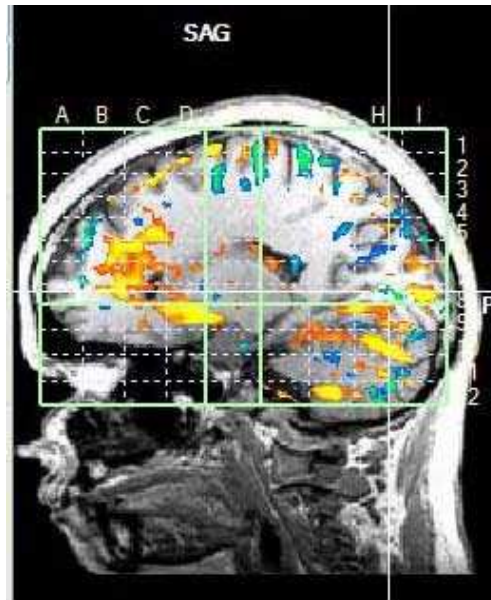


### For the cover of the book

The message in the cover-design should be: Hinduism (and all other religions) start from the mental aspect of the unmanifested primal entity (idealism: matter from mind, *Brahman*/God/consciousness, subjective first person perspective), whereas science starts from the physical aspect of the unmanifested primal entity (materialism, mind from matter, objective third person perspective). However, these two aspects are *inseparable* in the *Dvi-Pakṣa Advaita* (the DAMv framework). In other words, one can start from either aspect, but it gets translated automatically, appropriately, rigorously, and faithfully to other aspect because of the *doctrine of inseparability* (1-1 correspondence). Thus, the *Dvi-Pakṣa Advaita* unifies Hinduism (and all other religions) and science rigorously while maintaining individual's faith/belief as they may have evolution and natural selection based adaptive benefits along with genetic traits. Front cover should somehow reflect this idea.





We need to superpose the second one on the first (or third below), so that it represents ‘Scientific Hinduism’

# **Scientific Hinduism: Bringing Science and Hinduism Closer *via* Extended Dual-Aspect Monism (*Dvi-Pakṣa Advaita*)**

**By**

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# PROLOGUE

We cannot ignore science because our daily life is based on it and we cannot ignore our religion (Hinduism) because it teaches us how to live in our own (Hindu) culture.<sup>1</sup> Therefore, serious effort is needed to bring them closer. The dominant metaphysics of science is materialism (mind from matter) and that of Hinduism (such as Vedic System) are idealism (matter from mind) and/or interactive substance dualism (mind and matter are two independent entities but they interact in us when we are alive). All these three metaphysics have serious problems. Because of these problems ‘real’ science (not the logic based pseudoscience) and Vedic system of Hinduism are at opposite poles. In other words, science and religions are in different boats of metaphysics and tacking in opposite directions. We need to put science and religions in the same boat of metaphysics then only we can unify them in ‘real’ sense.

A simple idea is to consider science and religions (such as Hinduism) as the *inseparable* physical and mental aspects of our lives, respectively. Science is based on materialism and it should be represented by the physical aspect, whereas religions are mostly consciousness-based idealism and they should be represented by the mental aspect of our lives. In other words, the Dual-Aspect Monism (*Dvi-Pakṣa Advaita* (द्विपक्षैत ): *Brahman is an inseparable-dual-aspect fundamental monistic entity*) addresses all the problems and brings them closer.

One could argue that all entities can be categorized in two categories: the mind and the matter. This western scientific term ‘mind’ (different from the eastern Vedic term ‘mana’ or ‘manas’) includes all mental entities (such as cognition, functions, experiences/appearances, self/soul, *Brahman/Parmātman/God*). The term ‘matter’ means matter-in-itself (not the appearances of matter). This categorization entails four major metaphysics (the foundation of everything): (1)

mind from matter (materialism), (2) matter from mind (mentalistic idealism or simply idealism), (3) matter and mind as independent entities but then can interact (interactive substance dualism), and (4) mind and matter as two *inseparable* aspects of the same entity-state (dual-aspect monism). The frameworks (1)-(3) have serious problems and (4) has the least number of problems.

In science's materialism, matter is the fundamental reality. The mind (including our subjective experiences (SEs)) *arises* from brain: either *emerges from* the interaction of stimulus dependent feed forward signals and cognitive feedback signals in the neural-networks of the brain or *identical with* the related brain-state. However, its explanatory gap problem is: how our experiences can arise from non-experiential matter such as brain.

Our *Vedic* system, such as *Dvaita*, *Viśiṣṭādvaita*, *Gītā*, *Sāṃkhya*, *Upaniṣads* (such as *B'hadāraṇyaka Upaniṣad*), has the 'built-in' interactive substance dualism. This is because, after death, a soul (*jīvātman*, mental entity) is separated from its dead body (physical entity). This means the soul is a separate entity and the dead body is also a separate entity (or substance). These two entities interact when we are alive in such a way that they appear *inseparable*.

However, interactive substance dualism has seven problems: (i) association or mind-brain interaction problem, (ii) problem of mental causation, (iii) 'zombie' (human-like-being in which there is no consciousness) problem, (iv) 'ghost' (soul without body-brain) problem, (v) neurophysiological many-one/many-many mind-brain relation problem, (vi) causal mind-brain pairing problem, and (vii) developmental problem.

In *Sankarāchārya's Advaita* (*Brahma satyaṃ jagat mithyā, jīvo brahmaiva nāparah*), matter/*jagat* (physical world including brain/body) is unreal/illusion because of its transitory nature, and *Brahman* (and *jīva*) is real because He is eternal/permanent. Thus, the separation between *jīva* and body is controversial in *Advaita*.

Some argue for the separation between real (*jīva*) and unreal (body), whereas some argue that the question of separation does not arise because world is illusion. For some, *Advaita* affirms monism without denying pluralism, but this monism is a (mentalistic) idealism that has an explanatory gap problem: how matter-in-itself (not its appearances) can arise from aspectless, attributeless, *Advaita*'s *Brahman* (consciousness).

These problems are addressed by replacing the built-in interactive substance dualism and/or idealism with the *Dvi-Pakṣa Advaita* (DAMv framework). This is the extended dual-aspect monism framework: the **D**ual-**A**spect **M**onism with dual-mode and with varying degrees of dominance of aspects depending on the levels of entities. Here, each entity (including *Brahman*) has two *inseparable* aspects (mental and physical).<sup>2</sup> This is an analogy to two *inseparable* sides of the same coin (*sikke ke dvi Pahalū*).

This new *Dvi-Pakṣa Advaita* (DAMv) framework has two versions: (1) *Āstika Dvi-Pakṣa Advaita* (आस्तिक द्विपक्षाद्वैत ) as the theist version of the DAMv framework. (2) *Nāstika Dvi-Pakṣa Advaita* (नास्तिक द्विपक्षाद्वैत ) as the atheist version of the DAMv framework.

We propose *Dvi-Pakṣa Advaita* (significantly different from *cit-acit*<sup>3</sup> *Viśiṣṭādvaita* as it does not embrace atheism) as the 7<sup>th</sup> sub-school of *Vedantic* system. It addresses the problems of all other eastern and western views including the previous 6 sub-schools of *Vedantic* system. We emphasize that the DAMv or *Dvi-Pakṣa Advaita* framework brings science and all (theist and atheist) religions closer as it is the middle path and encompasses all views with appropriate modifications. We think that the DAMv (*Dvi-Pakṣa Advaita*) framework is a major breakthrough in sciences and religions.

In *Dvi-Pakṣa Advaita*,<sup>4</sup> *Brahman* is the eternal, fundamental, dual-aspect, monistic entity. In its unmanifested causal-form (*kāran-Brahman*)<sup>5</sup>, *Puruṣa* is its eternal mental aspect and *Prakṛti* is its eternal physical aspect. Both aspects are *inseparable* and **latent** in



the unmanifested state of *Brahman*, and hence *kāran-Brahman* appears aspectless and attributeless as in *Sankarāchārya's Nirviśeṣādvaita* (Radhakrishnan, 1960). In its fully manifested effect-form (*kārya-Brahman that has innumerable manifested states*), 'individual-self/*unliberated-jīvātmā*/consciousness' is the transitory mental aspect of the fully manifested state and *jagat* (world/physical-universe) is its transitory physical aspect; both aspects are *inseparable* and expressed.<sup>6</sup> In other words, each entity has *inseparable* mental and physical aspects, and the dominance of aspects varies with levels of entities. In the *Dvi-Pakṣa Advaita* framework, an individual self/soul and *inseparable* brain-body are the mental aspect and the physical aspect of manifested/realized state of brain, respectively. They co-evolved from the mental and the physical aspect of the dual-aspect un-manifested state of *Brahman*. At the time of dissolution (such as perhaps Big-Crunch), they all return back to the dual-aspect un-manifested state of *Brahman*.

In the **Āstika Dvi-Pakṣa Advaita** (*āstika/theist* version of DAMv framework), **(a)** the SE of subject (self/*jīva*) and SEs of objects were *potentially superposed* in the mental aspect of unmanifested state of *Brahman* (before cosmic fire or *Virāt*); the related physical aspect (neural-networks (NNs) of brain) were *potentially superposed* in the physical aspect of unmanifested state of *Brahman* before the Big Bang. These two aspects eventually co-evolved from *Brahman* (over 13.7 billions of years) and co-developed after birth for the manifestation (*realization*) of self and its neural-correlates into respective aspects of brain state. Once the necessary conditions of consciousness are satisfied in NNs, the self emerges/arises as the mental aspect of self-related NN-state, and its physical aspect is the self-related NN and its activities. **(b)** At the highest (*samādhi*) state of consciousness, three kinds of subjective experiences are reported: the Bliss, the inner light perception, and the unification of self/subject with environment/objects. This triad is due to the highest manifested states of *kārya-Brahman*. This is also called by some as *Parmātman*



with Bliss/*Ānanda*,<sup>7</sup> which presumably/metaphorically lives in each of us all the time, and can be realized by yoga. **(c)** The *mukta*/liberated-*jīvātmā* (if soul exists after death) merges with the mental aspect of unmanifested *Brahman* (*kāran-Brahman*) and loses its identity to transform into *Puruṣa* (the mental aspect of the unmanifested (potential, *avyakta*) state of *kāran-Brahman*).<sup>8</sup> **(d)** At death, un-liberated soul acquires a subtle body (*sukshma śarīra*), i.e., the dual-aspect soul-subtle-body state has (i) the mental aspect that contains soul/self/*jīvātman* and (ii) the physical aspect that is the subtle body, which contains traces of *manas*, the five senses of knowledge, life (*prāṇa*), *karmas* (merit/*puṇya* and demerit/*pāpa*) and intense desire.<sup>9</sup> In liberated soul (*mukta jīvātman*), there is no traces of *karma* and the liberated soul merges with *Brahman* in the form of dead brain-body (all entities are *Brahman* and *Brahman* is in all entities: ALL in ONE and ONE in ALL) at death.

The ***Nāstika Dvi-Pakṣa Advaita*** (*nāstika/atheist/scientific* version of DAMv framework) can be described better by comparing with the *Āstika Dvi-Pakṣa Advaita* as follows: **(a)** Creation of Universe: the physical aspect of unmanifested state of empty-space (*nothing*/void: no matter/radiation or no space-time) with quantum fluctuations leading to the Big Bang followed by inflation (Guth, 1997) for creating universe (from *nothing*: (Krauss, 2012))<sup>10</sup> is equivalent to the fluctuations in the cosmic consciousness (a peculiar adjustment of consciousness<sup>11</sup> in the mental aspect of the unmanifested state of *Brahman* (*kāran-Brahman*)) leading to the creation of universe in the *Āstika Dvi-Pakṣa Advaita*.<sup>12</sup> This is because the mental and physical aspects of unmanifested state of *Brahman*/*Śūnyatā*/void are *inseparable* and hence fluctuations in physical aspect can be translated to that in mental automatically, rigorously, and faithfully, and *vice versa*.<sup>13</sup> **(b)** The manifestation of self/*jīvātman* from unmanifested state of *Brahman* is the same as that of the *Āstika Dvi-Pakṣa Advaita*. **(c)** *Parmātman* (*kārya-Brahman*) as the manifestation of *kāran-Brahman* of *Āstika Dvi-Pakṣa Advaita*, living in us, is

equal/equivalent to the highest state of consciousness in *nāstika Dvi-Pakṣa Advaita*. And **(d)** the merging of *mukta-jīvātmā* in *Brahman* of *Āstika Dvi-Pakṣa Advaita* is equal/equivalent to the merging of *mukta-jīvātmā* in the mental aspect of its dead body-brain system as every entity is *Brahman*, which is equivalent to the superposition of *potential* subjective experiences (SEs) of objects and subject (self) in the mental aspect of the unmanifested (*potential*) state of *Brahman* after death in *nāstika Dvi-Pakṣa Advaita*. It is unclear what happens to un-liberated soul and its remaining *karmas* and intense un-fulfilled desire after death because of the lack of scientific evidence for soul, *Parmātmān* (*kārya-Brahman*), and the life-after-death after death.<sup>14</sup> Further research is needed.

The *nāstika* (science) and *āstika* (religions) *Dvi-Pakṣa Advaita* can be thought of two different languages/views for discussing how we and our universe arose from *Brahman*. Their underlying metaphysics is the same, namely the *Dvi-Pakṣa Advaita* (DAMv) framework, and hence trying to reveal us the same fundamental truth, which encompasses both atheism and theism and brings science and religions closer. This working hypothesis is consistent with the finding that atheist(*nāstika*)-theist(*āstika*) phenomenon is genetic and/or acquired.

One could argue that the status of unliberated-*jīvātman* is unclear because so far there is no scientific evidence for the life (existence of soul) after death to the satisfaction of all scientists. After death, we eventually disintegrate in to natural dual-aspect entities for Nature's recycling process. The *mukta/liberated-jīvātman* is not a problem because it merges with body at death, which is consistent with science that self and related neural-network merges with body. The dead body is also a manifested state of *Brahman* with dominant physical aspect and latent mental aspect. One could also argue that it is also unclear how and from where our daily experience of self (as the knower, the owner of action-brain-body, and the experiencer of objects) come from; until this is resolved to the satisfaction of

everybody, the *Āstika Dvi-Pakṣa Advaita* cannot be rejected. To address both objections, we propose that the self co-evolves and co-develops from the mental aspect of the unmanifested state of the fundamental entity (*Brahman*) with its *inseparable* physical aspect. The SEs of objects and subject (self) are in *potentially* superposed (latent) form in the mental aspect of unmanifested state of *Brahman*. Here, the essence of all *jīvātman*s, i.e., the SE of self for all subjects, is the same, so no need to superpose innumerable *jīvātman*s in the mental aspect of unmanifested (potential) state of *Brahman*. Each specific *jīvātman* (the SE of subject, self) can be developed later during the process of manifestation (*realization*) as follows: The *potential* SEs of objects and subject (self) are *realized* (manifested) via the process of co-evolution, co-development, and co-tuning (via sensorimotor and neural Darwinism) processes using the matching and selection mechanisms (detailed in (Vimal, 2010c)). Is this hypothesis satisfactory to everybody?

The major difference between the two versions of *Dvi-Pakṣa Advaita* (DAMv) framework is as follows: In the *nāstika Dvi-Pakṣa Advaita*, the status of the life-after-death and the *jīvātman*/soul after death is unclear (don't-know-status) because of the lack of scientific evidence. Whereas in the *Āstika Dvi-Pakṣa Advaita*, it is assumed (as a brute-fact) that the life-after-death and the dual-aspect *jīvātman*/soul exist after death.

In the *Dvi-Pakṣa Advaita* (DAMv) framework, the mental and physical aspects are latent in unmanifested state of *Brahman*, which appears as formless, aspectless, and attributeless. If total energy of universe is zero (if the amount of positive energy in the form of matter is exactly canceled out by the negative energy in the form of gravity) as Flat Universe model requires, then quantum fluctuations (spontaneous births and deaths of virtual particle pairs) in dual-aspect unmanifested state of *Brahman* will cause the emergence of universe, i.e., a universe arose from 'nothing' (the empty space at ground state of quantum field with minimum energy or no space-

time) (Berman, 2009; Berman & Trevisan, 2010; Guth, 1997; Hartle & Hawking, 1983; Hawking & Mlodinow, 2010; Krauss, 2012).<sup>15</sup>

In both versions of the *Dvi-Pakṣa Advaita* (DAMv) framework, it is unclear if there exist an entity (such as *Parmātman* or *kārya Brahman* who resides in each of us and also outside)<sup>16</sup> that is all-knowing (knows what everything is thinking/experiencing, omniscience), and that helps in reducing/eliminating our suffering by worshipping Him as claimed in religions. Perhaps, *Brahman*'s omnipresent and omnipotent can be defended, but omniscience is certainly debatable. It is also unclear if this is needed and ethical because it will violate modern HIPAA privacy Act. It is also unclear if soul with traces of its *karmas* and intense desires exists after death and if rebirth hypothesis is correct because there is no solid scientific authentic evidence. It appears that as science progresses and answers all questions, *Nāstika Dvi-Pakṣa Advaita* will slowly start dominating. For example, *Vedic* system was dominating over *Cārvāka* and *nāstika* systems, but now as *nāstika* (neo-*Cārvāka*) modern science is progressing, the dominance of *āstika* system is declining. However, it is argued that they are two different languages to describe the same fundamental truth as both are based on the same *Dvi-Pakṣa Advaita* (DAMv) framework.

