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Dual Aspect Framework for Consciousness and Its Implications: West meets East for Sublimation Process

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Abstract: The dual-aspect-dual-mode framework of consciousness, based on neuroscience, consists of four components: (1) dual-aspect primal entities; (2) *neural-Darwinism*: co-evolution and co-development of subjective experiences (SEs) and associated neural-nets from the mental

aspect (that *carries* the SEs/proto-experiences (PEs) in *superposed* and unexpressed form) and the material aspect (mass, charge, spin and space-time) of fundamental entities (elementary particles), respectively and co-tuning via sensorimotor interaction; (3) matching and selection processes: interaction of two modes, namely, (a) the non-tilde mode that is the material and mental aspect of cognition (memory and attention) related feedback signals in a neural-network, which is the cognitive nearest past approaching towards present; and (b) the tilde mode that is the material and mental aspect of the feed forward signals due to external environmental input and internal endogenous input, which is the nearest future approaching towards present and is an entropy-reversed representation of non-tilde mode; and (4) the *necessary* ingredients of SEs (such as wakefulness, attention, re-entry, working memory, stimulus at or above threshold level, and neural-net PEs). This framework leads to structural and functional coherence between the mind and the brain, bridges the explanatory gap (the gap between SEs and their neural-correlates), and leads to our mundane subjective experiences. This dual-aspect-dual-mode PE-SE framework could be the fundamental basis of various religions and philosophies. This is a Western perspective. On the other hand, Eastern perspectives emphasize the practical methods for achieving *altered* experience at *samadhi* state. An important corollary of these methods (such as yogic method) is the sublimation of negative aspects of seven groups of self-protective energy system (desire, anger, ego, greed, attachment, jealousy, and selfish-love) into their positive aspects. Their negative aspects create war and suffering, whereas their positive aspects advance science and technology, family values, peace, and happiness. Here, the Western perspective framework is extended to include the concepts of the sublimation process to encompass Eastern perspectives. The four elements (war, suffering, peace, and happiness) are ubiquitous in both space and time because they are essential contributors to the variations for natural selection in our evolutionary system. The sublimation process optimizes the system: minimizes war and suffering, maximizes peace and happiness, and enhances family values and individual progress. This is consistent with both Eastern and Western perspectives.¹

Introduction

The mind-body problem is central to the understanding of consciousness in individuals and in groups of interacting individuals such as family, society, nation, and world as a whole. There are over forty meanings attributed to term ‘consciousness’ that were identified and categorized according to

whether they were principally about function or about experience.² Based on this, consciousness may be *optimally* (that has the least number of problems) defined as a mental aspect of a system or a process, which has two sub-aspects: *conscious-experience* and *conscious-function*.³ Various disciplines that affect our lives can be grouped into three categories: science, philosophy, and religion. It could be argued that various religions and philosophies have created wars and suffering while preaching dogmatically how to live peacefully. On the other hand, science does not address family values very well. The goal of the present article is to look critically for a link between all three disciplines and to investigate whether we can find a fundamental basis common to all religions and philosophies. Once we find the underlying common framework then the differences between religions and philosophies become superficial. Western views in psychotherapy and clinical research (conventional medicine) and Eastern views on holistic living have created a significant amount of empirical data. Data are data and remain immortal if collected rigorously.

In this context, the following layout is presented. First, a Western framework of consciousness based on neuroscience, called the dual-aspect-dual-mode PE-SE (proto-experience-subjective experience) framework,⁴ is extended to include the essence of Eastern perspectives. Second, a framework called *Purusha-Prakriti*, based on Eastern perspectives, especially from Hinduism, is described. We will show how war and suffering can be minimized, and how peace and happiness can be maximized by the process of sublimation in both frameworks. Third, various complementary frameworks are critically examined. Fourth, some empirical and clinical data from a sampling of religions and philosophies are elucidated using the dual-aspect-dual-mode PE-SE framework. In addition, empirical data of (1) the cycle of birth, life, and death, (2) the soul, and (3) God are interpreted in terms of this framework. Fifth, the seven groups of the self-protective energy system are detailed as they play important role in war, suffering, peace, happiness, the advancement of family values, and individual progress. Sixth, the sublimation process is detailed. Finally, the conclusion provides a synthesis of our main thesis.

1. The Neuroscience-Based Framework and Sublimation Process

The neuroscience-based dual-aspect-dual-mode PE-SE framework was originally developed to explain how subjective experiences (SEs) occur in

our brain and to address the explanatory gap between SEs and their neural correlates.⁵ It consists of four components: (1) dual-aspect primal entities; (2) *neural-Darwinism*: co-evolution and co-development of SEs and associated neural-nets from the mental aspect (that *carries* the SEs/proto-experiences (PEs) in *superposed* and unexpressed form) and the material aspect (mass, charge, spin and space-time) of fundamental entities (elementary particles), respectively and co-tuning via sensorimotor interaction; (3) matching and selection processes: interaction of two modes, namely, (a) the non-tilde mode that is the material and mental aspect of cognition (memory and attention) related feedback signals in a neural-network, which is the cognitive nearest past approaching towards present; and (b) the tilde mode that is the material and mental aspect of the feed forward signals due to external environmental input and internal endogenous input, which is the nearest future approaching towards present and is a entropy-reversed representation of non-tilde mode; and (4) the *necessary* ingredients of SEs (such as wakefulness, attention, re-entry, working memory, stimulus at or above threshold level, and neural-net PEs).

The dual-aspect-dual-mode PE-SE framework can be concisely described as follows:⁶ There are three entities that need to be linked: *structure*, *function*, and *experience*. Various materialistic neuroscience models link *structure* with *function* well, but fail to link them with *experience* that leads to the explanatory gap of materialism: how an *experience* can be created from non-experiential matter (such as brain *structure*)? To address this explanatory gap, it was hypothesized that each of the fundamental entities (strings or elementary particles (fermions and bosons)) has two aspects: (i) material aspect such as mass, spin, charge, force, quanta, and space-time, and (ii) mental aspect. The mental aspects of strings, elementary particles, and inert matter are considered as the *carriers* of *superimposed* fundamental *experiences* (or SEs/PEs) in unexpressed form. The *superposition of multiple possible experiences* is based on the hypothesis ‘the mental aspect of wave is wave-like and is a function of experiences’, which is based on the assumption that matter (wave/particle) has double aspects (mental and material aspect). “These possibilities are actualized when neural-networks are formed via *neural Darwinism*, and a specific SE is selected by a *matching* process; these processes also bind elemental *micro-minds* into one *macro-mind*. Here, the term *mind* refers to SE.” In addition, for example, SE *redness* will never be selected and experienced without the formation of redness-related V4/V8/VO-neural-network. The ‘brute fact’ of dual-aspect is justified because SEs are fundamental, inherent, and irreducible. The dual-mode concept from the framework of thermofield dissipative quantum brain dynamics⁷ was explicitly incorporated in the dual-aspect PE-SE framework without decreasing the

degree of parsimony as it was implicitly already present. “The two modes are: (1) the non-tilde mode that is the material and mental aspect of cognition (memory and attention) related feedback signals in a neural-network, which is the cognitive nearest past approaching towards present; and (2) the tilde mode that is the material and mental aspect of the feed forward signals due to external environmental input and internal endogenous input, which is the nearest future approaching towards present and is a entropy-reversed representation of non-tilde mode.” Furthermore, one could argue that there are at least five pathways for information transfer in the brain dynamics: (i) classical axonal-dendritic neural pathway, (ii) quantum dendritic-dendritic microtubule (MT) (dendritic webs) pathway, (iii) Ca-related astro-glia-neural pathway, (iv) extracellular volume transmission, and (v) soliton propagation. “We propose that (a) the *quantum conjugate matching* between *experiences* in the mental aspect of the tilde mode and that of the non-tilde mode is related more to the mental aspect of the quantum microtubule-dendritic-web and less to that of the non-quantum pathways, and (b) the classical *matching and selection* processes to the mental aspect of the non-quantum pathways.” In all cases, a specific SE is selected (a) when the tilde mode interacts with the non-tilde mode to *match* for a specific SE, and (b) when the *necessary* ingredients of SEs (such as wakefulness, attention, re-entry, working memory, stimulus at or above threshold level, and neural-network-PEs) are satisfied. When the conjugate match is made between the two modes, *the world-presence (Now)* is disclosed; its content is the SE of subject (self), the SE of objects, and the content of SEs. “The material aspects in the tilde mode and that in the non-tilde mode are matched to link *structure* with *function*, whereas the mental aspects in the tilde mode and that in the non-tilde mode are matched to link *experience* with *structure* and *function*.” It is argued that (a) this dual-mode-dual-aspect PE-SE framework has fewer problems (such as the justifiable ‘brute fact’ of dual-aspect), and (b) it addresses the problems of other framework including the explanatory gap in materialism. In addition, we have worked through double aspect theory at a level which has not been previously elaborated because it touches *bottom*.

