

Concept of Consciousness in Philosophy and Neuroscience

Mukundan, C.R*¹., Priyanka, K.*²

The article is a brief metaanalysis of comparison of the concept of consciousness in philosophy and neurosciences. It attempts to bring out the semantic and processing differences in the usage of the concept in the two domains of application. Consciousness in philosophy and religion is often referred as an all-pervasive entity of the universe, often imbuing a spiritual dimension. In neuroscience consciousness is a psychobiological state of a living organism, which is needed for its sensory - motor interactions with the external world. An important component of consciousness in this domain is the ability to become aware of the semantic and other processes that take place within the brain.

Key words:

Consciousness, Philosophy, Neuroscience, Awareness

Religious and philosophical thinking domains were the two original contexts in which the concept of consciousness was first created and used. Consciousness was thought of as an entity that contributed to life, in a larger sense, and to mind in a more specific sense. Philosophically consciousness has been postulated as an independent entity, which exists within and outside the brain. The need to create a concept of consciousness could have originated from a top down thinking strategies used, when one wanted to find

¹Mukundan C.R., Institute of Behavioral Sciences, Gujarat Forensic Sciences University, Gandhinagar, Gujarat.

²Priyanka K., Institute of Behavioral Sciences, Gujarat Forensic Sciences University, Gandhinagar, Gujarat.

a cause and purpose for life and the universe. A spiritual origin of the universe or the existence of a spiritual entity became the core idea for a dualistic thinking in some of the ancient eastern philosophical thinking efforts, though dualism was considered in the Western schools of thinking mainly as the distinction between mind and the body. In Indian Vedic philosophy, consciousness is considered as the ultimate reality, which is present in every living being and forms the basis of life in the body, when it unites with the material entities. The philosophical ideas are created mainly for explaining the experiences that indicated an infinite and pervasive existence of the universe. A close scrutiny of the ancient philosophical thoughts of consciousness would show that the purpose of explanations of what they considered and defined as consciousness were genuine symbolic efforts to capture otherwise unexplainable attributes of life and the universe. A direct comparison of these concepts with scientific explanations of consciousness is illogical and does not serve any meaningful purpose.

In Vedic philosophy, consciousness is described as an entity encompassing the infinite universe, all its qualities, strengths and weaknesses, and presents itself in every living being. It is an amazing concept as it reflects the simultaneous presence of all qualities. One wonders if this was the earliest attempt by human mind to symbolically capture the relative nature of existence, time, and space of the universe, which was captured by Einstein in the Relative Theory centuries later. On the one hand, consciousness was considered to encapsulate not only the physical attributes of the universe, but what human mind considered nonphysical viz. awareness, personality, thoughts, etc. On the other hand, it was considered to include what exist outside energy and matter in the time and space domains. Consciousness was considered to represent the experiencing person or the self, which was considered an entity different from the body and all its parts. In this dualistic theory, consciousness is outside the body. On the other hand, the materialistic approach considered the mind as equivalent to consciousness, emerging from the brain or as its phenomenon or epiphenomenon. It was believed that the self has an independent existence over and above the matter and the body. There have been many effort to relate brain with the mind In the total absence of scientific methods and experimentations, there was a need to conceptualize a method of internal organization

and wisdom responsible for life and the universe, and one of the concepts created was that of consciousness. Consciousness thus reflected wisdom, knowledge, awareness, power, and eternity. Consciousness was considered an imperative need for awareness or knowing what one perceives and performs. Its presence in the body gave rise to the concept of self, though one could attain the realization that the self within is merely the part of universal force or consciousness. Realization that self merges across persons and other living entities in the universe reflected the universality of life as a force of nature. The same model of integration and merger was applied with regard to matter and their various physical attributes, which helped to conceptualize a merger of all entities into a universal force or energy. Consciousness was considered a functional state of mind, superior to cognitive processes associated with recognition, learning, memory, etc. Consciousness came to be considered part of a spiritual dimension, superior to matter, energy, and mind and all the qualities that could be attributed to them.

