TRIDENT (*TRIŚŪLA*) MODEL (T-M) OF BODY-MIND-CONSCIOUSNESS: A COMPREHENSIVE MONIST–DUALIST MODEL OF PSI[1]

Sonali Bhatt Marwaha

In B. Nalini & Rosetta Joseph (2017). "Reflections on the Man, the Mind and the Mission: A Festschrift on the 85th birthday of Koneru Ramakrishna Rao"

Professor K. Ramakrishna Rao's first academic work in psi was his M.A. (Hons.) dissertation — *Paranormal Cognition: An Essay in Survey of Evidence and Theories* — submitted to the Department of Philosophy, Andhra University, 1955. His first publication in this area started with an East-West dialogue, discussing Vedānta and parapsychology, the article "Vedanta and the Modus Operandi of Paranormal Cognition" published in the *Philosophical Quarterly* (Rao, 1955). These early publications set the tone for his life-long journey in an East-West dialogue in psi phenomena and consciousness studies, culminating in *The Trident* (*Triśūla*) *Model of Body-Mind-Consciousness*.

I am privileged to have worked with him during his process of developing the trident model, at times serving as a sounding board for his ideas. This process kindled my interest in this fascinating area of psi research, which has since charted my own journey, particularly in psi theory, albeit from a physicalist perspective. Working closely with him introduced me to Indian philosophy as an academic discipline, expanding my viewpoints from all sides of the theoretical divide.

Professor Rao embarked on his journey into psi research in 1958, when he went to Durham and spent two weeks with J.B. Rhine, the acknowledged father of experimental parapsychology, and his colleagues at Duke University's Parapsychology Laboratory. Stepping on to this path, Rao went on to become an elected president of the Parapsychological Association (1965, 1978, 1990), the international professional society of scientists engaged in parapsychological research around the world based in USA. In 1967 he established and headed the one and only statutory department for studying parapsychology in India — the Department of Psychology and Parapsychology at Andhra University. For nearly 20 years he headed the premier parapsychology research establishment, Foundation for the Research in the Nature of Man (FRNM), now known as the Rhine Research Center, founded by Rhine. Rao also served as the editor of the *Journal of Parapsychology* for eighteen years, and now continues on its editorial board.

Rao's academic background was in philosophy and psychology—during the heydays of behaviorism; no doubt this was a source of much dissonance. As he states:

> We were studying behaviour in a deterministic paradigm and the stimulus-response framework. Conditioning is the overarching law governing behaviour, we were taught. There is no place for mind or consciousness. So this sudden shift from one hour to the next, day after day, from Brahman to behaviourism was not easy to handle, because my interest was more than passing the exams and getting a good grade. The gap between Brahman consciousness and stimulus driven behaviour appeared too wide to bridge.
>
> (Rao, 2011, p. 224)

Based on over sixty years of experience in consciousness studies and psi research, from both the Eastern and Western perspectives, Professor K. Ramakrishna Rao proposes the Trident (*Triśūla*) Model (T-M) that can bridge the explanatory gaps in understanding these concepts—consciousness, mind, and body. This model has its psychological base in Yoga theory. It further incorporates the principles of Advaita philosophy and Western empirical research.

Briefly, the trident model (T-M) may be understood at two levels: the psychological level, and the metaphysical level. At the psychological level, the emphasis is on epistemological dualism, i.e., knowing with or without sensory mediation. At the metaphysical level it is process monism. In this view, the reality principle may be considered not as consisting of ontologically distinct consortium of substances but as process continuum that involves quantitative and qualitative jumps from body to mind and mind to consciousness.

This tripartite link between the body, mind, and consciousness, forms the basis of the trident (*triśūla*) model, with the Mind occupying a central position in both cognitive, transcognitive and transcendental phenomena, forging a growth from Knowing to Being to Experience — *sat-cit-ānanda* (absolute being, absolute knowing, absolute bliss).

In this article, after a brief introduction to psi research and the challenges faced by psi theorists, an overview of theoretical approaches to psi is presented, followed by the trident model.

Psi Research?

Primarily, psi research addresses the phenomena of informational-psi (precognition, clairvoyance, telepathy), causal-psi (mind-matter interaction), and post-mortem survival.

Informational psi (a.k.a., anomalous cognition,[2] extrasensory perception), refers to three types of phenomena: precognition, clairvoyance, and telepathy. *Telepathy* generally refers to the anomalous acquisition of information concerning the thoughts, feelings, or activity of another conscious being. Procedurally, it is difficult to determine exactly what the target is, as one has to either rely on a prerecorded note of the target stimulus (a clairvoyance condition) or rely on a post-session narration of the target stimulus (a precognition condition). As far as current neuroscience is concerned, there are no unique CNS signatures of a thought, thus making it difficult to determine what exactly the target of telepathy is. *Clairvoyance* generally refers to information received from a distance, beyond the reach of the ordinary senses. It refers to the anomalous cognition (AC) of objects and events as distinguished from AC of thoughts and mental states of individuals. Procedurally it means that the target stimuli in experiments are occurring in real time, and are randomly generated *before* data collection is initiated. *Precognition* is defined as *an atypical perceptual ability that allows the acquisition of non-inferential information arising from a future point in space-time* (Marwaha and May 2015a,b). Procedurally in precognition experiments, it means that target stimuli are randomly generated *after* data collection is complete. Associated concepts include retrocausation, precognitive dreams. Another related concept is presentiment and prestimulus response, i.e., physiological responses *before* random stimuli. However, there is insufficient evidence for this in favor of the experimenter psi hypothesis; nevertheless, it is still informational psi. Remote viewing is a methodological approach applied for clairvoyance and precognition tasks. Using a double-blind, and at times triple-blind, protocol is standard for all such experiments.

Professor of Statistics, Jessica Utts (President of the American Statistical Association, 2016) has concluded:

> It is clear to this author that anomalous cognition is possible and has been demonstrated. This conclusion is not based on belief, but rather on commonly accepted scientific criteria. The phenomenon has been replicated in a number of forms across laboratories and cultures. The various experiments in which it has been observed have been different enough that if some subtle methodological problems can explain the results, then there would have to be a different explanation for each type of experiment, yet the impact would have to be similar across experiments and laboratories. If fraud were responsible, similarly, it would require an equivalent amount of fraud on the part of a large number of experimenters or an even larger number of subjects.
>
> (Utts, 1995, p. 3.29)

Causal-Psi a.k.a. Mind–Matter Problems. Known as psychokinesis (PK)—micro-, macro-PK—it refers to mental interaction with animate or inanimate matter. Because of the crushing definitional problems of PK (i.e., negative or operational) and based on an analysis of the PK data using the formulations of the decision augmentation theory (DAT), there is only weak statistical evidence to support its validity. In a metaanalysis of the US government sponsored psi research program it is stated that "There is no evidence to support that a psychoenergetic interaction with the physical world exists." (May, Utts, Trask, et al., 1989).

Survival Research—reincarnation, near-death experiences, out-of-body experiences, and mediumship research. Although rebirth is a cultural given, these areas are problematical with regard to evidence given that precognition would be equally likely to provide an explanation for the information obtained in these experiences. Post-mortem survival is based on the assumption that some aspect of the self (nonmaterial soul, consciousness) survives bodily death, retains autobiographical memory, can influence matter, and communicate with the living. However, according to the super-psi hypothesis, all evidence suggestive of survival is the result of the product of powerful sub-conscious psychic activity by living agents, mobilized and guided by deep-seated psychological needs. The super-psi theorist is obviously committed to the existence of informational psi. As this area is problematical with regard to evidence, there is an impasse between the super-psi and survival hypotheses because when they are compared in terms of their theoretical virtues neither has a decisive overall advantage (e. g., Braude, 1992; Sudduth, 2009). However, David Rousseau (2015) concludes that, 'the *context* in which AC sometimes occurs [NDEs and OBEs] does suggest structural mind-body dualism, and indicates that AC is a capacity of the mind existing as a concrete thing in addition to the physical body,' Mitchell-Yellin (2014) suggests that NDEs can be understood in terms of physicalism.

Considering the validity of informational psi, and evidence for precognition, Marwaha and May (2016) have elaborated on the view held by several psi researchers that *precognition is most likely the only form of psi, subsuming within it clairvoyance, telepathy, micro-PK, and the survival hypothesis.* Precognition is based on the assumption that information exists in the future that is accessed by psi-gifted persons in the present. From an experimental perspective this implies that there is an "answer book" that the psi percipient can access — either the future event itself, or information presented as feedback to the percipient. Thus, irrespective of the experimental protocol, information is available to the percipient in a future "answer book." Further, considering the validity of precognition, it is impossible to close the door to the future. Subsuming all forms of psi in precognition is a parsimonious approach that reduces the problem space for determining the mechanism of psi.

Fundamental Issues and Challenges for Psi Theorists

The fundamental issues that the experience of psi raises are related to the nature of time, causality, and information. Theorists are thus challenged to address not only the nature of these fundamental concepts but also their apparent violation as seen from a person's point of view—the other view being that of the external information-centric physical world. Thus, what appears to be a violation may indeed be normal functioning of the external world, and atypical above-average perceptual abilities of a few; "above-average," does not imply "supernormal" (Marwaha and May, 2015c). Approximately 1% of the general population possess a natural psi ability (May, Utts, Trask, et al., 1989).