Furthermore, in the dual-aspect-dual-mode PE-SE framework, “there are three competing hypotheses: *superposition* based \mathbf{H}_1 , *superposition-then-integration* based \mathbf{H}_2 , and *integration* based \mathbf{H}_3 where *superposition* is not required. \mathbf{H}_3 is related to the dual-aspect panpsychism. ... The *experiences* (or PEs/SEs) superposed in fundamental particles may simply be *potentialities or possibilities* that manifest *reality* only in the context of particular experiments or observations. For example, when long wavelength light is presented to the ‘V4/V8/VO’ Red-Green neural

network, the *potentiality* of SE *redness* turns into *reality* via (conjugate) matching and selection mechanism. One could argue that this *potentiality* can be viewed as one of the motivations for the evolution to eventually form neural-networks in brains so that SEs can be realized. In other words, neural-networks can be viewed as ‘attractors’ for evolution. The *matching* process ... is required in all above three hypotheses; whereas, the *selection* process is required only in \mathbf{H}_1 (not in \mathbf{H}_2 and not in \mathbf{H}_3). This is because the mysterious *emergence* process is necessary in \mathbf{H}_2 and \mathbf{H}_3 (but not in \mathbf{H}_1). In other words, the *matching* and *selection* processes are required in \mathbf{H}_1 ; whereas the *matching* and *emergence* processes are necessary in \mathbf{H}_2 and \mathbf{H}_3 and hence the mystery of *emergence* still remains in the latter two hypotheses. In \mathbf{H}_1 , the mental aspect of the fundamental entities and inert matter is the *carrier* of superimposed fundamental *experiences* (or SEs/PEs) in unexpressed form. In \mathbf{H}_1 , a specific SE is selected in a neural-network as follows: (i) there exist a *virtual reservoir* (plenum) that *stores* all possible fundamental *experiences* (SEs/PEs), such as in the mental aspect of the fundamental entities in superposed form, (ii) the interaction of stimulus-dependent feed-forward (tilde mode) and feedback signals (non-tilde mode) in the neural-network creates a specific neural-network state, (iii) this specific state is assigned to a specific SE from the *virtual reservoir* during *neural Darwinism*, (iv) this specific SE is embedded as the mental aspect of memory trace of neural-network-PE, and (v) when a specific stimulus is presented to the neural-network, the associated specific SE is selected by the *matching* and *selection* process and experienced by this network that includes also self-related neural-network⁸. In addition, the *necessary* ingredients of SEs (such as wakefulness, attention, re-entry, working memory, stimulus at or above threshold level and neural-network-PEs) must be satisfied before the network can experience.”⁹

Materialism (internal representation)¹⁰, functionalism (sensorimotor interaction with environment)¹¹ or naturalistic dualism¹² alone cannot explain how our subjective experiences (SEs) occur in our brain or our behavior—we need an additional hypothesis of co-evolution and co-development of the mind and the brain. As above, we propose that nature consists of entities with dual aspects with *experiences* (SEs/PEs) superposed in their mental aspect and the mass, spin, charge, and space-time in their material aspect. These entities have mental (*experiences*) and material aspects, which co-evolved, co-developed, and co-tuned with the environment into mind/consciousness (*functions* plus *experiences*) and their neural-correlates (neural-nets in the brain), respectively. Consciousness is a basic biological adaptation with an evolutionary basis.¹³ Co-evolution¹⁴ of the brain and the mind started with the Big Bang, and continues today by possibly being embedded in human genes.¹⁵ The co-developmental process

begins when a spermatozoon meets an egg and continues until the onset of adulthood. The specificity of SEs and their neural correlates co-develops from the non-specificity of elemental superposed experiences and their material aspect by interaction and tuning of neural-nets with the environment. The non-specificity of elemental superposed experiences and specificity of SEs are reciprocally related. Orchestrated objective reduction¹⁶ and quantum field theory¹⁷ models can be extended to include our framework.¹⁸ For example, fronto-parietal attentional, wakeful, and re-entry signals to a color area interact with a feed forward, stimulus-dependent retino-cortical signal leading to SEs of color via the mechanism of these models.¹⁹ The co-evolution and co-developmental processes lead to a dual-aspect model: SEs (such as ‘redness’ to ‘greenness’) and their neural correlate (such as ‘V4/V8/VO R-G neural-net’) are two aspects of the same psychophysical entity (such as Red-Green channel).²⁰ In other words, to distinguish the dual-aspect view with neutral monism²¹, one can re-write this as follows: A neural-network has two aspects; its mental aspect is a specific SE experienced subjectively and its material aspect is its related anatomical mass and neural-activities measured objectively such as by functional magnetic resonance imaging (fMRI)²². Our framework leads to structural and functional coherence between the mind and the brain, and bridges the explanatory (or psycho-physical) gap (the gap between SE and its neural correlate).

The dual-aspect-dual-mode PE-SE framework, originally developed from Western perspectives²³, is now extended to encompass Eastern perspectives in premises (18)-(21) below. The philosophical arguments in terms of premises run as follows. Whiteheadian scholars will notice the proximity with the “philosophy of organism”:

(1) Nature consists of primal entities, called *Ädi-Shiva*²⁴ entities, which are equivalent to strings or elementary particles (fermions and bosons) in the dual-aspect-dual-mode PE-SE framework.

(2) Each of the *Ädi-Shiva* entities has two aspects: material and mental.

(3) The material aspect of *Ädi-Shiva* entities is matter; matter has intrinsic material attributes such as mass, charge, spin, and space-time.

(4) The mental aspect of *Ädi-Shiva* entities is intrinsic, irreducible experiences (PEs/SEs) in superposed and unexpressed form.

(5) Matter (the material aspect) has two sub-aspects: wave and particle, which are related by the bridging law is $\langle E = mc^2 = h\nu \rangle$, where E is the energy, m is mass, c is velocity of light, h is the Planck constant, and ν is the frequency of the wave aspect of matter.

(6) The mental aspect of an entity is a function of experiences.²⁵

(7) The material and mental aspects of *Ädi-Shiva* entities are causally related:²⁶ conclusion from (1)-(6).

(8) Nature consists of *Ädi-Shiva* entities, which have causally related mental and material aspects, which co-evolved, co-developed, and co-tuned with the environment into mind/consciousness (functions and experiences) and their neural-correlates (structures: neural-nets in brain), respectively: conclusion from (1)-(7).

(9) Materialism (internal representation hypothesis) alone cannot explain how subjective experience (SE) occurs/emerges in the brain, but it is necessary to explain the processing of information in the brain related to SE.

(10) Functionalism (sensorimotor interaction hypothesis) cannot explain how SE occurs, however, it is necessary to explain the processing of information related to sensorimotor interaction with the environment related to SE.

(11) Materialism and functionalism cannot bridge the psycho-physical (or explanatory) gap.

(12) Naturalistic dualism — “a nonreductive theory based on principles of structural coherence and organizational invariance and a double-aspect view of information”²⁷ with the assumption that SEs exist as irreducible fundamental physical²⁸ entities — or a dual-aspect model (an entity has material and mental aspects) can bridge the psycho-physical gap, but cannot explain how structural coherence between the mind and the brain arises and whence such a large number of SEs emerged.

(13) The hypothesis of co-evolution and co-development of the mind and the brain suggests that SEs and their respective neural nets co-evolved, co-developed, and co-tuned with the environment from the mental and material aspect of *Ädi-Shiva* entities or elementary particles.

(14) Co-evolution and co-development of the mind and the brain leads to structural and functional coherence between the mind and the brain.

(15) Co-evolution and co-development of the mind and the brain is an essential extra ingredient for bridging the psycho-physical gap and explaining how structural coherence between the mind and the brain arises and from where such a large number of SEs came into existence: conclusion from (9)-(14).

(16) The four essential ingredients for explaining SE, information processing, and bridging the psycho-physical gap are (i) dual-aspect primal entities, (ii) *neural-Darwinism*: co-evolution and co-development of the mind and the brain and sensorimotor co-tuning, (iii) matching and selection

processes, and (iv) the *necessary* ingredients of SEs (such as wakefulness, attention, re-entry, working memory, stimulus at or above threshold level, and neural-net PEs).

(17) The subjective experience via premises (1)-(16) with internal representation in normal mind-dependent reality or conventional reality²⁹ is *indirect*.

(18) To acquire *direct* subjective experience (SE), the subject (observer) needs to attain the *samadhi* state. In this state, the observer *feels* that the observer (*karta*), the observed (*karm*), and the process of observation (*kriya*) are unified. For example, the three entities (i) an object such as a tomato with its physical red color, (ii) the processes of observation, i.e. the long wave length light reflected from the tomato to photoreceptors in the retina, which are then converted in physiological signals, eventually reach the brain and the color visual area to create an internal representation of the tomato's physical red color, and (iii) the observer with the SE of redness are *felt* as a single unified entity to the subject in the *samadhi* state. If the object is the observer's enemy, then in the *samadhi* state, the observer, his/her enemy (the observed), and the process of observation will be unified (observer's enemy = observer). Thus, the enmity will be sublimated to compassion, humility, and love; this will transform the observer, and the related suffering caused by enmity will disappear. This is a very important implication in the process of *direct* subjective experience.

(19) *Samadhi* state is extremely hard to attain. However, yogis claim that it is not impossible. It can be achieved by yoga³⁰ such as *rāja-yoga* (yogic methods), *jñāna/gyan-yoga* (knowledge based logical reasoning and right thinking process), *bhakti-yoga* (the path of prayer and devotion), *karma-yoga* (the discipline of right action), and *prema-yoga* (path of compassion, humility, and love). It is argued that this state of mind might be under consideration for future co-evolution of mind and brain for higher civilization. If evolution finds it useful then *Samadhi* state may be genetically programmed; if this happens then we do not have to work so hard to attain this higher state of mind. There are many advantages of this state such as the sublimation of negative aspects of protective energy system into compassion, humility, and love even to enemies; the disadvantage is that it may reduce variations for the natural selection related to evolution because of the reduction of war and suffering (see below). Alternatively, the Buddhist middle path can be followed to minimize suffering to the some extent; the philosophy underlying the middle path includes the dependent co-origination (*pratītya-samutpāda*:

Sanskrit: प्रतीत्यसमुत्पाद) of Buddhist-Indian philosopher Nāgārjuna.³¹

(20) Nature provides seven groups of self-protective energies (*rakshaseeya saktiyan*: RS) to protect an individual system: desire (*kama*), anger (*krodha*), ego (*mada*), greed (*lobha*), attachment (*moha*), jealousy (*eershya*), and selfish-love (*swarthmay prem*). Each of these has both positive and negative aspects. Positive aspects are useful and lead to individual progress, whereas negative aspect lead to suffering and war when two or more people interact as in a family, a society, a nation, or a world. Negative aspects must be sublimated (converted) into compassion, humility, and love to minimize suffering and war and to maximize happiness and peace. The yoga³² related to physical exercise (*hatha-yoga: asana*), breathing exercise (*pranayam*), and meditation (mental yoga or *sadhana: pratyahar, dharna, dhyana, and samadhi*) help in the sublimation process (SP).

