evolution, one interaction at a time.

In pursuing this objective, he draws on his 25-year varied experience with leading organisations, and the formal education he is fortunate to have received at some of India's top institutions (IIM Ahmedabad, IIT Roorkee, DAV-Gopalapuram Chennai).

Born to Kashmiri Pandit parents who instilled in him good values and exposed him to Indic wisdom from childhood, he believes he is guided on his path by the *anugraha* (grace) of his spiritually-elevated ancestors.

Switi Gupta: A chemical engineer (IIT Roorkee) with a master's in management systems (IIT Delhi), Switi's key focus area in the last 25+ years has been to design and develop easy-to-use systems for recording, managing and analysing data to successfully run enterprises. As founder member of Broad Strokes Ventures, she uses this experience to design IT solutions for remote business management, B2C marketplace and ERP solutions for Dairy & Food businesses.

She is also founder member at not-for-profit R&D organisation, GI4QC Forum, which is scientifically exploring the fundamental realm of reality in a balanced and structured way. She actively collaborates with other organisations and brings together like-minded people with the aim to transform the existing worldview to embrace a comprehensive spirito-scientific framework.

Statements and Declaration: This writeup is an expansion of a previous work titled "Universal Consciousness: Actuality or a Fragment of Imagination?" by two of the authors - Manish Pajan and Switi Gupta, which has not published in any journal but a copy exists on the website img1.wsimg.com and can be accessed using the link.

<https://img1.wsimg.com/blobby/go/dc0a0457-36e4-4997-9420-90413cd54f35/downloads/Imagination%20Or%20Actuality%20-%202022%20Jun.pdf?ver=1671195657134>

The common sections between the two writeups, which constitutes about 15% of this paper, are included within the quotation marks « and » and have been cited with reference number 39. No financial support was received for the work within this manuscript. The authors declare they have no conflict of interest.

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