That psi may be an innate ability, is reflected in the *Yoga Sūtra* (IV.1), "The Siddhis are the result of birth, drugs, Mantras, austerities or Samadhi" (Taimni, 1961, p. 322). However, the point that psi can be developed by training has not been established in the research literature. According to the YS (III), it is only after years of intensive yoga practice, including a disciplined life style, and becoming adept in *saṃyama* (*dhāraṇā, dhyāna, samādhi*), probably over lifetimes, that siddhis begin to "happen." This view is supported by research that so far has shown that training participants with no inherent psi-ability has no effect on their psi performance (May, Utts, Trask, et al. 1989, p. 2).

Theoretical Approaches to Psi

There are several theoretical approaches to the understanding of psi. These include: psychological models (first sight theory, Carpenter, 2011; Vassy, 2015); psychological model based on QM metaphors (model of pragmatic information, von Lucadou, 2015/1995), phenomenological model—decision augmentation theory—which states that putative micro-PK events are informational rather than causal; it addresses the experimenter psi problem (May, Utts, and Spottiswoode, 2014/1995); Bierman's (2010) consciousness induced restoration of time symmetry theory (CIRTS) is a psychophysical theoretical perspective that starts from the assumption that information processing by a brain, while it is sustaining consciousness, is restoring the break in time symmetry in physics; it focuses upon "time" rather than "information"; In this context, Bierman defines "consciousness" as "awareness" (Bierman, 2013).

Physicalist models include a thermodynamic model of psi (May and Depp, 2015), and a local signal-based model—the multiphasic model of precognition (MMPC)—that incorporates the physics and neuroscience domain, which includes the psychological aspects (Marwaha and May, 2015a).

While it is appealing to use quantum mechanics (QM) as a metaphor in the behavioral sciences, it is important to note that QM deals with the behavior of matter and light on the *atomic and subatomic scale* – and thus technically a physicalist approach. Nevertheless, there are several approaches to psi based on the Copenhagen interpretation that emphasize the primacy of consciousness (Walker, 1984; Houtkooper, 2002).

Walach and Römer (2011) reject the physicalist option on the grounds that it faces serious theoretical problems and has to exclude a range of phenomena in order to be convincing. In their view, the dualist model, although phenomenologically more satisfying, cannot explain how such an interaction might work. Hence, they propose a model that is ontologically monist, in line with the general intuition of the natural sciences, and at the same time phenomenologically dualist, true to our subjective experience. Thus, they propose the track laid out by Generalized or Weak Quantum Theory. As Walach, von Lucadou, and Römer (2014, p. 612) state:

> We think that the locality-principle fails in PSI research for various reasons: (1) The empirical database is incompatible with its basic assumptions. PSI effects are independent of distance and time. This is a strong argument against any local model, at least within the constraints of the standard model. (2) PSI effects are also not in the same sense regular and available at will as local-causal effects are normally assumed to be. Hence, we feel, it is time to search for a nonlocal and non-causal model.

However, data from the 22-year (1972-1995) $20 M U.S. Government sponsored applied and basic psi research program evidences that through the method of remote viewing, psi effects can be made regular and available at will. This vast database has led to the development of the local signal-based model of precognition, the MMPC (May and Marwaha, 2017).

In a recent survey of thirty-three leading mainstream physicists attending the conference "Quantum Physics and the Nature of Reality" on the foundational nature of quantum mechanics, held July 3–7, 2011, at the International Academy Traunkirchen, Austria, it is reported that:

> It is remarkable that more than 60% of respondents appear to believe that the observer is not a complex quantum system. Also, very few adhere to the notion that the observer plays a distinguished physical role (for example, through a consciousness-induced collapse of the wave function). Given the relatively strong (42%) support for the Copenhagen interpretation … this finding shows that support of the Copenhagen interpretation does not necessarily imply a belief in a fundamental role for consciousness. (Popular accounts have sometimes suggested that the Copenhagen interpretation attributes such a role to consciousness. In our view, this is to misunderstand the Copenhagen interpretation.)
>
> Schlosshauer, Kofler, & Zeilinger (2013, p. 7)

Tononi (2008) developed his integrated information theory suggesting that consciousness is the ability to integrate information. He went on to put the theory on a mathematical footing within the framework of classical physics through the use of set theory. His work was expanded by Tegmark (2014) and developed in the framework of quantum physics using rigorous application of Hilbert operators applied to quantum factorization. One of the most important findings of Tegmark's work is the idea that it is possible to find certain quantum states that minimize the decoherence in complex systems. He goes on to suggest that consciousness is the state in which the decoherence is at a minimum. He also suggests, but does not prove, that the emergence of consciousness and the emergence of time are related. Based on a calculation of neural decoherence rates, Tegmark (2000) argues that the degrees of freedom of the human brain that relate to cognitive processes should be thought of as a classical rather than quantum system, i.e., that there is nothing fundamentally wrong with the current classical approach to neural network simulations. He disagrees with suggestions by Penrose and others that the brain acts as a quantum computer, and that quantum coherence is related to consciousness in a fundamental way.

There are several arguments against the role of consciousness in psi phenomenon (May and Spottiswoode, 2014/1994; Blackmore, 2001; Broughton, 2011; Marwaha and May, 2015d). As Bierman (1998) states: "…even if the reported empirical 'mind over matter' data are not due to some yet undiscovered artefact, the conclusion that they would support a dualistic perspective is not warranted." However, there are several dualist/panpsychist approaches that emphasize the fundamental role of consciousness in psi.

According to John Beloff (2002, p. 62) “The dualism implied by psi phenomena, however, assigns to the mind powers that exceed anything that could be explained as due to the workings of the brain. We might call this “ontological dualism” and it is this which, I believe, must be granted if we are to acknowledge psi phenomena.” Edward Kelly (2007, 2015) prefers a non-Cartesian dualist interactionist approach. David Rousseau (2011) proposes a system-theoretical substance-dualism approach to the mind-body problem, particularly with reference to near-death experiences.

In Professor Charles Tart’s (2009) view, psi phenomena stand outside the basic assumptions of current science. He starts with the assumption that psi events, by definition, can be explained only by a dualist view, and from there sets about finding an answer. Similarly, in Larry Dossey’s view psi phenomena provide support for non-local consciousness. According to Dossey (2010) consciousness is not a thing or substance, but is a non-local phenomenon. Further, human consciousness is non-local — i.e., it is not confined to specific points in space, such as brains and bodies, or specific moments in time, such as the present. Consciousness is seen as fundamental and working through the brain but not produced by the brain, and [quantum] entanglement is the mechanism for the non-local interactions of conscious beings. A consequence of non-local consciousness is immortality, because temporal non-locality implies infinitude in time (Dossey, 2014).

According to the dualist position, the reductionist paradigm has been unable to adequately address the *what* or *how* of subjective experiences and anomalous cognitions and the influence of mind on body which forms the basis of Yoga theory and practice. According to Charles Tart (2009) the data from psi research provides conclusive proof for dualism, and he has valiantly declared the ‘end of materialism.’

Beauregard (2014) proposes a theory of psychoelementarity (TOP), which posits that the psyche plays a role as primordial as that of matter, energy, and space-time. The TOP is based on the premise that the psyche is primordial and cannot be reduced to physical processes, it is a fundamental force, the psyche and the physical world are deeply interconnected, and it is not produced by the brain. Although Beauregard presents supporting empirical evidence and predictions for these premises, he does not expand on the theoretical structure of TOP. Beauregard acknowledges the antecedents of the TOP in “pre-modern thought” that include Vedānta and Neoplatonic philosophies (p. 136).

As the brief discussion above shows, there is much support, and challenges, for the dualist position in psi in the Western context, however, none of the Western dualist positions have been systematized into a comprehensive model. Professor Rao’s trident (*triśūla*) model of body-mind-consciousness (T-M) is the first such systematic model based on the meta-theoretical framework of Sāṃkhya-Yoga psychology and Advaita philosophy.

In Rao’s view, there are several explanatory gaps for understanding consciousness and psi that called for a new model. In the following the metatheoretical framework of Indian psychology is presented, which includes an overview of the explanatory gaps, followed by an overview of the trident model and the implication of the trident model, with specific reference to psi phenomena.

The Metatheoretical Framework of Indian Psychology

The dualistic theory of the Sāṃkhya-Yoga system of Indian thought and its extended monistic base in Advaita philosophy form the basis of Indian philosophy from which Rao draws the T-M model. These systems are extensive classical philosophies, the details of which are beyond the scope of this work. While philosophical purists may object to

combining these two systems–dualism and idealistic monism–as a blueprint, Rao, however, sees them as being on a continuum with scope for finding answers along the fluid line. Thus the definitions of terms are also an amalgamation of the schools represented, permitting derivation of an alternative theoretical position which incorporates a contemporary understanding of the subject matter. To put across the meaning of these concepts in this paper with such brevity does great injustice to the depth that is present in these ancient systems, as well as the deep philosophical thinking behind the formulation of this model. Acknowledging this, the metatheoretical framework is presented here (Figure 1).