It is claimed that once a *ṣi* (seer) is in *samādhi* state, then whatever he sees or hear (*śruti*) is directly from God.<sup>17</sup> This is debatable because different *ṣis* (such as *Vedantic ṣis* vs. Buddha<sup>18</sup> vs. Christ vs. Mohammad vs. Jain-*rṣi* vs. *Cārvāka-ṣi* vs. *Sāṃkhya-ṣi* Kapila) give different information whereas God is only one. It is highly unlikely that experimentally verified information from great scientists is inferior to that from *ṣis*. However, one could argue that different views represent different aspects of the unmanifested state of *Brahman* or unified field.<sup>19</sup>

Furthermore, the problems (such as category mistakes and metaphysical problems) and controversies of *Brahm-sūtra* and

*Sāṃkhya* (Radhakrishnan, 1960; Rāmānujāchārya, 1904) can be addressed by the *āstika* and the *nāstika Dvi-Pakṣa Advaita*. For example, without making category mistake, one could question about creation/evolution (*Srishti*): who/what is behind evolution as potter is behind making pot from clay? To address this question, one could argue for the tinkering process, which is the random process with trial-and-success/error method, adaptation, natural selection, and so on. During *Srishti*, the world/*jagat* as a manifested state of *Brahman* (with dominant physical aspect and latent mental aspect) is *realized* from the physical aspect of unmanifested state of *Brahman* and a *jīva*/self is realized from the mental aspect of unmanifested state of *Brahman*. During *Pralaya* (dissolution), world is contracted/absorbed into the physical aspect of unmanifested state of *Brahman* and *jīvas* are absorbed in to its mental aspect, where both aspects are latent and hence *Brahman* appears as aspectless, formless, and attributeless. This model is consistent with the cyclic Closed Universe, but it is unclear for the Flat Universe.

Furthermore, it is argued that theist/atheist phenomenon is subject-specific because it has genetic disposition or acquired traits. This implies that the Fundamental truth (the dual-aspect *Brahman*) is independent of mind-dependent theism/atheism. The doctrine of 'All (entities) in One (*Brahman*) and One (*Brahman*) in All (entities)' of *Advaita* and *Viśiṣṭādvaita* is still maintained.

To sum up, as science progresses and provides explanation of paranormal phenomena, ethics/morality/science-based-*dharma* (such as good over evil, right over wrong, truth over lie, fairness over unfairness, justice over unjust, unselfishness/altruism over selfishness, love over hate, compassion over ruthlessness, humility over arrogance, peace over war, happiness over suffering, control over cravings and desires, and so on) and other necessities of humanity what religions currently provide, the *Nāstika Dvi-Pakṣa Advaita* will prevail over the *Āstika Dvi-Pakṣa Advaita*. Until this happens, we



need hypotheses (even if they are fictions) for life-after-death, soul, rebirth due to residual *karmas*, and God/*Īśvara*.<sup>20</sup>

**Conclusion:** Hinduism (and all other religions) start from the mental aspect of the unmanifested primal entity (idealism: matter from mind, *Brahman*/God/consciousness, subjective first person perspective), whereas science starts from the physical aspect of the unmanifested primal entity (materialism, mind from matter, objective third person perspective). However, these two aspects are *inseparable* in the *Dvi-Pakṣa Advaita* (the DAMv framework). In other words, one can start from either aspect, but it gets translated automatically, appropriately, rigorously, and faithfully to other aspect because of the *doctrine of inseparability* (1-1 correspondence). The domains of materialistic science and idealistic religions are physical and mental aspects of each entity-state, respectively. As long as they operate in their own domain, category mistakes are not made; otherwise these mistake cause serious problems. Thus, the *Dvi-Pakṣa Advaita* unifies Hinduism (and all other religions) and science rigorously while maintaining individual's faith/belief as they may have evolution and natural selection based adaptive benefits along with genetic traits.

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## KEY WORDS

Religions, mentalistic idealism, interactive substance dualism, dual-aspect monism, mind, matter, *Brahman*, God, *jīva*, *Atman*, *Vedas*, *Gītā*, *Sāṃkhya*, *Bḥadāraṇyaka Upaniṣad*, Jainism, *Lokāyata*, *Cārvāka*, Buddhism, Christianity, Islam, *Advaita*, *Kashmir Shaivism*, *Viśiṣṭādvaita*, *Dvaitādvaita*, *Dvaita*, *Achintya-Bheda-Abheda*, *Dvi-Pakṣa Advaita*, theist, atheist.

## LIST OF ABBREVIATIONS

cMDR: Conventional Mind Dependent Reality

DAMv: **D**ual-**A**spect **M**onism with dual-mode and with **v**arying degrees of dominance of aspects depending on the levels of entities

God = *Paramātmān* = *Ishawar* = Bliss (*atishay ananda*), the feeling of merging of self with surrounding objects/environment at samādhi state in the DAMv framework

MIR: Mind Independent Reality

SEs: Subjective Experiences

uMDR: Ultimate Mind Dependent Reality

# CONTENTS

PROLOGUE

KEY WORDS

LIST OF ABBREVIATIONS

1. Introduction

2. The Four Major Metaphysics: Western Metaphysics and Comparison with Eastern Metaphysics

2.1. *The four major metaphysics from the categorization of entities*

2.2. *Materialism and its problems*

2.3. *Idealism and its problems*

2.4. *Interactive substance dualism and its problems*

2.5. *Extended Dual-Aspect Monism (DAMv) Framework*

2.5.1. DAMv and doctrine of inseparability

2.5.2. Dual-mode in DAMv

2.5.3. The concept of varying degrees of the dominance of aspects in DAMv with Dual-mode

2.6. *Three Kinds of realities*

3. Science and its problems

3.1. *Science in Ancient India*

3.2. *Cārvākas*

3.3. *Modern Science and its problems*

4. Hinduism and its problems

4.1. *Gītā, Sāṃkhya, Brahma-Sūtra, Bḥadāraṇyaka Upaniṣad, and Trika Kashmir Shaivism*

4.1.1. *Gītā and Sāṃkhya, and Critique*

4.1.2. *Bḥadāraṇyaka Upaniṣad and Critique*

4.1.3. *Brahma-Sūtra and Critique*

4.1.4. *Trika Kashmir Shaivism and Critique*

4.2. *Six Subschoools of Vedānta*

4.2.1. *Advaita Vedānta and Critique*

4.2.2. *Viśiṣṭādvaita Vedānta*

- 4.2.2.1. Ramānujāchārya's *Viśiṣṭādvaita Vedānta*
- 4.2.2.2. Rāmānandārchārya's *cit-acit Viśiṣṭādvaita* and critique on Śankarāchārya's *Advaita*
- 4.2.2.3. Comparison between *cit-acit Viśiṣṭādvaita* and *Dvi-Pakṣa Advaita*/DAMv framework
  - A. Major Differences between *cit-acit Viśiṣṭādvaita* and *Dvi-Pakṣa Advaita* (the DAMv framework)
    - (i). *The doctrine of inseparability of aspects*
    - (ii). *The doctrine of meta(beyond)-theism-atheism phenomenon*
    - (iii). *Conclusions*
  - B. Similarity between *cit-acit Viśiṣṭādvaita* and *Dvi-Pakṣa Advaita* (the DAMv framework)
    - (i). *Jīvātman and Parmātman*
    - (ii). *Cit (mind) and acit (matter)*
- 4.2.3. *Dvaitādvaita Vedānta*
- 4.2.4. *Dvaita Vedānta*
- 4.2.5. *Shuddhādvaita Vedānta*
- 4.2.6. *Achintya-Bheda-Abheda Vedānta*
- 4.3. *Problems of Hinduism (Vedānta, Gītā, and Sāṃkhya philosophy)*
- 5. Solution of the Problems of Science and Hinduism by Seventh Sub-school of Vedānta (*Dvi-Pakṣa Advaita*)
  - 5.1. *Extended Dual-Aspect Monism (Dvi-Pakṣa Advaita) Resolves the Problems*
  - 5.2. *Theist/atheist phenomenon*
    - 5.2.1. God gene and acquired traits
    - 5.2.2. God Gene hypothesis
    - 5.2.3. God Module hypothesis
    - 5.2.4. God Particle hypothesis
    - 5.2.5. Neural correlates of religiosity
    - 5.2.6. Conceptual analysis of theist/atheist phenomenon
  - 5.3. Evolution of Universe
  - 5.4. In search of equivalence between science and religions to Bring them closer
  - 5.5. Future Researches
- 6. Epilogue

BIBLIOGRAPHY

ENDNOTES

INDEX

---XXX---

# CHAPTER 1

## Introduction

We use science in our daily lives so we cannot ignore it. Religions are needed as they teach us how to live in unity among diversity. Science, unfortunately, has not done this job well. However, we need to update our religions as per scientific, philosophic, and metaphysical researches with time. For this, we must have critical ‘eyes’ to figure out possible problems. We cannot escape from this. In this book, I critically examine some parts of Hinduism concisely to investigate the inherent metaphysical problems.

The time line and authors/founders are: *Vedas* (*Rig-Vedic* period: Astronomical-sky-view 8000-4000 BC<sup>21</sup>, 4000–2000 BC<sup>22</sup>), *Rāmāyaṇa* (*Rāma*: 5114–5075 BC<sup>23</sup>, 8000-6000 BC<sup>24</sup>), *Gītā* (*Mahābhārata* war: 3067 BC<sup>25</sup>, 5561 BC<sup>26</sup>, *Vyas*), *Sāṃkhya* (~1000–600 BC?, *Kapila*: ~550 BC?, before 3067-5561 BC)<sup>27</sup>, *B’hadāraṇyaka Upaniṣad* (*Yajnavalkya*, *Mid-first millennium BC*)<sup>28</sup>, Jainism (*Rishabh Dev*, 900-600 BC,<sup>29</sup> *Lokāyata/nāstika/materialist/atheist* (*Cārvāka*, 800-500 BC; *Chānakya*, c. 350–283 BC)<sup>30</sup>, Buddhism (*Buddha*, birth:c.563 or 623 BC, death c.483 or 543 BC),<sup>31</sup> mind–body holism of pre-Qin (pre-221 BC) China (*Slingerland & Chudek*, 2011), Judaism (*Tanakh*: 450 BC – 70 CE),<sup>32</sup> Christianity (*Jesus Christ*, c. 5 BC–c. 30 CE),<sup>33</sup> Islam (*Muhammad*: 610–632),<sup>34</sup> *Advaita* (non-dualism, *Adi Shankara*: 788-820)<sup>35</sup>, *Kashmir Shaivism* (*Vasugupta*, 860–925)<sup>36</sup>, *Viśiṣṭādvaita* (qualified non-dualism, *Ramānujāchārya*: 1017–1137)<sup>37</sup>, *Dvaitādvaita* (*Nimbārkāchārya*: 1130-1200)<sup>38</sup>, *Dvaita* (dualism, *Madhvacharya*: 1238–1317)<sup>39</sup>, *Shuddhādvaita* (pure non-dualism, *Vallabhacharya*: 1479-1531)<sup>40</sup>, and *Achintya-Bheda-Abheda* (*Chaitanya Mahaprabhu*, 1486-1534)<sup>41</sup>.

The above have the ‘built-in’ interactive substance dualism that has seven problems and/or idealism that has an explanatory gap problem. These problems are addressed by proposing *Dvi-Pakṣa Advaita* (द्विपक्षद्वैत , or *Dōharī-Pahalū Advaita*) framework, which has the theist and atheist versions of extended dual-aspect monism or DAMv framework. (*Kak*, 1997a) has summarized the Vedic theory of

consciousness within a framework of contemporary scientific concepts.

A critical test for any metaphysical framework could be its predictions: What happens at the time of death and birth? Does the mental aspect (such as *jīva*) get separated from physical aspect (such as body) at time of death? Can *jīvātman*/soul exist independent of body/matter/*jagat*? Our empirical observation is that we see dead body and dead brain after death in conventional mind dependent reality (cMDR). We really do not know if *jīvātman*/soul <sup>42</sup> exists after death because we do not have empirical scientific evidence one way or other. We will examine relevant metaphysical frameworks with respect to this test in addition to the relationship between *Brahm*/*Brahman*/God, *jīvātman*/soul, and matter/*jagat*.

## CHAPTER 2

# **The Four Major Metaphysics: Western/Scientific Metaphysics and Comparison with Eastern Metaphysics**

### ***2.1. The four major metaphysics from the categorization of entities***

In Western/scientific Metaphysics, we categorize all entities in just two categories: matter and mind, or physical (P) and mental (M) entities.

Matter: This is a western/scientific term for matter-in-itself and includes all elementary particles (fermions and bosons), atoms, molecules, and all inert entities including our body, brain and its activities (such as neural activities).

Mind: This is a western/scientific term and includes all entities that are not matter-in-itself. For example, our subjective experiences, self, thoughts, attention, intention, perception, the appearance of matter-in-itself, and so on are all mental entities.

The western/scientific term ‘mind’ is different from eastern term ‘*manas*’ or ‘*mana*’, which is a subtle matter, the central processor, and is liaison between *Puruṣa* and *Prakṛti*. As per Rao (1998), “The *manas* is the central processor which selectively reflects on the material provided by the senses and determines its character by assimilation and discrimination” (p.319).



The above categorization entails four major scientific/western/eastern philosophical positions (metaphysics) (Vimal, 2012a):

(1) M from P: P is primitive/fundamental. SEs *emerge* from the interactions of feed forward and feedback signals in neural-networks (emergentism) or *identical* with brain-states (identity theory). This metaphysics includes materialism (materialistic idealism), physicalism, naturalistic/physicalistic/materialistic nondual monism, reductionism, non-reductive physicalism, naturalism, and/or [Cārvāka](#)/Lokāyata view (800-500 BC: (Vimal, 2011h)).

(2) P from M: M is primitive. Matter-in-itself is ‘congealed’ mind. This metaphysics includes idealism (mentalistic idealism), mentalistic nondual monism, and/or [Advaita](#) (788-820 AD: (Vimal, 2011h)).

(3) P and M are independent but can interact when we are alive. Here, both P and M are equally primitive. This metaphysics includes interactive substance dualism, *Prakṛti* and *Puruṣa* of [Sāṃkhya](#) (1000–600 BC) and/or *Gīta* (3067 BC) (Vimal, 2011h).

(4) P and M are two *inseparable* aspects of a state of an entity (such as fundamental/primal entity, fermions and bosons and composites, the ‘primitive’ quantum field/potential,<sup>43</sup> the empty-space with or without space and with or without ground state minimum energy (Krauss, 2012), the fundamental unmanifested *Brahman*, manifested *Brahman*, brain). This metaphysics includes dual-aspect monism (DAM), DAMv framework, triple aspect monism (M can be further divided into non-conscious M and conscious M), neutralism, [Kashmir Shaivism](#) (860–925 AD) and [Viśiṣṭādvaita](#) (1017–1137 AD: mind (*cit*) and matter (*acit*) are adjectives of *Brahman*), see (Vimal, 2011h)).

The framework (1)-materialism is the dominant view in science, and (2)-idealism and (3)-interactive-substance-dualism are the dominant views in religions; all (1)-(3) have serious problems. The framework (4)-DAM has the least number of problems; the proposed DAMv framework is the extension/modification of DAM, which brings science and religions such as Hinduism closer.

## 2.2. Materialism and its problems

If matter is fundamental reality then it is materialism or monistic materialism (materialistic idealism, which is the dominant view in science), where mind including SEs *somehow* (we precisely do not know how) arise from non-experiential matter-in-itself. However, this has explanatory gap problem: how SEs arise from non-experiential material entities.

My working hypothesis is that the western/scientific materialism is close to the eastern *Cārvāka/Lokāyata* system.<sup>44</sup>

## 2.3. Idealism and its problems

If mind is fundamental reality then it is idealism, where matter arises from mind. Stapp's quantum-physics-based dual-nondual framework is a good example. According to (Stapp, 2009a), “quantum mechanics conforms at the *pragmatic/operational* level to the precepts of Cartesian duality, but reduces at a deep *ontological* level to a fundamentally mindlike nondual monism.” Here, the matter-in-itself is assumed to be the ‘congealed’ mind. However, it has explanatory gap problem: what is precise mechanism of ‘congealing’ process?

My working hypothesis is that the western/scientific idealism is close to the eastern Śāṅkarāchārya's *Advaita* (nondual monism). *Advaita* is silent on matter because *jagat*/matter is *mithyā/māyā* (illusion). If this is interpreted that the matter-in-itself is unreal, then *Advaita*'s matter might have derived from the eternal *Brahman* (mental entity in *Advaita*).

## 2.4. Interactive substance dualism and its problems

If mind and matter are on equal footings but interact then it is interactive substance dualism (somewhat close to eastern *Sāṃkhya*'s *Puruṣa-Prak'ti* system, where *Puruṣa* ‘shines’ on *Prak'ti* to create our

universe). Mind and matter are *separable* in interactive substance dualism, which has 7 problems (Vimal, 2011c); here, there is clear cut duality both substance-wise and property-wise. The seven problems are as follows. Comments on these problems and replies are given in endnote.<sup>45</sup>

**(1) Association or mind-brain interaction problem:** how does the non-material mind interact with the non-experiential brain? For example, how can we associate *redness* with red-green cells of 'V4/V8/VO' neural-net?<sup>46</sup> This is a problem of unexplained epistemic gap: how is the jump made from the mental *redness* to material 'V4/V8/VO' neural-net (and vice versa). Furthermore, if nature has two distinct aspects, namely, mind and matter, then how can these distinct aspects of nature ever interact (Stapp, 2009b)?

**(2) Problem of mental causation, violation of the law of energy conservation and problem of causal closure:** How can a mental cause give rise to a behavioral effect without the violation of the conservation of energy and momentum ((Fodor, 1994).p25) and without making category mistake (Feigl, 1967)? How can mental entities such as intentions and/or choices causally generate physical brain-events ((Collins, 2011).note5.p265)? The casual closure principle is “every physical effect has its chance fully determined by physical events alone” (Lowe, 2000). Then how is it possible that mind can determine physical events? Materialists, such as ((Dennett, 1991).p35 and (Flanagan, 1991).p21)), argue: (a) If mind does not have an associated physical energy/mass to transfer, how mind can influence brain cells for example going to concert. (b) In addition, since an interaction requires the expenditure of energy to have any effect (within the law of conservation of energy), where does this energy come from? These imply that (a) the law of energy conservation is true for all purely physical interactions and (b) an exchange of energy is involved in all causal interactions (or law-like connections); however, assumptions (a) is false in GTR and (b) is false in QM ((Collins, 2011).p125). However, as per (Collins, 2011), “the law

of energy conservation cannot be defined for the gravitational field, and hence for interactions involving gravity. [p127...] The non-conservation of energy in general relativity opens up another response a dualist could give to the energy-conservation objection. A dualist could argue that, like the gravitational field, the notion of energy simply cannot be defined for the mind, and hence one cannot even apply the principle of energy conservation to the mind/body interaction. The mind, like the gravitational field, could cause a real change in the energy of the brain without energy being conserved. [... then why] one should think that it [energy conservation] must apply to the mind/brain interaction. [p130...] The energy-conservation objection against interactionistic dualism fails when one considers the fact energy conservation is not a universally applicable principle in physics and the quantum mechanics sets a precedent for [causal] interaction [between the particles themselves] (or at least law-like correlation [between attributes of distantly separated particles as in quantum entanglement]) without any sort of energy-momentum exchange [by Bell's theorem], or even any intermediate carrier. Of course, the more general interaction problem for interactionistic dualism still remains, a problem that is addressed [elsewhere (p133)]". Thus, the problems may still remain for mind influencing the brain in interactive substance dualism.

