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## **Four Perspectives on Consciousness**

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### **Abstract**

This paper presents different views on the puzzle of consciousness from the spiritual, the physical, the biological and the neuroscientific perspectives. It gives glimpses of these different views to remind us of how complex the phenomenon is, and how varied its interpretations are. There is as yet no bridge linking the random permutation of letters in a sonnet to the meaning that permeates it.

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## **1. Introduction**

Many religions and cultures assign a non-physical entity to the core of every living human. Named variously as soul, spirit, *âtman*, etc., this entity is what thinks, feels and creates. It does all this through the instruments of perception. In this view, the human body is living as long as a soul is within; it becomes a corpse when the soul departs. The disembodied soul goes elsewhere, perhaps to a realm transcending space and time. This view of the soul is satisfactory in explaining the phenomenon of dynamic life and inert death at a subjective level but it does not constitute a scientific theory.

## **2. Spirituality in the Indian Framework**

In the Indian traditions the world has a physical as well as a spiritual dimension. The physical dimension includes everything that is matter and energy. Our perceptions and minds bring to our knowledge many of the world's tangible aspects. As per the spirituality thesis, beneath and beyond the physical universe there is a spiritual undercurrent that cannot be analyzed through logic, detected through instruments, or verbalized in language. But facets of it can be experienced through spiritual disciplines.

The universal spirituality cosmos is not unlike the ether of classical physics permeating every nook and niche of the world and the universe. The vacuum of current physics would be an even better analogy: that void is no longer inert nothingness, but a dynamic sea of fluctuations, like the heart-throb of the cosmos. In the Hindu framework, every individual consciousness is a spark of a cosmic consciousness *Brahman* that stretches across the span of space and time.

Moreover, individual consciousness is our spiritual dimension. Spirituality is infinite and eternal. However, we are finite in breath and body and our finiteness is painted on a cosmic canvas. Though we may die and turn to dust, the protons and electrons that subtend our physical frame will exist for ever and this may be considered analogous to spirituality. This is no more obvious than the supernova origins of our physical being.

There are levels of consciousness, experienced in various states of awareness: while awake, while dreaming, and in deep sleep, in all of which consciousness is only vaguely experienced. There is a state called *samadhi* in which one experiences consciousness in its dismantled, fragmented glory. Yoga is an effort to seek union between the individual and the cosmic consciousness. In its full potential, *samadhi* is the ultimate goal.

Hindu insights on spirituality arose from meditative probing, instead of from philosophical speculations or external observations. Some have pointed out that this is an important difference between Indian experiential appraisals and Western empirical theories of consciousness. As one scholar said, "the focus is on the person having the experience...(In the West) the focus is on the object of experience, the emphasis is on the physical, and the preferred method is third person based on observation and experiment (Rao, 2005, 8). While this is true at the mystical level, there have also been analytical approaches to the problem in various Hindu philosophical schools.

### 3. Physics and Consciousness

According to modern physics/science every aspect of the experienced world arises from complex configurations of matter and transformations of energy. Physics holds that this can be unraveled through the methodology of science: careful observation and data analysis, instruments, mathematics, and conceptual constructs.

Until the first quarter of the twentieth century, the focus of physics was on the material world, from atoms to astronomy. The discovery of electromagnetic waves uncovered an insubstantial aspect of the physical universe. Quantum physics revealed an inevitable interaction between observer and observed in the microcosm. Thus, human consciousness entered the realm of physics. Physicists began to consider the role of humans in the appraisal of the physical world, not simply as interpreters but also as participants. John Wheeler famously said, "We are not only observers. We are participators."

Whereas the early quantum physicists spoke in broad terms about a conscious observer and an insentient objective reality, later ones began to propose theories to explain how this comes about, by appealing to specific quantum phenomena and to neuroscience. David Bohm was one of the first to suggest that consciousness is intrinsic to matter at a deeper level (*implicate order*) of which mind and matter are different manifestations (*explicate order*) (Bohm and Hiley, 1993).

Roger Penrose argued that that the human brain is capable of discovering truths which cannot be derived through logic alone. His thesis was that "the brain's organization would have to be geared to take advantage of non-computable action in physical laws, whereas ordinary materials would not be so organized (Penrose, 1994, 216). With Stuart Hameroff, he proposed a theory of consciousness involving microtubules which are important elements of the cytoskeleton. In this theory, consciousness arises when the microtubules induce collapses of quantum coherence. (Hameroff and Penrose, 1996).