(21) As long as the negative aspects of the seven groups of protective energy system are intact, war and suffering will exist. Evolution needs variation for the natural selection to occur, and negative aspects create variations, therefore war and suffering are inevitable, as are positive aspects that lead to individual progress. That is, war and suffering have significant contributions to evolution, and just as they existed in past (as history suggests), they exist now, and they will exist in the future. This is a bitter truth that we simply have to accept, and we must try our best to optimize the system by the process of sublimation. The important implication of our framework is that war, peace, suffering and happiness are ubiquitous in nature in both space and time, and the sublimation process is essential for optimizing them. Religions, philosophies, and now science (such as conventional medicine) try their best to reduce suffering and enhance happiness. To sum up, since evolution is essential and cannot be eliminated, war, suffering, peace, and happiness will always exist to create more variations for the natural selection. This appears to be one of laws of evolution.

2. *Purusha-Prakriti* Eastern Framework and Sublimation Process

Though there are many frameworks in Hinduism, the common theme among them can be summarized by the following premises:³³

(1) There are two types of entities: Consciousness (*Purusha*) and matter (*Prakriti*). Since *Purusha* and *Prakriti* are the fundamental categories, we call it the '*Purusha-Prakriti* framework'.

(2) *Purusha* is fundamental, ubiquitous, irreducible to brain states (*Prakriti*), and is a non-causal entity.

(3) Brain evolved from *Prakriti*.

(4) *Manas* is subtle matter and evolved with the brain; it is not the same as mind in Western perspective. *Manas* is the liaison between *Purusha* and the brain's internal representations.

(5) *Jiva* (the person) is embodied consciousness (*Purusha*) and is constrained by the mind-body complex. *Jiva* may be interpreted as self-consciousness, *personal-self*, or self.

(6) *Jiva* has *indirect* subjective experience of external stimuli via *manas* interacting with internal representations in the brain in the normal state.

(7) *Jiva* has *direct* subjective experience of an object in the *samadhi* state: The observer (*karta*), the observed (*karm*), and the 'process of observation (*kriya*) are all the same, and happening in the same neural-network, according to the Eastern perspective, and consistent with the Western perspective³⁴. In a normal state of mind *karta*, *karm*, and *kriya* appear distinct to us, but in the *samadhi* state of mind, a subject will presumably *feel* that this trio is the same (the unification process). This is what yogis call it by various names such as *pure consciousness* or *direct experience*.

(8) The seven groups of protective energy system in humans, and the sublimation process, are consistent with Western perspectives and are described in premises (20)-(21) of Section 1. Sublimation of the negative aspects of the seven groups of protective energy system into compassion, humility, and love minimizes suffering and war and maximizes happiness and peace.

(9) Yogic methods (such as Patanjali's Ashtang yoga) lead to *liberation* of *Jiva* at the *samadhi* state, i.e., *Jiva* is in full communication with the eternal *Purusha*. In addition, at the *samadhi* state, the sublimation process is considered complete, and the subject is considered transformed because his/her negative aspects of the seven groups of protective energy system are sublimated into humility, compassion, and love for every being.

3. Other Frameworks, Critique, and Causal Effects of Consciousness

According to Chalmers, most of views related to the metaphysics of consciousness can be classified into six types.³⁵ Reductive views (Type A-C) consider subjective experiences (SEs) as physical processes that do not

involve expansion of a physical ontology. On the other hand, nonreductive views (Type D-F) consider SEs as entities irreducible in nature, meaning they involve expansion or reconception of a physical ontology. **Type-A** materialists³⁶ deny a psycho-physical gap. However, they face significant criticism because they deny the entity we all experience daily. **Type-B** materialists³⁷ accept an epistemic gap between the mind and the brain, but deny an ontological gap. “They identify SE with certain physical or functional states”, but it is not clear from where an SE emerges. **Type-C** materialists³⁸ “accept the deep epistemic gap, but hold that it will eventually be closed by further research” and hence it is an unstable framework. **Type-D** dualists, or interaction-dualists³⁹, “deny the causal closure of the microphysical, and hold that physical states cause phenomenal states” and *vice-versa*. They assume that the mind exists as a separate channel, which interacts with the brain. However, it faces an association problem (such as how to associate ‘redness’ to red-green cell). **Type-E** dualists, or epiphenomenalistic dualists,⁴⁰ “accept the causal closure of the microphysical, and hold that phenomenal properties play no causal role in affecting the physical world. ... Physical states cause phenomenal states, but not *vice versa*.” This framework is deeply counterintuitive and inelegant. **Type-F** monists, or panprotopsyichists⁴¹, consider that “consciousness is constituted by the intrinsic properties of fundamental physical entities” and plays a causal role. They “accept the causal closure of the microphysical network, but hold that phenomenal or protophenomenal properties are integrated with it and are located at the fundamental level of physical reality.” Here, “it is postulated that macro-psychophysical laws (connecting physical and phenomenal properties) evolved from micro-psychophysical laws (connecting micro-physical and proto-phenomenal properties).”

The dual-aspect-dual-mode PE-SE framework⁴², with three hypotheses (**H₁**, **H₂**, and **H₃**), is a general framework that encompasses other frameworks as special cases. For example, in *reductive* frameworks (Types A-C), the main idea is that the mental entities can be reduced to fundamental entities. This is consistent with our assumption that SEs can be reduced to proto-experiences which, in the dual-aspect-dual-mode PE-SE framework with hypothesis **H₃**, can be considered as the intrinsic irreducible property of matter (see also premises (4)-(8) of Section 1). In *non-reductive* frameworks (Types D-F), the main idea is that the mental entities are irreducible fundamental entities (at some level). This is also consistent with the dual-aspect-dual-mode PE-SE framework with hypothesis **H₁**, where experiences (SEs/PEs) are fundamental, irreducible, intrinsic entities that are superposed in elementary particles, atoms,

molecules, and inert matter; a specific SE is selected during matching process in neural-networks.

In the ancient *Purusha-Prakriti* framework, premises (2) and (4) of Section 2 have consistency problems: if *Purusha* were non-causal, then *jiva* (embodied *Purusha*) would also be non-causal, whereas consciousness (*functions* and subjective *experiences* that are *jiva*'s attributes) have causal effects. "One could argue that consciousness causes⁴³: (i) increased flexibility and sophistication of control such as in novel situations, (ii) enhanced capacity for social coordination such as enhanced self-awareness and understanding of other's minds, (iii) more unified and densely integrated representation of reality such as the unity of experienced space, (iv) more global informational access such as in global broadcasting⁴⁴, (v) increased freedom of choice or free will such as in the selection of our own action, and (vi) intrinsically motivating states such as in the functional and motivational roles of conscious affective states (e.g., pleasures and pains)."⁴⁵ Furthermore, "1. By relating input to its context, consciousness defines input, removing its ambiguities in perception and understanding. 2. Consciousness is required for successful problem solving and learning, particularly where novelty is involved. 3. Making an event conscious raises its "access priority," increasing the chances of successful adaptation to that event. 4. Conscious goals can recruit subgoals and motor systems to carry out voluntary acts. Making choices conscious helps to recruit knowledge resources essential to arriving at an appropriate decision. 5. Conscious inner speech and imagery allow us to reflect on and, to an extent, control our conscious and unconscious functioning. 6. In facing unpredictable conditions, consciousness is indispensable in allowing flexible responses."⁴⁶ "In sum, consciousness appears to be the major way in which the central nervous system adapts to novel, challenging and informative events in the world".⁴⁷ Moreover, PTSD (Posttraumatic stress disorder), psychosomatic effects, and hallucination in mental disorder patients (such as schizophrenia) are examples of the causal effect of consciousness on the brain and behavior. In quantum Zeno effect⁴⁸, the rapid repetition of identical Process 1 actions (such as the rapid repetition of 'Yes' response to the Process 1 intentional acts may entail 'Yes' and hold it in place) may lead to a powerful effect of mental effort on the material world.⁴⁹ Furthermore, *manas* is considered a liaison between *Purusha* and the brain's internal representations, similar to the framework of mind-brain interaction via quantum processes at the synaptic cleft.⁵⁰ This has an association problem: how is a specific SE associated with a specific stimulus? In addition, it is not clear how and from where various SEs came into existence. Therefore, this framework needs modification, which is achieved in the more general dual-aspect-dual-mode PE-SE framework.

The sublimation process is a higher order, luxurious process (as it is not the necessity of survival) and involves the conversion of the negative aspects of the seven groups of protective energies (that are needed for basic survival of an individual). The fulfilment of an individual's basic needs (such as a place to live comfortably, healthy foods, and comfortable clothes to wear, and resources for entertainment) is a prerequisite of the success of the sublimation process. Unless this prerequisite is met, the sublimation of the individual survival energy into humility, compassion, unselfish and unconditional deep love for the benefit of family, society, nation, and whole world may not be completely successful. Furthermore, the prerequisite is variable and changes from person to person. Some people have little need for basic necessities, while others have a greater need. Therefore, a nation, or the United Nations, should formulate certain criteria for meeting basic needs if the sublimation process is to be implemented nationally or internationally.

4. Empirical Data, their Explanation, Sublimation Process, and Interpretation of Cycle of Birth-Life-Death, Soul, and God

There are many frameworks with their own underlying philosophy of the mind and the brain. They also have some useful practical techniques for reducing physical, mental, and social suffering. Each framework tries to interpret its techniques in its own way. We argue that these useful techniques, to a significant extent, can be interpreted in terms of the dual-aspect-dual-mode PE-SE framework, which is more general and might be the underlying basis of other frameworks. For example, suffering reduction techniques in Eastern perspectives (such as the eight steps of Patanjali's Ashtang yoga, the eight paths of the Buddhist system, Ayurvedic medicine, Acupuncture technique associated with traditional Chinese medicine) and Western perspectives (such as allopathic and homeopathic medicine) might be directly or indirectly related to this framework. Further research is needed to test these hypotheses.

Religions and philosophies lead to war and suffering because of ignorance. This ignorance is derived from the assumption that various religions and philosophies are fundamentally different. The general tendency is for people to consider their own religion or philosophy as the only one that carries truth, whereas other religions or philosophies are

considered to be false. This attitude creates conflict. The ignorance and conflict can be minimized if people realize that the fundamental basis is the same for all religions and philosophies because the truth (conventional mind-dependent reality and ultimate reality⁵¹) must be the same for everyone. The dual-aspect-dual-mode PE-SE framework suggests just that. The apparent differences between various religions and philosophies are superficial and/or cultural (such as lifestyle, eating habits, social functions, language, political structures, etc). Once the dual-aspect-dual-mode PE-SE framework is understood by the public at-large, war and suffering will be minimized, and peace and happiness will be maximized.⁵² This would be a great achievement of the systems based on science.