**(3) 'Zombie' problem:** Substance dualism allows brains without conscious experiences (zombies) by subtracting the latter from the former. This implies 'epiphenomenalism': "mental events are caused by physical events in the brain, but have no effects upon any physical events" (Robinson, 2011). My zombie twin behaves just like me but it has no conscious experiences (Eerikäinen, 2000).

**(4) 'Ghost' problem:** The problem is that the interactive substance dualism would allow for various paranormal phenomena and that none of them has yet been scientifically verified. It is "the converse of the zombie problem. If the mind is separate from the body, then not

only can the brain exist without the mind but also the mind can exist without the brain. Thus, the so-called ‘disembodiment’ becomes a real possibility” (Eerikäinen, 2000). Nunn argues (personal communication) that the evidence for the occurrence of apparently disembodied states is actually quite strong, for example, near-death experiences (NDEs) (Blackmore, 1996; French, 2005). If this is true then this may not be a problem. However, one could argue that although there is some evidence for states that **appear to be disembodied**, but this is different from the **evidence for disembodiment**, since the phenomenon may be illusory.<sup>47</sup> Moreover, according to (Klemenc-Ketis, Kersnik, & Grmec, 2010), the higher partial pressure of carbon dioxide (pCO<sub>2</sub>) in arterial blood proved to be important in the provoking of NDEs and higher serum levels of potassium (K) might also be important. In addition, the “factors that could be important in provoking NDEs are anoxia ..., hypercapnia ..., and the presence of endorphins ..., ketamine ..., and serotonin ..., or abnormal activity of the temporal lobus ... or the limbic system ... These psychological theories try to explain the NDEs as a way of dissociation ..., depersonalisation ..., reactivation of birth memories ..., and regression” (Klemenc-Ketis et al., 2010).<sup>48</sup>

**(5) Neurophysiological many-one/many relation problem:**

Interactionism or substance dualism is not favorable to neurophysiological tests because it entails a many-one or many-many relations or correspondences (Feigl, 1967). As per (Beck & Eccles, 1992), the mind-brain interaction is a quantum process in synapses. One-one relationship means one experience (mental entity) interacts at one synapse (physical entity); many-one relationship means many synapses are related to one experience; many-many relationship means many synapses are related to many experiences. Thus, many-one and many-many relationships/interactions are not tractable for neurophysiological tests.

**(6) Causal pairing problem:** “It is exceedingly odd that particular minds and brains form a lifelong ‘monogamy’ despite the absence of any apparent relational framework. For it is only within the terms of such a framework that we could explain the persistent individual pairings as a consequence of a contingent, external relationship between them, which relations structure mental-physical causality in

a general fashion. [...] This difficulty might be overcome by positing the emergence of the mental substance, so that the asymmetrical dependency of mind on brain grounds their monogamous interaction” (O'Connor & Wong, 2005). However, it will be then materialistic emergence.

**(7) Developmental problem:** “[E]ven an emergentist version of substance dualism requires what is empirically implausible, viz., that a composite physical system gives rise, all in one go, to a whole, self-contained, organized system of properties bound up with a distinct individual. For we cannot say, as we should want to do, that as the underlying physical structure develops, the emergent self does likewise. This would require us to posit changing mereological complexity within the self, which would give rise all over again to problems of endurance that substance dualism is supposed to avoid, and which would run counter to intuitions of primitive unity that substance dualists have regarding persons. No, the emergent dualist view will have to say, instead, that at an early stage of physical development, a self emerges having all the capacities of an adult human self, but most of which lie dormant owing to immaturity in the physical system from which it emerges” (O'Connor & Wong, 2005). However, this seems to imply that self is not powerful and is a slave of developing physical system.

My working hypothesis is that the metaphysics of *Sāṃkhya*, *Gītā*, and *Advaita* might be close to this western interactive substance dualism; this is based on verses II/17-25 of *Gītā* (Swami Chinmayananda, 2000) pp.74-85). *Advaita* is derived from *Sāṃkhya*’s philosophy perhaps via *Mahat* (*Great-Brahman*: *Gītā*:XIV/3: (Swami Chinmayananda, 2000).p.870) concept. *Advaita*’s non-duality is between *jīvātman* and *Parmātman* (*Puruṣa*). *Advaita* is silent on matter; *Jagat*/matter is *mithyā*/māyā (illusion) because it is temporary as it dies and hence it is not eternal. If this is interpreted that the matter-in-itself, though temporary, is real in cMDR, then *Advaita*’s matter might have come from *Sāṃkhya*’s *Prakṛti*. In other words, *Advaita* and *Gītā* appear similar and are derived from *Sāṃkhya*’s *Puruṣa* and *Prakṛti*. Thus, *Puruṣa* and *Prakṛti* are two different substances, but they interact via ‘shining’ concept. Therefore, it is interactive substance dualism framework. *Gītā* seems



to mention that *Puruṣa-Prakṛti* interaction is via *Hiranyagarbha* (Golden Egg) concept (*Rig-Veda*, 10:121;<sup>49</sup> *Gītā*:VIII/4, XIV/4: (Swami Chinmayananda, 2000).p.488-91 and 871-2): *Puruṣa* shines on un-manifested *Prakṛti* (metaphorically makes her pregnant) for the creation of universe. However, there is an explanatory gap problem of precisely how this happens just saying it happens is not satisfactory because it would fall under hand-waving hypothesis.

## 2.5. Extended Dual-Aspect Monism (DAMv) Framework

The extended Dual-Aspect Monism or the DAMv framework is the ‘**D**ual-**A**spect **M**onism framework (Vimal, 2008b) with dual-mode (Vimal, 2010c) and **v**arying degrees of dominance of aspects depending on the levels of entities (Vimal, 2012a), where each entity-state (including the state of matter-in-itself) has *inseparable* physical and mental aspects. The mental aspect is from the subjective first person perspective and the physical aspect is from the objective third person perspective. This framework is *optimal* because it has the least number of problems (Vimal, 2010c).

The DAMv framework is elaborated further in (Bruzzo & Vimal, 2007; Caponigro et al., 2010; Caponigro & Vimal, 2010; MacGregor & Vimal, 2008; Vimal, 2008a, 2009a, 2009b, 2009c, 2009d, 2009e, 2009f, 2009g, 2009h, 2009i, 2009j, 2009k, 2010a, 2010b, 2010d, 2010e, 2010f, 2010g, 2010h, 2011c, 2011d, 2011f, 2011j, 2011k, 2011l).

### 2.5.1. The dual-aspect monism and the doctrine of inseparability

In the dual-aspect monism (Vimal, 2008b), the state of each entity has *inseparable* mental and physical aspects, where the *doctrine of inseparability* is essential to address various relevant problems discussed in (Vimal, 2010d). There are a number of hypotheses in this framework. In (Vimal, 2010d), (Vimal, 2010c), and (Vimal, 2009i),



three competing hypotheses about *inseparability* are described: (i) *superposition* based (hypothesis  $\mathbf{H}_1$ ), (ii) *superposition-then-integration* based ( $\mathbf{H}_2$ ), and (iii) *integration* based ( $\mathbf{H}_3$ ) where superposition is not required.

In  $\mathbf{H}_1$ , the mental aspect of the state of each fundamental entity (fermion or boson) and inert matter is the *carrier* of superimposed *potential* subjective experiences (SEs)/proto-experiences (PEs).<sup>50</sup> In  $\mathbf{H}_2$ , the mental aspect of the state of each fundamental entity and inert matter is the *carrier* of superimposed *potential* PEs (not SEs); these PEs are *integrated* by *neural-Darwinism* (co-evolution, co-development, and sensorimotor co-tuning by the evolutionary process of adaptation and natural selection). There is a PE attached to every level of evolution (such as atomic-PE, molecular-PE, genetic-PE, bacterium-PE, neural-PE, and neural-net-PE). In  $\mathbf{H}_3$ , for example, a string in string theory has its own string-PE; a physical entity is not a *carrier* of PE(s) in superposed form as it is in  $\mathbf{H}_2$ ; rather its state has two *inseparable* aspects.  $\mathbf{H}_3$  is a dual-aspect panpsychism because the mental aspect of the entity-state is in all entities at all levels, even though *psyche* (conscious subjective experience) only emerges when PEs are integrated. These two aspects of the state of various relevant entities for brain-mind and/or other systems are rigorously *integrated* via *neural-Darwinism*.

In  $\mathbf{H}_1$ , a specific SE arises (or is *realized*) in a neural-net as follows: **(i)** there exists a *virtual reservoir* that *stores* all possible fundamental *potential* SEs/PEs. **(ii)** The interaction of stimulus-dependent feed-forward and feedback signals in the neural-net creates a specific dual-aspect neural-network (NN)-state. **(iii)** The mental aspect of this specific state is assigned to a specific SE from the *virtual reservoir* during *neural Darwinism*. **(iv)** This specific SE is embedded in the mental aspect of related NN as a memory trace of neural-net-PE. And **(v)** when a specific stimulus is presented to the NN, the associated specific SE is selected by the matching and selection process and experienced by this NN that includes also self-related areas such as cortical midline structures (Northoff & Bermpohl, 2004; Northoff et al., 2006).

For example, when we look at red ball, it generates a state/representation in brain, which is called the redness-related brain state; this state has two *inseparable* aspects: mental and physical aspects. Our subjective color experience is redness, which is the mental aspect of NN-state. The red ball also activates a brain area called visual V4/V8/VO color area; this structure and other related structures (such as self-related cortical midline structures: CMS) form a NN that has related activities such as neuronal firing that we can measure using functional MRI. The physical aspect of this NN-state consists of the NN and its activities. These two aspects are *inseparable* in the dual-aspect monism. Here, the substance is just a single entity (the NN-state), which justifies the term ‘monism’; however, there are two *inseparable* aspects/properties, which justifies the term ‘dual-aspect’ and the dual-aspect monism framework (Vimal, 2008b).

In hypotheses **H<sub>2</sub>** and **H<sub>3</sub>**, a specific SE *emerges* mysteriously in a NN from the interaction of its constituent neural-PEs, such as in feed-forward stimulus-dependent neural signals and fronto-parietal feedback attentional signals. In all hypotheses, a specific SE is *realized* when essential ingredients of SEs are satisfied (Vimal, 2011e).

### 2.5.2. Dual-mode in the dual-aspect monism

In (Vimal, 2010c), the dual-mode concept<sup>51</sup> is explicitly incorporated in dual-aspect monism (Vimal, 2008b). The two modes are non-tilde and tilde modes: **(i)** The *non-tilde mode* is the cognitive nearest past approaching towards present; this is because memory traces (that contains past information) are stored in feedback system, which are involved in matching process (matching with stimulus dependent feed forward signals). In dual-aspect monism framework (Vimal, 2008b), the state of each entity has two *inseparable* (mental and physical) aspects. Therefore, the NN-state of the cognition (memory and attention)-related feedback signals in a neural-network of the brain has its *inseparable* mental and physical aspects. **(ii)** The *tilde mode* is the nearest future approaching towards present and is an entropy-reversed representation of non-tilde mode.<sup>52</sup> This is because the immediate future is related to the feed forward signals due to external

environmental input and/or internal endogenous input. The NN-state of feed forward signals has its *inseparable* mental and physical aspects. The physical aspect (P) of non-tilde mode is matched with the physical aspect of tilde mode (P-P matching) and/or the mental aspect (M) of non-tilde mode is matched with the mental aspect of tilde mode (M-M matching). In other words, there is no cross-matching/cross-interaction (such as M-P or P-M) and hence there is no category mistake. As mentioned before, mind and matter are of two different categories and one cannot arise from other; mind and matter cannot interact with each other; a mental entity has to interact with another mental entity but NEVER with a physical entity and vice-versa; cross-interaction is prohibited; otherwise we will make massive category mistake.<sup>53</sup> Interactive substance dualism (where mind and matter interact), materialism (where mind arises from matter), and idealism (where matter-in-itself arises from mind as ‘congealed’ mind) make category mistake and hence they are rejected. The reason is that we do not have scientific evidence for M-P or P-M. However, we have evidence for P-P from physics, which implies that same-same interaction cannot be rejected. If we find scientific evidence for cross-interaction M-P or P-M then we can reject the categorization of all entities into two categories if needed as in materialism or idealism to avoid category mistake. In that case, we cannot reject materialism, idealism, and substance dualism based on category mistake. Perhaps, we should search very hard for evidence to make sure that ‘category mistake’ is reliable doctrine. If we cannot reject this doctrine, then it clearly supports ONLY dual-aspect monism and its variations such as DAMv framework and triple aspect monism.

Furthermore, to link *structure* and *function* with experiences, there are two types of matching mechanisms in DAM framework with dual-mode (Vimal, 2010c): (a) the matching mechanism for the quantum dendritic-dendritic MT pathway, and (b) the matching mechanism for classical pathways. In other words, we propose that (a) the *quantum conjugate matching* between *experiences* in the mental aspect of the NN-state in *tilde* mode and that of the NN-state in *non-tilde* mode is related mostly to the mental aspect of the NN-state in quantum MT-dendritic-web. And (b) the classical *matching* between *experiences* in the mental aspect of the NN-state in *tilde* mode and that of the NN-

state in *non-tilde* mode is related to the mental aspect of the NN-state in remaining non-quantum (classical) pathways, such as axonal-dendritic sub-pathway for neuro-computation. Similarly, the physical aspects are matched.

In all cases, a specific SE is selected (a) when the *tilde* mode (the physical and mental aspect of NN-state related to feed forward input signals) interacts with the *non-tilde* mode (the physical and mental aspect of NN-state related to cognitive feedback signals) to *match* for a specific SE, and (b) when the *necessary* ingredients of SEs are satisfied (Vimal, 2011e). When the 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 physical 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*. However, if physical aspects are matched, mental aspects will be automatically and appropriately matched and *vice versa* because of the ***doctrine of inseparability*** of mental and physical aspects.

### 2.5.3. The concept of varying degrees of the dominance of aspects in DAM with Dual-mode

Here, we introduce the concept of varying degrees of the dominance of aspects depending on the levels of entities (Vimal, 2012a) in the **Dual-Aspect Monism** (Vimal, 2008b) framework with dual-mode (Vimal, 2010c); all these three components together is called the DAMv framework. For example, in inert entity, such as rock, the physical aspect of the state of entity is dominant and mental aspect seems latent (because we do not know the first person perspective of rock, for which we need to be rock). When we are awake, both aspects are equally dominant. At deep quantum level, the mental aspect is dominant and the physical aspect is latent. By the term 'latent', we mean that the latent aspect will re-appear when appropriate conditions are satisfied. This concept is introduced to encompass most views. For example: (i) In materialism, matter is the

fundamental entity and mind arises from matter. This can be re-framed by considering the fundamental entity in materialism as a dual-aspect entity, its physical aspect is dominant, and its mental aspect is latent. (ii) In substance dualism, mind and matter are two independent entities, which interact. This can be re-framed as the one of the entities has mental aspect dominant and physical aspect latent, and other one has physical aspect dominant and mental aspect latent. (iii) In idealism, consciousness/mind is the fundamental reality, and matter emerges from it. This can be re-framed, as the fundamental entity in idealism is a dual-aspect entity, its mental aspect is dominant and its physical aspect is latent. Thus the DAMv framework (Vimal, 2008b, 2010c, 2012a) encompasses and bridges most views; and hence it is close to a general framework.

If mind and matter are two *inseparable* aspects of the same entity, then it is dual-aspect monism. For example, you look at this **red text**. The subjective color experience is redness, which is the mental aspect. It also activates a brain area called visual V4/V8/VO color area, this structure and related activities such as neuronal firing that you can measure it using functional MRI is the physical aspect. This **red text** generates a state in brain, which is called redness-related brain state; this state has two aspects: mental and physical aspects. These two aspects are not separable in the DAMv framework. Here substance is just one (so monism) but there are two properties (so dual-aspects).

As per (Vimal, 2012a), “The DAMv framework is **(i)** consistent, to a certain extent, with other dual-aspect views such as reflexive monism (Velmans, 2008), retinoid system (Trehub, 2007), and also triple-aspect monism (Pereira Jr., 2012), and **(ii)** is complementary to **(a)** Global Workspace Theory (Baars, 2005; Dehaene, Kerszberg, & Changeux, 1998), **(b)** neural Darwinism (Edelman, 1993), **(c)** NCC framework (Crick & Koch, 2003), **(d)** autopoiesis/autonomy (Maturana, 2002; Varela, Maturana, & Uribe, 1974; Varela, 1981)-embodiment/embeddedness (Thompson & Varela, 2001)-neurophenomenology (Varela, 1996), **(e)** the self-organization based autogenesis of the self (Schwalbe, 1991), and **(f)** the mind-brain equivalence hypothesis (Damasio, 2010) that proposes that brain states and mental states are equivalent, for example, when the



physical aspect of the self-related neural-network state or process is generated (in three stages: protoself, core self, and autographical self), its *inseparable* mental aspect emerges.”