A spiritual dimension came to be selectively developed when man chose to attribute the origin or creation of the universe and life to a superior power. This choice provided mankind opportunity to develop faith in a superior force, and the faith provided them with social harmony and strength to live purposively, caring for one another. This style of living lifted the human life over and above the fight-flight animal life models, creating a new dimension of natural phenomenon. The effects of the strength of love and compassion on thinking for creating meaningful relationships helped to develop purpose for living and goal directed strategic navigational efforts for achieving the goals. Human brain learnt, refined and developed these strategic abilities over ages. Expressions of love and compassion by man in the place of normal Flight-Fight models of nature's response patterns created a new exclusive response dimension in the nature, which could be learnt, expressed, and practiced only by human beings. Some considered consciousness an internal energy developing and merging with energy at the universal level. Origin of matter has been always an issue of immense importance, and there was need to develop theoretical models as well as prove their accuracy. When the concept of Quantum potential model was developed, it was considered to highlight the transformation of matter from

energy and the explanations of presence of physical properties at molecular, atomic and subatomic levels were intriguing and gave impetus to the notions of consciousness as energy at a universal level.

Scientifically explaining, mere presence of life or biologically functioning of the body or body organs is not considered indicative of a conscious state of the living being. A human being can remain unconscious and alive for long periods. The biological functioning of the body is indeed a prerequisite for being conscious. Consciousness only refers to a processing state of the brain or the nervous system. Medically consciousness is a state when the brain can recognize/perceive the sensory inputs and respond to them, whereas neuroscientifically one can additionally retrieve and process stored information in this state. The conscious state is differentiated between wakefulness and sleep. Brain processes stored information during wakeful states as well as in sleep, but does not process online sensory inputs or respond to them during sleep. The fact that sleeping is a time limited alternating state with wakefulness, and the brain maintains the continuity in processing and responding, when wakefulness returns every time after a period of sleep, help to conceptualize and verify continuity of consciousness. Knowing the external world is therefore an essential component of being conscious. Consciousness can be affected by conditions like diseases and lesions that impair normal functioning of the brain. Anesthesia is introduced as a routine medical requirement for various forms of surgery, when the patient is either unconscious or does not have sensations of pain in the organs surgically manipulated. Conceptually this is a huge departure from that of consciousness as a form of energy thought over in philosophy. A comparison of the two concepts is not feasible and is illogical as the changeover is from a processing state to an entity.

A scientific model of consciousness has always been the most intriguing and challenging as it can be physically verified. There are specific and clear parameters of physical responses and mental changes, which indicate the degree of restoration of consciousness when it is impaired because of lesions of the brain or surgical interventions. When wakeful and conscious state, on the one hand, indicates the capacity of the brain to monitor its own sensory and motor processes and use the information for controlling the

online sensory and motor effects, the process brings the brain in contact with the physical realities of the word. On the other hand, consciousness is a state providing ability to monitor the cognitive and emotive processes taking place within, allowing the use of the information to semantically create or recreate new relationships.

We presume consciousness occurs at different levels in each individual and any current level determines the qualitative attributes and the effectiveness with which the external world and internal processes are monitored, organized, and processed. There are independent scientific methods to measure the monitoring abilities and their effectiveness in using the monitored information for altering and adjusting the ongoing processes, and hence consciousness is used as a concept to refer to these complex and dynamic processes in the brain. Wakefulness and sleep are the most strikingly different phases of consciousness. We know that sleep is an essential state that should follow hours of wakefulness. Processing takes place in the brain during both the states, though the nature of processing and their consequential effects differ in the two states. Recognition of external stimuli and internal or proprioceptive physical changes do not occur during sleep and therefore the individual is considered to be in a temporary non-conscious state in sleep.