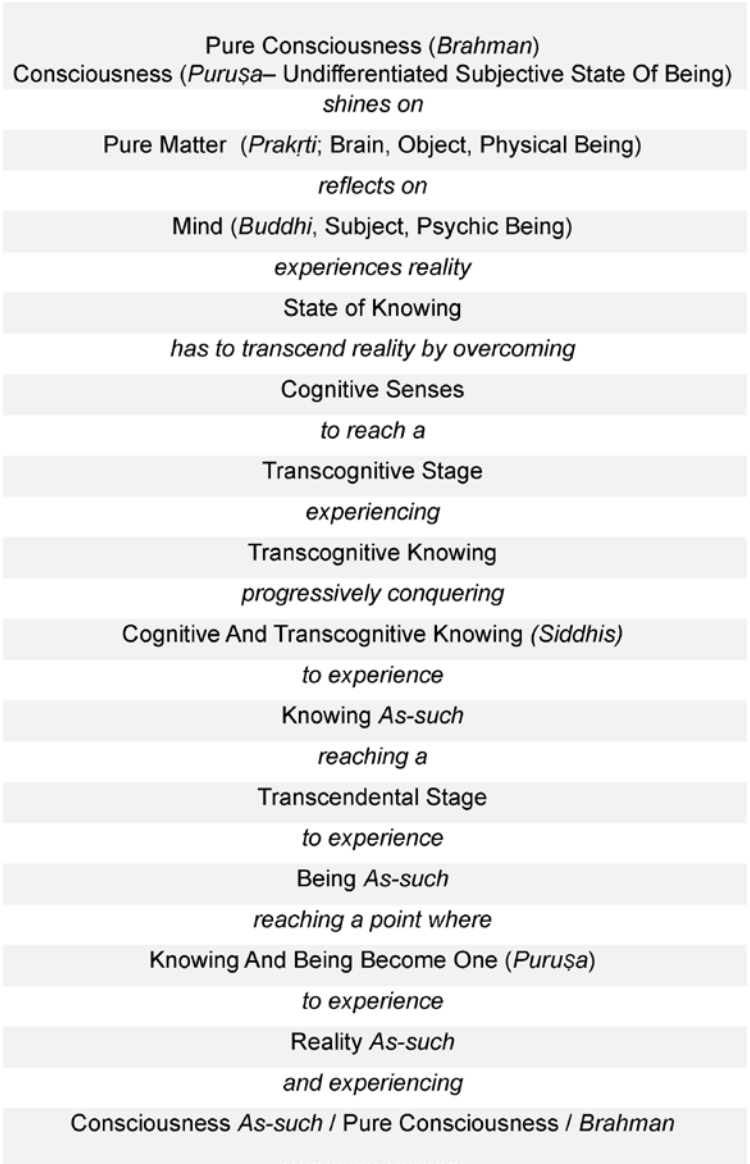

Figure 1: Metatheoretical framework of Indian psychology (especially Yoga).

There are three principal components in Indian thought: *Brahman* (pure consciousness) of which the *puruṣa,* or self, is an individualized extension, *prakṛti* (primordial, pure or subtle matter), and *buddhi* (the subjective, psychic being). *Prakṛti* is a composite of three elements, also conceived of as *triguṇa* (attributes or qualities) – *sattva, rajas* and *tamas.* Unlike *puruṣa* (consciousness), *prakṛti* (subtle matter) goes through evolutionary changes and manifests itself in various physical forms.

Sattva is the purest property of mind, and is said to be characterized by illumination, subtlety and lightness. *Rajas* is the active, restless, passionate, and goal directed principle of

the mind. It is roughly equivalent to "energy". *Tamas* is the ignorance of the mind, and is said to be characterized by heaviness, inertia, and darkness.

As Rao (2011, p. 753) states: "*Sattva* element is that aspect of *prakṛti* that makes subjectivity possible by its ability to reflect or absorb and manifest consciousness. For this reason it is the meaning component of all objects evolving out of *prakṛti*. In the physical objects, the preponderance of *tamas* and *rajas* obscures and hides the *sattva* component, which needs another agent to recognize and reveal it"

As Rao further explains, consciousness illumines in various degrees its *sattvic* component on gross physical matter, such as the mountain and the mole, giving them the meaning of being what they are. In the human, the *sattva* is more refined and reinforced thereby giving rise to the psychic being, which otherwise lays dormant, and the object also becomes a subject. The person becomes consciousness embodied, to the extent to which she realizes consciousness in her being. Thus, the emergence of mind (*buddhi*) in gross matter becomes the pinnacle of biological evolution (p. 754).

Thus, in brief, pure consciousness or consciousness *as-such* (*Brahman*), of which consciousness (*puruṣa*) is the undifferentiated subjective state of being, shines on subtle/primordial matter (*prakṛti*) and gives rise to a sense of being to the gross objective physical matter. Subtle matter (*prakṛti*) with its reinforced and refined *sattva* reflects consciousness to create the "mind" (*buddhi*), which is the subjective psychic being. The mind (*buddhi*) is in a state of knowing and experiences reality, and is now in the normal aware condition of the human being. In Western scientific literature, this knowing is sensory mediated cognitive knowing, the ordinary state of consciousness which gives access to a mundane physical reality.

Contrarily, according to Indian thought, the being is deluded by the illusions of the senses, and loses sight of knowing reality *as-such* or pure reality. Hence person has to transcend this state by stripping the cognitive senses of the delusions of sensorially mediated reality to reach a state of transcognitive or psychic knowing, i.e. knowing without sensory mediation. The practice of the eight-fold path of Yoga (*yama, niyama, āsana, prāṇāyāma, pratyāhāra, dhāraṇā, dhyāna* and *samādhi*) leads one through these stages. By progressively conquering each stage, the she is now able to transcend cognitive and transcognitive knowing, to experience knowing *as-such.* In doing so, the yogin is able to reach the transcendental stage, to experience being *as-such.* The yogin is then able to reach a point where knowing and being become one, to experience reality *as-such* (*puruṣa*, consciousness), and become one with consciousness *as-such,* i.e. pure consciousness or *Brahman.* It is a state of perfection where truth is realized in one's being; and there is thus no divide between Knowing and Being

The Explanatory Gaps

The classical systems of philosophy, both Eastern and Western, laid the path of inquiry into the mysteries of the universe. The early Western scientific mind-set differed from Indian thought on one crucial point, that of dismissing consciousness from the purview of its inquiry. This, according to Rao, has led to them having reached road blocks in the common search for answers to some of the most enduring puzzles of human existence. There are three major interlinked areas where Rao finds explanatory gaps between the observed and the experienced. These are in the conceptualization of consciousness, understanding psi experiences, and understanding the link and influence between the mind and body which, in his view, are well understood within the framework of Indian thought.

Contemporary inquiry into consciousness and psi has expanded into a multidisciplinary endeavor, each using the tools of their discipline to inquire into the meaning and nature of consciousness. The main differences that do exist now are between a physicalist and dualist perception of consciousness and psi. In the following, we take a brief look at the questions that Rao has raised with regard to psi research and consciousness studies.

Consciousness

Consciousness, its essence, meaning and extent is one basic concept that has faced a continued onslaught of divergent views with scarce attempt to understand its "true" nature, as defined by Indian thought.

Taking the physicalist-reductionist approach, scientific investigation has moved on the path of seeking the neural correlates of the content of consciousness, and seeking the biological basis of consciousness *as-such.* However, as David Chalmers (2000) has pointed out, we cannot find the neural correlates of consciousness, until we have an understanding of what consciousness is. Following this line of investigation has given rise to all too numerous questions that have made consciousness studies an area that has attracted the interest of scholars from all disciplines, such as philosophy, psychology, neurosciences, physics, and even mathematics. According to Rao, limiting the "search" for consciousness, at the outset, within the restricted sphere of the brain, restricts the definition that can be assigned to it. Hence, it is the constraints of the experiment, as it were, that is determining the scope and definition of the term.

It cannot be denied that certain cortical processes are a requisite condition for the manifestation of experience, as the destruction of certain areas leads to complete loss of awareness, such as in visual hemispatial neglect due to damage to the parieto-occipital region. Recent research in the cognitive neurosciences is increasingly identifying neural mechanisms of various experiences, such as the feeling of déjà vu which probably occurs due to processing errors in the frontal and temporal regions (Reber, 2010), brain activity associated with the phantom limb phenomenon which may help in understanding how the body creates an image of the self (Khateb, Simon, Diegue et al., 2009), elicited mental imagery in severely brain injured patients captured on fMRI (Bardin, Fins, Katz et al., 2011), neural correlates of face recognition (Strother, Mathuranath, Aldcroft et al., 2011), neural correlates of sudden insight (Durstewitz, Vittoz, Floresco & Seamans, 2010), subjective experience based on speed of nerve conductivity and visual integration across brain hemispheres (Genç, Bergmann, Singer & Kohler, 2011), location of feeling of being in the temporo-parietal junction (Ionta, Heydrich, Lenggenhager et al., 2011), reconstructing internal imagery using fMRI (Nishimoto, Vu, Naselaris, et al., 2011).