As per (Velmans, 2008), “*Reflexive Monism [RM]* is a dual-aspect theory (in the tradition of Spinoza) which argues that the one basic stuff of which the universe is composed has the potential to manifest both physically and as conscious experience. In its evolution from some primal undifferentiated state, the universe differentiates into distinguishable physical entities, at least some of which have the potential for conscious experience, such as human beings. [...] the human mind appears to have both exterior (physical) and interior (conscious experiential) aspects [...] According to RM ... conscious states and their neural correlates are equally basic features of the mind itself. [...] the reflexive model also makes the strong claim that, insofar as experiences are anywhere, *they are roughly where they seem to be*. [...] representations in the mind/brain have two (mental and physical) aspects, whose apparent form is dependent on the perspective from which they are viewed.”

In my view, the RM framework needs to address a few explanatory type problems (Vimal, 2012a): **(i)** What is that mechanism which differentiates the presumed primal undifferentiated state of the universe into distinguishable physical entities, at least some of which have the potential for conscious experience, such as human beings? **(ii)** What is so special about some entities that become conscious? **(iii)** Why can mind (a mental entity) have two aspects: exterior (physical) and interior (conscious experiential) aspects, i.e., how can a mental entity mind have physical aspect? Is this because the third person perspective (that we usually say physical aspect) is also mind’s construct? **(iv)** Is it not that *the objects of experiences are roughly where they seem to be* whereas the process of experiencing is in the neural-network of brain? One could argue that the SEs, such as redness, belong to the subject and is the function of the triad: brain, body, and environment; objects reflect long wavelength lights; otherwise, achromat should also be able experience redness if redness only belongs to the ripe tomato.

In the DAMv framework, the SE of 3D phenomenal world can be nothing more than the mental aspect of a brain-state/representation that must be inside the brain. Its physical aspect is **(i)** related NN and its activities are inside the brain, **(ii)** body and **(iii)** environment. However, the aspects of the brain-state and that of 3D-world-state are tuned (Vimal, 2010c). In other words, the DAMv framework, like RM, accepts the world appearance-Reality (cMDR-MIR: see below Section 2.6) distinction and “conscious appearances really are (roughly) how they seem to be”. The term ‘appearance’ is our daily conventional mind-dependent reality (cMDR); and the term ‘Reality’ is thing-in-itself or mind-independent reality (MIR) that is either unknown as per Kant or partly known via cMDR as per neo-Kantian view because mind is also a product of Nature and hence it must be telling us at least partly about thing-in-itself.

In RM, perceptual projection is “a *psychological effect* produced by unconscious perceptual processing” (Velmans, 2000).p115, which is the mental aspect of related brain-state in DAMv. DAMv incorporates some of the features of both RM and biological naturalism (BN), where BN is ‘non-reductive’ or emergent forms of physicalism (Searle, 2007; Velmans, 2008). In the DAMv framework, the real skull and its (tactile, visual image in mirror) appearance are between the mental aspect of brain-state and the psychologically projected phenomenal world.

My working hypothesis is that the theist interpretation of the DAMv framework (Vimal, 2008b, 2010c, 2012a) may be somewhat close to eastern *Viśiṣṭādvaita* and *Trika Kashmir Shaivism* (TKS). However, there is one difference: in all theist religions, the ‘soul’ is *separable* from body at the time of death, whereas mental and physical aspects are *inseparable* in the DAMv framework. The dual-aspect entities are disintegrated during death; after death, the *actuality* of soul or self as being the SE of subject returns into its *potentiality* as in SEs potentially superposed in each entity. In other words, the *Brahman* is the fundamental dual-aspect entity in which all dual-aspect entities are in potential form. The theist interpretation of the DAMv framework is that the *Brahman* is God and atheist interpretation is simply the fundamental dual-aspect entity from which physical and mental aspect of universes including us arise. In the DAMv



framework, *Ishvara* and *Jīva* (purely mental entities) of *Viśiṣṭādvaita* are the mental aspect and *Jagat* (purely physical entities) of *Viśiṣṭādvaita* is the physical aspect of *Brahman*. It appears that mental and physical aspects are *separable* in eastern *Viśiṣṭādvaita* and TKS, whereas they are *inseparable* in the DAMv framework. The problems of *Sāṃkhya*, *Gītā*, and *Advaita* creep up in *Viśiṣṭādvaita* and TKS.

*Dvi-Pakṣa Advaita* (the DAMv framework) is NOT inconsistent with the view: “this universe is spoken of as both differentiated and undifferentiated to indicate the identity of the Self [mental aspect] and not-Self [physical aspect]” (Ādi Śankarāchārya, 1950).I.4.7.p114.

## 2.6. Three kinds of realities

There are 3 kinds of realities (Vimal, 2009a):

- (1) Our daily conventional mind-dependent reality (cMDR)
- (2) Ultimate Samādhi-state<sup>54</sup> mind-dependent reality (uMDR)
- (3) Mind-independent reality (MIR), which is partly known via cMDR and uMDR.

One could argue that we live daily in *conventional* mind-dependent reality (cMDR); entities around us are real in this cMDR, but they are illusion in mind-independent reality (MIR). MIR is unknown as per Kant; however, it is partly known as per neo-Kantians because mind is also a product of Nature; so MDR must be telling us something about reality.<sup>55</sup>

My working hypothesis is that, in cMDR and uMDR, theists claim that God exists who created all universes including us. Whereas, in cMDR, atheists claim that God is created by human mind. Thus, there is a conflict in views. ‘God exists or not’ cannot be proved or disproved scientifically. We cannot settle this issue in both MDRs. We need to investigate the fundamental Truth in MIR, which is either

unknown or partly known via cMDR and uMDR. Thus, Truth remains unknown; however, it would be fair to say, there is the fundamental entity (unmanifested state of *Brahman*) from which universes including us arise. Theists can call this entity God and atheists can call whatever they wish as per their metaphysical view such as physicist's vacuum/quantum potential, Bohm's Implicate Order, Buddhist Universal Mind, and so on. For example, *Brahman* is a dual-aspect entity I the DAMv framework.

## CHAPTER 3

# Science and its problems

### 3.1. Science in Ancient India

The practice of science in ancient India emphasized to link rigorously both outer (physical) and inner (mental) worlds based on idealism, interactive substance dualism, separable dual-aspect/perspective monism, and *Cārvāka's* materialism/naturalism. Thus, it was different from current purely materialistic western modern science. All have serious problems except the dual-aspect monism to some extent. The extended dual-aspect monism (*Dvi-Pakṣa Advaita*) with inseparable physical and mental aspects has the least number of problems.

#### 3.1.1. Some of Ancient Indian Scientists

Some of Indian scientists in mathematics, astronomy, medicine, grammar (Danino, 2009) are: Baudhāyana (800 BC), Manava (750 BC), Apastamba (600 BC), [Pāṇini](#) (पाणिनि : 520 BC, 600-500 BC in [Pushkalavati](#)/Attock/Gandhāra now in Pākistān), Katyayana (200 BC), Āryabhata-I (born 476, Patna), Yativrsabha (500), Varahamihira (505, Ujjain), Brahmagupta (598, Ujjain), Bhāskara-I (600, Saurashtra), Govindaswami (800), Mahāvira (800, Mysore), Prthudakaswami (830), Sankaranarayan (840), Sridhara (870), Āryabhata II (920), Vijayanandi (940, Varanasi), Parameswara (1370, Alattur), Nīlakantha (born 1444, Kerala), Kamalakara (1616, Varanasi), Sripati (1019, Rohinikhand), Brahmadeva (1060, Mathura), Bhaskara-II (1114, Vijayapura), Narayana (1340), Mahendra Suri (1340), Mādhava (1350, Kochi), Kvesthadeva (1500, Kochi), Jagannath (1690, Jaipur). *Siddhantic* Period (from 5<sup>th</sup> century CE) was the golden age of Indian mathematics and astronomy (Danino, 2009).

**Baudhāyana** (fl. c. 800 BC) was mathematician. His [Śulbasūtra](#) give rules for the construction of [altars](#) that contained several important mathematical results. He is accredited with calculating the value of [pi](#) before [Pythagoras](#), and with discovering what is now known as the [Pythagorean theorem](#).

**Suśruta** (सुश्रुत, fl. 800 BC) was an ancient Indian Father of Surgery and lived in [Varanasi](#). In his [Suśruta Samhitā](#), he describes over 300 surgical procedures, 120 surgical instruments and classifies human surgery in eight categories.

**Caraka** (चरक, born c. 300 BC) was the Father of [Indian Medicine](#), contributed ancient art and science of [Ayurveda](#) (a system of medicine and lifestyle developed in [Ancient India](#)). His [Charaka Samhita](#) (चरक संहिता) is an early [Ayurvedic](#) text on [internal medicine](#). His [Sushruta Samhita](#) (सुश्रुतसंहिता) is foundational to [Ayurvedic medicine](#) with innovative chapters on [surgery](#).

**Kanada** (कणाद: c. 200-600 BC) developed [logic](#) in [Vaiśeṣika Sutra](#) (वैशेषिक सूत्र), which advocates a form of [atomism](#) and postulates that all objects are reducible to a finite number of [atoms](#). He developed the concept of Anu (atom), such as Dvyanuka (biatomic [molecule](#)) and tryanuka (triatomic [molecule](#)). He believed that all living beings are composed of one to five elements: water, fire, earth, air, ether. He theorized that *Gurutva* ([Gravity](#)) was responsible for the falling of objects on the Earth.

**Nāgārjuna** (नागार्जुन) (ca. 150–250 [CE](#)) was an Buddhist philosopher. Along with his disciple [Āryadeva](#), he is credited with founding the [Mādhyamaka](#) school of [Mahāyāna Buddhism](#). Nāgārjuna developed (a) concept of [śūnyatā](#), or ‘emptiness,’ (b) [anātman](#) (no-self), (c) the philosophy of the [Prajñāpāramitā](#) sūtras related to dependent co-origination or the organism-environment interaction, (d) the idea of relativity in his Ratnāvalī (shortness exists only in relation to the idea of length, the determination of an object is only possible in relation to other things or objects, relationship between the ideas of ‘short’ and ‘long’ is not due to intrinsic nature (svabhāva), (e) further [Ayurvedic medicine](#), compiled [redaction](#) in [Suśruta](#)’s [Sushruta Samhita](#), conceptualized the circulatory system

and blood tissue ([rakta dhātu](#)), developed the therapeutic value of minerals (*bhasmas*: the father of [iatrochemistry](#)) and (f) iconography.

[Āryabhata](#) (आर्यभट ) of Kusumapura/Pā'aliputra/Patna (476–550) was [Indian mathematician](#) and [Indian astronomer](#). His book [Āryabhaṭīyam](#) (499 CE) covers arithmetic, algebra, plane trigonometry, spherical trigonometry, fractions, quadratic equations, sums-of-power series, a table of sines, planetary, and cosmic theories. Āryabhaṭīyam has four chapters (Kak, 1997b): “(i) the astronomical constants and the sine table, (ii) mathematics required for computations, (iii) division of time and rules for computing the longitudes of planets using eccentrics and epicycles, (iv) the armillary sphere, rules relating to problems of trigonometry and the computation of eclipses.” His another book *Arya-siddhānta* has astronomical computations. As per Āryabhata (476 CE) (Danino, 2009): (i) earth spins on its axis (Kak, 1997b) and rotates around sun;<sup>56</sup> (ii) earth’s diameter = 1050 yojanas, circumference =  $2\pi r = 44,860$  km (~10% off; circumference at the Equator = 40,075 km); (iii) the “moon eclipses the sun, and the great shadow of the earth eclipses the moon” (Āryabhata, IV.37); (iv) 24 values in increments of  $3.75^\circ = 90^\circ$  for the first quadrant as the table of sines and  $\pi = 3.1416$ . He (v) gave the area of triangle, and (vi) solved, in integers, the linear indeterminate equations of the type  $ax + c = y$ . (vii) His ‘orbit of the sky’ is close to the distance ‘illuminated by the sun’. (viii) He hypothesized that the heavenly motions go through a cycle of 4.32 billion years (Kak, 1997b). (ix) As per (Kak, 1997b), “Āryabhata was aware of the relativity of motion is clear from this passage in his book, ‘Just as a man in a boat sees the trees on the bank move in the opposite direction, so an observer on the equator sees the stationary stars as moving precisely toward the west.’ ”

[Varāhamihira](#) (वराहमिहिर) (505–587) was an astronomer, mathematician, and [astrologer](#) and lived in [Ujjain](#). His *Pañcasiddhāntikā* (treatise on the five astronomical [Canons](#), ca. 575 CE) is a treatise on mathematical astronomy; it summarises five earlier astronomical treatises, namely the [Surya Siddhanta](#), [Romaka Siddhanta](#), [Paulisa Siddhanta](#), [Vasishtha Siddhanta](#) and [Paitamaha Siddhantas](#). He mentioned that the shifting of the equinox is 50.32 seconds. His book [Bṛihat Samhita](#) has 106 chapters and covers astrology, planetary movements, eclipses, rainfall, clouds,

architecture, growth of crops, manufacture of perfume, matrimony, domestic relations, gems, pearls, rituals, gemstone evaluation criterion found in the *Garuda Purana*, and the sacred Nine Pearls. His book *Brihat Jataka* details Hindu astrology.

[Brahmagupta](#) (598–668) of Bhilamala in Rajasthan (ब्रह्मगुप्त) was mathematician and astronomer who wrote [Brāhmasphuṭasiddhānta](#) (628 CE) on mathematics (algebra, arithmetics, series, zero, geometry-triangle, Pi, trigonometry) and astronomy. His work was translated into Arabic (771/773) at Baghdad as *Sindhind* (Kak, 1997b). He proposed the solutions in integers for  $Nx^2 + 1 = y^2$  (second order indeterminate equation) using *bhāvanā* method. His another book *Khandakhadyaka* is related to astronomical computations. As per (Ifrah, 1994), “A thousand years ahead of Europeans, Indian savants knew that the zero and infinity were mutually inverse notions”, for example, see *Brāhmasphuṭasiddhānta*.

[Bhāskara I](#) (c. 600 – c. 680) (भारुकर I) was a mathematician, who (a) wrote numbers in the [Hindu-Arabic decimal system](#) with a circle for the [zero](#), (b) gave a rational approximation of the [sine](#) function in *Āryabhaṭīyabhāṣya* (629 CE), and (c) wrote two astronomical works: the *Mahābhāskariya* and the *Laghubhāskariya*.

**Mahavira** (born: 800) provided approximate formulas for the eclipse’s area and its circumference and worked on permutations and combinations.

[Halayudha](#) (हलायुध) was a 10th century mathematician, who wrote the *Mṛtasañjīvanī*, a [commentary](#) on [Pingala's Chandah-shastra](#), containing a clear description of [Pascal's triangle](#) (called *meru-prastāra*).

**Bhāskara-II** (born 1114 in Karnataka region) (a) developed the improved ‘cyclic method’ (*chakravāla*), e.g. solution to  $61x^2 + 1 = y^2$ . Lagrange (1736–1813) reached the same solution, but through a much longer method, (b) also worked on derivatives (of a sine function in relation to the velocity of planets), and (c) defined a unit of time (truti) ~ 30 microseconds (Danino, 2009). His book *Siddhānta Shiromani* has four parts (Kak, 1997b): “(i) *Lilavati* on arithmetic, (ii) *Bijaganita* on algebra, (iii) *Ganitadhyaya*, (iv) *Goladhyaya* on astronomy.” He extended earlier *siddhāntas* related to epicyclic eccentric theories of planetary motions.



**Parameswara** (1360-1455) (a) observed eclipses over 55 years and made minute corrections on the position of planets, and (b) worked on infinite series including trigonometric functions (Danino, 2009).

**Mādhava** (c. 1340-1425) worked on (a) power series expansions for sine and cosine (correct to  $1/3600^{\text{th}}$  of a degree), and (b) infinite series of  $\pi$  with 10 correct decimal places (Danino, 2009). He developed (c) a procedure to determine the positions of the moon every 36 minutes, and (d) methods to estimate the motions of the planets (Kak, 1997b).

**Nilakantha** Somayaji (c. 1444-1545) provided (a) the formula for the sum of a convergent infinite geometric series, and (b) the concept of heliocentrism (building on Parameswara) (Danino, 2009).

**Jyesthadeva's** *Yuktibhāṣā* (1530) proposed (a) the notion of proof (*upapatti*) and (b) the observed results must be validated (Danino, 2009).

The **Avatamsaka Sūtra** (Buddhist text) illustrates a network of pearls: one can see, in each pearl, the reflections of all other pearls and the reflections within the reflections. This is consistent with the arrangement of circles in a 'Schottky group' in modern mathematics (Danino, 2009).

**Sayana's comments on RigVeda** (1.50.4) implies speed of light = 2202 yojana (1 yojana=13.6km) in half a nimesha ( $16/75^{\text{th}}$  second) = 280,755 km/s, close to actual speed of 299,792 km/s (Danino, 2009).

**Infinitesimals:** one paramānu ~ 70 nanometers; and 1 dhansi = 0.123 mg (Danino, 2009).

The **metaphysics** of above ancient scientists seems to be idealism and/or interactive substance dualism; whereas, materialism is unclear (except in the metaphysics of *Cārvākas* discussed later in Section 3.2).

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### 3.1.2. Physical and Cognitive sciences

The followings are adapted from (Kak, 1997b) and other sources<sup>57</sup>:

**(1) Mathematical and Physical Sciences:** Vedic science encompassed both physical (such as physics, mathematics,



astronomy, and logic) and cognitive sciences including other disciplines.

As per (Seidenberg, 1978), “[Old-Babylonia](#) [1700 BC] got the theorem of [Pythagoras](#) [570-495 BC] from India [geometric rituals were preserved in the [Śulbasūtras](#): 800-600 BC]”. He argues that (a) Indian geometry (800-600 BC) predates [Greek geometry](#) ([Thales](#): 635-543 BC; [Pythagoras](#): 570-495 BC) by centuries evidenced from [śatapatha brāhmaṇa](#) (9<sup>th</sup> to 6<sup>th</sup> centuries BC), (b) the origin of mathematics including geometry had a ritual origin because the ritual consisted of converting the circular altar (representing earth) into a square alter (representing heavens) of an identical area. Furthermore, ritualists knew that the length of the year was between 365 and 366 days.