Furthermore, in certain sense, the dual-aspect-dual-mode PE-SE framework may be a sort of consistent with (1) Eastern perspectives (such as essence of Yoga, Vedanta, Buddhism, etc.) as they may be directly or indirectly related to or perhaps derived from the dual-aspect-dual-mode PE-SE framework, (2) an Ayurvedic, holistic yogic lifestyle for stress-free daily living, and (3) the two-channel concept — (a) Eastern higher family-values, and (b) Western higher scientific and technological achievements — as they can be enhanced using the process of sublimation, which is one of the premises of the dual-aspect-dual-mode PE-SE framework.⁵³ Further research is needed to test these hypotheses. This type of research is worth doing to investigate the fundamental framework that is the underlying basis of all views. So far, the dual-aspect-dual-mode PE-SE framework is the optimum framework because it has the least number of problems compared to other frameworks as discussed elsewhere.⁵⁴

There are many frameworks — each one like a window showing the same truth in different ways. In the dual-aspect-dual-mode PE-SE framework, our seven groups of protective energy system are mental entities and must have neural correlates; they are co-evolved, co-developed, and co-tuned. According to this framework, if the mind is sick or suffering, its neural correlates will also be dysfunctional, and *vice-versa*. This protective energy system, consistent with both Eastern and Western perspectives, is described in the premises (20)-(21) of Section 1. They have negative and positive aspects. These attributes protect our system, which works well as long as the system is isolated. However, if we are in a family where systems interact closely, then negative aspects lead to suffering. This is consistent with Buddha's noble truths: there is *dukha* (suffering), which has *karan* (cause) and also has *niwaran* (solutions) and the solutions are Buddha's eight noble paths (or concisely the middle path). Though these attributes appear mostly mental, they also lead to physical suffering because the mind and the brain are two aspects of the same entity (dual-aspect model) and are

causally related. This is consistent with the *karma* concept (cause and effect) in Buddhism. Both Eastern and Western systems provide many techniques in many contexts to minimize suffering. Religious and scientific techniques for minimizing suffering can be re-interpreted in terms of the dual-aspect-dual-mode PE-SE framework. For example, one of the Eastern techniques is the process of sublimation (conversion) of negative aspects of the seven groups of self-protective energies into humility, compassion, and love via yogic methods such as Patanjali's Ashtang Yoga, Maharishi Mahesh Yogi's transcendental meditation (TM), Sahaj yoga, etc. Yogic methods effortlessly optimize the system, which minimizes suffering. Another example is the Buddhist system that provides eight noble paths: Right Understanding, Right Thought, Right Speech, Right Action, Right Livelihood, Right Effort, Right Mindfulness and Right Concentration. These methods help considerably in sublimating the negative aspect to the positive aspect of the seven groups of the self-protective energy system, leading to humility, compassion, and love.⁵⁵

Patanjali's Ashtang Yoga is apparently based on a sort of dualism: When *Purusha* (consciousness) shines like a spotlight on *chitta* (internal representation), SE occurs. The embodied *Purusha* is called *jiva*, which is imprisoned inside a subject. The eight steps Patanjali's Ashtang Yoga lead to the *samadhi* state, at which *jiva* is liberated from the prison and joins to *Purusha*. Though these premises have problem, as critically examined in Section 3, the empirical result of Patanjali's Ashtang Yoga (eight steps: *Yam*, *Niyam*, *Asanas*, *Pranayam*, *Pratyahar*, *Dharna*, *Dhyan*, and *Samadhi*) is that physical, mental, and social suffering is reduced; this is empirical data. This data can also be explained in terms of the dual-aspect-dual-mode PE-SE framework. A neural-network has two aspects: the mental aspect (function and SE) and material aspect (related neural correlates). These eight steps tune up our system by appropriately balancing the chemicals and activities in the neural-network, which lead to reduction of physical, mental, and social suffering. This is also a sort of neural explanation of the sublimation process. All other techniques that reduce suffering can be similarly interpreted in terms of the dual-aspect-dual-mode PE-SE framework, making it more general.

Since evolution needs variation for the natural selection, and war, peace, suffering, and happiness play important roles in generating variations, these entities will persist forever. We have to accept this bitter truth and act accordingly. The best we can do is to optimize the system (minimize war and suffering, and maximize peace and happiness) by optimization methods such as the process of sublimation. Eastern perspectives (such as *Gita*) suggest one should have a stable mind (*esthir buddhi*), i.e., one

should not become too elated on good days, nor get too depressed in bad days. Rather, one should try to have neutral or positive feelings all the time. This thinking process minimizes suffering and can be considered another method of sublimation. Almost all religions, philosophies, and science (conventional medicine) have their own methods for the sublimation process.

There are other empirical data such as the cycle of birth, life, and death, and concepts of soul and God that can be interpreted using the dual-aspect-dual-mode PE-SE framework, as follows.

An interpretation of the cycle of birth, life, and death: One could argue that birth is the integration of energies from nature via the process of reproduction, and thus, we are transformed energies from nature. We come from nature and will go back to nature for recycling, so to speak. In addition, our parents live in us as we are made 50% of mother's genes and 50% of father's genes. We must transfer this genetic information, so we need to produce children, and raise them in the best possible way. This channel is usually known as family-values. The more love and care we give to our family members, the greater family values we will have. If a family member is misguided, for whatever reason, we must forgive them and offer our love. Tender loving care is one of the entities that can change the bad nature of a family member, in the long run. With this, we can develop a better world with a better fundamental family unit. This development can be called 'life'. If this is missing, then negative energies make us sad and unhappy. One could argue that death is a disintegration of our integrated energies into forms that can be recycled. Thus, there is no birth or death; simply a transformation of one form of energy into other. Our permanent home is Nature. We come here for short time empty-handed from Nature, and we have to return to our permanent home empty-handed. And also by this reasoning, ownership is not useful because it generates suffering (such as suffering during division of property in divorce), and hence assets we acquire should be used for the benefit of family and humanity.⁵⁶

An interpretation of the Soul: The term "soul" is ill defined, but it can be interpreted as self-awareness, *personal-self* or *self* (SE of subject)⁵⁷, which is a selected mental entity (as in hypothesis **H₁**) or an evolved mental entity (as in hypothesis **H₃**). It is a part of the mind/consciousness, which occurs or emerges in the brain according to the dual-aspect-dual-mode PE-SE framework. One could argue that its attributes are related to the processing of dual-aspect information via two channels: (1) general-genetic information and (2) individual-specific information. Therefore, contrary to some religions and *Purusha-Prakriti* Eastern Framework (Section 2), the soul is NOT immortal. Our *soul* or *personal-self* dies when we die.

However, the *general-self* (that does not have any acquired information related to *personal-self*) is a superposed SE that is inherent and eternal according to hypothesis **H₁**.⁵⁸ The *personal-self* or *self* (SE of subject) is selected (as per hypothesis **H₁**) or emerged (as per hypothesis **H₃**) and then embedded in the self-related neural-network⁵⁹ when this net is formed via *neural-Darwinism*. When we die, our *personal-self* or *soul* also dies. Yet, most of us have the urge to be immortal. This urge can be partly fulfilled. We can preserve our *soul*'s attributes in terms of our ideas and concepts to some extent for longer time by preserving the two channels: (1) we can preserve the general attributes (genetic information, such as height, hair, skin, and eye color) of our *soul* by transferring the genetic information to children. This part is immortalized for a long time through family values by raising children in the best possible way. (2) Each one of us is an individual entity and has own specific attributes (even twins are different), which also can be immortalized for a longer time. We can preserve our specific attributes by doing something that can be recorded, for example publishing research articles, establishing trusts, public service, and so on. For example, a scientist's specific attributes or ideas are preserved in published articles, which are presumably kept for long time. One can also set up an immortal irrevocable trust (such as the Nobel Prize) with some initial seed money for the purpose specific to an individual's attributes. Here, *soul* or *personal-self* is defined as a mental entity that has attributes related to both general-genetic and individual's specific information.

Furthermore, in the dual-aspect-dual-mode PE-SE framework, I-ness (*soul* or *personal-self*) is selected or emerged property of the neural net. This network (a group of interacting neurons) needs to be awake, attentive, and re-entrant and has working memory to have a subjective experience (SE).⁶⁰ That is, it needs to interact with ARAS (ascending reticular activating system) that controls wakefulness-sleep-and-dream and fronto-parietal cortical system that controls attention. Thus, when I say, "I saw a flower," this means some cells were activated and hence they have that SE; in addition there is a self-related neural net that is I's hardware. This means when the brain dies, the *soul* dies. However, if we keep up both channels, then we can live longer in terms of information (our ideas or concepts). Thus, we have a justification based on neuroscience to have children and raise them to the best of our abilities, because our ancestors live in us as we carry their genetic information, which will be continued in our children. For keeping our personal-specific attributes alive we must do something in life as great people did, or at least set up a family trust as a legacy.

An interpretation of God: The term "God" is also ill-defined. One could argue that all the processes in this universe can be grouped into the

following three processes: **G**enerator, **o**perator (maintainer), and **d**estroyer. For example, consider the reproduction process where millions of sperm rush towards an egg in the first marathon of life, and the one who reaches first enters the egg for the formation of a baby. All other sperm are annihilated (destroyed) by the changing pH values of the egg's surrounding environment. The process of cell division and development of the fetus is the process of maintenance. These three processes are ubiquitous in nature. Thus, in the dual-aspect-dual-mode PE-SE framework, one could argue that God is 'a bag of all kinds of processes' including the co-evolution, the co-development, and the sensorimotor co-tuning processes of the mental (consciousness: functions and experiences)⁶¹ and material aspects of entities.