Nevertheless, Rao (2011, pp. 8-9) has raised several questions for the physicalist-reductionist paradigm to address, such as: (i) How does this paradigm account for the self as knower, known, and doer? (ii) Is the goal one of reducing consciousness to its neural correlates, or is it one of understanding consciousness? (iii) Is there any neurological evidence suggestive of the existence of consciousness *as-such*, i.e. a state when a person is conscious without being aware of anything? (iv) What is the distinction between consciousness and content of consciousness? (v) While certain neurobiological measures correlate with certain thoughts of the subject, does it explain the neurobiological basis of consciousness *as-such*? (vi) Can neural correlates of thought and action account for their nonphysical manifestation as subjective/phenomenal experience? (vii) Are there "fine-grained" correlations between identifiable brain states and the contents of consciousness experienced and revealed? (viii) If these correlations do indeed exist, to what extent are we

justified in assuming that they are in fact *causal* relations? (ix) Is there a coherent theory of consciousness that could help us organize and relate the putative neural correlates of consciousness to the several distinguishing aspects of consciousness we identify? (x) Are the postulated neural correlates of consciousness (NCC) necessary and sufficient for explaining the transition from an information to experiential state, i.e., from a representational to a phenomenal state?

These questions become particularly important for the scholar of consciousness, as the entire foundation of Indian philosophy, based on first-person experience, provides a substantive explanation. While there may be minor points of dispute between the various schools of thought, classical Indian thought conceives of consciousness as a *distinct* entity that is not a manifest property of the material structure of the brain. To put it simply, consciousness, as perceived in Indian thought, is more than just the awareness of the individual being, it is consciousness *as-such* – all-pervasive and everlasting.

Cognitive Anomalies

As mentioned earlier, empirical studies have supported the existence of psi, particularly informational-psi. Based on his extensive experience in the discipline, Rao (2011) raises some crucial issues:

1. "If the claims [of psi research] are to be taken seriously, they give rise to fundamental questions about the nature and role of consciousness in our being." (p. 10).
2. "Parapsychological research needs to go beyond collecting evidence for the existence of an anomaly. There is need for methodological innovations, not merely improvements in this area, to ascertain the source of psi. Unable to identify unambiguously the source of psi, the person from whom a communication is received, parapsychologists are in no position to meaningfully investigate the problem of post-mortem continuity of consciousness." (p. 549).
3. "If some aspects of consciousness do not indeed fit into the physical framework of our being and consequently do seem to involve extraphysical processes, can we ever understand these processes?" (p. 11).
4. "Is it possible to have a naturalistic understanding of the phenomena and processes that may not be translated into physical terms?" (p. 12).
5. Does the postulation of extraphysical processes necessarily lead to a radical dualistic metaphysics and all the associated difficulties of accounting for the interaction of two fundamentally different entities?" (p. 12).
6. "If there is a transcendental (extraphysical) realm of being, as most religious experiences are believed to attest (i.e. so-called pure conscious events), how can we account for our dual citizenship in the physical and extraphysical worlds?" (p. 12).
7. According to Rao, the absence of an adequate attempt to answer these questions "raises a very basic question whether parapsychology as developed and pursued in the West has the necessary conceptual and methodological tools and theoretical resources to understand psi phenomena, any more than merely accumulating massive evidence for the existence of certain cognitive anomalies." (p. 13).

These questions can only be addressed once the natural physical processes have been empirically refuted as possible causative factors for the observed phenomenon. As mentioned earlier, current research in the field is beginning to answer the questions raised, some of which are well established in the domain of research psychology. Simultaneously it is

imperative that we start formulating testable hypothesis for non-physical naturalistic processes from the perspective of Indian psychology to explain the observables. However, as I see it, the last two questions are the truly enigmatic ones, a direction towards their resolution being dependent on the answers to the earlier questions.

Professor Rao's trident model (T-M), based in Advaita Vedānta and Sāṃkhya-Yoga theory and practice provides the explanatory bridge between the dilemmas raised by the materialist-reductionist concept in the study of consciousness. It addresses the concept of psi phenomena (*siddhis*) that are understood as natural and real phenomena and which may be the missing link between pure consciousness and mind. Within the framework of Yoga philosophy and practice the link between the mind and body can be well understood, although a mechanism for the same has not been expounded, even though the means to achieve them are explicitly stated based on classical literature. A naturalistic explanation for any phenomenon does require an understanding of its mechanism which must be experimentally falsifiable. That said, the Trident Model is presented in the following section.

The Trident (*Triśūla*) Model (T-M)

Based on the metatheoretical framework of Indian philosophy, it is assumed that the person is a composite of body-mind-consciousness (BMC). Rao's trident model (T-M) may be understood at two levels: the psychological level, and the transcendental level (Figure 2). At the psychological level, the mind takes center stage linking consciousness to the body. The body comes to the fore in its phenomenal sense, with the assistance of the mind. At the transcendental level, the mind forges a link with pure consciousness. At this level it is the link between the body and mind taking center stage. Thus, according to the T-M, at the metaphysical level it is process monism, and at the psychological level the emphasis is on epistemological dualism, i.e. knowing with or without sensory mediation.

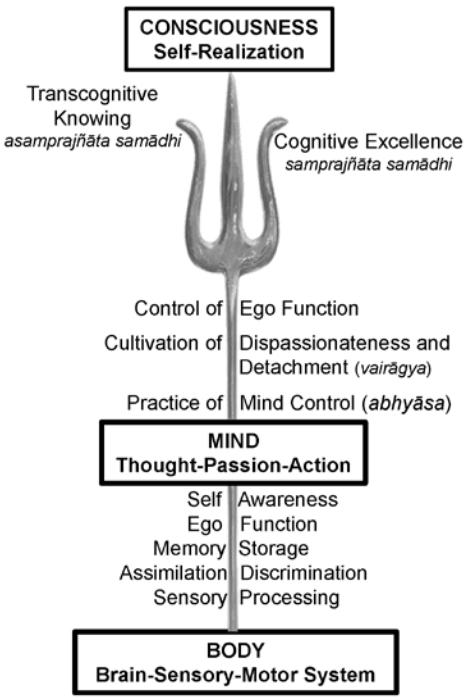

Figure 2. The trident (*triśūla*) model of body-mind-consciousness (Rao, 2011, p. 756).

Basic Assumptions of the Trident Model

- *Puruṣa* (consciousness) and *prakṛti* (subtle primordial matter) are two basic principles underlying the universe.
- Consciousness is fundamentally different from matter and is essentially irreducible to material forms.
- The *puruṣa* illuminates the material forms of the universe through the instrumentality of the mind.
- Each *puruṣa* is distinct and has unique experiences in its association with the mind-body complex.
- Consciousness (*puruṣa*) and mind (*citta*) are different.
- Intentionality is the characteristic of the mind and not of consciousness.
- There are two ways of knowing: (1) direct knowing without sensory involvement and (2) mediated knowing with sensory mediation.
- The T-M is to be understood at two levels, the psychological (mind-body connection) and transcendental (mind-consciousness axis), to account for all experiences.

Body

Pure matter (*prakṛti*), in its evolutionary process, gives rise to the gross physical body. It refers to the brain, the nervous system, and the rest of the supporting structures of the body. The sensory systems are the "external" organs, through which the mind (the internal sense) makes contact with the external objective world. The senses are both the instruments of knowing (*jñānendriyās*) as well as of action (*karmendriyās*). As Sri Aurobindo says: "Body, brain, nervous system are instruments of consciousness, they are not its causes" (Dalal, 2001, p. 333).

Mind

In Yoga psychology, the mind (*buddhi*) evolves from pure matter (*prakṛti*) and is composed of subtle matter that connects the gross matter of the body to consciousness. Thus, the mind is an independent entity, irreducible to any bodily state. *Knowing* is the basic feature of the mind. According to Rao, it is the crowning achievement of biological evolution, wherein the subtle matter of the mind forges a link with the body and reflects consciousness on it, providing the object (body/brain) to experience subjectivity. As Rao expands:

> "Knowing, feeling and being are seen in the mind as distinct. With its attributes of thinking, willing and feeling, the mind becomes the knower, doer and the experiencer. The mind may be functionally distinguished into three components. The *manas* is the central processor that continually attends to, filters, analyzes, and assimilates the inputs received from sensory sources. *Ahaṃkāra* is the ego function that appropriates the processed inputs and engenders the sense of "me" and self-consciousness. *Buddhi* is that aspect of the mind which has the closest affinity to consciousness. In virtue of *buddhi* we discriminate, remember and have unified awareness. In association with the ego, it discharges the executive functions. In our ordinary states, *buddhi*, which is predominantly *sattva*, is embellished in various degrees by the presence of other two elements, *rajas* and *tamas*. However, it is possible to purify *buddhi* and make it to shed the distracting and obstructing elements.