[The Shri Yantra](#) is mentioned in the *Atharvaveda* and is “formed by nine interlocking triangles that surround and radiate out from the central ([bindu](#)) point, the junction point between the physical universe and its unmanifest source. Together the nine triangles are interlaced in such a way as to form 43 smaller triangles in a web symbolic of the entire cosmos or a womb symbolic of creation. Together they express [Advaita](#) or [non-duality](#).”<sup>58</sup> (Barrow, 1992) argued if the Shri Yantra implies non-Euclidean geometry; if so then it originated in India centuries before its systematic development in Europe.

As per (Kak, 1994), the **zero symbol** was derived from the fish sign, which represented ‘ten’ in [Brāhmī](#) script (50 BC-50 CE). As per (van Nooten, 1993), [Piṅgala](#)(पिङ्गल)'s *Chandaḥśāstra* (est. 4th century BC) used **binary numbers** to classify Vedic meters. (McClain, 1978) described the tonal basis of early myth and argued that the links between music and myth are even deeper than astronomy and myth. The *Samaveda* (its hymns were sung) was compared to the sky, which emphasizes the **musical basis of astronomy**.

As per (Staal, 1988), Panini's **grammar** (6th century BC or earlier) embodies a universal grammatical and computing system implying Panini-grammar based logical framework for modern computers (Kak, 1987).

According to (Filliozat, 1970), the link between the three elements of the wind, the gall, and the phlegm, hypothesized by Plato (Greek medicine), seems to be derived from the earlier **tridosha theory** of

Ayurveda. This transmission of information might have occurred via the Persian Empire.

**Rhythms of outer and inner world:** The ancients (such as in *Aitreya Aranyaka* 2.4.2.4) discovered many of the biological periods (Kak, 1997b), such as (a) the 24-hour-50-minute circadian rhythm, (v) the 24-hour cycle of the sun and sight, (c) the connection of the menstrual cycle with the motions of the moon, (d) the life cycles of various plants, (e) the semimonthly estrus cycle of sheep, (f) the three-week cycles of cattle and pigs, and (g) the six-month cycle of dogs.

**(2) Appendices to Vedic science** are six Vedāṅgas: (i) *kalpa* for the performance of ritual based on geometry, mathematics and calendrics, (ii) *shiksha* for phonetics, (iii) *chhandas* for metrical structures, (iv) *nirukta* for etymology, (v) *vyakarana* for grammar, and (vi) *vyotisha* for astronomy and other cyclical phenomena.

**(3) The Tripartite Model:** Vedic science/world-view proposed that our universe can be divided in 3 regions (earth, space, and sky), where the processes in the earth, on the sky, and within the mind are linked.

**(4) The Five Levels/Sheaths:** This model was extended to five categories/levels of analysis: (a) [\*Panchamahābhūta\*](#) (the foundation of *Ayurveda*) theory has 5 elements, namely, *Prithvī* (earth), *Jala* (water), *Teja* (fire), *Vayu* (air), and *Ākāśh* (ether); (b) five senses: smell, taste, form/sight, touch, sound; and (c) *Pancha Koshas*/sheaths (the foundation of yoga) from gross to finer levels: physical body (*annamaya kosha*), *prāṇa* (*prāṇamaya kosha*), mind (*manomaya kosha*), intellect (*vijñānamaya kosha*), emotion (*ānandamaya kosha*). The self is above emotion, which is higher than the intellect. The *prāṇa* is the energy underlying physical and mental processes and synchronizes the body and the mind/thoughts through *prāṇāyāma*. The three energy states are *tamas* (the state of dull and lethargic), *rajas* (the state of agitated and restless), and *sattva* (the state of equilibrium and balance). The characteristics of each higher level emerge from the previous level. In other words, mind emerges from matter (materialism), but requires the presence of the self (interactive substance dualism).

**(5) Vedic cognitive science:** As per Rig-Veda, the outer world (physical aspect) and the inner world (mental aspect) are equivalent in a complementary manner for cosmic order. As per Vedic world, the

matter-in-itself (physical aspect) and its appearance/consciousness (mental aspect) are aspects of the same transcendental reality. The hypothesis of complementarity (mind and matter are complementary to each other) is consistent with the following complementary groups: logic (*nyāya*) and physics (*Vaiśeṣika*), cosmology (*Sāṃkhya*) and psychology (*yoga*), and language (*Mīmāṃsā*) and reality (*Vedānta*). These are consistent with the *Dvi-Pakṣa Advaita*.

**(6) Cosmology:** *Sāṃkhya* addresses the question of ‘how does inanimate matter come to have awareness/consciousness?’ The primal physical entity *Prakṛti* evolves into 24 categories, which when interact with the 25<sup>th</sup> category, the primal mental entity *Puruṣa*, the consciousness emerges; this is detailed later in Section 4.1.1. This is consistent with western interactive substance dualism. The universe itself goes through cycles of creation and destruction as per the recursive Vedic world-view; *Sāṃkhya* implies that individual life “mirrors the entire creation cycle and cognition mirrors a life-history” (Kak, 1997b).

**(7) The Structure of the Mind:** The (western term) mind consists of five components: *manas*, *ahamkāra*, *chitta*, *buddhi*, and *ātman*; this is not inconsistent with *Sāṃkhya*. The ***manas*** is the sensory-motor lower mind that assembles sense impressions (sensory representations) from the senses of sight, hearing, touch, taste, and smell. The perceptions related to *manas* shift from moment to moment. The ***Ahamkāra*** is ‘the sense of I-ness’, which links some perceptions to subjective experiences. The ***chitta*** (different from *cit*), is ‘the memory bank of the mind’, such as iconic memory, short-term/working memory, and long-term memory. The *chitta* is an active entity that organizes the new impressions for instinctual/primitive urges responsible for different emotional states. The ***buddhi***, discriminative in nature (बुद्धि निश्चयात्मिका चित्त-वृत्ति), discerns truth from falsehood for making wisdom possible. The *ātman*/self is the innermost aspect of mind/consciousness, which is surrounded/covered by the above mental complex (*manas*, *ahamkāra*, *chitta*, and *buddhi*).

**(8) Yoga-Vasiṣṭha’s concepts of space, time, matter, mind, experience/consciousness:** Valmīki’s (first century AD) [Yoga-Vasiṣṭha](#) is based on radical idealism at deeper level (Kak, 1997b) and interactive substance dualism (**mind** and **matter** dichotomy) at

conventional mind-dependent reality (cMDR). YV implies three kinds of **space** (Kak, 1997b): (i) the infinite space of consciousness (idealism) that is omnipresent, (ii) the psychological space for individual mind/consciousness, and (iii) the physical space for all material objects (interactive substance dualism). Space and **time** do not a fixed span. For us external objects (matter-in-itself) have appearance, so is the time. The time can vary from about one-millionth of the twinkling of an eye (one unit of time) to several cycles of the four yugas, which is the life-span of one cosmic creation-cycle in cyclic universe. There are innumerable universes with varied composition and space-time structure.

As per *Upaniṣads* (*śrutis*), the direct experience (such as in samādhi/mystic state: consciousness-as-such) is the basis for main pramans (proofs). The underlying hypothesis is that (a) the the infinite space of consciousness is substratum of the experiencing intelligence (the *Puruṣa*); and (b) this itself becomes the experiencer (*karta*, the observer), the act of experiencing (*kriya*, the process of observation), and the experiences (*karm*, appearances of objects, the observed). We have an insentient destructable physical body and the finite but orderly mind with sentient self. “I have carefully investigated, I have observed everything from the tips of my toes to the top of my head, and I have not found anything of which I could say, ‘This I am.’ Who is ‘I’? I am the all-pervading consciousness which is itself not an object of knowledge or knowing and is free from self-hood. I am that which is indivisible, which has no name, which does not undergo change, which is beyond all concepts of unity and diversity, which is beyond measure”. The following pairs are **complementary** to each other: mind and matter, the observer and the observed, appearances and matter-in-itself, and experiencer and experiences.

The radical idealism of Yoga-Vasiṣṭha is as follows (Kak, 1997b): **(i)** Cosmic consciousness is eternal, pure, infinite, ominipresent, birthless, deathless, ominipresent, omniscient, and omnipotent, fundamental field that pervades the whole universe but is unknowable (to some extent in my view). **(ii)** The creation of universe(s) appears when cosmic consciousness reflects in itself. **(iii)** The world can be considered as the body of consciousness. **(iv)** The universe is real because its source is the cosmic consciousness (*Brahman*) that is real (eternal) and is also unreal because the

universe is transient and will face death at the end of cycle. **(v)** This eternal infinite cosmic consciousness contains innumerable universes in analogy to a beam of light containing specks of dust. **(vi)** “The universe exists in infinite consciousness. Infinite consciousness is unmanifest, though omnipresent, even as space, though existing everywhere, is manifest. [...] The manifestation of the omnipotence of infinite consciousness enters into an alliance with time, space and causation. Thence arise infinite names and forms” (Kak, 1997b). **(vii)** The laws of Nature are intrinsic to the unfolding universe and hence evolve with it. **(viii)** A new information is a result of the interaction between cosmic mind (*Puruṣa*) and matter (*Prakṛti*) and does not emerge from the inanimate world. **(ix)** The radical idealism of Yoga-Vaiśiṣṭha and the dominant view (materialism) of mainstream science are at opposite poles and both have serious problems as mentioned in Section 2 but they can be addressed by the *Dvi-Pakṣa Advaita* (DAMv framework) as discussed in Section 5.

### 3.1.3. Yugas and Dashavatār

**Yugas:** The durations of *Satyayuga*, *Tretāyuga*, *Dvāparayuga*, and *Kaliyuga* are 1.728, 1.296, 0.864, and 0.432 million years (MY), respectively (Danino, 2009). The total for all *yugas* (i.e., *Churyuga*) is 4.32 MY, which is close to [Ardipithecus](#) (5.5–4.4 MYA (million years ago)), with species [Ar. kadabba](#) (about 5.6 MYA) and [Ar. ramidus](#) (about 4.4 MYA). The duration of one day of *Brahmā* is = one *kalpa* = 1000 *Churyuga* = 4.32 BY (billion years), which is very close to when our [solar system](#) was formed (about 4.6 BYA: billions years ago). As per *Āryabhaṭīyam*, *Kaliyuga* started on Friday, 18th February, 3102 B.C. (Kak, 1997b).

**Dashavatār:** The concept of [Dashavatar](#) is consistent with Darwin’s theory of evolution (Danino, 2009): (a) *Satyayuga*: fish (*Matsyavatār*), amphibian (*Kurmavatār*, tortoise), mammal (*Varahavatār*, boar), half-man half-animal (*Narasimhavatār*), (b) *Tretāyuga*: short-man (*Vamanavatār*, dwarf), *Parshuramavatār* (mental evolution), *Ramavatār* (mental evolution), (c) *Dvāparayuga*: *Krishnavatār* (north India)/*Balaramavatār* (south India) (mental evolution), (d) *Kaliyuga*: *Buddhavatār* (north)/*Vithoba* (Maharashtra, Goa)/*Jagannath* (Orissa)



(mental evolution), and *Kalkivatār* (Hindu)/[Imam Ali](#) (Ismaili [Khoja](#)) (mental, technical, and cultural evolution: awaited for full mental evolution).

### 3.2. Cārvākas/Lokāyatas

*Cārvāka/Lokāyata* (चार्वाकः 800-500 BC) is a system of [Indian philosophy](#) that adopts various forms of [philosophical skepticism](#) and religious indifference. *Cārvākas* were *nāstikas*, materialist, and atheists and were the probable author of the [Bārhaspatya-sūtras](#) and probably followers of [Brihaspati](#), who founded the *Cārvākas/Lokāyata* philosophy.<sup>59</sup>

The followings propositions related to *Cārvāka/Lokāyata* system are adapted from (Raju, 1985; Singh, 2002) and other sources mentioned in the texts below:

**(i)** The hypothesis of life-after-death (such as soul, *karmic* laws, rebirth, and God) was rejected unequivocally by *Cārvākas* in any shape or form, similar to modern science.

**(ii)** They also rejected the hypothesis of the post-death *karmic* law of reward and retribution, which influences the destiny of a soul for rebirth.

**(iii)** As per Mādhava Vidyāranya (*Advaitist* and 12th Jagadguru of the Sringeri Sharada Peetham: 1380-1386 AD in his *Sarvadarśanasamgraha* (सर्वदर्शनसङ्ग्रह)) reveals the view of *Cārvākas/Lokāyata* as, “There is no heaven, no final liberation, nor any soul in another world, nor do the actions of the four castes, orders, etc., produce any real effect. [...] While life remains let a man live happily [...] When the body turns into ashes, how can it ever return again? If he who departs from the body goes to another world, how is it that he does not come back again, restless because of his love for his kindred?” (quoted from (Singh, 2002)).

**(iv)** As per *Cārvākas/Lokāyata*, our consciousness, intelligence, and subjective experiences somehow emerge/arise from matter (such as our brain), similar to the materialistic emergentism of modern

cognitive neuroscience and the atheistic system of the materialist school of Epicurus (341-270 BC) in ancient Greece.

(v) *Cārvāka* related atheist ***Bṛhaspati*** (बृहस्पति: c. 600 BC), different from theist *deva-guru* (guru of the gods) *Bṛhaspati*, wrote [Bārhaspatya-sūtras](#), which is the foundational text of the [Cārvāka](#) school of ‘materialist’ ([nastika](#)) philosophy.

(vi) ***Dehātmavāda***: *Cārvākas/Lokāyatas* rejected the metaphysical concept (idealism) of the ‘Self’ as portrayed in the *Upaniṣads*, and the karmic law that necessitated the rebirth of this entity into the next life was nonsensical. They believed in *Dehātmavāda* that consciousness emerges from the body-brain endowed with intelligence. Buddha and Mahavīra also rejected the Vedic orthodoxy of Self (God). When we die, our body-brain disintegrates into its constituent elements and merges with Nature for recycling (*prithivikayah* and *bhūtacaitanyavadin*); this is similar to modern materialistic science.

As per Sankara (Ādi Śankarāchārya, 1988), *Dehātmavāda* is as follows: (a) Consciousness/SE/intelligence is observed only in body-brain system, whereas it is never detected without a functional body-brain. Therefore, materialists (*Dehātmavādīs*) consider consciousness is simply the attribute of the body-brain system. (b) The three *gunas*, *tamas*, *rajas*, and *sattva* are mass, energy, and intelligence, respectively. As the mixture of these three *gunas* unfolds, consciousness emerges from the brain-body system via theory of Sāṃkhya. (c) *Dehātmavāda* negates anything (such as soul, God, *Puruṣa*) outside of the material elements that constitutes the body-brain system; it can also be interpreted as being “the cult of the body-brain system”.

(vii) ***Pramāṇa***: *Cārvākas/Lokāyatas* accepted [pratyakṣa](#) (perception) as the only [pramāṇa](#) (proof). They rejected [anumāna](#) (inference) because it can entail transcendental world (such as heaven/hell, God, soul/*ātman*, immortality, laws of karmas and life-after-death), which was not acceptable to them (Raju, 1985; Singh, 2002). However, later *Cārvākas* (such as Purandara: 7<sup>th</sup> century) was sympathetic to [anumāna](#) related to the nature of all worldly entities if where [pratyakṣa](#) (perceptual experience) is available. However, since ordinary perceptual experience is not available for transcendental hypotheses, [anumāna](#) cannot be used to establish them.



**(viii) Agnostic scepticism:** [Jayarāṣi Bhaṭṭa](#) (ca. 770-830) wrote the *Tattvopaplavasimha* ('The Lion that Devours All Categories' or 'The Upsetting of All Principles') was a radical *Cārvāka*. He rejects all *pramāṇas*<sup>60</sup> as valid sources of knowledge. The claims about the existence or non-existence of any [deity](#), transcendental world, also religious and [metaphysical](#) claims are unknown or unknowable. The *Cārvāka*/materialist's doctrine of causality must be due to purely physical processes only, i.e., *adṛṣṭā* (unseen) non-physical causes are either unknown or unknowable.

**(ix) Svabhāvacāra and Yadr̥cchāvacāra:** The world/universe is the result of the inherent nature (*svabhāva*) of the (material) elements or things that constitute it.<sup>61</sup> As per Gunaratna (c. 15<sup>th</sup> century CE), the doctrine of self-origination (*Svabhāvacāra*) implies that an entity undergoes transformation by itself (*svataḥ*) because of its essential/inherent nature (*svabhāva*), i.e., all entities are born because of their own *svabhāva*. He also hypothesized an alternative view for the rejection of causality (*Yadr̥cchāvacāra*): There is no fixed cause-effect relation for objects; such relations are due to *yadr̥ccha* (chance, accident), i.e., objects are attained accidentally without any prior deliberation (*abhisandhi*). As per [Gopinath Kaviraj](#) (1887–1976), both *Svabhāvacāra* and *Yadr̥cchāvacāra* are identical in the sense that both reject the causality; both imply that the observed order and regularity in our experience is because of mere chance.

**(x) The Cārvākas** (800-500 BC) proposed (Raju, 1985) that (a) perceptual experiences alone is the valid means of knowledge ([pratyakṣa pramāṇa](#)); (b) the processes of the world are due to their own nature (*Svabhāvacāra*), (c) which are certainly not due to supernatural causation, consistent with modern science (Krauss, 2012).

**(xi) Cārvākas and Sāṅkhya:** Some of the later *Cārvākas* accepted gradually the atheistic *Sāṅkhya* philosophy of interactive substance dualism, i.e., the physical universe is because of the insentient *Prakṛti* (primitive matter) and somehow self (*ātman*) gets entangled in it.

**(xii) The Cārvāka system** might have partly originated from 3 premises: (a) *Svabhāvacāra* (self-origination): the universe arose because of its own nature; (b) *Yadr̥cchāvacāra*: it is due to chance/accident; and (c) *Sāṅkhya*: it is the outcome of the interaction

between *Prakṛti* and *Puruṣa* (cosmic sexes). This is also consistent with the *Śvetāśvatara Upaniṣad*.