Henry Stapp (1992) has developed quantum mechanical consciousness theories. He regards consciousness as resulting from the fact that the brain determines itself in a way that defies external representation. Every neural excitation is a quantum code, and consciousness arises when one of the codes is selected. If and when one zeroes in on the neurons that are responsible for the top-level code, that could be an experimental confirmation of Stapp's theory.

In the view of Amit Goswami (1995), there are ‘archetypes of mental objects’ in the mind which are subject to the laws of quantum physics. He formulates a series of equivalences between position and momentum in physics on the one hand and content and association in the world of thought.

The materialistic view of consciousness was expressed in no uncertain terms by Daniel Dennett (1995, 203) when he wrote: "An impersonal, unreflective, robotic, mindless little scrap of molecular machinery is the ultimate basis of all the agency, and hence meaning, and hence consciousness in the universe."

By contrast, Freeman Dyson (1979) published calculations to the effect that consciousness may not be subject to entropy increase and energy conservation, and could therefore exist *ad infinitum* in the universe. He wrote, in fact, that in his view, "the world of physics and astronomy is also inexhaustible; no matter how far we go into the future, there will always be new things happening, new information coming in, new worlds to explore, a constantly expanding domain of life, consciousness, and memory" (Dyson, 1979).

#### 4. Biology and Consciousness

There are two opposing scientific views on the origin of life. Adherents to "panspermia" hold to the position that life is everywhere throughout the cosmos (Hoyle and Wickramasinghe 2000; Wickramasinghe et al., 2009 ) and that life on Earth came from other planets (Joseph, 2009). Hoyle, Joseph, and Wickramasinghe believe the universe may be infinite and eternal, and that life may have no origins, and is an intrinsic feature of the living, infinite universe.

Yet others subscribe to the theory of "abiogenesis" where life emerges from non-life (Burns, 2009; Istock, 2009). According to this scenario, life arose some three and a half billion years ago through a chemical mix caused by a propitious set of physical conditions. Since then, self-replicating molecules have been morphing in myriad ways provoked by ambient variations and through intrinsic urges to survive and propagate. This proliferation in forms and peculiarities is what one calls evolution: a perspective which explains the panorama of plants and animals, insects, birds, and beasts that populate the earth.

Adherents of panspermia tend to view consciousness as an integral feature of the cosmos; as a collective consciousness, which may come to be fragmented and individualized within the brain (Joseph, 1988a,b).

Therefore, be it panspermia or abiogenesis, human consciousness can be viewed as an offshoot of the evolution of the human brain. Consciousness can evolve. As summed up by Mayr, "it is quite certain that human consciousness did not arise full-fledged with the human species, but is only the most highly evolved end point of a long evolutionary history" (Mayr, 2001, 282).

Tremlin (2006, p.54) offers a machine metaphor of consciousness, when he says: "as a biological machine... the human central nervous system has much in common those other living organisms, designed, as all are, to control bodily function and to interpret and respond to signals received from the outside world." And yet he concedes, "the human brain, however, is different from that of any other creature on Earth in displaying the higher-order mental activities we label with names like 'intelligence' and 'consciousness.'"

In evolutionary terms, consciousness is one of many techniques that arose for fruitfully processing external stimuli. As one biologist put it (Wilson, 2002, 121): "Conscious intentional thought is only the latest gadget in a toolkit of psychological mechanisms that evolved to transform environmental information into adaptive behavior, many of which operate beneath conscious awareness." In other words, there were many factors involved in the evolution of consciousness in the creature called human being.