> The *buddhi* in its untainted and purified form is almost like consciousness because its reflections of consciousness are so pure and unblemished that they are indistinguishable from consciousness *as-such. Buddhi*, like a mirror, displays the images generated by its association with consciousness. Untainted by *rajas* and *tamas* and their effects, the images reflected in the *buddhi* are essentially indistinguishable from consciousness *as-such.*"
>
> (Rao, 2011, p. 755)

To put it simply, along with the sensory systems of the body, the mind creates cognitive awareness. This cognition/awareness is, as stated, sensory mediated and processed in the brain (body). The cognitions, then, are not direct representations of reality; rather they are transformed by the limitations of the sensory system, and provide a distorted view of reality. In assuming an identity with the body, the mind develops the sense of self or 'I'. The development of this 'individuality' creates the minds attachment to the body, aversions and the will-to-live, which are hindrances in the minds ability to reach towards pure consciousness. The mind, then, in association with the body becomes deluded and hence loses touch with true reality or reality *as-such.* Thus, the human condition becomes an existence in a reality of false knowledge.

Difference between Mind and Body

Following Yoga philosophy, the T-M considers the mind as being physical. However, the physicality of the mind is different from the physicality of matter as we commonly understand it. Rao provides a distinction between the mind and brain in the T-M: "The mind is material not only in a functional sense but also in a substantive sense. While the mind needs the brain and the sensory-motor system in some of its functions, in some others it can also function independent of the brain, and yet remain essentially material. A distinction may be made between material and physical. Mind is material but not physical like the brain in that its materiality transcends the constraints of space and time that bind physical entities like the brain." (2011, p. 756).

Connotations of Consciousness

There are a variety of definitions of consciousness in current academic debate. According to Rao (2011), the understanding of consciousness in Western psychology is restricted to a state of subjective or phenomenal awareness. It is distinguished from and contrasted with related states like the unconscious and the preconscious. Unconscious states are those where phenomenal awareness is absent or precluded. Preconscious states are those where the phenomena are on the fringe and periphery of awareness. Thus, the terms conscious, unconscious and preconscious are 'adjectival' and not substantive. As Rao states:

> Consciousness (*puruṣa*) has neither a beginning nor an end. It does not grow or diminish. Consciousness *as-such* is ineffable, nonintentional and nonrelational. It has no form or appearance. It is undifferentiated subjectivity associated with all that exists as its information content, called *sattva* in Sāṃkhya-Yoga theory of matter (*prakṛti*). Knowing, feeling and being go together undifferentiated in *puruṣa*. It is self-luminous as well as the source of illumination to all minds.
>
> (Rao, 2011, p. 754)

In the T-M, consciousness is not considered to be a variety of mental phenomenon, rather, it is the primary principle that makes awareness possible in its association with the mind. 'Awareness' is a reflection of consciousness in the mind; the reflection itself comes in

various shades and shapes, tinges and tints, depending on the state of the mind and the degrees of its association with consciousness, experientially resulting in degrees of awareness. Thus, at the individual level, consciousness may be defined as awareness.

The T-M distinguishes five different states of awareness (Figure 3): (i) The *unconscious* states that include not only repressed and dissociated mental phenomena and unconscious motives but also phenomena like subliminal perception and blind sight; (ii) *preconscious* states which refer to peripheral awareness, which is in the field of awareness at a fringe as a backdrop but not in focus. In a sense, it refers to unattended phenomenal/primary awareness; (iii) *conscious* states are what we experience in normal waking, dreaming and psychotic states; (iv) *super conscious* states which consist of cognitive excellence as seen in creative arts and expression of genius in a variety of forms, and paranormal phenomena made possible by access to a nonsensory route of awareness; and (v) *pure conscious* states that include such experiences as self-realization where there is a perfect blending of knowing and being.

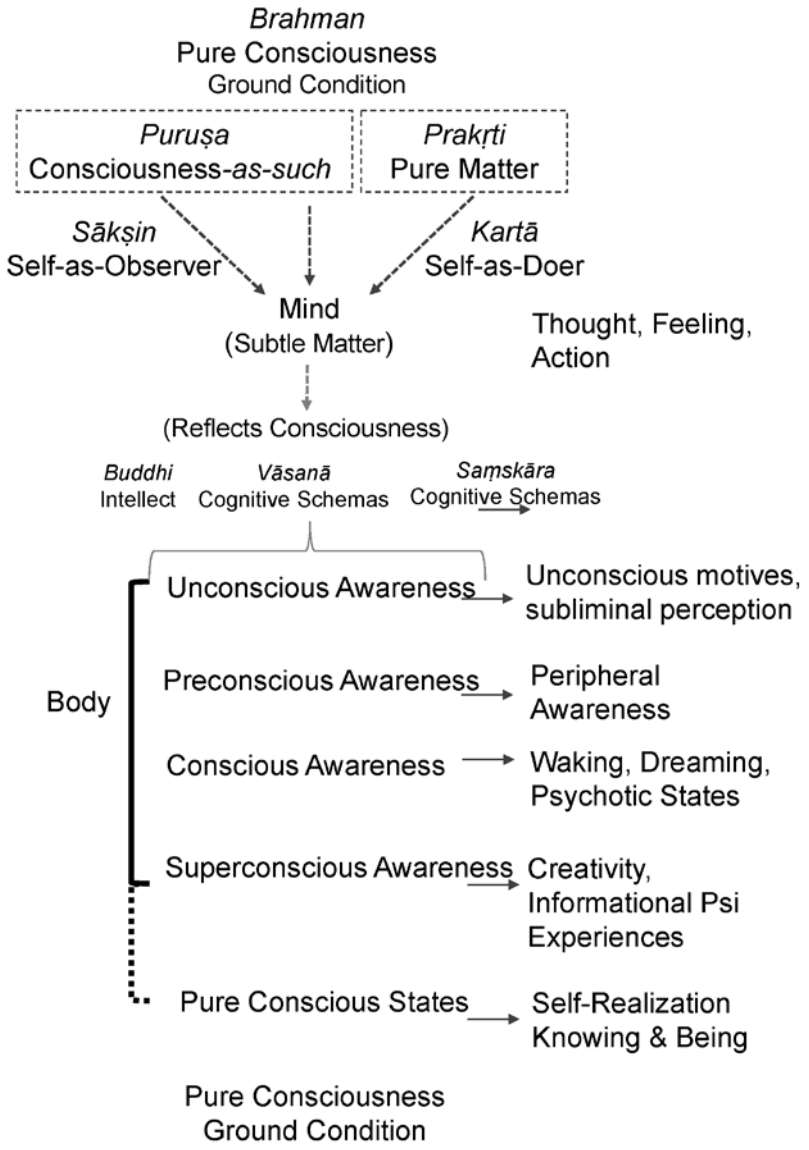

Figure 3. Consciousness, mind, and levels of awareness.

Difference between Mind and Consciousness

- The mind is physical and evolves out of *prakṛti*. However, it is different from the body we see. It is subtle, rarefied and highly evolved matter.
- The mind is the active instrument of thought, feeling and action in the person.
- The mind does not generate consciousness; it simply reflects it. Its luminosity is acquired because of its association with consciousness, and the purity of its matter.
- In the person, the mind is a flowing stream of thoughts, explicit and overt as well as covert and unconscious.
- Though primary, consciousness in a sense has a secondary role in the person. It is regarded as a "witness" and given the role of an observer (*sākṣin*) rather than of an active player.
- Consciousness is reflected in the mind.

The Psychological Level of the Trident Model

As the T-M states, mind is not the same as the brain; it is the interface between consciousness and the brain. The distinctions such as subject and object arise because of the mind's ability to reflect consciousness and its predisposition to take the reflections as its own. The mind is the active center of the cognitive, conative and affective states. As a result of sensory inputs, the mind generates internal imagery, memory and conscious and unconscious processes, which give rise to thoughts, feelings and actions.

The person, caught in this constantly changing state, considers the mind to be her own, considering it to be the center of her consciousness, and thus develops a sense of self. This binds the mind to the objective world. This is a congenital condition that is described as the state of false knowledge or *avidyā*, as a result of which, the person confuses the mind as being the real self and the center of her consciousness.

According to the T-M, the psyche component of the mind, the intellect (*buddhi*), the faculty that controls the sense organs, has the power of comprehension and is the reflective surface of the mind. The psyche (*buddhi*) is embellished by innate desires, drives, instincts, cognitive schemas (*vāsanā*), and impressions left behind by previous births and experiences (*saṃskāra*). Further, since the *buddhi* is constrained by the physical limitations of the sensory system, the reality that it perceives is thus distorted and what is subsequently reflected in the mind is not consciousness *as-such*. Rather, it is a false constructed image that is illumined by the reflection of consciousness; consciousness *as-such* is thus clouded by the mind. Under these conditions, the person is not privy to true reality or reality-*as-such*. What are seen are not things-in-themselves, but sensory objects as constructed and construed by the mind. However, since the biological limitations for all humans are uniform across the species, there is constancy and uniformity in the perception of the external world. While this facilitates inter-subjective validity, inter-species communication and constancy of perception across species is impeded.