**(xiii) Rationale for *Yadṛcchāvāda*, *anumāna* (inference), and *Svabhāvavāda*** (Raju, 1985): If one argues that the causality is the major premise, then a *Cārvāka* replies that the causality must be a universal proposition. However, the universal proposition cannot be verified by [pratyakṣa](#) (perception) [pramāṇa](#). Therefore, alternatively, *Cārvākas* argue that every event is a chance. If we use inference; all our inferences are conjectures; sometimes it turns out to be true. Therefore, this truth is accidental/chance (*Yadṛcchāvāda*). The inferences are verifiable only when we perceive the objects of inference; perceivable and verifiable inferences were acceptable by Purandhara (7<sup>th</sup> century *Cārvāka*). However, if the inferred entity is unperceivable, *Cārvākas* cannot accept its truth. Since the transcendental world (such as *ātman*, God, heaven, etc.) is unperceivable, *Cārvākas* would never accept it. Furthermore, they argue that events simply happen because of their inherent nature (*Svabhāvavāda*).

**(xiv) Epistemology:** Like inferential knowledge, *Cārvākas* do not accept verbal knowledge (knowledge from speech, such as *śrutis*) giving truth unless it is clearly verified by [pratyakṣa](#) (perceptual subjective experiences) [pramāṇa](#). The rationale is that Veda/Vednata considers *śrutis* as best proof and is based on it. However, knowledge from *śrutis* is based on *samādhi*-state so called direct perceptions, but this knowledge is contradictory, for example, Vedantic-self vs. Buddhist non-self. The rival schools argue that *Cārvākas*' premises (such as everything is due to its own nature, everything is a chance, and nothing has a cause) contain universal propositions that cannot be verified by perception. This is because all principles (abstract laws) are not perceivable. Furthermore, there is an explanatory gap: where do the subjective experiences (SEs) come from? How can SEs arise/emerge from non-experiential matter? Thus, *Cārvāka*-epistemology remains self-contradicted and problematic; so is the Vedic-epistemology. The *Dvi-Pakṣa Advaita* does not have such problems.

**(xv) Metaphysics of *Cārvākas*:** The metaphysics of *Cārvākas* is materialism, naturalism and humanism (not unethical materialism). This is because matter or physical nature is the ultimate reality. They unequivocally rejected supernatural/transcendental world because

of lack of rigorous scientific empirical evidences. The *Cārvākas* clearly admit that there is a difference between the living and dead man, but this difference is certainly not because of the hypothetical and the imperceptible *ātman*. The quale/consciousness/SE is only a quality of the brain-body system. For example, when the material constituents of the brain-body come together in a specific ratio, form, and pattern, a specific brain-body-structure with the quality of consciousness *emerges* (indeed this is modern scientific materialistic emergentism).<sup>62</sup> Therefore, the quale/consciousness/SE is only an emergent quality. Furthermore, when the brain-body system disintegrates or when a specific part is damaged as in accidents, the specific ratio, form, and pattern wanes; and the constituents of brain-body system tend to disperse and the emergent quality/consciousness disappears. Emergences are also seen in inert systems. For example, when yeast and grape juice are mixed/interacted, wine with intoxicating quality emerge because the yeast or the grape does not have quality. Although *Cārvākas* (and still modern scientists) cannot explain why a new quality emerges, it is assumed that it is natural and certainly not caused by super-natural entities. To sum up, consciousnesses in living beings somehow arise/emerge from material entity. *Cārvākas* (and still modern materialistic scientists) admit that they do not know how, but consciousnesses certainly cannot exist apart from the brain-body system. Thus their metaphysics was materialistic emergentism, which is also indeed the case for modern materialistic science (that has alternative view of the *identity theory* where consciousness is assumed to be *identical with* the brain state).

**(xvi) Rationale against transcendental world** (Raju, 1985): (a) If the *ātman* survives after death, as *Veda/Vedānta* hypothesizes, it should have ability to visit its family and friends; however, over thousands of years, there is not even a single authentic repeatable report. (b) Immortality, for *Cārvākas*, is the immortality of the body-brain system i.e., the preservation of the living body for ever; this is somewhat similar to the modern concept of [cryonics](#) for preserving whole body for preserving the information theoretic death. (c) Most of the theologians in the West and also most of the *Vedāntins* in India acknowledge that the effort for the absolute proof for the existence of God, soul, and the moral law has failed. Kant, Bacon, Hume, and Mill have also has similar difficulties. Only, so far, we have some success

on the phenomenological and existential analysis of human experience in the realms of Nature, ethics, and religion. However, this is not a conclusive and syllogistic inference for the transcendental world. (d) Even if we accept causality, we cannot explain why the causal law is as it is. The Cārvāka, the Mīmāṃsā, and the Sāṅkhya do not accept that God or Nature is the ultimate truth who has purpose in creating the universe. Even Śaṅkara argues for impersonal Absolute (*Parabrahman*, not any personal God) as the ultimate truth. Similarly, Aristotle rejects the reality of God as Pure Form and accepts some ultimate [tychism](#) (absolute [chance](#)/[indeterminism](#) for the operation of the universe).

**(xvii) Rejection of super-natural entity:** The super-natural cause is been rejected by (i) human-centered philosophy such as *Cārvākas/Lokāyatas* as early as 1000 BC and (ii) Buddhism, for example [Gautama Buddha](#)'s skeptical attitude toward the supernatural in the 6th-century BC.<sup>63</sup>

**(xviii) Cārvākas/Lokāyatas as ancient Indian materialistic scientists:** As per (Singh, 2002), "it is doubtful that Lokāyata is synonymous with the modern usage of scientific materialism." However, as long as there is rigorous empirical evidence, the same requirements as in modern science, *Cārvākas/Lokāyatas* accepted (a) [pratyakṣa](#) (perception) and later (b) [anumāna](#) (inference), and (c) [śabda/āgama](#) (verbal knowledge). Perhaps (d) they would have accepted also [upamāna](#) (analogy), (e) [arthāpatti](#) (superimposition of the known knowledge on an appearing knowledge), and (f) *anupalabdi* (skepticism in the face of non-apprehension) as long as there are rigorous empirical evidence.

Furthermore, *Cārvākas* hypothesized that the creation/evolution of universe is consistent with *Yad'cchāvāda* (non-causal chance-based/accidental) and *Svabhāvavāda* (events happen due to their inherent nature), which is somewhat similar to modern science hypothesis of the chance-based quantum fluctuations in empty-space for creation of universe and stochastic/intrinsically non-deterministic processes in science (such as physics, biology, medicine and so on). Moreover, *Cārvākas* were very particular for scientific rigorous validations ([pramāṇa](#)). Therefore, I would argue for *Cārvākas* being ancient Indian materialistic scientists, and modern materialistic scientists as neo-*Cārvākas*.

**Summary:** From Sections 3.1 and 3.2, it appears that the metaphysics of ancient Indian science includes idealism and interactive substance dualism in addition to materialism (the dominant view in current western and eastern science). All of these views have problems as discussed in Section 2.

The views of the *Cārvāka/Lokāyata*, the *Mīmāṃsā*, and the *Sāṅkhya*, even Śaṅkara's *Advaita* are somewhat consistent with the atheist *Dvi-Pakṣa Advaita*—for the evolution of the physical aspect of the unmanifested fundamental primal dual-aspect entity (*Brahman*). Whereas, the *cit-acit Viśiṣṭādvaita* is somewhat consistent with the theist *Dvi-Pakṣa Advaita*—the co-evolution of the *inseparable* mental aspect of the unmanifested fundamental primal dual-aspect entity (*Brahman*).

As per the *Dvi-Pakṣa Advaita*, as long as (a) theists, idealists, and/or dualists (such as *Vedic/Vedantic* system, *Buddhists*, *Jainists*, and *Sāṅkhyaists*) are limited to the mental aspect of each entity-state, and (b) materialists (such as *Cārvākas*) are limited to the *inseparable* physical aspect of the entity-state, they are fine. Problems start when they cross their domains. In other words, when (a) theists, idealists, and/or dualists try crossing to the physical domain from their mental domain, and/or (b) materialists try crossing to the mental domain from their physical domain because of the massive category mistakes.

### 3.3. Modern Science and its problems

As per (Crick, 1994), “The Astonishing Hypothesis is that *you*—your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules.”

This has explanatory gap problem of materialism: How can subjective experiences (SEs) such as the SE of self (*you*), SEs of joy, sorrow, and other feelings, and SEs of objects can arise from *non-experiential* material entities such as ‘a vast assembly of nerve cells and their associated molecules’? Materialists have two main hypotheses: (1) emergentism: SEs *emerge* from the interactions of stimulus dependent feed forward signals and cognitive feedback signals. (2)



SEs are *identical* with the relevant brain-states. However, both hypotheses have the same explanatory gap problem, which has not been addressed to the satisfaction of everybody.

Furthermore, the dominant metaphysics of science is materialism, which has problems (Vimal, 2010d). In **Identity theory** of materialism, a specific experience (SE: such as *redness*) is *identical with* a specific state (such as redness-related state caused by long wavelength light) of a specific neural-network (such as red-green V4/V8/VO-neural-net) (Levin, 2006; Levin, 2008; Loar, 1990, 1997; Papineau, 2006). In the **emergentism/reductionism** framework of materialism, qualia/subjective experiences (such as *redness*) are assumed to mysteriously *emerge* (emergentism) or *reduce* to (reductionism) the relevant states of neural-nets, which is a *brute fact* (that's just the way it is).<sup>64</sup>

The **major problem of materialism** is Levine's explanatory gap (Levine, 1983)<sup>65</sup>: the gap between experiences and scientific descriptions of those experiences (Vimal, 2008b). In other words, how can our experiences *emerge from* the non-experiential matter such as neural-networks of our brain/organism-environment interactions or be *identical with* the related brain-states?

Furthermore, materialism has three more assumptions (Skrbina, 2009): matter is the ultimate reality, and material reality is essentially objective and non-experiential. These assumptions need justification.

(Fingelkurts & Fingelkurts, 2009) uses materialistic emergentism metaphysical framework for the occurrence of religious experiences in brain. This has Levine's explanatory gap, which cannot be addressed. However, our DAMv (**D**ual-**A**spect **M**onism with dual-mode and **v**arying degrees of the dominance of aspects) framework (Vimal, 2008b, 2010c, 2012a) can address the gap and is a complementary to both materialism (mind from matter) and idealism (matter from mind) and bridges these two opposite frameworks.

In the *holoworld* framework (Globus, 2005; Globus, 2007), one always find oneself already amidst a world of colors, sounds, and so



on; ‘experience’ is superfluous, and, in a manner of speaking, is grounded in dualistic metaphysics, a separation between experience and thing. Thus, this framework seems to eliminate SEs and hence *bypasses* the explanatory gap of materialism. However, if one finds the reduction or elimination of SEs problematic, then the problem raised remains, i.e., SEs exist and cannot be eliminated.

“The suggestion that the mental may still be conceptually irreducible to the physical is but a sop: from an ontological point of view, it amounts to nothing more than noting that there can be complex physical structure types which conform to high-level patterns of instantiation. [...] The flipside of the reductionist view that mental activity is not fundamentally distinctive is that the qualitative and intentional character of mental states from which such activity flows is likewise unremarkable. Here, too, the general reductionist line flies in the face of deep intuitive judgments derived from introspection” (O'Connor & Wong, 2005).

## CHAPTER 4

# Hinduism and its problems

Hinduism, in general, includes all philosophies developed over 6000 years in India. However, I will discuss concisely just a few of them, such as *Gītā*, *Sāṃkhya*, *Brahma-Sūtra*, *Bṛhadāraṇyaka Upaniṣad*, *Trika Kashmir Shaivism*, and the six subschools of *Vedānta*, and related metaphysical problems.

### 4.1. *Gītā*, *Sāṃkhya*, *Brahma-Sūtra*, and *Bṛhadāraṇyaka Upaniṣad*, and *Trika Kashmir Shaivism*

#### 4.1.1. *Gītā* and *Sāṃkhya*, and Critique

Verses II/17-25 (especially II.20 and II.22) of *Gītā* ((Swami Chinmayananda, 2000) and *cit-acit Viśiṣṭādvaita* related commentary of (Jagadguru Rāmabhadraśāhārya, 1998b)) implies ‘built-in’ problematic interactive substance dualism because soul/*jīvātman* separates from dead body/brain after death and interacts with brain/body when we are alive. In *Sāṃkhya* philosophy (Radhakrishnan & Moore, 1957; Rao, 1998; Sen Gupta, 1986), *Puruṣa* (mental aspect, consciousness, mind) and *Prakṛti* (physical aspect, matter) are independent entities but they interact, via the ‘shining’ or the ‘fusion’ process because of the proximity of *Puruṣa* with *Prakṛti*, to create universe including us (चित् पुरुष के सान्निध्य से इसी एक तत्व ‘प्रकृति’ को क्रमशः तेईस अवांतर तत्वों में परिणत होकर समस्त जड़ जगत् को उत्पन्न करती हुई माना गया है)<sup>66</sup>. This is close to the problematic interactive substance dualism. Atheist version of *Sāṃkhya* denies the existence of God, which is criticized by

Vedantists.<sup>67</sup> The relationship of *Brahm*, *Jīva*, and matter (*Jagat*) are summarized in Table 1.

In verses II/26-28 of *Gītā*, the **materialism/Cārvāka/nāstika** view is presented that *jīvātman* is ‘*nityajAtam*’ (*nirantara janma lene wālā*: always takes birth as body is born) and ‘*nityam vā manyase*’ (*nirantara marne wālā*: always dies as body dies); in other words, *jīvātman* as being constantly born and constantly dying (Swami Chinmayananda, 2000). The state of *jīvātman*-brain-body before birth and after death is in unmanifested/potential (*avyakta*) form of *Brahman*; and the period between birth and death, i.e., during one is alive is in manifested/realized (*vyakta*) form of *Brahman* (verse II/28) (Swami Chinmayananda, 2000). At this point, both theist and atheists agree that life is continuous chain of birth and death. However, the materialistic view has the explanatory gap problem (how the mental entity ‘*jīvātman*’ can emerge/born from physical (inert) entity, such as brain).

One could attribute multiple meanings to the term *Brahman*: (i) *Brahman* is aspectless, formless, and attributeless in *Sankarāchārya*’s *Advaita*, (ii) *Brahman* has *cit* (mind) and *acit* (matter) as adjectives in *cit-acit Viśiṣṭādvaita*, (iii) *Brahman* is fundamental matter from which mind emerges in materialism, (iv) *Brahman* has two inseparable (mental and physical) aspects in the *Dvi-Pakṣa Advaita*, and so on.

#### 4.1.2. *Bṛhadāraṇyaka Upaniṣad* and Critique

**Bṛhadāraṇyaka Upaniṣad metaphysical cosmology:** This is discussed in (Vimal, 2011b). Briefly, *Bṛhadāraṇyaka Upaniṣad* (verses I.2.1-6 of (Swami Krishnananda, 1983) and (Ādi Śankarāchārya, 1950)) has well developed **metaphysical cosmology** via the doctrine of manifestation (causal to subtle to gross by the use of ‘condensation’ process)<sup>68</sup>: Originally, there was ‘nothing’ (in the sense

of an *imperceptibility* of all things)<sup>69</sup>, but this ‘nothing’ was in a primordial/universal causal state that contained the effect (in ‘potential’ form). A peculiar adjustment of consciousness<sup>70</sup> (the desire/will of Supreme Person self-conscious *Puruṣa/Brahman*)<sup>71</sup> within the cause separated the effect, which activated the unmanifested *Prakṛti*/(*Īshvara: Mula-Prakṛiti*)<sup>72</sup>. This manifested to *Mahat/Hiraṇyagarbha*/Cosmic-Mind, which then manifested to Cosmic *Ahamkāra* (Cosmic ‘I’-sense)/*Virāt* that has *inseparable* mental and physical/material aspects.<sup>73</sup> *Virāt* was then manifested (via Cosmic Fire) into the Tripartite-Being or threefold form/aspect: the transcendent (*Adhidaiva*), the objective physical (*Adhibhūta*) and the subjective mental (*Adhyātma*) aspects; i.e., mental and physical aspects were separated but linked together via *Adhidaiva* as per *Madhu-Vidyā*.<sup>74</sup> Since then further creation of universe continued down to lower levels as of today including us. A major claim is ‘*aham brahmāsmīti*’ (I.4.10): “I am *Brahman*”<sup>75</sup> which is eternal and is inherent in all entities (both physical and non-physical) and also localized in each individual).<sup>76</sup> However, the *jagat* (world, wealth, relationship etc.) is transient; after dissolution, there is no awareness;<sup>77</sup> therefore, our goal of life should be to realize *Brahman/Puruṣa* (II.4.12-14; II.5). At the end of the cosmic dissolution, all entities return back to source (Absolute/*Brahman*) and then next cycle begins.<sup>78</sup>

**Critique:** *Bṛhadāraṇyaka Upaniṣad* is a great *Upaniṣad*; it is excellent, very interesting, and beautiful subjective research. One of the claims of this *Upaniṣad* is that the self (*mukta-jīvātman*) is not conscious (of objects, actions and their results) after attaining oneness with *Brahman* because then everything is the Self (*Brahman*) who is only aware of Itself. This is consistent with the current scientific research because after death self (if exists) cannot be aware of objects as it was aware before death because functional neural-networks, wakefulness, re-entry, attention, and working memory are necessary for awareness (Vimal, 2009g), which is missing after death.

The main metaphysical view of *B'hadāranyaka Upaniṣad* appears to be idealism (matter from mind) because Supreme Person self-conscious *Puruṣa/Brahman* or universal consciousness is the fundamental reality. However, it appears that *Sāṃkhya* philosophy/metaphysics (interactive substance dualism) is somehow also included because the term '*Mula-Prak'iti*' (unmanifested *Prak'ti*) is also used. Both metaphysical views have problems as elaborated in Section 2. Furthermore, in view of current researches: (1) it has explanatory gap problems at various levels (for example, how mind and matter are inseparable at *Virāt* level, but they get separated at lower levels)<sup>79</sup>. (2) It makes category mistake (when it proposes that matter/body/physical universe arises from mental entities such as *Puruṣa*, *Mahat/Hiraṇyagarbha*/Cosmic Mind, and Cosmic *Ahamkāra/Virāt*). And (3) it has some of the problems of interactive substance dualism because of (a) the separation of mental entity (*jīvātman*) from physical entity (brain/body) during and after death, (b) their integration during birth, and (c) their interactions during life.<sup>80</sup> Other views of eastern and western systems also have some of the above problems along with their own problems.