During wakeful conditions, the cerebral cortex passes through two phases, which may overlap or remain independent. One phase is that of sensory - motor interactions with the external world, whereas in the other phase, the brain may remain partly or fully (?) independent of these interactions, but may engage in internal processing of retrieved information and creating new information. Internal processing may range from very active and focused states of problem solving or states with minimal to nil processing. One learns to engage in processing of both external and internal signals and the processing efficiency may be determined by the relative importance allotted to the two domains, which in turn affects the emotional arousal and attentiveness of the individual. An important component of consciousness in neuroscience is the presence of awareness of the ongoing processes. Verbal awareness is different from awareness in other sensory modalities as they are generally considered equivalent to modality specific sensory perception. On the other hand, in verbal awareness the listening

brain has the opportunity to monitor the processing of the talking brain contributing to verbal awareness of the thoughts created and recreated. That we transcode most of nonverbal experiences into verbal mode help to have a verbal documentation of all experiences, which are further critically appraised and modified by the brain. Verbal awareness therefore become a comprehensive mode of accessing own experiences and thoughts for critical analysis and problem solving.

Verbal awareness is essentially of the semantic interpretations or meanings of sensory-motor experiences and explanations of those experiences. Creation of a universe of meaningful relationships and entities reflecting those meanings constitute the mind of the individual, which is driven by the emotional arousal present in the system. Such processing is possible only in a conscious state and hence become the hallmark of consciousness in the individual. These processing occur even if sensory-motor experiences are partially impaired, and awareness therefore represents the minimum requirement of consciousness. Semantic interpretations and their understandings are essentially the functions of the frontal and temporal lobes and other associated systems of the brain, which contribute to the core function of creation of meanings. The universe of meanings created and associated processes used for the creations form the matrix of human mind. The mind can create infinite meanings and relationships and it creates a world larger than the real world. The presence of the mind, whether it represents a real or imaginary world is an active state indicating consciousness in the individual.

Emotional and behavioral responses can be directly elicited by certain types of external stimuli from the brain of a living system, without their perception and awareness and hence, it may be said to take place in a non-conscious state of the system. These preattentive emotions are considered to support an unconscious processing facility of the brain. Hence, perception and awareness cannot be considered exclusive features of consciousness and consciousness can be considered to represent an exclusive requirement of a living system's interaction with the external world.

Reference

- Bishop, S.J., Duncan, J., Lawrence, A.D. (2004). State anxiety modulation of the amygdalareponse to unattended threat-related stimuli. *J. Neurosci.*, 24, 10364-68.
- de Gelder, B., Rouw, R. (2000). Paradoxical configuration effects for faces and objects in prosopagnosia. *Neuropsychologia*, 38, 1271-79.
- de Gelder, B., Vroomen, J., Pourtois, G., Weiskrantz, L. (1999). Non-conscious recognition of affect in the absence of striate cortex. *Neuroreport*, 10, 3759-63.
- LeDoux, J. (1996). Emotional networks and motor control: A fearful view. *Prog. Brain Res.*, 107, 437-46.
- LeDoux, J. (1998). Fear and the brain: Where have we been, and where are we going? *Biol. Psychiatry*, 44: 1229-38.
- LeDoux, J. (2003). The emotional brain, fear, and the amygdala. *Cell. Mol. Neurobiol.*, 23, 727-38.
- Morris, J.S., Ohman, A., Dolan, R.J. (1998). Conscious and unconscious emotional learning in the human amygdala. *Nature*, 393, 467-70.
- Mukundan, C.R. (1998). From perception to thinking - Verbal adaptation in human brain. In: Isaac, J.R. and Purendu, H. (Eds) Proceedings of International Conference on Cognitive Systems, New Delhi, Allied Publishers, XXXIX -XIII.
- Mukundan, C.R. (1999) Power of Words: Neuro-cognitive Approach for Understanding Brain Mechanisms of Awareness. In: Sangeetha Menon, M.G. Narasimhan, A. Sinha, & B.V. Sreekantan (Eds.), Scientific and Philosophical Studies on Consciousness. National Institute of Advanced Studies, Bangalore, India. 127-136.
- Mukundan, C.R. (2007). Brain Experience: Neuroexperiential Perspectives of Brain-Mind. Atlantic Publishers, New Delhi.
- Mukundan, C.R., Ajayan, P. (2011). Awareness and Self-Image. *Indian Journal of Clinical Psychology*, 38:1, 37- 48.
- Whalen, P.J., Rauch, S.L., Etcoff, N.L., McInerney, S.C., Lee, M.B., Jenike, M.A. (1998). Masked presentations of emotional