The Transcendental Level of the Trident Model

At the transcendental level, the T-M deals with the relations between the mind and pure consciousness (consciousness *as-such*, *Brahman*). Consciousness *as-such* has no form. In the human condition, it illumines the form of material objects in the mind. It is contentless undifferentiated subjectivity. Subjectivity in experience arises from the mind's association

with consciousness. By reflecting consciousness *as-such* the mind realizes the universe. Consciousness *as-such* has no content.

According to the T-M, accepting the fact that biases and distortions in the perception of the reality outside of us are built into the very process of our interaction with the world, it becomes necessary to remove the biases and correct the distortions so that we could come closer to knowing the world the way it really is. The psychophysical system of the mind is paradoxical in that on the one hand the mind embellishes one's perceptions and distorts the truth while on the other hand it is also an instrument that could help remove the biases and distortions and thus enable one to know the truth. Thus the mind is *double edged.*

The freedom of the mind and the person consists in overcoming these constraints in order to come face to face with truth. The emergence of the ego is the point when individuation begins, bringing about the experience of subjective relativity. Consequently, when consciousness is reflected in the mind, the ego breaks the intrinsic unity between being, knowing and bliss which is inherent in consciousness. The process of freedom thus has to start with shedding of this sense of self.

Three Tiers of Cognitive Excellence

The Trident Model conceives three tiers of cognitive excellence, *śravaṇa*, *manana* and *nididhyāsana*.

1. *Śravaṇa*, which literally means hearing includes, as interpreted in the T-M, all modes of observation that give rise to perceptual awareness. The T-M expands the scope of *śravaṇa* from its Vedic meaning of received knowledge to include all forms of observation and perceptual knowing. It involves third-order knowing that can be sensorially observed and objectively recorded, measured and verified. It involves the brain-driven processes accessible to third-person observation. The scientific method places a premium on this mode of knowing, which gives us information about the world.

2. *Manana* is ratiocination. It involves reasoning, logical inference, induction, and other means of understanding the observed phenomena, which makes us understand the observed world. *Manana* may be considered as second-order knowing. It gives us mind-constructed cognitions. Both *śravaṇa* and *manana* deal with phenomena – real, illusory or imaginary.

3. *Nididhyāsana* involves knowing by being. It is the first-order knowing characterized by intuitive insights that are self-certifying truths and manifest not as cognitive constructions but as transformational phenomena, where knowing becomes being. It is, one could say, the final step in phenomenological reduction. It is best exemplified by the identity relationship between the knower and the known assumed to occur in a state of *samādhi*. The knower-known identity is a matter of reflexivity between the subject and the object, the inner and outer reality. *Nididhyāsana* may be seen as a method of phenomenological reduction to arrive at absolute certainty by establishing such a relationship. If *śravaṇa* is observation and *manana* is understanding, *nididhyāsana* is transformation. The knower becomes the known.

Thus, in the trident model, Rao enumerates three levels of the person, which correspond to *saṃyama* the final three stages of yogic excellence:

1. *Body* that gives rise to observational knowing, which corresponds with *dhāraṇā* (concentration) that gives observational excellence,

2. *Mind* that gives rise to intellectual understanding, which corresponds with *dhyāna* that leads to excellence in understanding, and
3. *Consciousness* that gives rise to transformational realization of intuitive truth obtained at the peak stage of meditation, *samādhi*, which involves excellence in transformational experience.

Transformation from Ignorance to Knowing and Being

As stated in Yoga philosophy, the mind has to take control and gain mastery over its wandering nature. This can be achieved by focused attention (*ekāgratā*), which makes the mind steady. As the ego is at the base of biases and distortions that cloud consciousness, it is essential to detach the mind from it. This is achieved by *vairāgya*, cultivation of the habit of dispassionateness and detachment, which leads the mind into a state of *samādhi.*

The state of *samādhi* is not a single, all-or-none state. It involves several states that progressively check the different functions of the mind from the mundane perceptual activity of the gross or subtle objects, reflection and recollection, feeling of joy and self-consciousness to the highest state of pure consciousness where the mind is all purified and remains untainted *buddhi*. In such a state, the mind reflects consciousness in its pristine purity; the person thus has access to reality *as-such* and knows truth and gets as close to perfection as possible The various states of *samādhi* may be seen as different levels of excellence achieved by eliminating the biases and distortions in cognitive knowing, culminating in (a) transcognitive and (b) transcendental states.

There are three distinctive effects of focused attention:

1. First, focused attention leading to a state of *samprajñāta samādhi* gives cognitive excellence by progressively controlling the biases that distort truth and embellish knowledge.
2. Following the suppression of sensory content, a new source of transcognitive knowing becomes functional—intuitive realization—which makes the person have nonsensory awareness, wherein consciousness *as-such* is accessed and translated into cognitive content. Knowledge acquired at this stage is not pure, as it is blemished by the cognitive process.
3. Third, beyond intuitive awareness is self-realization, which is accessing consciousness *as-such* and staying in that state, where knowing and feeling blend with being. This is the state of *asamprajñāta samādhi.*

Implications of the Trident Model

The T-M body-mind-consciousness model of the person has several implications.

Evolution

According to Rao, the Trident Model of evolution is unlike the Darwinian unidimensional model. Evolution, according to the T-M, is a complementary bi-dimensional or two stage process. There is the separation from consciousness (*viyoga*) to form the mind and body, and then there is the union of the mind with consciousness (*saṃyoga*) to attain the state of pure consciousness. (1) The emergence of the mind and its refinements, which reaches its apex with achieving cognitive excellence, its purpose is self-perpetuation and enhancement of personal happiness by material means. The struggle for self-survival leads to the sharpening of the mind and development of reason and abstract thinking, and the

attendant decreased dependence on intuitive knowing. The pinnacle of biological evolution is the cognitive mind. (2) Evolution of the psyche that emerges later and is a less obvious process, which results in progressive suspension of the higher evolved faculties of the mind. With the control of reason and logic and suspending the sensory inputs, the mind opens the doors of intuition.

As a result of this bi-dimensional process, material, comfort-oriented competitive ways give way to spiritual seeking and striving for common good. With the progressive detachment of the mind from its material base and the mind getting grounded in intuition, there arises the flowering of consciousness *as-such* in the life of the person. Ego-centric excellence loses its hold; and altruism and expanded awareness gain ground. Intuitive knowing dominates as sensory knowing recedes into the background. As the mind ceases to filter, cloud and color consciousness, the cognitive mind dissolves, and consciousness shines forth with its inherent splendor. The relationship between body, mind and consciousness is thus linear and not triangular.

The bidimensional nature of evolution indicates the two sides of yoga –*saṃyoga* and *viyoga*, which are not ordinarily distinguished. *Viyoga* is from the perspective of the lower mind. It refers to the disentanglement of that part of the mind that corrupts the reflection of consciousness. *Saṃyoga* is from the perspective of the higher mind devoid of its corrupt and blemished forms and refers to its purity which is indistinguishable from consciousness itself. *Viyoga* is the return of the mind to its source in *prakṛti*, and *saṃyoga* is its union with *puruṣa* when the person realizes consciousness *as-such* and reflects it in her being.

The detachment and the cessation of the commingling of mind and consciousness is not a simple separation of the two, but the mind's evolutionary retreat to its primordial condition in *prakṛti* and the person's participation in consciousness *as-such*.

In the second stage of evolution there is not only the dissolution of the cognitive mind, but its transformation into psychic mind, a purely *sattvic buddhi* indistinguishable from consciousness *as-such*. The notion of evolution in this context entails that it is a progressive process, each step giving rise to very special phenomena in the form of personal transformation.

Qualia or the Hard Problem of Consciousness

According to the T-M, subjectivity is not a state of the brain or an intrinsic attribute of the mind, rather it is the quality of the mind arising from its association with consciousness. Consciousness *as-such* is undifferentiated subjectivity. When the mind comes to commingle with consciousness, the latter bestows subjectivity on the mind. Subjectivity in the self-conscious mind, simply does not exist without assuming its association with consciousness *as-such*.

According to Rao, when consciousness illumines the ego (*ahaṃkāra*) one has subjectivity and self-consciousness. With the transcendence of the ego function, mental phenomena lose their subjectivity in the sense of self-consciousness. Therefore, during the higher states of awareness, there may be no self-awareness. In other words, self-awareness is not the sine qua non of awareness. We need to assume subjectivity in phenomena like subliminal perception and blind sight. This notion of consciousness as the inherent meaning of a thing, whether or not it becomes explicit in one's awareness, is something that is difficult to comprehend from a Western perspective.

Survival of Bodily Death

As far as the T-M is concerned, consciousness has no birth or death, it neither rises nor sets. The mind, however, admits the possibility of surviving the disintegration of the body because it is conceived to be distinct from the body. It is assumed that the physical subtlety of the mind enables its nonphysical survival. The mind does not decay with the body; it disintegrates by its own effort to return to its primordial material state in *prakṛti*. If there is evidence for reincarnation, it is the evidence for the continuity of mind beyond one body.