### 4.1.3. *Brahma-Sūtra* and Critique

As per (Radhakrishnan, 1960), "THE LIFE-PRINCIPLES OF A KNOWER OF *NIRGUṆA BRAHMAN* DO NOT DEPART FROM THE BODY AT DEATH ... *prāṇas* [life-principles] do not pass out of the body of him who know [*nirguṇa*] *Brahman*. The opponent denies this and argues that the passage does not deny the passage of the *prāṇas* from the body but only from the embodied soul. For if they do not depart from the body there will be no death at all. [BS:IV.2.12:p539-540]". In other words, as per BS:IV.2.12, *prāṇas* are life-principles, which do not depart from the body of the knower of *nirguṇa Brahman* at the time of death. However, critique argues that if *prāṇas* do not

depart from the body, there will be no death at all. Therefore, *prāṇas* depart from the body and go with the departing soul at death.

(Radhakrishnan, 1960) discussed *Brahma-Sūtras* further, “It is not true that if the *prāṇas* do not depart there will be no death for they do not remain in the body but get merged [in the body], which makes life impossible and we say that the person [the knower of *nirguṇa/kāraṇa Brahman*] is dead. Again, if the *prāṇas* departed with the soul from the body, then the rebirth of the soul would be inevitable and there would be no liberation. [This seems to imply that the soul departs from body (for all beings both knower and non-knowers of *nirguṇa Brahman*), but *prāṇa* is merged in the body. BS:IV.2.13:p540] [...] It follows that he who knows *Brahman* neither moves nor departs. R. [Rāmānujāchārya] says that there are *smṛti* passages which declare that sage also when dying departs from the body. The soul of him who knows departs by means of an artery from head. ... According to Nimbārka [the souls of] both knowers and non-knowers go out; only they travel by different paths. [BS:IV.2.14:p540] [...] THE ORGANS OF THE KNOWER OF *NIRGUṆA BRAHMAN* ARE MERGED IN IT DEATH ... The question is in regard to the knower of *Brahman* who dies. What happens to the sense-organs and the subtle body in which they abide? These get merged in the Supreme *Brahman*. See *Praśna* U. VI.5.1. M.U. III.2.7, however, gives the account of the end from a relative standpoint according to which the body disintegrates and goes back to its cause, the elements. The former text speaks from a transcendental standpoint according to which the whole aggregate is merged in *Brahman* ... Ś [Śankarāchārya]. R. says that elements unite themselves with the Highest Self: C.U. VI.8.6. ... As in the states of deep sleep and *pralaya*, there is, owing to union with the Highest Self, a cessation of all experience of pain and pleasure, so is it in the case under question. [BS:IV.2.15:p541] [...] ON THE DEATH OF THE KNOWER OF THE HIGHEST *BRAHMAN* THE ORGANS AND THE ELEMENTS ARE MERGED IN THE *BRAHMAN* SO AS TO BE NO LONGER DISTINCT FROM IT IN ANY WAY ... The merging of elements



in the case of the knower of *Brahman* is absolute, whereas in the case of an ordinary person it is not so. The elements exist in a subtle condition, causing future rebirth. In the case of the knower of *Brahman*, knowledge destroys ignorance and its effects get merged in *Brahman* absolutely, without any chance of cropping up again. [BS:IV.2.16:p541] [...] No movement can take place towards the highest *Brahman* which is absolutely complete, all-knowing, present everywhere, the Self of all. We do not move to some other place in order to reach *Brahman*. *Brahman* is something already reached. [BS:IV.3.7:p548] [...] According to S., *sūtra* 12-14 give the opponent's view. The *Brahman* attained by those who travel by the path of the gods cannot be the Supreme *Brahman* but only the *kārya Brahman* or effected *Brahman*. The supreme *Brahman* is all-pervading and the inmost self of all. Journey or attainment is possible only where there is a difference where the attainer is different from the thing attained. To realise the Supreme *Brahman*, all that is necessary is to remove ignorance. In such a realization there is neither going nor attaining. The reference to a journey to *Brahman* belongs to the sphere of relative knowledge [BS:IV.3.14:p550] [...] 'In whatever form they meditate on him, that they become.' [BS:IV.3.15:p551] [...] R. points out that the question is whether the released soul views itself as separate, *pṛthag-bhūta* from *Brahman* or as non-separate, being a mode of *Brahman*. There are passages favouring both views. The released soul, it is said, stands to the Highest Self in the relation of fellowship, equality, equality of attributes. All this implies consciousness of separation. ... The *sūtra* says that the released soul is conscious of itself as non-divided from the Highest *Brahman*. The souls have for their inner self the Highest *Brahman*. This is seen. The souls have for their inner self the Highest Self. They are modes (*Prakāras*) of it. [BS:IV.4.4:p554]".

**Critique:** The above seems to imply that individual soul irrespective of knower or non-knower, leaves the body. The question is about *prāṇas* (life-principles). It is unclear what *prāṇas* really mean in terms

of current physiology: is it constituents of life such as breath/respiration, vital energy in breath, blood, semen in men, vaginal fluid in women, and so on?<sup>81</sup> The prāṇas of knower merges in the body and does not depart from the body. Whereas, the prāṇas of non-knower does not merge in the body, rather it departs from the body with soul for rebirth because prāṇa is presumably necessary for rebirth. However, how is that possible for prāṇa? Elements/prāṇas are the same elements/prāṇas for both non-knower (ignorant) or knower of *kāran(nirguṇa)-Brahman*. It seems that the hypothesis of the life-after-death, soul with or without *prāṇa*, and *Parmātman* are inserted *by hand* (in the concept of the fundamental entity unmanifested *Brahman*) just to make society doing good *karmas* for the benefit of all. However, the same can be achieved by sublimation process (to required extent, converting selfish energies to non-selfish ones for the interest of society) if the Fundamental Truth is told as it is. As long as there are neural activities, related brain-state exists, which has inseparable mental aspect with some type of experience/cognition and self. Once a knower or non-knower person is dead, the mental aspect of dead-body is latent like any other inert entity with partly un-manifested *Brahman*. This is because majority of the space between quarks of proton has quantum fluctuations (spontaneous births and deaths of virtual particle pairs) (Krauss, 2012), which is close to unmanifested *Brahman*. Furthermore, one all *īṣṭ*'s views (*śrutis*) arose from *samādhi* state, but they contradict each other, for example, eternal *ātman* Vedantists vs. *anātman* Buddhists.

#### 4.1.4. *Trika Kashmir Shaivism and Critique*

*Kashmir Shaivism/Śaivism* or *Trika Śaivism* is “categorized by various scholars as monistic idealism (absolute idealism, theistic monism, realistic idealism, transcendental physicalism or concrete monism). [...] These descriptors denote a standpoint that Cit (consciousness) is the one reality. Matter is not separated from consciousness, but

rather identical to it. There is no gap between God and the world. The world is not an illusion (as in Advaita Vedānta), rather the perception of duality is the illusion.”<sup>82</sup>

*Trika Kashmir Shaivism* (Kaul, 2002; Raina Swami Lakshman Joo, 1985; Vimal, 2009b; Wilberg, 2008) is close to dual-aspect view. According to (Kokiloo, 2002), “Veda, Shaiva, Vama, Dakshina, Kaula, Matta, and Trika are the seven Acharas (systems) recognised by Kashmir Shaivism. The most popular among the seven Acharas has been the Trika system. What does this Trika mean? Trika means trinity of Nara Shakti and Shiva as is given in Tantras. Nara means an individual, Shakti means the Universal Energy and Shiva means the Transcendental Being. Thus a soul recognizes himself as Shiva by means of the realization of his Shakties - the powers of God-head. Therefore this Trika system advocates the practical path towards complete self-realization. To make it more clear, this three fold science of spirit is based on the three energies of Lord Shiva namely Para, Parapara and Aparā. Para energy is subjective energy of Lord Shiva and it is regarded as the supreme. Parapara energy is cognitive energy of Lord Shiva and is called as intermediate. Aparā energy is objective energy of Lord Shiva and it is known as inferior energy.” “It is called Trika because it encompasses the threefold signs of man and his world. These three signs are Shiva, his Shakti (energy), and Jīva (individual). Also signified are three primary energies: *para* (supreme) energy, *para-para* (combination of highest and lowest) energy, and *apara* (lowest) energy. These are also termed *iccha Shakti*, the energy of will, *jñāna Shakti*, the energy of knowledge, and *kriyā Shakti*, the energy of action. These three energies represent the threefold activities of the world: knower, knowing, and known.”<sup>83</sup>

**Critique:** *Kashmir Shaivism* seems close to neutral monism (which has explanatory gap problem: how the aspects are derived from or reduced to the third neutral entity): *Śiva* (*Puruṣa*, consciousness, mental aspect) and *Śakti* (*Prakṛti*, Nature, matter, physical) are two

projected aspects of the third transcendental ‘ground’ level entity (*Brahm, Mahātripurasundarī*) (Kak, 2010b).<sup>84</sup>

*Trika Kashmir Shaivism*<sup>85</sup> seems close to dual-perspective/dual-aspect monism, where *Śiva* is the mental aspect and *Śakti* is the physical aspect of same entity (such as *Brahm/Brahman*). It is unclear (i) if these aspects appear separable and (ii) it is also unclear if *jīva* (mental aspect) and body (physical aspect) remain inseparable at the time of death. We assume that *jīva/atma/soul* can exist independently after death because *Sāṃkhya* is involved in it. If this is correct, then it has the problems of interactive substance dualism.

Thus, in *Trika Kashmir Shaivism*, there is a no distinction (i) between God (*Brahman*) and individual souls (*jīvas*), (ii) among individual souls, and (iii) between God and matter. (iv) There is a possibility of separation/distinction between soul/*jīva* and matter at the time of death. (v) However, the distinction is unclear among various types of matter, perhaps there is no distinction as in dual-aspect monism. The relationship of *Brahm, Jīva*, and matter (*Jagat*) are summarized in Table 1.

## 4.2. Six Sub-schools of Vedānta

*Vedānta* is the philosophy developed after Vedas. It has six main sub-schools: *Advaita, Viśiṣṭādvaita, Dvaitādvaita, Dvaita, Shuddhādvaita, and Achintya-Bheda-Abheda Vedānta*.

### 4.2.1. Advaita Vedānta and Critique

In Adi Śāṅkarāchārya’s **Advaita Vedānta** (Ādi Śāṅkarāchārya, 788-820a, 788-820b; Rosen, 2007), *Brahman* alone is truth, the *jagat* (material world) is unreal/illusion, individual self is none other than *Brahman*, i.e., there is ultimately no difference between *Brahman* and

individual *jīva* (*Brahma satyaṃ jagat mithyā, jīvo brahmaiva nāparah*).<sup>86</sup> In other words, there is NO distinction (i) between God and individual souls and (ii) among individual souls. *Brahman* is the substrate of the material world, but not necessarily a form of physical matter. Therefore, it is unclear if there is a distinction (iii) between God and matter, but, matter (such as dead body) is also a part of God. However, there is a distinction (iv) between soul (*jīva*) and matter (such as dead body) and (v) among various types of matter, but the matter (*jagat*) is unreal because only *Brahman* is real. (vi) All qualities or manifestations that can be perceived are unreal and temporary. (vii) The doctrine of ‘All (entities) in One (*Brahman*) and One in All’ is maintained. These are summarized in Table 1.

(Radhakrishnan, 1923) mentions that *Nyayakosa* includes *Sāṃkhya* and *Advaita Vedānta* under *nāstika* (atheist), i.e. unorthodox systems.<sup>87</sup> As per (Balasubramanian, 2011), “Following the *Upanisads*, Advaita holds that consciousness is the support (*adhiṣṭhāna*) of the objects of the entire world; that is to say, the objects, which are totally different from consciousness, have no existence of their own, no status of their own, no nature of their own, with the result they are dependent on consciousness.<sup>88</sup> [...] Though Advaita is pluralistic from one point of view, it is monistic from another point of view. Without denying pluralism, it affirms monism.”<sup>89</sup> However, it is unclear how then objects (matter-in-itself) arise from ‘consciousness’/mind; this appears to be idealism.

**Critique:** If *Advaita* also has the attributes of monistic mentalistic idealism, then *Advaita* has the reverse of the explanatory gap problem of materialism, namely, how matter-in-itself arises from consciousness (mind).

For some scholars, in *Advaita*, matter/*jagat* (world including brain/body) is an illusion and hence never exists so the question of separation between *jīva* and body never arises during death.<sup>90</sup> Alternatively, since material world is illusion and *Brahm* is real, there

is dramatic difference between *Brahm* and world. One could argue that the *jagat* is unreal because it is temporary whereas *Brahm* is real because *Brahm* is assumed permanent/eternal. Since, in conventional mind dependent reality (cMDR), death is real as we all observe and as argued in other branches of *Vedānta* (such as *Dvaita*) and *Gītā*, one could also interpret that there is separation between truth (*jīva*) and illusion (body) at the time of death. In other words, an alternative interpretation can be that there is a separation of this illusion (*jagat*/body) from the real *jīva* (*Brahm*) at the time of death. Thus, *Advaita* also involves interactive substance dualism implicitly. One could also argue that non-duality is among all *jīvas* and *Brahm*, but their relationship with matter is unclear. Thus, *Advaita* has multiple interpretations and hence it is controversial on this issue. To be on safe side, it is better NOT to ascribe interactive substance dualism (ISD) to *Advaita*, but the problem of mentalistic idealism still remains.

### 4.2.2. *Viśiṣṭādvaita Vedānta* and Critique

We discuss *Viśiṣṭādvaita* in little more detail because it has addressed some of the problems of *Advaita Vedānta*, and it is somewhat close to the proposed *Āstika Dvi-Pakṣa Advaita*.

#### 4.2.2.1. *Ramānujāchārya's Viśiṣṭādvaita Vedānta*

In this *Viśiṣṭādvaita Vedānta* (Rāmānujāchārya, 1904), God (*Narāyana/Brahman*) has two inseparable *Prakāras* or modes/aspects, namely, the world and the souls. Matter and souls are the subordinate elements (*Viśeṣaṇa* or attributes).<sup>91</sup> In contrast to Śankarāchārya, Ramānujāchārya holds that there is no knowledge source in support of the claim that there is a distinctionless (homogeneous) *Brahman*. All knowledge sources reveal objects as distinct from other objects. Furthermore, there seems NO distinction



(i) among individual souls and (ii) between God and matter (soul and matter are two inseparable aspects of *Brahman*). However, there is a distinction (iii) between God (*kārya Brahman* or *Ishvara*) and individual souls (because of two birds analogy, one *jīvātman* and distinct *Parmātman* always sitting very closely in us)<sup>92</sup>, (iv) between soul and matter (such as dead body), and (v) among various types of matter; this distinction is real similar to *Brahman* is real. (vi) All qualities or manifestations that can be perceived are real and permanent and under the control of the *Brahman*. God can be one despite the existence of attributes, because they cannot exist alone; they are not independent entities. They are *Prakaras* or the modes, *Sesha* or the accessories, and *Niyama* or the controlled aspects, of the one *Brahman*. (vii) The doctrine of ‘All (entities) in One (*Brahman*) and One in All’ is maintained. (viii) *Ramānujāchārya* picks out seven fundamental flaws in the Śāṅkarāchārya's *Advaita*: the nature of *Avidyā*, the incomprehensibility of *Avidyā*, the grounds of knowledge of *Avidyā*, the locus of *Avidyā*, *Avidyā*'s obscuration of the nature of *Brahman*, the removal of *Avidyā* by *Brahma-vidyā*, and the removal of *Avidyā*.<sup>93</sup> The above are summarized in Table 1.

“The typical interpretation of *Neti-Neti*<sup>94</sup> is *not this, not this* or *neither this, nor that*. It is a phrase meant to convey the inexpressibility of *Brahman* in words and the futility of trying to approximate *Brahman* with conceptual models. In *Viśiṣṭādvaita*, the phrase is taken in the sense of *not just this, not just this* or *not just this, not just that*. This means that *Brahman* cannot be restricted to one specific or a few specific descriptions. Consequently, *Brahman* is understood to possess infinite qualities and each of these qualities is infinite in extent.”<sup>95</sup> It is interesting to note that [Tulsīdāsa](#) (the author of *Śrī Rāmacaritamānasa*: (Goswami Tulsīdāsa, 1574/2004)) and Kabīrdāsa (the author of *Satya Kabīr kī Sākhī*: (Kabīrdāsa, 1977)) were from Rāmānandārchārya's *sampradāya* and hence their metaphysics was also the *cit-acit Viśiṣṭādvaita*.

#### 4.2.2.2. Rāmānandārchārya's cit-acit Viśiṣṭādvaita and critique on Śankarāchārya's Advaita

Jagadguru Rāmabhadraṛchārya (PhD, DLitt)<sup>96</sup> (personal meeting on 23<sup>rd</sup> Dec 2011 night in Chitrakoot Ashram) accepted the *Āstika Dvi-Pakṣa Advaita* whole-heartedly. As a matter of fact, he mentioned, his own metaphysical framework is cit-acit *Viśiṣṭādvaita* of Jagadguru Rāmānandārchārya (about 1400-1476 AD:<sup>97</sup> he was initiated in the Rāmānujāchārya Sect). This is very close to the *Āstika Dvi-Pakṣa Advaita*. He mentioned that *Viśiṣṭādvaita* has two sub-schools: previous one is Rāmānujāchārya's *Viśiṣṭādvaita* about 1017–1137 AD. This is because their metaphysics of 'cit' (mental, mind=not manas but mind includes manas) and 'acit' (physical, matter) as adjectives (*viśeṣaṇa*) of *Brahman* is close to the *Āstika Dvi-Pakṣa Advaita*. He even said that *Dvi-Pakṣa Advaita* is the same as cit-acit *Viśiṣṭādvaita*. However, after studying seriously his books (Jagadguru Rāmabhadraṛchārya, 1998a, 1998b, 2000a, 2000b, 2000c, 2000d, 2000e, 2000f, 2000g, 2000h, 2000i), I found that the *Dvi-Pakṣa Advaita* is significantly different from cit-acit *Viśiṣṭādvaita*, although there are some similarities. This is because (a) the *Dvi-Pakṣa Advaita* encompasses both theism and atheism whereas cit-acit *Viśiṣṭādvaita* supports only theism (*āstikatā*) and strongly rejects the atheism (*nāstikatā*). I also explained to him that the recent research related to theist/atheist phenomenon is genetic and/or acquired. The major problem of *Vedānta* including the cit-acit *Viśiṣṭādvaita* is NOT encompassing the *nāstika*/atheist-views of science, where the DAMv framework addresses this problem. He accepted that we cannot ignore science, but science is atheist system. This means that further investigation is needed for the Fundamental Truth.