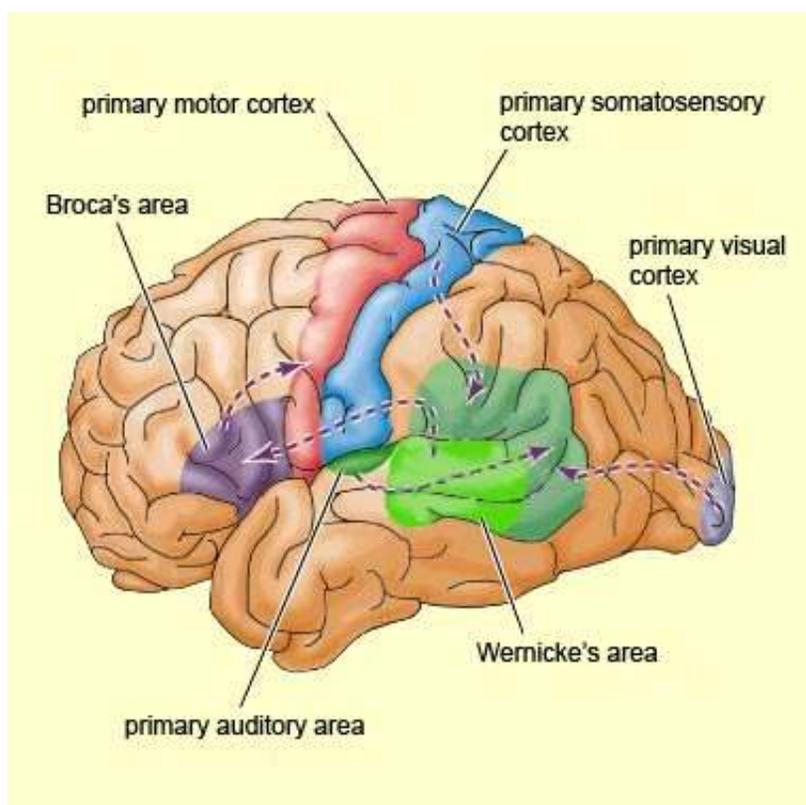
According to Lovejoy (1981, 326), "evolution of cognition is neither the result of an evolutionary trend nor an event of even the lowest calculable probability, but rather the result of highly specific evolutionary events whose ultimate cause is traceable to selection for unrelated factors such as locomotion and diet."

With all that, what Crick (1995, 255) wrote many years ago is still valid: "I believe that the correct way to conceptualize consciousness has not yet been discovered, and we are merely groping our way toward it."

## 5. Neuroscience and Consciousness

From the neuroscientific perspective, consciousness is essentially an overall effect of neuronal activities, a consequence of the incessant transformations of chemical and electrical signals in the human brain. The challenge is to uncover which neurons do what and how, to create this extraordinary phenomenon in the entire universe. To the neuroscientist, consciousness is associated with feelings and expressions of pain and pleasure, with seeing and hearing, touching, and self-awareness (Joseph, 1988a,b).

A unique feature of the brain is functional localization, with specific areas of the brain processing and expressing unique aspects of the human experience. For example, the left frontal area of the brain, known as "Broca's Area" is associated with the expression of human speech. The left temporal area, known as "Wernicke's Area" processes the sounds of speech and comprehends human language.