From the perspective of our discussion⁶², Whitehead's *Process and Reality*⁶³ exploits interesting features, such as (1) its use of topological and mereological notions, (2) *its arguments in favor of a God of sorts (although it is debatable whether Whitehead's God is the God of revealed monotheism)*, (3) Whitehead's rejection of mind-body dualism (similar to elements in oriental faith traditions such as Buddhism), (4) the fundamental elements of the universe are occasions of experience, which are "pulses" or "drops" of experience, while the "beings" disclosed in the so-called normal state of consciousness are societies of such occasions. In order to differentiate Whitehead's approach from panpsychism, David Ray Griffin has coined the term "panexperientialism."⁶⁴

In some respects, Whitehead's philosophy and the monads of Leibniz resemble one another. However, Whitehead's occasions of experience, unlike Leibniz's monads, are interrelated with every other occasion of experience that precedes it (in time). Actually, it is this very suppression that creates time: *all experiences are influenced by prior experiences, and will influence all future experiences. This process of influencing is never totally deterministic; an occasion of experience consists of a process of prehending other occasions of experience, and then of reacting to it. Because no process is ever deterministic, free will is essential and inherent to the universe.*

Process philosophy gives God a special place in this universe of occasions of experience. God encompasses, to a significant degree, all the other occasions of experience, but also transcends them (as a result, claims Hartshorne, Whitehead embraces panentheism). Because free will is inherent to the nature of the universe, God is not omnipotent in Whitehead's metaphysics. God's role is to offer enhanced occasions of experience. God participates in the evolution of the universe by offering possibilities, which may be accepted or rejected.

The comparison between Whitehead's Process and Reality (PR) and our dual-aspect-dual-mode PE-SE framework (PE-SE framework) is as follows: (1) both PR and PE-SE framework reject mind-body dualism, but the PE-SE framework accepts a dual-aspect view. (2) PR proposes that 'the fundamental elements of the universe are occasions of experience'; PE-SE framework proposes that Nature consists of primal (*Ādi-Shiva*) entities, each has material and mental aspects (so do actual occasions, says Whitehead explicitly), which co-evolved and co-developed into brain and consciousness (functions and SEs), respectively. (3) PR's panexperientialism is close to panpsychism, whereas the hypothesis H_3 of the PE-SE framework is close to dual-aspect panprotopsychism. (4) Both have similar notions of time (all occasions are influenced by prior occasions, and will influence all future occasions). (5) PR argues that processes are NOT deterministic, whereas the PE-SE framework with hypothesis H_1 suggests that the selection of SE sometimes depends on the input stimulus (redness is selected for a long wavelength stimulus), however, the allocation or assignment⁶⁵ of SEs might not be deterministic during co-evolution. (6) Both accept that God participates in the evolution of the universe by offering possibilities, which may be accepted or rejected; however, the PE-SE framework's God is a bag of processes, each having three attributes (generation, maintenance, and destruction). (7) In some sense, the PE-SE framework that employs neuroscience, psychology, and metaphysics is a more general than PR with the understanding that neuroscience/materialism is by definition more local than metaphysics.

5. Details on Seven Groups of Self-Protective Energy System and Sublimation Process

According to the dual-aspect-dual-mode PE-SE framework, the seven groups of protective energies (*Rakshaseeya Saktiyan*: RS) are useful, say, for the advancement of a career to some extent, but are harmful if the negative aspects are implemented among family members. It is emphasized that only the destructive part of RS needs to be sublimated. The constructive part is beneficial to the advancement of career and family values if used appropriately. The seven RS are not mutually exclusive; they are briefly described as follows.

(1). *Kama* (desire): Negative desires cause destructive stress in a family. For example, one may desire an expensive car priced beyond their budget. To fulfil this desire, one must take on extra work to earn more money, reducing the time spent on nurturing the family. Let us suppose someone's

lifelong goal is to do research. If this person works hard for grant-funding, and thus also raises enough money to buy a better car, then it is a good desire. However, if this person must work odd jobs that are unrelated to the goal, then time and energy are wasted, signifying a bad desire.

(2). *Krodha* (anger): The positive aspect of anger generates stress as a medium to resolve problems, which is beneficial; but its negative part is destructive. Moreover, love solves problems in more positive ways. Therefore, it is advisable to let love solve problems, because sublimated humility, compassion, and love are more powerful than all seven *rakashas* (self-protectors) combined.

(3). *Mada* (ego): Extreme negative *mada* pollutes the institution of marriage. *Swabhiman* (self-pride), and all entities related to self must be sublimated to *DivyaPrem* (deep love) for better relationship between husband and wife. This is what “surrender” means in the dual-aspect-dual-mode PE-SE framework. Just as we surrender to God, we surrender to *DivyaPrem*, one of the highest order entities our brain can generate. Good *swabhiman* leads to work hard to keep up our dignity. Bad *swabhiman* is not useful, not even at work.

(4). *Lobha* (greed): Good *lobha* is to have positive aspirations, whereas bad *lobha* is harmful. For example, aspiring to have a BMI (body-mass-index) of 19-21 is good *lobha* because one needs to have proper exercise and proper diet to accomplish this. If one has *lobha* for unhealthy food, it is alright as long as one does not overeat. This is a minor RS.

(5). *Moha* (attachment): Attachment is good as long as it is constructive. Love has a positive energy and *moha* has a negative energy, even though they may appear to be empirically similar. If a mother has bad *moha* towards her children (who usually make serious mistakes), then it needs to be sublimated to love; this will be better for both family-values and professional progress.

(6). *Eershya* (jealousy): The positive aspect of jealousy is constructive such as in enhancing career goals by working hard when you feel jealous of your colleagues. However, the negative aspect of jealousy is very dangerous and one of most destructive negative energies. For example, if a spouse has a friendship with a person of the opposite sex, then the other spouse’s jealousy will cause stress, which could destroy the relationship. However, if there is deep love between them, the love can help in resolving these issues. There are significant amount of data on unsublimated couples on the tendency to seek companionship outside of the relationship. If a couple is not sublimated, this could happen after marriage as well. However, in sublimated couples, this immoral, destructive urge never appears because couples are fully content with each other. In relating to

members of the opposite gender, people can develop moral, good, and stress-free relationships modelled after brother-sister, mother-son, or father-daughter morally right relationships. Friendships with opposite sex outside the marriage should ideally not be necessary since your spouse is your best friend that you can communicate with all the time.

(7). *Swarthmaya Prem* (selfish love): Unsublimated couples usually have selfish love. Look around and you will find this is true for over 75% of couples. That is why both husband and wife need to sublimate the negative aspect of selfish love.

6. Details on the Sublimation Process

The seven groups of protective energies (*Rakshaseeya Saktiyan: RS*) are useful for professional progress (academic and work) but they create many problems in family, such as family feuds and divorces. For this reason, we need to sublimate their destructive components for better family life. There are many methods for the sublimation process in various religions, philosophies, and science (conventional medicine) under various names with their own limitations. For example, in *bhakti yoga*, various types of prayers at home, temples, mosques, churches, and other religious centers are also methods of sublimation. However, they are limited to a specific religion and hence are not very helpful in minimizing suffering caused by religious wars. We need methods that sublimate the seven RS across religions and philosophies. Therefore, various current methods need to be extended to include the implications of the dual-aspect-dual-mode PE-SE framework, specifically, that the fundamental basis of all religions and philosophies is the same. Multiple religions and philosophies have done great service to people using their own methods of sublimation. However, these methods are not very successful due to their underlying interpretation being based on unreliable, incomplete, and misleading truths. Therefore, if all the religions and philosophies are re-interpreted in term of the dual-aspect-dual-mode PE-SE framework, the same methods will be very effective in the sublimation process. It should be noted that these methods were very effective in the ancient era when science was not advanced. Now that science has revolutionized almost everything, it would be wise for religions and philosophies to be re-interpreted accordingly. Deep love instantly sublimate the seven RS, but how this great emotion occurs in us needs further research.⁶⁶ Furthermore, everybody has his/her own way of sublimating the seven RS for the person or object of his/her choice. Some of such methods are described below:

(1) Daily exercise creates appropriate chemicals in our brain for the sublimation to take place. In addition, it yields better physical and mental health and brings the body-mass-index (BMI = weight in kg / square of 'height in meter') to 19-21, the ideal number for yogic-life.

(2) Daily *hath-yoga* (physical yoga), *pranayam* (breathing exercise), and *Sudarshan Kriya yoga* (SKY: hyperventilation technique)⁶⁷ practice also generates appropriate chemicals in our brain for the sublimation to take place. Additionally, it helps in the fine-tuning of internal organs for better physical and mental health.

(3) Meditation, such as transcendental meditation (TM)⁶⁸ or Patanjali's Ashtang Yoga⁶⁹ sets up an optimal internal environment for sublimation to take place, in addition to better mental health. TM should be learned from a TM *guru*. The following three-step relaxation method somewhat deviates from TM, but yields somewhat similar results: sit comfortably (preferably lotus posture), close the eyes and repeat any (preferably meaningless) word. The word '*OM*' works fine for some. If thoughts come, ignore them, do not fight with them, but let them go away. Do not concentrate; just try to repeat the selected word. You will enter into *yoga-nidra* (yoga sleep, your head will go down) in 10-15 min and then you will be awake. Repeat the steps for 30 minutes twice a day or anytime you feel tired, anxious, or cannot fall sleep.

(4) Sublimate (melt, convert) the seven RS into humility, compassion, and deep love (*DivyaPrem*) by autosuggestion and motivation in daily life, in addition to sublimation via steps (1)-(3). Test it every moment; it is okay to fail, but try again. The most important RS are *kama*, *krodha*, *mada*, and *eershya*. This is the process of surrender (*Aatm-Samarpan*) and leads to *DivyaPrem*, humility or humbleness, and makes us a better person for a higher civilization.

7. Conclusion

1. The neuroscience based dual-aspect-dual-mode PE-SE framework is the underlying common basis of conventional mind-dependent reality and hence that of science, all philosophies, and all religions. This is because, so far, it is the most optimum framework as it has the least number of problems compared to other frameworks: the only problem of this framework with hypothesis H_1 is the 'brute fact' of dual-aspect view.