Informational Psi

According to T-M, informational psi—intuition—may be better understood from the psychic dimension of the T-M than from the biological perspective. The carrier of psi information is intuition; its source is consciousness *as-such*, which is part of the ground condition of the universe. Intuitive information is thus directly available to the mind from consciousness *as-such*, which it reflects on the intellect and cognitive schemas. Intuition is radically different from perception, which is based on the lower, sensory mediated mind. As in Jaina epistemology, this direct knowledge—precognitive and clairvoyant—is transcendental perception, or extrasensory knowledge, and is of three types: (1) awareness unbound by space and time, (2) knowledge of events and objects remote in space and time, and (3) direct knowledge of thoughts of others. (Rao 2011, p. 254).

Siddhis or supernormal powers are obtained by *saṃyama* or perfect meditation, leading to clarity of insight, enabling the yogin to gain knowledge of the past and future. This is possible both for objects and the knowledge of the mind of another person, when *saṃyama* is done on an object or the mind of another. This knowledge is generated purely by the mind.

Causal Psi

Within the framework of the T-M, there does not appear to be any scope for causal psi (psychokinesis), i.e., the volitional effect of mind upon an external object, unless the mind is able to perturb matter at a distance. While the *Yoga Sūtras* mention eight *mahāsiddhis* (great powers), which can be classified under causal-psi events, Rao (2011, p. 521) notes, “It is difficult to discern whether some of these are metaphorical allusions or genuine phenomena. The description of powers is often very terse leaving room for ambiguity.” The *mahāsiddhis* include the power to expand into space and become big, the power to become light, the power to become heavy, the power to reach out anywhere, the power to realize any wish, the power to create, the power to command and conquer.

As stated earlier, there is only weak statistical evidence supporting the mind-over-matter hypothesis; further, the decision augmentation theory considers statistical observations of micro-PK as indications of informational rather than causal psi.

Evaluation of the Trident Model

The T-M of body-mind-consciousness is based on the Sāṃkhya-Yoga and Advaita Vedānta schools of thought. Purists from these schools of thought may object to the fusion of dualist and idealist-monist philosophies. However, this fusion may be a necessary step for advance in theory development, in order to address the questions that are unanswered by either school independently.

One of the major critiques against a monist school of thought is disregarding the mundane aspects of being, i.e. the relevance of the body in the whole scheme of affairs. By combining the two schools in the T-M, Rao gives relevance to the body as an essential aspect

of the mind-consciousness dyad. Thus, the relation between matter-mind-consciousness-pure consciousness, retains the value and importance of each level of being. The evolution from a cognitive sensory dependent person to a spiritual person deriving knowledge *as-such* through transcognitive processes and ultimately evolving to a stage of pure consciousness or consciousness *as-such* is the linear growth of the individual. This linearity may be able to address the issue of subjectivity in mind, in that mind is proposed to be independent of the body and hence able to extend itself out of the constraints of the body, as seen in psi abilities.

One of the goals of Indian psychology, as distinct from Indian philosophy, is to provide testable hypotheses for classical concepts using appropriate methods of investigation dependent on the question under consideration. As Rao and Paranjpe (2017, p. 31) state: "Indian psychology can use a variety of behavioral as well as phenomenological methods and can undertake laboratory-based experimental investigation as well as field and case studies in the natural setting. … It thus subscribes to methodological pluralism." As they further state, "Neurophysiological studies are not irrelevant to Indian psychology because the mind is connected to and is influenced by the brain." Thus, while the transcendental aspects of the T-M are, by definition, outside the purview of scientific inquiry, as a psychological model, it is imperative for the T-M to provide hypotheses that can be put to test.

Psi research is presently at a very interesting stage, as experimentalists and theorists are now considering it as a natural rather than supernatural ability, and examining it from several perspectives, both physicalist and dualist. There is incontrovertible evidence for the validity and applicability of informational psi. A U.S. Defense Intelligence Agency report states: "[…] the history of application investigations in this field [AC] demonstrates that at least some level of application reliability can be achieved for some types of projects" (1993, p. 11).

In 2014, several Western researchers were signatories on a "Manifesto for Post-Materialist Science" (Beauregard, Schwartz, Miller, Dossey et al., 2014), in which they state:

> Post-materialist science does not reject the empirical observations and great value of scientific achievements realized up until now. It seeks to expand the human capacity to better understand the wonders of nature and, in the process, rediscover the importance of mind and spirit as being part of the core fabric of the universe. Post-materialism is inclusive of matter, which is seen as a basic constituent of the universe.

Although called a "post-materialist" science, Western scholars are now turning to the metatheoretical basis of Indian philosophy and psychology.

Professor K. Ramakrishna Rao's *trident model of body-mind-consciousness* presents a systematic process-oriented dualist model standing firmly on a monist philosophy, thereby incorporating both the transcendent and lived realities. The T-M serves as a fundamental model for a "post-materialist" science, and has the scope for synthesizing the dualist and physicalist models in consciousness, mind, and psi.

Notes

1. This paper is based on Chapter Z: The *Triśūla* (Trident): The Trilogy of Body-Mind-Consciousness, from Rao, K.R. (2011). *Cognitive Anomalies, Consciousness, and Yoga.* Project of History of Indian Science, Philosophy and Culture (PHISPC), Delhi: Matrix Publisher.

2. In 1995, May, Utts, and Spottiswoode (1995/2014) coined the term "anomalous cognition" (AC) to refer to ESP phenomena. According to them, the earlier definitions of ESP were not

sufficient to either describe the observables or provide a working definition for experimental work. The “anomaly” in AC refers to our insufficient understanding of the process of AC, rather than its validity. Anomalous cognition (AC) is defined as the perception and cognition of information that emerges from a distant point in space-time, but which is blocked from the usual sensory systems by distance, shielding or time. In this process, some individuals are able to gain access to information from events outside the range of their senses by a currently not understood mechanism. Anomalous perturbation is defined as the interaction with matter solely by mental means alone.

References

Bardin, J.C., Fins, J.J., Katz, D.I., Hersh, J., Heier, L.A., Tabelow, K., Dyke, J.P., Voss, H.U. (January 01, 2011). Dissociations between behavioural and functional magnetic resonance imaging-based evaluations of cognitive function after brain injury. *Brain, 134*, 3, 769–782.

Beauregard, M. (2014). The primordial psyche. *Journal of Consciousness Studies, 21*(7–8), 132–157.

Beauregard, M., Schwartz, G.E., Miller, L., Dossey, L., Moreira-Almeida, A., Schlitz, M., ... & Tart, C. (2014). Manifesto for a post-materialist science. *Explore: The Journal of Science and Healing, 10*(5), 272–274.

Beloff, J. (2002). Psychical research and the case for dualism. pp. 60–64. In Rammohan, V. G. (eds). *New frontiers of human science: A festschrift for K. Ramakrishna Rao*. Jefferson, NC: McFarland.

Bierman, D.J. (1998). Do psi phenomena suggest radical dualism? In: Stuart R. Hameroff, Alref W. Kaszniak, and Alwyn C. Scott (eds.), *Toward a science of Consciousness* II, The MIT Press, Cambridge MA, pp. 709–714.

Bierman, D.J. (2010). Consciousness induced restoration of time symmetry (CIRTS): A psychophysical theoretical perspective. *Journal of Parapsychology, 24*, 273–300.

Bierman, D.J. (2013). Personal communication, July 2013.

Blackmore, S. (2001). What can the paranormal teach us about consciousness? *Skeptical Inquirer, 25*(2), 22–27.

Braude, S.E. (1992). Survival or super-psi? *Journal of Scientific Exploration*, *6*(2), 127–144.

Broughton, R. (2011). An evolutionary approach to anomalous intuition. *8th Symposium of the Bial Foundation: Behind and Beyond the Brain: Intuition and Decision-making, Porto, Portugal, 07–10 April 2010*. Porto, Portugal: Fundação Bial.

Carpenter, J. (2011). *First sight: ESP and parapsychology in everyday life*. Lanham, Md: Rowman & Littlefield Publishers.

Chalmers, D.J. (2000).What is a neural correlate of consciousness? In T. Metzinger (Ed.), *Neural correlates of consciousness: Empirical and conceptual questions*. Cambridge, MA: MIT Press.

Dalal, A.S. (2001). *The greater psychology: An introduction to the psychological thought of Sri Aurobindo*. Pondicherry: Sri Aurobindo Ashram.

Directorate for Scientific and Technical Intelligence, DIA, *Star Gate Project: An Overview*, 30 April 1993. DIA.

Dossey, L. (2010). *The science of premonitions: How knowing the future can help us avoid danger, maximize opportunities, and create a better life.* New York: Plume.

Dossey, L. (2014) Spirituality and nonlocal mind: A necessary dyad. *Spirituality in Clinical Practice, 1*(1), 29–42.

Durstewitz, D., Vittoz, N.M., Floresco, S.B., & Seamans, J.K. (2010). Abrupt transitions between prefrontal neural ensemble states accompany behavioral transitions during rule learning. *Neuron, 66*(3), 438–448.

Genç, E., Bergmann, J., Singer, W., & Kohler, A. (2011). Interhemispheric connections shape subjective experience of bistable motion. *Current Biology, 21*(17), 1494–1499.