facial expressions modulate amygdala activity without explicit knowledge. *J. Neurosci.*, 18(1), 411-18.

Alter, T. and S.Walter, eds. *Phenomenal Concepts and Phenomenal Knowledge: New Essays on Consciousness and Physicalism*. New York: Oxford University Press, 2007.

Baars, B., Banks, W., and Newman, J. eds. *Essential Sources in the Scientific Study of Consciousness*. Cambridge, MA: MIT Press, 2003.

Block, N. "On a Confusion about the Function of Consciousness." In *Behavioral and Brain Sciences* 18: 227-47, 1995.

Botterell, A. "Conceiving what is not there." In *Journal of Consciousness Studies* 8 (8): 21-42, 2001.

Brook, A. &Raymont, P. 2006. *A Unified Theory of Consciousness*. Forthcoming.

Carruthers, P. *Phenomenal Consciousness*. Cambridge, MA: Cambridge University Press, 2000.

Caston, V. "Aristotle on Consciousness." *Mind* 111: 751-815, 2002.

Chalmers, D.J. "What is a Neural Correlate of Consciousness?" In Metzinger 2000.

Dainton, B. *The Phenomenal Self*. Oxford: Oxford University Press, 2008.

Edelman, G. &Tononi, G. "Reentry and the Dynamic Core: Neural Correlates of Conscious Experience." In Metzinger 2000.

Flohr, H. "An Information Processing Theory of Anesthesia." In *Neuropsychologia* 33: 9, 1169-80, 1995.

Gennaro, R.J. *Mind and Brain: A Dialogue on the Mind-Body Problem*. Indianapolis: Hackett Publishing Company, 1996b.

Gennaro, R.J., ed. *Higher-Order Theories of Consciousness: An Anthology*. Amsterdam and Philadelphia: John Benjamins, 2004.

Gennaro, R.J. "Between Pure Self-referentialism and the (extrinsic) HOT Theory of Consciousness." In Kriegel and Williford 2006.

Gennaro, R.J. *The Consciousness Paradox: Consciousness, Concepts, and Higher-Order Thoughts*. Cambridge, MA: MIT Press, 2012.

- Hirstein, W. *Brain Fiction*. Cambridge, MA: MIT Press, 2005.
- Horgan, T. and Tienson, J. "The Intentionality of Phenomenology and the Phenomenology of Intentionality." In Chalmers 2002.
- Koch, C. *The Quest for Consciousness: A Neurobiological Approach*. Englewood, CO: Roberts and Company, 2004.
- Kriegel, U. "Consciousness and Self-Consciousness." In *The Monist* 87: 182-205, 2004.
- Penrose, R. *The Emperor's New Mind: Computers, Minds and the Laws of Physics*. Oxford: Oxford University Press, 1989.
- Penrose, R. *Shadows of the Mind*. Oxford: Oxford University Press, 1994.
- Place, U. T. "Is Consciousness a Brain Process?" In *British Journal of Psychology* 47: 44-50, 1956.
- Polger, T. *Natural Minds*. Cambridge, MA: MIT Press, 2004.
- Preston, J. and Bishop, M. eds. *Views into the Chinese Room: New Essays on Searle and Artificial Intelligence*. New York: Oxford University Press, 2002.
- Radden, J. Ed. *The Philosophy of Psychiatry*. New York: Oxford University Press, 2004.
- Ramachandran, V.S. *A Brief Tour of Human Consciousness*. New York: PI Press, 2004.
- Ramachandran, V.S. and Blakeslee, S. *Phantoms in the Brain*. New York: Harper Collins, 1998.
- Revonsuo, A. *Consciousness: The Science of Subjectivity*. New York: Psychology Press, 2010.
- Robinson, W.S. *Understanding Phenomenal Consciousness*. New York: Cambridge University Press, 2004.
- Rosenthal, D. M. "The Independence of Consciousness and Sensory Quality." In E. Villanueva, ed. *Consciousness*. Atascadero, CA: Ridgeview Publishing, 1991.
- Rosenthal, D. M. "Thinking that one thinks." In M. Davies and G. Humphreys, eds. *Consciousness: Psychological and Philosophical Essays*. Oxford: Blackwell, 1993b.