2. The sublimation process (SP) sublimes the negative aspect of self-protective energies into their positive aspect, which leads to compassion, humility, and love for every being. There are many methods

of SP; one of the methods is to attain the *Samadhi* state, at which the observer, the observed (including enemies), and the process of observation merge leading to SP.

3. Once science (such as the dual-aspect-dual-mode PE-SE framework)—interpreted holistically—becomes the foundation of all religions and philosophies, and people put effort towards the sublimation process, war & suffering will be minimized, and peace & happiness will be maximized.

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Bibliography

- Baars, B. J. (1996). Understanding subjectivity: Global workspace theory and the resurrection of the observing self. *Journal of Consciousness Studies*, 3(3), 211-216.
- Baars, B. J., & McGovern, K. (1996). Cognitive views of consciousness: What are the facts? How can we explain them? In M. Velmans (Ed.), *The Science of Consciousness: Psychological, Neuropsychological, and Clinical Reviews* (pp. 63-95). London: Routledge.
- Baars, B. J. (1997). *In the Theater of Consciousness: The Workspace of the Mind*: Oxford University Press.
- Baars, B. J. (2005). Introduction: Subjective experience is probably not limited to humans: The evidence from neurobiology and behavior. *Consciousness and Cognition*, 14, 7-21.
- Beck, F. (2001). Quantum brain dynamics and consciousness. In P. van Looke (Ed.), *The Physical Nature of Consciousness*, (Vol. 83-116). Amsterdam: Benjamins.
- Beck, F., & Eccles, J. (1992). Quantum aspects of brain activity and the role of consciousness. *Proceedings of the National Academy of Sciences of the USA*, 89, 11357-11361.
- Block, N., & Stalnaker, R. (1999). Conceptual analysis, dualism, and the explanatory gap. *Philosophical Review*, 108, 1-46.

- Bruzzo, A. A., & Vimal, R. L. P. (2007). Self: An adaptive pressure arising from self-organization, chaotic dynamics, and neural Darwinism. *Journal of Integrative Neuroscience*, 6(4), 541-566.
- Campbell, K. K. (1970). *Body and Mind*: Doubleday.
- Chalmers, D. (1996). *The Conscious Mind*. Oxford: Oxford University Press.
- Chalmers, D. J. (1995). Facing up to the problem of consciousness. *Journal of Consciousness Studies*, 2, 200-219.
- Chalmers, D. J. (1997). Moving forward on the problem of consciousness. *Journal of Consciousness Studies*, 4(1), 3-46.
- Chalmers, D. J. (2003). Consciousness and its Place in Nature. In S. Stich & F. Warfield (Eds.), *Blackwell Guide to Philosophy of Mind*: Blackwell. Also in (D. Chalmers, ed) *Consciousness and its Place in Nature* (Oxford University Press, 2002). <<http://consc.net/papers/nature.html>>; also email correspondence on 11 November 2005.
- Churchland, P. S. (1997). The hornswoggle problem. In Shear (Ed.).
- Churchland, P. S. (2003). Self-representation in nervous systems. *Ann N Y Acad Sci*, 1001, 31-38.
- Cobb, J. B., Jr., & Griffin, D. R. (Eds.). (1977). *Mind in Nature: Essays on the Interface of Science and Philosophy*. Washington, DC: University Press of America.
- Cowan, R. L., Haga, E., de, B. F. B., Dietrich, M. S., Vimal, R. L., Lukas, S. E., & Renshaw, P. F. (2006). MDMA use is associated with increased spatial BOLD fMRI visual cortex activation in human MDMA users. *Pharmacol Biochem Behav*, 84(2), 219-228.
- Crick, F., & Koch, C. (1998). Consciousness and neuroscience. *Cereb Cortex*, 8(2), 97-107.
- Crick, F., & Koch, C. (2003). A framework for consciousness. *Nat Neurosci.*, 6(2), 119-126.
- Dehaene, S., & Naccache, L. (2001). Towards a cognitive neuroscience of consciousness: basic evidence and a workspace framework. *Cognition*, 79, 1-37.
- Dennett, D. (2001). Are we explaining consciousness yet? *Cognition*, 79(1-2), 221-237.
- Dennett, D. C. (1991). *Consciousness Explained*. Boston: Little, Brown and Company.
- Dretske, F. (1995). *Naturalizing the Mind*: MIT Press.
- Edelman, D. B., Baars, B. J., & Seth, A. K. (2005). Identifying hallmarks of consciousness in non-mammalian species. *Consciousness and Cognition*, 14.
- Edelman, G. M. (2003). Naturalizing consciousness: a theoretical framework. *Proc Natl Acad Sci U S A*, 100(9), 5520-5524.
- Feigl, H. (1958/1967). The 'mental' and the 'physical'. *Minnesota Studies in the Philosophy of Science*, 2, 370-497; Reprinted (with a postscript) as *The 'Mental' and the 'Physical'*. University of Minnesota Press.
- Foster, J. (1991). *The Immaterial Self: A Defence of the Cartesian Dualist Conception of the Mind*. London: Routledge.
- Globus, G. (2006). The Saltatory Sheaf-Odyssey of a Monadologist. *NeuroQuantology*, 4(3), 210-221.
- Globus, G. G. (1995). Forget qualia, zombies and zimboes. Available: <http://www.imprint.co.uk/online/Globus.html>.

- Griffin, D. R. (1998). *Unsnarling the World-Knot: Consciousness, Freedom, and the Mind-Body Problem*: University of California Press.
- Hameroff, S. (1998a). Did Consciousness Cause the Cambrian Evolutionary Explosion? In S. R. Hameroff & A. W. Kaszniak & A. C. Scott (Eds.), *Toward a Science of Consciousness II: The Second Tucson Discussions and Debates* (pp. 421-437). Cambridge, MA: MIT Press. <http://www.quantumconsciousness.org/penrose-hameroff/cambrian.html>.
- Hameroff, S. (1998b). Funda-Mentality: Is The Conscious Mind Subtly Linked To A Basic Level Of The Universe? *Trends in Cognitive Sciences*, 2(4), 119-127. <http://www.quantumconsciousness.org/publications.html>.
- Hameroff, S. (2005). Consciousness, Neurobiology and Quantum Mechanics: The Case for a Connection. In J. Tuszynski (Ed.), *The Emerging Physics of Consciousness*: Springer-Verlag. In press. <http://www.quantumconsciousness.org/springer.htm>.
- Hameroff, S., & Penrose, R. (1998). Quantum computation in brain microtubules? The Penrose–Hameroff ‘Orch OR’ model of consciousness. *Philos. Trans. R. Soc. London, Ser. A* 356, 1869–1896.
- Harman, G. (1990). The intrinsic quality of experience. *Philosophical Perspectives*, 4, 31-52.
- Hill, C. S. (1997). Imaginability, conceivability, possibility, and the mind-body problem. *Philosophical Studies*, 87, 61-85.
- Hodgson, D. (1991). *The Mind Matters: Consciousness and Choice in a Quantum World*: Oxford University Press.
- Hodgson, D. (2005). Plain Person's Free Will. *Journal of Consciousness Studies*, 12(1), 3-19; discussion 20-75; response 76-95.
- Jackson, F. (1982). Epiphenomenal qualia. *Philosophical Quarterly*, 32, 127-136.
- Jackson, F. (1998). Postscript on qualia. In F. Jackson (Ed.), *Mind, Method and Conditionals* (pp. 76-79). London and New York: Routledge.
- John, E. R. (2002). The neurophysics of consciousness. *Brain Research Reviews*, 39, 1-28.
- John, E. R. (2005). From synchronous neuronal discharges to subjective awareness? *Prog Brain Res*, 150, 143-171.
- Johnston, W. A. (2005). Third nature: the co-evolution of human behavior, culture, and technology. *Nonlinear Dynamics Psychol Life Sci*, 9(3), 235-280.
- Koch, C. (2004). Qualia. *Curr Biol*, 14(13), R496.
- Kripke, S. A. (1980). *Naming and Necessity*: Harvard University Press.
- Lee, S.-H., Blake, R., & Heeger, D. J. (2005). Traveling waves of activity in primary visual cortex during binocular rivalry. *Nature Neuroscience*, 8(1), 22-23.
- Levine, J. (1983). Materialism and qualia: The explanatory gap. *Pacific Philosophical Quarterly*, 64, 354-361.
- Lewis, D. (1988). What experience teaches, *Proceedings of the Russellian Society*: University of Sydney.
- Loar, B. (1990). Phenomenal states. *Philosophical Perspectives*, 4, 81-108.
- Loar, B. (1997). Phenomenal states. Revised edition. In N. Block & O. Flanagan & G. Güzeldere (Eds.), *The Nature of Consciousness*. Cambridge, MA: MIT Press.
- Lockwood, M. (1989). *Mind, Brain, and the Quantum*. Oxford: Oxford University Press.
- Lycan, W. G. (1996). *Consciousness and Experience*. Cambridge, MA: MIT Press.