Houtkooper, J.M. (2002). Arguing for an observational theory of paranormal phenomena. *Journal of Scientific Exploration, 16*(2), 171–185.

Ionta, S., Heydrich, L., Lenggenhager, B., Mouthon, M., Fornari, E., Chapuis, D., Gassert, R., Blanke, O. (2011). Multisensory mechanisms in temporo-parietal cortex support self-location and first-person perspective. *Neuron*, *70*(2), 363–374.

Kelly, E.F., Crabtree, A., & Marshall, P. (eds.). (2015). *Beyond physicalism: Toward reconciliation of science and spirituality*. Lanham, Md. [u.a.: Rowman et Littlefield.

Kelly, E.F., Kelly, E.W., Crabtree, A., Gauld, A., Grosso, M., & Greyson, B. (2007) *Irreducible mind: Toward a psychology for the 21st Century.* Lanham, MD: Rowman & Littlefield.

Khateb, A., Simon, S.R., Dieguez, S., Lazeyras, F., Momjian-Mayor, I., Blanke, O., Landis, T., Pegna, A.J., & Annoni, J.M. (2009). Seeing the phantom: A functional MRI study of a supernumerary phantom limb. *Annals of Neurology*. DOI: 10.1002/ana.21647

Marwaha, S.B., & May, E.C. (2015a). Rethinking extrasensory perception: Towards a multiphasic model of precognition. *SAGE Open*, January-March 2015, 1–17. DOI: 10.1177/2158244015576056.

Marwaha, S.B., & May, E.C. (2015b). The multiphasic model of precognition: The rationale. *Journal of Parapsychology, 79*(1), 5–19.

Marwaha, S.B. & May, E.C. (2015c). Fundamental issues for psi theorists. pp. 1–17. In E. C. May and S. B. Marwaha (Eds.). *Extrasensory perception: Support, skepticism, and science, Volume II — Theories of Psi.* Santa Barbara, CA: Praeger Publications.

Marwaha, S.B., & May, E.C. (2015d). A refutation of the dualist perspective in psi research. *Journal of Consciousness Studies, 22*(5–6), 70–95.

Marwaha, S.B., & May, E.C. (2016). Precognition: The only form of ESP? *Journal of Consciousness Studies, 23*(3–4), 76–100.

May, E.C. & Depp, J. (2015) Entropy and precognition: The physics domain of the multiphasic model of precognition. In E. C. May & S. B. Marwaha (Eds.). *Extra-sensory perception: Support, skepticism, and science, Volume II — Theories of psi,* Santa Barbara, CA: Praeger Publications.

May. E.C., & Marwaha, S.B. (2017). *The Star Gate Archives: Reports of the United States Government Sponsored Psi Program, 1972-1995. Vol 1: Remote Viewing, 1972-1984. Vol 2. Remote Viewing, 1985-1995; Vol. 3 Psychokinesis, Vol. 4: Government Reports and Memorandums*. Jefferson, NC: McFarland.

May, E.C., & Spottiswoode, S.J.P. (2014/1994). Shannon entropy: A possible intrinsic target property. In E.C. May, & S.B. Marwaha, (Eds.). *Anomalous cognition: Remote viewing research and theory*, pp. 299–313. Jefferson, NC: McFarland.

May, E.C., Utts, J.M., Trask, V.V., Luke, W.L.W., Frivold, T.J., & Humphrey, B.S. (1989). *Review of the psychoenergetic research conducted at SRI International (1973–1988)* (SRI Project 1291). Menlo Park, CA: SRI International.

May, E.C., Utts, J.M., & Spottiswoode, S.J.P. (2014/1995). Decision augmentation theory: Toward a model for anomalous mental phenomena. In E. C. May & S. B. Marwaha (Eds.), *Anomalous cognition: Remote viewing research and theory* (pp. 222–243). Jefferson, NC: McFarland.

Mitchell-Yellin, B. (2014). The near-death experience argument against physicalism: A critique, *Journal of Consciousness Studies*, *21*(7–8), pp. 158–183.

Nishimoto, S., Vu, An, T., Naselaris, T., Benjamini, Y., Yu, B., Gallant, J.Ll. (2011). Reconstructing visual experiences from brain activity evoked by natural movies. *Current Biology*, 22 September 2011 DOI:10.1016/j.cub.2011.08.031

Rao, K.R. (1955). Vedanta and the modus operandi of paranormal cognition. *Philosophical Quarterly*, 29, 35–38.

Rao, K.R. (2011). *Cognitive anomalies, consciousness, and Yoga*. New Delhi: Published by Centre for Studies in Civilizations for the Project of History of Indian Science, Philosophy and Culture and *Matrix* Publishers.

Rao, K.R., & Paranjpe, A.C. (2017). *Psychology in the Indian tradition*. New Delhi: D.K. Printworld.

Reber, P. (2010). What is going on in the brain when we experience déjà vu? *Scientific American*, October 7, 2010. Cf. http://www.scientificamerican.com/article.cfm?id =what-is-going-on-in-the-brain

Rousseau, D. (2011) Near-death experiences and the mind–body relationship: A systems-theoretical perspective, *Journal of Near-Death Studies*, *29*(3), 399–435.

Rousseau, D. (2015) Anomalous cognition and the case for mind–body dualism. In E. C. May & S. B. Marwaha (Eds.), *Extrasensory perception: Support, skepticism, and science, Volume II — Theories of Psi*, Santa Barbara, CA: Praeger Publications.

Schlosshauer, M., Kofler, J., & Zeilinger, A. (2013). A snapshot of foundational attitudes toward quantum mechanics. *arXiv preprint arXiv:1301.1069*.

Strother, L., Mathuranath, P.S., Aldcroft, A., Lavell, C., Goodale, M.A., & Vilis, T. (2011). Face inversion reduces the persistence of global form and its neural correlates. *PLOS One*, *6*, 4.

Sudduth, M. (2009). Super-psi and the survivalist interpretation of mediumship. *Journal of Scientific Exploration*, *23*(2), 167–193.

Taimni, I.K. (1961). *The science of yoga: The Yoga-sūtras of Patañjali* in Sanskrit with Transliteration in Roman, Translation in English and Commentary, Wheaton, IL: Theosophical Pub. House.

Tart, C.T. (2009). *The end of materialism: How evidence of the paranormal is bringing science and spirit together.* Oakland, CA: Noetic Books, IONS.

Tegmark, M. (2000). Importance of quantum decoherence in brain processes. *Physical Review E, 61*(4), 4194.

Tegmark, M. (2014). Consciousness as a state of matter. arXiv preprint arXiv: 1401.1219

Tononi, G. (2008). Consciousness as integrated information: a provisional manifesto. *Biological Bulletin*, *215*(3), 216–242.

Utts, J.M. (1995). An assessment of the evidence for psychic functioning. In Mumford, M. D., Rose, A. H., & Goslin, D. A. (1995). *An evaluation of remote viewing: Research and applications*. American Institutes for Research. pp. 3.2–3.41.

Vassy, Z. (2015). Activational model of psi. In E. C. May and S. B. Marwaha (Eds.). *Extrasensory perception: Support, skepticism, and science, Volume II — Theories of Psi.* Santa Barbara, CA: Praeger Publications.

von Lucadou, W. (2015). Model of pragmatic information, pp. 221–242. In E. C. May and S. B. Marwaha (Eds.). *Extrasensory perception: Support, skepticism, and science, Volume II — Theories of Psi.* Santa Barbara, CA: Praeger Publications.

Walach, H., & Römer, H. (2011). Generalized entanglement—A nonreductive option for a phenomenologically dualist and ontologically monist view of consciousness. In H. Walach, Schmidt, S.; Jonas, W. B. (Eds.) *Studies in neuroscience, consciousness and spirituality* l. doi 10.1007/978-94-007-2079-4_6. e Springer Science+B Business Media B.V. 2011

Walach, H., von Lucadou, W., & Römer, H. (2014). Parapsychological phenomena as examples of generalized nonlocal correlations—A theoretical framework. *Journal of Scientific Exploration*, *28*(4), 605–631.

Walker, E.H. (1984). A review of criticisms of the quantum mechanical theory of psi phenomena. *The Journal of Parapsychology*, *48*(4), 277.

Author

Sonali Bhatt Marwaha, Ph.D., holds a BSc with a major in child development from University of Mumbai, MA in Clinical Psychology and MPhil in psychology from S.N.D.T. Women's University, Mumbai. She was awarded a PhD by the Dept. of Psychology and Parapsychology, Andhra University, for a theoretical analysis of belief systems, self, and emotions, for which she was awarded the J. B. Rhine Biennial Research Award. Based in Visakhapatnam, she is a research associate with the Laboratories for Fundamental Research, Palo Alto, CA. Her recent publications include *Extrasensory Perception: Support, Skepticism, and Science, Volume I — History, Controversy, and research, & Vol. II – Theories of Psi*, Praeger Publications (2015), and *The Star Gate Archives: Reports of the United States Government Sponsored Psi Program, 1972–1995.* (4 Volumes), McFarland (2017-2018), co-edited with Edwin C. May.