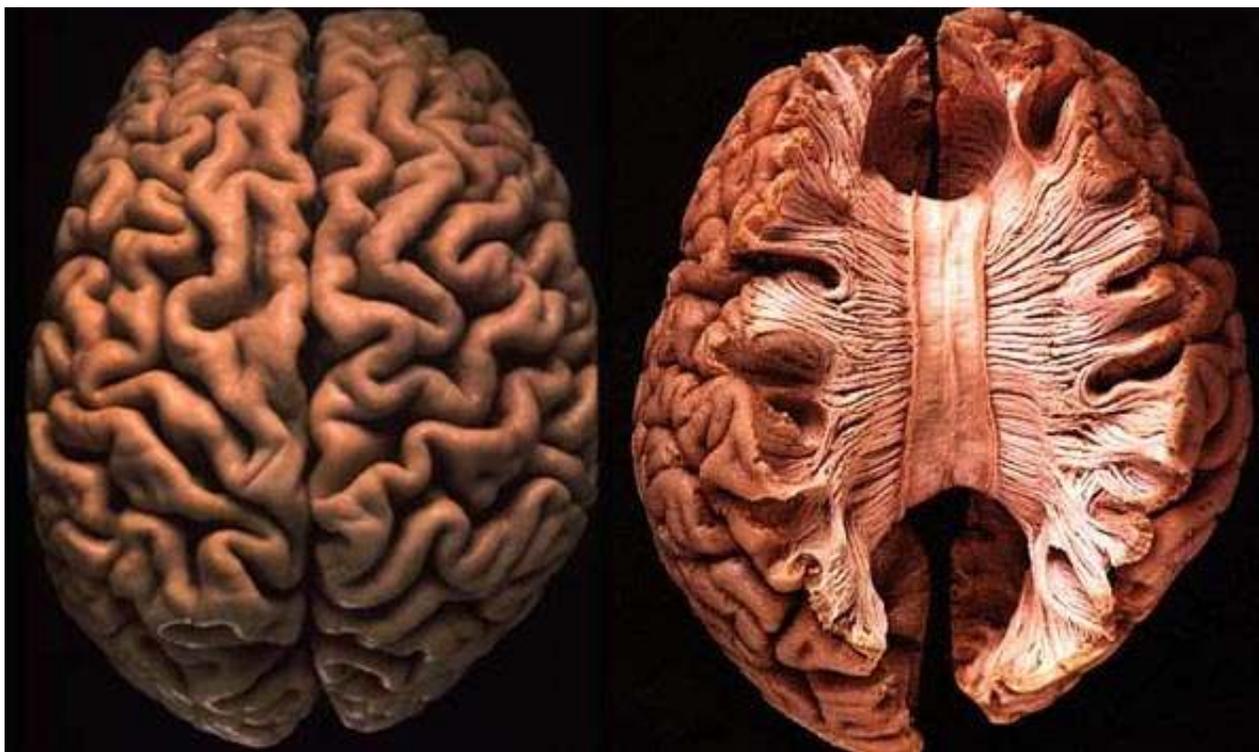


The Left Half of the Brain

Therefore, according to some neuroscientists the left hemisphere is linked with the language-dependent aspects of consciousness (Joseph 1988a,b). The right hemisphere is more concerned with body language, visual-spatial analysis, and social-emotional information processing. Thus, different areas of the brain are associated with different types of conscious experience. In consequence, if the brain is injured, consciousness may be fractured.

For example, it is well known that with severe right cerebral injuries a patient (or rather his/her left hemisphere) might ignore the left half of the body, and even deny ownership of the left arm or leg (which is controlled by the right hemisphere). If the ignored left hand is shown to them the undamaged left hemisphere (which controls language) may claim it belongs to the doctor or a person in the next room (Joseph, 1988b). What this means is that the verbal consciousness associated with the left half of the brain is very limited and is unable to recognize the half of its body that is governed by the right half of the brain; and this is because, when the right is damaged, right (and left) cerebral awareness of the left half of the body is erased.

When the right and left hemisphere's are surgically disconnected the two halves of the brain actually display two independent forms of consciousness.



**The Right and Left Hemisphere and the Corpus Callosum**

As described by Joseph (1988a): split-brain patient, "2-C complained of instances where his left hand would act in a manner completely opposite to what he expressively intended, such as turn off the T.V., or change channels, even though he (or rather his left hemisphere) was enjoying the program, or perform socially inappropriate actions (e.g. attempting to strike or even strangle a relative). On at least one occasion, his left leg refused to continue going for a walk and would only allow him to return home."

Based on an analysis of dozens of "split-brain" cases, Joseph (1988b) concluded that the verbal aspects of consciousness are associated with the left hemisphere, and the awareness maintained by the right half of the brain, makes self-awareness possible.

Research on split-brain patients, and the duality of consciousness, parallel discoveries in quantum physics, such that the observer observes himself, giving rise to self-awareness, which

is the result of an interaction between observer and observed in the microcosm.

Research along these lines has led to the popularization of *neurotheology* which attributes religious and spiritual experiences to the activation of and interactions between different areas of the brain. Consider, for example, the classic "near death" experience, where the patient may experience themselves detached from and looking down on their dead body. Again, this can be construed as a splitting of consciousness and the result of an interaction between observer and observed in the microcosm.

Andrew Newberg and Eugene D'Aquili (1994) identified clear differences in brain activity between benign spiritual experiences and pathological brain-states. Nevertheless, neurotheology implies that the God to whom people pray is ultimately only an idea formed in the brain.

An extreme version of this is the psychologist Michael Persinger's idea that "electromagnetic fluctuations – produced by solar flairs, seismic activity, radio and microwave transmissions, and other external sources, or originating in the brain itself – can trigger disturbances resembling epileptic seizures which generate a wide range of altered states, including religious and mystical visions, out-of-body-experiences, and even alien-abduction episodes (Persinger 2002a,b).

On the other hand, some philosophers are convinced that mental processes "are not reducible to the neurobiological level. ... [M]ental properties, properly understood, are higher-level properties relative to neural events and structures. They are contextualized brain events, co-constituted by their role in action-feedback-evaluation-action loops in the environment" (Murphy & Brown, 2007, 195). In this view consciousness is beyond the scope and purview of neurophysiology.

## 6. Concluding Thoughts

Of late, scientists from different disciplines such as cognitive science, linguistics, computer science, anthropology, and neuroscience have attacked the problem of how the brain – a mere mass of tissue, from the materialist perspective – acquires information, interprets it, experiences awareness, and does a thousand other things that could well be described as miraculous. They have gained many insights and much technical/mechanistic information on the phenomenon, but we are still far from deciphering how this inner light seems to make all the difference in the world between mute matter and measuring mind, between rhythmic heart-beat and the joy of love, between the pneumatics of pulmonary bellow and sighs of sorrow.