- MacGregor, R. J., & Vimal, R. L. P. (2008). Consciousness and the Structure of Matter. *Journal of Integrative Neuroscience*, 7(1), 75-116.
- Maxwell, G. (1979). Rigid designators and mind-brain identity. *Minnesota Studies in the Philosophy of Science*, 9, 365-403.
- McGinn, C. (1989). Can we solve the mind-body problem? *Mind*, 98, 349-366.
- Misra, B., & Sudarshan, E. (1977). The Zeno's Paradox in Quantum Theory. *Journal of Mathematical Physics*, 18(4), 756-763.
- Nāgārjuna, & Garfield, J. L. (1995). *The Fundamental Wisdom of the Middle Way: Nāgārjuna's Mūlamadhyamakakārikā* (J. L. Garfield, Trans.). New York, Oxford: Oxford University Press (Translation and commentary by J. L. Garfield).
- Nagel, T. (1974). What is it like to be a bat? *Philosophical Review*, 83, 435-450.
- Northoff, G., & Bermpohl, F. (2004). Cortical midline structures and the self. *Trends Cogn Sci*, 8(3), 102-107.
- O'Regan, J. K., Myin, E., & Noë, A. (2005). CHAPTER 5: Skill, corporality and alerting capacity in an account of sensory consciousness. In S. Laureys (Ed.), *Progress in Brain Research* (Vol. 150, pp. 55-68): Elsevier B.V.
- O'Regan, J. K., & Noë, A. (2001). A sensorimotor account of vision and visual consciousness. *Behav. Brain Sci.*, 24(5), 939-973; discussion 973-1031.
- Papineau, D. (1993). Physicalism, consciousness, and the antipathetic fallacy. *Australasian Journal of Philosophy*, 71, 169-183.
- Penrose, R. (2001). Consciousness, the brain, and spacetime geometry: an addendum. Some new developments on the Orch OR model for consciousness. *Ann N Y Acad Sci*, 929, 105-110.
- Penrose, R., & Hameroff, S. (1995). What gaps? Reply to Grush and Churchland. *Journal of Consciousness Studies*, 2(2), 98-111.
- Perry, J. (2001). *Knowledge, Possibility, and Consciousness*. Cambridge, MA: MIT Press.
- Popper, K., & Eccles, J. (1977). *The Self and Its Brain: An Argument for Interactionism*. New York: Springer Verlag International.
- Rao, K. R. (2005). Perception, Cognition and Consciousness in Classical Hindu Psychology. *Journal of Consciousness Studies*, 12(3), 3-30.
- Rees, G., Kreiman, G., & Koch, C. (2002). Neural correlates of consciousness in humans. *Nature Reviews Neuroscience*, 3, 261-270.
- Rey, G. (1995). Toward a projectivist account of conscious experience. In T. Metzinger (Ed.), *Conscious Experience: Ferdinand Schoningh*.
- Robinson, W. S. (1988). *Brains and People: An Essay on Mentality and its Causal Conditions*. Temple University Press.
- Russell, B. (1927). *The Analysis of Matter*. London: Kegan Paul.
- Ryle, G. (1949). *The Concept of Mind*. Hutchinson and Co.
- Schiffer, F., Mottaghy, F. M., Vimal, R. L. P., Renshaw, P. F., Cowan, R., Pascual-Leone, A., Teicher, M., Valente, E., & Rohan, M. (2004). Lateral visual field stimulation reveals extrastriate cortical activation in the contralateral hemisphere: an fMRI study. *Psychiatry Research: Neuroimaging*, 131(1), 1-9.
- Sellars, W. (1981). Is consciousness physical? *The Monist*, 64, 66-90.
- Sheinberg, D. L., & Logothetis, N. K. (1997). The role of temporal cortical areas in perceptual organization. *Proceedings of the National Academy of Sciences USA*, 94(7), 3408-3413.

- Stapp, H. O. (2005). Quantum Interactive Dualism: An Alternative to Materialism. *Journal of Consciousness Studies*, 12(11), 43-58.
- Stapp, H. P. (1996). The hard problem: a quantum approach. *Journal of Consciousness Studies*, 3(3), 194-210.
- Stoljar, D. (2001). Two conceptions of the physical. *Philosophy and Phenomenological Research*, 62, 253-281.
- Strawson, G. (2000). Realistic materialist monism. In S. Hameroff & A. Kaszniak & D. Chalmers (Eds.), *Toward a Science of Consciousness III*: MIT Press.
- Stubenberg, L. (2005). Neutral Monism. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (pp. 1-65. Available: <<http://plato.stanford.edu/archives/spr2005/entries/neutral-monism/>>.).
- Swinburne, R. (1986). *The Evolution of the Soul*: Oxford University Press.
- Tye, M. (Ed.). (1995). *Ten Problems of Consciousness: A Representational Theory of the Phenomenal Mind*: MIT Press.
- Van Gulick, R. (1993). Understanding the phenomenal mind: Are we all just armadillos? In M. Davies & G. Humphreys (Eds.), *Consciousness: Philosophical and Psychological Aspects*: Blackwell.
- Van Gulick, R. (2001). Reduction, Emergence and Other Recent Options on the Mind/Body Problem A Philosophic Overview. *Journal of Consciousness Studies*, 8(9-10), 1-34.
- Van Gulick, R. (2008). Consciousness. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2008 Edition): Available: <<http://plato.stanford.edu/archives/win2008/entries/consciousness/>>.
- Velmans, M. (2009). How to define consciousness—and how not to define consciousness. *Journal of Consciousness Studies: Special Issue on Defining consciousness*, Edited by Chris Nunn. In Press.
- Vimal, R. L. P. (1998a). Spatial-frequency tuning of sustained nonoriented units of the Red-Green channel. *Journal of the Optical Society of America A*, 15, 1-15.
- Vimal, R. L. P. (2002a). Spatial frequency tuned mechanisms of the Red-Green channel estimated by oblique masking. *J. Opt. Soc. Am. A*, 19(2), 276-288.
- Vimal, R. L. P. (2008a). Proto-experiences and Subjective Experiences: Classical and Quantum Concepts. *Journal of Integrative Neuroscience*, 7(1), 49-73.
- Vimal, R. L. P. (2008b). Attention and Emotion. *The Annual Review of Biomedical Sciences (ARBS)*, 10, 84-104. Available: <http://arbs.biblioteca.unesp.br/viewissue.php>.
- Vimal, R. L. P. (2009a). Meanings attributed to the term 'consciousness': an overview. *Journal of Consciousness Studies*, Accepted in September 2008. Available at <http://www.geocities.com/rlpvimal/meanings-Vimal.pdf>.
- Vimal, R. L. P. (2009b). Selection of a specific subjective experience: conjugate matching and subjective experience. *Journal of Integrative Neuroscience*, In review. Available at <http://www.geocities.com/rlpvimal/selection-matching-Vimal.pdf>.
- Vimal, R. L. P. (200x-a). Necessary Ingredients of Awareness: Integration of Psychophysical, Neurophysiological, and Consciousness Research for the Red-Green Channel. In review, Available at <http://www.geocities.com/rlpvimal/Visual-Awareness-Vimal.pdf>.
- Vimal, R. L. P. (200x-b). Proto-Experiences and Subjective Experiences I: Integration of Classical, Quantum, and Subquantum Concepts. In review. Available at <http://www.geocities.com/rlpvimal/PE-SE-SQ-Vimal.pdf>.

- Vimal, R. L. P. (200x-c). Proto-Experiences and Subjective Experiences II: Integration of Classical and Quantum Concepts for Emergence Hypothesis. In review. Available at <http://www.geocities.com/rlpvimal/PE-SE-Emergence-Vimal.pdf>.
- Vimal, R. L. P. (200x-d). Quest for the Definition of Consciousness Qualia, Mind, and Awareness. In review, Available at <http://www.geocities.com/rlpvimal/DefineC-Vimal.pdf>.
- Vimal, R. L. P. (200x-e). Towards a Theory of Everything: Unification of Consciousness with Fundamental Forces in String Theory. In review, Available at <http://www.geocities.com/rlpvimal/TOE-Vimal.pdf>.
- Vimal, R. L. P. (200x-f). Dependent Co-origination and Inherent Existence. In review, available: <http://www.geocities.com/rlpvimal/Coorigination-Vimal.pdf>.
- Vimal, R. L. P., & Pandey-Vimal, M.-U. C. (2007). Ancient Historical Scripture and Color Vision. *Color Research and Application*, 32(4), 332-333.
- Vimal, R. L. P., & Davia, C. J. (2008). How Long is a Piece of Time? - Phenomenal Time and Quantum Coherence - Toward a Solution. *Quantum Biosystems*, 2, 102-151, available at <http://www.quantumbionet.org/admin/files/QBS2%20102-20151.pdf>.
- Vimal, R. L. P., Pandey-Vimal, M.-U. C., Vimal, L.-S. P., Stopa, E. G., Renshaw, P. F., Vimal, S. P., & Harper, D. G. (2009). Activation of suprachiasmatic nuclei and primary visual cortex depends upon time of day. *European Journal of Neuroscience*, 29, 399-410.
- Vitiello, G. (1995). Dissipation and memory capacity in the quantum brain model. *International Journal of Modern Physics*, B9, 973-989.
- Weber, M. (Ed.). (2004). *After Whitehead: Rescher on Process Metaphysics. Process Thought I*. Frankfurt / Lancaster: Ontos Verlag.
- Whitehead, A. N. (1926). *Religion in the Making* (Lowell Institute Lectures of 1926). New York: Macmillan & Cambridge, Cambridge University Press.
- Whitehead, A. N. (1933). *Adventures of Ideas*. New York: The Free Press.
- Whitehead, A. N. (1978). *Process and Reality. An Essay in Cosmology* [1929] Corrected edition. New York-London: The Free Press. A division of Macmillan Publishing Co., Inc.-Collier Macmillan Publishers.

Notes

- ¹ **Keywords:** Evolution of consciousness; Internal representation; Sensorimotor interaction; Dual-aspect model; Subjective experience; Proto-experiences,

Explanatory gap; Mind-brain problem; Purusha; Prakriti; Eastern and Western perspectives; Yoga; Sublimation process; Whitehead; *Process and Reality*; Occasions of experience.

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- ² Vimal, 2009a.
- ³ Vimal, 200x-d.
- ⁴ Vimal, 2008a, 2008b, 2009b, 200x-a; MacGregor & Vimal, 2008.
- ⁵ Vimal, 2008a, 2008b, 2009b, 200x-a; MacGregor & Vimal, 2008. For the explanatory gap, see Levine (1983).
- ⁶ Vimal, 2009b, 2008a. Quotes are from Vimal, 2009b.
- ⁷ Vitiello, 1995; Globus, 2006.
- ⁸ Northoff & Bermpohl, 2004.
- ⁹ Vimal, 2009b.
- ¹⁰ Baars, 1997; Crick & Koch, 1998; Dehaene & Naccache, 2001; Dennett, 2001; Edelman, 2003; Lee, Blake, & Heeger, 2005; Rees, Kreiman, & Koch, 2002; Sheinberg & Logothetis, 1997.
- ¹¹ O'Regan, Myin, & Noë, 2005; O'Regan & Noë, 2001.
- ¹² Chalmers, 1995; Chalmers, 1997.
- ¹³ Baars, 2005; Edelman, Baars, & Seth, 2005.
- ¹⁴ Hameroff, 1998; Johnston, 2005; Stapp, 1996.
- ¹⁵ Vimal, 2008a, 2008b, 2009b, 200x-a; MacGregor & Vimal, 2008.
- ¹⁶ Hameroff, 1998b, 2005; Hameroff & Penrose, 1998; Penrose, 2001; Penrose & Hameroff, 1995.
- ¹⁷ John, 2002, 2005.
- ¹⁸ Vimal, 2008a, 2008b, 2009b, 200x-a; MacGregor & Vimal, 2008.
- ¹⁹ Vimal, 2008a, 2008b, 2009b, 200x-a; MacGregor & Vimal, 2008.
- ²⁰ Vimal, 1998a; Vimal, 2002a.
- ²¹ Stubenberg, 2005.
- ²² Vimal et al., 2009; Cowan et al., 2006; Schiffer et al., 2004.
- ²³ Vimal, 2008a, 2008b, 2009b, 200x-a; MacGregor & Vimal, 2008.