- Rosenthal, D. M. "A Theory of Consciousness." In N. Block, O. Flanagan, and G. Guzeldere, eds. *The Nature of Consciousness*. Cambridge, MA: MIT Press, 1997.
- Rosenthal, D. M. "Introspection and Self-Interpretation." In *Philosophical Topics* 28: 201-33, 2000.
- Rosenthal, D.M. *Consciousness and Mind*. New York: Oxford University Press, 2005.
- Seager, W. *Theories of Consciousness*. London: Routledge, 1999.
- Shallice, T. *From Neuropsychology to Mental Structure*. Cambridge: Cambridge University Press, 1988.
- Shear, J. *Explaining Consciousness: The Hard Problem*. Cambridge, MA: MIT Press, 1997.
- Silberstein, M. "Converging on Emergence: Consciousness, Causation and Explanation." In *Journal of Consciousness Studies* 8: 61-98, 2001.
- Skinner, B. F. *Science and Human Behavior*. New York: MacMillan, 1953.
- Thau, M. *Consciousness and Cognition*. Oxford: Oxford University Press, 2002.
- Titchener, E. *An Outline of Psychology*. New York: Macmillan, 1901.
- Van Gulick, R. "Understanding the Phenomenal Mind: Are we all just armadillos?" In M. Davies and G. Humphreys, eds., *Consciousness: Psychological and Philosophical Essays*. Oxford: Blackwell, 1993.
- Van Gulick, R. "What would count as Explaining Consciousness?" In Metzinger 1995.
- Van Gulick, R. "Inward and Upward: Reflection, Introspection and Self-Awareness." In *Philosophical Topics* 28: 275-305, 2000.
- Van Gulick, R. "Higher-Order Global States HOGS: An Alternative Higher-Order Model of Consciousness." In Gennaro 2004a.
- Van Gulick, R. "Mirror Mirror - is that all?" In Kriegel and Williford 2006.

- Velmans, M. and S. Schneider eds. *The Blackwell Companion to Consciousness*. Malden, MA: Blackwell, 2007.
- Weisberg, J. "Same old, same old: The same-order representation theory of consciousness and the division of phenomenal labor." *Synthese* 160: 161-181, 2008.
- Weisberg, J. "Misrepresenting consciousness." *Philosophical Studies* 154: 409-433, 2011a.
- Weisberg, J. "Abusing the notion of what-it's-like-ness: A response to Block." *Analysis* 71: 438-443, 2011b.
- Williford, K. "The Self-Representational Structure of Consciousness." In Kriegel and Williford 2006.
- Wundt, W. *Outlines of Psychology*. Leipzig: W. Engleman, 1897.
- Yablo, S. "Concepts and Consciousness." In *Philosophy and Phenomenological Research* 59: 455-63, 1999.
- Zelazo, P, M. Moscovitch, and E. Thompson. Eds. *The Cambridge Handbook of Consciousness*. Cambridge: Cambridge University Press, 2007.