It is satisfying to many to regard love and laughter, acts of kindness, and the quest for truth as among the peak performances of neuron firings, as evolutionary upshots of cerebral chemistry, as readable scripts from genetic programming. It may well be that we are essentially sophisticated carnal robots which compose music, write poetry, and make jokes. But it is also plausible that some kind of transcendence is at work in the context of value and meaning and whatever else goes with what we call the human spirit.

We cannot deny the biochemical basis in the persistence of personhood. Some day, silicon configurations in plastic casings may acquire feelings and emotions, mimicking the heaves and exhilarations of the human heart. Computers create music today; they may be enjoying it tomorrow. But this is no proof that there is nothing beyond matter and energy in space and

time.

Four centuries of modern science have thrown much light on the physical basis of this uncommon wonder which may have parallels in other planetary pockets in the universe. Perhaps some day we will be able to account for it fully in terms of matter-based principles. But as of now, consciousness remains a fantastic anomaly in the mindless arena of mass-energy. No purely material link has as yet been unveiled between alphabetical permutations and sublime sonnets, nor between molecular structure and meaning and value. The tenuous bridge between matter and mind could well be an aspect of transcendence.

The importance of the human species is by no means obvious when viewed in terms of our physical dimensions. No planet, star or galaxy, if they could judge, would attribute to puny humans greater weight than to icebergs or volcanoes. The relative smallness of the human frame is beyond question, even to the most superficial observer. The earth itself, in comparison the sun, is significantly small.

When it comes to sheer physical power, our bodies are but flimsy structures susceptible to instant decimation by nature's fury. A lightning bolt can kill anyone in a brief thunderous flash. Hurricanes and earthquakes can annihilate thousands without a moment's notice. Even tiny bacteria can spell disaster, ruining cities and wiping out civilizations.

When we reckon the age of our species and reflect on the fleeting nature of individual lives, our significance shrinks even further. What are a few hundred thousand years of human survival compared to the billions of years during which the universe has survived, and what is a century of longevity compared to the age of mountains and lakes, of stars and galaxies? If one were to evaluate significance in terms of size or superior strength, longevity or persistence, Homo sapiens is frail, a very recent vulnerable entity in the grand arena of space and time.

Thus, at the purely physical level humans don't have a special place in the universe. But this would be but a partial vision if we don't recognize that we play an unusual role in it. To see this, just imagine a theater-hall that is stark empty while a magnificent play is being performed. What a waste of artistry that would be! Now think of the universe without the human consciousness in it. That world would be dark and dismal. All the light and beauty, grandeur and majesty of the universe are unraveled only in the tiny retinas of human beings, and in those of other living creatures. But for human brains, there would be no formulas for elliptical orbits, no reckoning of space or time, no inverse square law or indeterminacy principle.

Grass and sky have been there for eons, but not green grass or blue skies; there were electromagnetic waves, but no light before the evolution of rods in the retina. Neither the golden sunset nor the patterns butterflies, neither the fragrance of flowers nor the taste of honey would emerge as aspects of the physical world without complex brains. We may imagine a universe that subsisted since the big blast from which it all came. But that pre-life universe was insipid and inert, with no music or melody, no poetry or philosophy.

We compute distance and speed, temperature and density, we conceptualize symmetry breaking and separation of the fundamental forces, we theorize on gravitation, nuclear fusion and the formation of stars. All this reality was somewhat like the tracks of an invisible beast in a vast wilderness: Only the responsive affirmations of noumenal states by brains give meaningful presence to the universe.

We have not been just passive observers. Consider nuclear fusion of hydrogen into helium. This had never occurred anywhere in the universe save in the core of stars. Now it has been brought about here on earth by human ingenuity. All through the eons of cosmic history, planets had never been spied, nor their images captured as photographs until human science and technology. Without human observational and recording devices all this would all be like encyclopedias buried under the sea, away from the reach of any complex system that can decipher. All the stories of stellar birth and death, of galaxies and expansion, remained untold and unknown until humans verbalized them in words and equations. None of the glory and splendor of the universe would have become apparent, if there had been only mute matter and no measuring mind in the cosmos (Raman, 2009, 199 et seq).

This then is the role of the human consciousness in the world. We begin to realize that the emergence of awareness was as great an event in cosmic history as the first big blast of its materialization. That awareness injects meaning into a mechanical and mindless world. It is as if by our presence we have lit up the whole universe which, until our emergence, had been plunged in a stark stillness devoid of joy, meaning, or reflection.

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