- ²⁴ *Ādi* is a Sanskrit prefix; it means ‘initial’ or ‘first’. The term *Ādi-Shiva* is borrowed from Hinduism, which started since RigVedic period (~ 4000 BC: see also Vimal and Pandey-Vimal, 2007).
- ²⁵ According to Vimal (200x-e): We investigated if the superposition of SEs/PEs in \mathbf{H}_1 and \mathbf{H}_2 is consistent with the mathematics of string theory. We found that the material aspect of the behavior of system in string theory remains invariant with the introduction of mental aspect as a function of temporal (Vimal and Davia, 2008) and spatial experiences (SEs/PEs). This requires that SEs/PEs in superposed form might be present in one space and one time ‘hidden’ dimensions of F-theory to satisfy the condition of minimum action. In addition, the Neumann and Dirichlet boundary conditions were also satisfied. For hypothesis \mathbf{H}_3 , the equations of string theory remain the same; we simply need to acknowledge that a string has dual-aspect; its mental aspect is string-PE. We concluded that it is possible to unify consciousness with all four fundamental material forces by the introduction of (i) SEs/PEs (as in \mathbf{H}_1) or PEs (as in \mathbf{H}_2) in superposed form in bosonic and fermionic strings or (ii) the bosonic-string-PE and fermionic-string-PE based on *integration* principle (as in \mathbf{H}_3). This leads us towards the theory of everything.

Alternatively, here in hypothesis \mathbf{H}_3 (dual-aspect panpsychism), a tentative bridging law for mental (v') and material (v) aspects of *Ādi-Shiva* entities may be $\langle hv' = (E = mc^2 = hv) \rangle$, which leads to $v' = v$. If this is true, then proto-experiences may be embedded intrinsically in material attributes such as mass or space-time. Since matter (fermions and bosons) could behave as wave or particle, a wave can also have mental and material aspects in a dual-aspect view. This implies that PEs can be wave-like, which justifies the frequency v' for PE.

- ²⁶ According to Vimal, 200x-f : (i) all conventional entities lack inherently existence, except subjective experiences (SEs)/proto-experiences (PEs) that are fundamental and irreducible and hence inherently exist; (ii) the entities that lack inherent existence dependently co-arise, and hence causality for them can be rejected but instead *conditions* (such as efficient, percept-object, immediate, and dominant conditions) might be necessary, as in Nāgārjuna’s philosophy; (iii) it is not clear that SEs that exist inherently cause entities that lack inherent existence, but one could argue that (a) Nāgārjuna’s rejection of causality needs to be reconsidered and (b) superposed PEs/SEs in the mental aspect of strings or elementary particles might be the motivation for the evolution to form neural-nets to realize a specific SE; (iv) It is not clear that structure, function, experience, and environment cause each other, but they might be linked via *conditions* (v) an entity has double aspect: mental and material aspects, (vi)

string is a dual-aspect entity that dependently co-arises from string-vacuum or *brane*, and (vii) the dual-aspect-dual-mode PE-SE framework is consistent with these premises. For example, PEs/SEs inherently exist and are in superposed form in the mental aspect of (a) string-vacuum and/or *brane* before Big-Bang, (b) strings, elementary particles (bosons and fermions) and all evolved entities after Big-Bang, and (c) entities before and after Big-Freeze/Big-Crunch. However, the selection of a specific SE has dependent co-origination (and hence not inherently existent, consistent with Nāgārjuna), i.e., a specific SE occurs in brain when (i) relevant neural-net is formed via *neural Darwinism*, (ii) the specific SE is selected via matching and selection mechanisms, and (iii) the *necessary* ingredients—such as wakefulness, re-entry, attention, working memory, stimulus at above threshold, and neural-net PEs—are satisfied. If this is true, then only experiences (PEs/SEs in superposed form) are inherently existent and other entities have dependent co-origination.

²⁷ Chalmers, 1995.

²⁸ The terms ‘physical’ and ‘physicalism’ include both material and mental aspects in the dual-aspect-dual-mode PE-SE framework.

²⁹ Vimal, 200x-f; Nāgārjuna & Garfield, 1995.

³⁰ <http://en.wikipedia.org/wiki/Yoga>.

³¹ Vimal, 200x-f; Nāgārjuna & Garfield, 1995. Acharya Nāgārjuna (150 - 250 AD) was an eminent Indian brahmin-buddhist philosopher and the founder of the Madhyamaka school of Mahāyāna Buddhism.

³² <http://www.astangyog.com/astangyog.html>.

³³ Rao, 2005; Vimal, 200x-b, 200x-c.

³⁴ Vimal, 2008a, 2008b, 2009b, 200x-a; MacGregor & Vimal, 2008.

³⁵ Chalmers, 2003; Vimal, 2008a. Quotes are from Vimal, 2008a.

³⁶ Globus, 1995; Dennett, 1991; Dretske, 1995; Harman, 1990; Lewis, 1988; Rey, 1995; Ryle, 1949.

³⁷ Block & Stalnaker, 1999; Hill, 1997; Kripke, 1980; Levine, 1983; Loar, 1990, 1997; Lycan, 1996; Papineau, 1993; Perry, 2001; Tye, 1995.

³⁸ Churchland, 1997, 2003; Crick & Koch, 2003; Koch, 2004; McGinn, 1989; Nagel, 1974; Van Gulick, 1993; Van Gulick, 2001.

³⁹ Beck & Eccles, 1992; Foster, 1991; Hodgson, 1991; Hodgson, 2005; Popper & Eccles, 1977; Sellars, 1981; Swinburne, 1986.

⁴⁰ Campbell, 1970; Jackson, 1982, 1998; Robinson, 1988.

- ⁴¹ Chalmers, 1996; Feigl, 1958/1967; Griffin, 1998; Lockwood, 1989; Maxwell, 1979; Russell, 1927; Stoljar, 2001; Strawson, 2000.
- ⁴² Vimal, 2008a, 2008b, 2009b, 200x-a; MacGregor & Vimal, 2008.
- ⁴³ Van Gulick, 2008.
- ⁴⁴ Baars, 1996.
- ⁴⁵ The quote is from Vimal, 2009b. For further causal effects of consciousness, see also Velmans (2009), Baars & McGovern (1996) and <http://www.geocities.com/rlpvimal/Consciousness-and-its-implications-recent-version.pdf>.
- ⁴⁶ Velmans, 2009.
- ⁴⁷ Baars & McGovern, 1996.
- ⁴⁸ Misra & Sudarshan, 1977.
- ⁴⁹ Stapp, 2005.
- ⁵⁰ Beck, 2001; Beck & Eccles, 1992.
- ⁵¹ Vimal, 200x-f; Nāgārjuna & Garfield, 1995.
- ⁵² See Section 1, premises (20)-(21).
- ⁵³ See Section 1, premises (20)-(21).
- ⁵⁴ Vimal, 2009b. The only problem of the dual-aspect-dual-mode PE-SE framework with hypothesis **H₁** is the ‘brute fact’ of dual-aspect view.
- ⁵⁵ See also Section 1, premises (20)-(21).
- ⁵⁶ There are many ways to minimize the suffering caused by ownership without any loss. For example, if you own large property then family members may have conflict of interest and cause suffering to you by legal-claims. To minimize this type of suffering, personal ownership can be transferred to a Trust, i.e., assets can be secured in the form of Trust, where the principal assets can live forever and its interest or income can be used for a good purpose for the family. For example, the net income could be donated to a non-profit research organization controlled by the family. Thus, the assets still remain in the family, but your suffering and the suffering among family members will reduce significantly; in addition, people at large can benefit from its products, such as published scientific articles. This becomes a family legacy and is useful for the grantor, trustee, family, society, nation, and whole world, in addition to the reduction in suffering induced by division of property. Moreover, in some special cases, one could also get a tax-break if one’s income is donated to a non-profit tax-exempt

organization. In some Trust systems, the hard-earned money can remain in the bank or in some secured investments (such as real estate) for an unlimited time, like a family treasure, which can increase with time if handled properly. This is also consistent with immortalizing concept of soul (ideas and concepts), as an extra benefit.

⁵⁷ See also Bruzzo & Vimal, 2007.

⁵⁸ Vimal, 200x-f; see also Bruzzo & Vimal, 2007; Vimal, 2008a, 2008b, 2009b.

⁵⁹ Northoff & Bermpohl, 2004.

⁶⁰ For detail see Vimal, 200x-a.

⁶¹ Vimal, 2009a, 200x-d.

⁶² Some of the information is extracted or adapted (*shown in italics*) from http://en.wikipedia.org/wiki/Alfred_North_Whitehead and http://en.wikipedia.org/wiki/Process_philosophy.

⁶³ Weber, 2004; Whitehead, 1926; Whitehead, 1933; Whitehead, 1978.

⁶⁴ Cobb & Griffin, 1977; <http://www2.citytel.net/~gmixon/pubs/deQuincey.html>

⁶⁵ See assignment problem in Vimal, 2008a.

⁶⁶ See information related to emotion in Vimal, 2008b.

⁶⁷ <http://www.pranajournal.com/kriya.htm>.

⁶⁸ <http://www.tm.org/>.

⁶⁹ <http://www.astangyog.com/astangyog.html>.