**Critique on Śankarāchārya's Advaita:** Jagadguru Rāmabhadraṛchārya has presented critique of Śankarāchārya's

Advaita in his books (Jagadguru Rāmabhadraṛchārya, 1998a, 1998b, 2000a, 2000b, 2000c, 2000d, 2000e, 2000f, 2000g, 2000h, 2000i) that includes re-interpretation of *Gītā* and *Upaniṣads* based on Jagadguru Rāmānandārchārya's *cit-acit Viśiṣṭādvaita*. If *acit* (matter, *jagat*) is not an adjective (aspect) of *Brahman* then (1) knowing *Brahman* will not reveal *jagat*/matter/*acit*, (2) if *jagat*/matter/*acit* is illusion/*mithyā* and is the effect of *Brahman*,<sup>98</sup> then *jagat*/matter/*acit* has to be another independent entity, which will entail *Dvaita* and hence Śankarāchārya's *Advaita* will be abolished, and (3) if *jagat* is *mithyā* then it cannot cover (envelope) *Brahman* ("yadi vah [*jagat*] *mithyā* hae to vah *Brahman* ko *dhānka nhee sakti* "p.205) and if it is eternal then *Advaita* is abolished (Jagadguru Rāmabhadraṛchārya, 2000b).p204-5.Hindi-part.<sup>99</sup> If *jagat* is *mithyā* and *Brahman* is *satya*, then there are two substances: (i) *satya-Brahman* and (ii) *mithyā-jagat*; this rejects Śankarāchārya's *Advaita* (Jagadguru Rāmabhadraṛchārya, 2000h).p33-34. As per page 81 of this reference, *Madhvāchārya* in *Dvaita* claims that *jagat*/*māyā*/*acit* is true (*satya*), Śankarāchārya in his *Advaita* claims it is untrue (illusion), and *Nimbārka* in his *Dvaitādvaita* claims it is both true and untrue (i.e., *satyāsatya*). Moreover, Rāmānandārchārya in his *cit-acit Viśiṣṭādvaita* claims *jagat*/*māyā*/*acit* and *cit* as adjectives of *Brahman*. Finally, the *Dvi-Pakṣa Advaita* claims *cit* (mind) and *acit* (matter) as two *inseparable* aspects of *Brahman*; this view has the least number of problems and addresses the theist-atheist phenomenon.

As per (Jagadguru Rāmabhadraṛchārya, 2000h), (a) "jisme *brahmbodha vidyamāna nhee hae vahī avidyā hae*" (page 92); this obviously rejects *nāstika* framework; and (b) there are two kinds of *jīva* (p.97): (i) *bhagvad-prapann* or *āstika*/theist type, and (ii) *bhagvad-vimukha* or *nāstika*/atheist type; this seems to accept theist-atheist phenomenon.

As discussed in Section 2.5, the DAMv framework has 3 parts: (1) DAM, (2) dual-mode, and (3) varying degrees of the dominance of

aspects depending on the levels of entities. The DAMv framework addresses the remaining problems of all six sub-schools of *Vedānta* system, science, and atheist religions, such as Buddhism. Thus, the DAMv is a better framework for bringing science and religions closer.

#### **4.2.2.3. Comparison between *cit-acit Viśiṣṭādvaita* and *Dvi-Pakṣa Advaita/DAMv* framework**

There are some similarities between *cit-acit Viśiṣṭādvaita* and *Dvi-Pakṣa Advaita/DAMv* framework; however, there are significant differences. I elaborate first the major differences and then the similarities.

##### **A. Major Differences between *cit-acit Viśiṣṭādvaita* and *Dvi-Pakṣa Advaita* (the DAMv framework)**

###### **(i). The doctrine of inseparability of aspects**

It should be noted that the meaning attributed to the term ‘aspect’ is different from the *cit-acit Viśiṣṭādvaita* term ‘*viśeṣaṇa*’ or adjective. Aspects have 1-1 (one-to-one) correspondence and they are viewed from first (mental aspect) and third person (physical aspect) perspectives; both aspects CANNOT be separated under any circumstance although their degrees of dominance vary with the levels of entities. The *viśeṣaṇas* are adjectives and do not necessarily have 1-1 correspondence and can be separated depending on the entity in question.

**(a).** In *cit-acit Viśiṣṭādvaita*, *cit* (mind) and *acit* (matter) are adjectives (*viśeṣaṇas*) of *Brahman* (Jagadguru Rāmabhadraṁcārya, 1998a, 1998b, 2000a, 2000b, 2000c, 2000d, 2000e, 2000f, 2000g, 2000h, 2000i). This means that *cit* and *acit* can be separated at certain entity-levels. For example, dead-body, stone, table, chair, car, and other inert entities are *acit* entities that have no built-in/inherent *cit*, although they are (*acit*) *Brahman*. Furthermore, *cit* and *acit* are

adjectives of *Brahman*, but they are not *Brahman*; *Brahman* is beyond *cit* and *acit* (Jagadguru Rāmabhadraṛchārya, 2000e). This seems to imply that *Brahman* is a third neutral entity (*Uttam Puruṣa*: personal communication with Jagadguru Rāmabhadraṛchārya on 23 Dec 2011) beyond *cit* and *acit*, i.e., this framework seems to the Neutral Monism, which has explanatory gap problem: precisely how *cit* and *acit* become adjectives of *Brahman*. It may be separable dual-aspect monism where aspects can be separated, such as at the time of death. However, after death, an unliberated *jīvātman* also has subtle body (*sukshma śarīra*) that carries traces of *karmas* and intense desire which is responsible for rebirth; this can be considered as physical aspect of the post-death state of *jīvātman*. But, the liberated (*mukta*) *jīvātman* does not have *karmas* and desires left and does not go through the cycle of rebirth; therefore, does not need subtle body and is purely mental entity which merges with *Brahman*. One could argue that *cit* and *acit* were latent or in unmanifested (*avyakta*) potential form in *Brahman*.

In *Āstika Dvi-Pakṣa Advaita* (the theist version of the DAMv framework), the mental and physical aspects are inseparable aspects of unmanifested state and manifested states (the states of micro to macro entities, from quantum entities such as electron to whole universe) of *Brahman* with varying degrees of the dominance of aspects depending on the levels of entities. For example, dead-body, stone, table, chair, car, and other inert entities have dominant physical (*acit*) aspect and latent mental (*cit*) aspect; these two aspects cannot be separated but their dominance can vary depending on the entities.

The dual-aspect unmanifested state of *Brahman* has potentialities of all entities. When an entity is *realized*, its state is called a dual-aspect manifested state of *Brahman*. For example, the self and its neural correlates (such as cortical midline structures of brain) are *realized*, respectively, from the mental and physical aspects of the unmanifested state of *Brahman* with all *potentiality* (possibilities) via



co-evolution and co-development of both aspects. In other words, the universes (including us) *explicate* or are *unfolded* from the *folded/implicated Brahman* using the concept of Implicate-Explicate Order of Bohm (Bohm, 1980; Bohm & Hiley, 1985).

**(b).** In the *Āstika Dvi-Pakṣa Advaita* (the theist version of the DAMv framework), (i) *jīvātman*/self is *realized*/manifested (via co-evolution and co-development with its physical aspect) from the mental aspect of the unmanifested state of *Brahman* that has the potentiality of all entities and (ii) the liberated/*mukta jīvātman* merges with *Brahman*: the mental aspect of the liberated and post-death state of a *mukta jīvātman* merges/unifies/interacts with the mental aspect of the unmanifested state of *Brahman*; similarly for the physical aspects. This implies that the identity of the *mukta jīvātman* is lost in the unmanifested state of *Brahman* (unlike the *cit-acit Viśiṣṭādvaita* where the identity of a *mukta jīvātman* is preserved). In other words, the *explicated* or *unfolded* universes (including us) *implicate* or are *folded* back to the *folded/implicated Brahman* using the reverse of concept of Implicate→Explicate Order of Bohm (Bohm, 1980; Bohm & Hiley, 1985). Whereas in the *cit-acit Viśiṣṭādvaita*, the identity of the *mukta jīvātman* is NOT lost in *Brahman* (see p.221-233 of Hindi-part of *Chāndogyopaniṣadi* (Jagadguru Rāmabhadraṁchārya, 2000b)); this is because *cit* and *acit* are adjectives (*viśeṣaṇa*) in the *cit-acit Viśiṣṭādvaita* framework, which has the explanatory gap problem of association: how to associate *cit* and *acit* in our brain if they are separable and if they do not have 1-1 correspondence.

**(ii).** *The doctrine of meta(beyond)-theism-atheism phenomenon*

The *cit-acit Viśiṣṭādvaita* is a 100% theist/*āstika* framework (Jagadguru Rāmabhadraṁchārya, 1998a, 1998b, 2000a, 2000b, 2000c, 2000d, 2000e, 2000f, 2000g, 2000h, 2000i) that rejects atheist/*nāstika* framework completely. Thus, it rejects ‘real’ science as ‘real’ science is the *nāstika* framework (logic based pseudoscience may be argued to be part of theism to some extent). Whereas the



DAMv framework (it has both theist and atheist versions) encompasses both theist/*āstika* and atheist/*nāstika* frameworks. This is because the theism-atheism phenomenon is genetic and/or acquired; therefore, the Fundamental Truth must encompass/transcend both theist/*āstika* and atheist/*nāstika* views. Furthermore, *Kapila's Sāṃkhya* has two versions: **(i)** *nāstika(nirīshvaravadī)-Sāṃkhya* with 25 elements (tatva): *Puruṣa (Ātmā)*, 24 elements of *Prakṛti* [4 *Antah-karanas/inner-instruments* (*mana/manas, buddhi/mahat, chitta, and ahamkāra*), 5 *jñāna-indriyas* (*netra/eyes, kaṇḍ/ears, nāsikā/nose, jivha/tongue and tvachā/body*), 5 *karma-indriyas* (*hasta/hands, pāda/legs, vāka/voice/vocal-apparatus, upastha/urino-genital-organ, and gudā/pāyu/anus*), 5 *Tanmātrās* (*roopa/color, shabd/sound, gandha/smell, rasa/taste, sparsh/touch*), and 5 *mahābhūtas* (*jala/water, prithavī/earth, agni/fire, vāyu/air, Ākāśh/sky/ether*)] **(ii)** *Āstika(seshvaravadī)-Sāṃkhya* with *Parmātman* as 26<sup>th</sup> *tatva* (Jagadguru Rāmabhadraśārya, 2000h).p.76 and p.94 (*ShwetAshwataropanishad*).<sup>100</sup> *Puruṣa* and *Prakṛti* can be derived from *Parmātman* as its two aspects (*viśeṣaṇas*). This implies that *SāṃkhyAcharya Kapila* (~1000–550 BC) somehow seems to know about theism-atheism phenomenon; however, *Sāṃkhya* is close to interactive substance dualism that has 7 problems. In other words, so far, the DAMv framework is closest to the Fundamental Truth.

### **(iii). Conclusions**

The DAMv framework has two versions: the theist version is called *Āstika Dvi-Pakṣa Advaita* and the atheist version is called *Nāstika Dvi-Pakṣa Advaita*. The DAMv framework has 3 parts: (1) Dual-Aspect Monism (DAM) (details in (Vimal, 2008b)), (2) dual-mode (details in (Vimal, 2010c)), and (3) varying degrees of the dominance of aspects depending on the levels of entities (details in (Vimal, 2012a)). The DAMv framework addresses the problems of all 6 sub-schools of *Vedānta* system including the *cit-acit Viśiṣṭādvaita*, science, and atheist religions, such as Buddhism.

In the theist version, one could argue that the dual-aspect *Brahman*, via its unmanifested state and manifested states, is the creator, governor, controller, regulator, and organizer of universes. In atheist version, the same dual-aspect *Brahman* can be viewed as the dual-aspect universes that are self-creator (autopoietic), self-governor (autonomous), self-controller, self-regulator, and self-organizer, and hence this scientific view does not need any additional higher level entity to create, govern, control, regulate, or organize them. Thus, theism and atheism are two different perspectives/views for describing the same fundamental entity: the dual-aspect *Brahman*. Therefore, it is not useful to argue theism against atheism and *vice-versa* because it is an endless discussion and just waste of time (in my view). If theism-atheism phenomenon is genetic, then by definition, theists are NOT supposed to agree with atheists and *vice-versa* because they are wired/built in two different ways: scientifically, if temporal lobe of brain inhibits strongly the frontal lobe then a subject is atheist; if this strength of inhibition is reduced below critical level, then the same subject becomes theist. The 'god-gene' regulates this strength of inhibition. A working hypothesis is that if we apply a magnetic field to brain (as done in trans-magnetic stimulation: TMS experiment) in such a way that it reduces the strength of inhibition then we can temporarily transform an atheist to a theist during TMS and *vice-versa*.

Thus, the DAMv framework is **NOT** the same as the *cit-acit Viśiṣṭādvaita*, and hence it is a novel framework that brings science and religions closer by resolving their problems. In the DAMv framework, theist religions and science-and-atheist religions are two different approaches to understand the Fundamental Truth. Therefore, the DAMv framework (*Āstika Dvi-Pakṣa Advaita* as the theist version and *Nāstika Dvi-Pakṣa Advaita* as the atheist version) should be considered as a separate 7<sup>th</sup> sub-school of *Vedānta* system.

## B. Similarity between *cit-acit Viśiṣṭādvaita* and *Dvi-Pakṣa Advaita* (the DAMv framework)

### (i). *Jīvātman* and *Parmātman* (*Kārya Brahman*)

In **Adi Śankarāchārya's Advaita**, *jīvātman* and *Brahman* are the same. In *cit-acit Viśiṣṭādvaita* and *Āstika Dvi-Pakṣa Advaita*, they are different because even *mukta jīva* cannot create universes as *Parmātman* and/or *realized/manifested Brahman* can (see Rāmabhadraśārya's interpretation of *Mundakopnishad*, p.37 and VedaVyas interpretation of *BrahmaSutra* 4/4/18 on p.37 of (Jagadguru Rāmabhadraśārya, 2000f)). As per *BrahmaSutra* IV.4.18, "The powers of the released souls are not unlimited for they get their powers from the Lord [*Brahman*] and depend on him" (Radhakrishnan, 1960).p561. One of the hypotheses of the *cit-acit Viśiṣṭādvaita* is that *jīvātman* is different from *Parmātman/Brahman*; the former is considered as a close-friend/slave/servant/adjective of the latter; they are like two birds sitting very close in us, one (*jīvātman*) eats and the other does not but enjoys the food (Jagadguru Rāmabhadraśārya, 2000h).p33-40.

In ***cit-acit Viśiṣṭādvaita***, as per *Ishāvāsyopanishada* (Jagadguru Rāmabhadraśārya, 2000c), there are two kinds of *Brahman*: (1) The '*kāran Brahman*' that is the unmanifested fundamental dual-aspect entity, which is the cause of all mental and physical entities and is beyond everything and is all-encompassing (*sabka vyāpaka hae*, सबका व्यापक है). (2) The '*kārya Brahman*' that is *Parmātman* and is attached to *Jīvātman (cit)* and *Jagat* (world, *acit*) and lives in each individual as inseparable friend of *Jīvātman*; it is the *potential* source of all subjective experiences, thoughts, cognition, and other mental activities. Both kinds of *Brahmans* are essentially the SAME (they are NOT dual, but they are non-dual) and have mind (*cit*) and matter (*acit*) as adjectives (*viśeṣaṇas*) in *cit-acit Viśiṣṭādvaita* or as *inseparable* aspects in the *Āstika Dvi-Pakṣa Advaita* (theist version of the DAMv

framework). Therefore, the *Brahman* is called *Kārya-Kāraṇa Brahman*. The *mukta* (liberated) *Jīvātman* is like *Parmātman* and is capable of enjoying everything as *Parmātman* is; however, *Jīvātman* is NOT the same as *Parmātman/Brahman*.

Furthermore, the *cit-acit Viśiṣṭādvaita* adopts the *śarīra-śarīri-bhāva*, the relation of *Brahman* (God) to the *Jīvātman* (soul) in the analogy of the *Jīvātman* to the *śarīra* (body), i.e., *Brahman* is the soul of *Jīvātman*.

In **Āstika Dvi-Pakṣa Advaita**, one could argue for two states of *Jīvātman*: (1) In un-liberated state, *Jīvātman* is enveloped/covered by *māyā* and hence this state of *Jīvātman* is certainly different from the *Parmātman*. (2) In liberated (*mukta*) state, *mukta Jīvātman* and *Parmātman/Kārya-Brahman* should eventually (at the end of universe-cycle) be unified/merged into unmanifested *Kāraṇa-Brahman* from which they arose/manifested. It is unclear if *Jīvātman* loses its identity or not in this Final process. The former (*Jīvātman* losing its identity) is consistent with *Dvi-Pakṣa Advaita* because of the doctrine of inseparability of aspects (see Section 4.2.2.3.A(i) above). The latter (*Jīvātman* NOT losing its identity and being slave/servant (दास/सेवक) of *Parmātman*) is a useful concept for deleting our ego (अहंकार) of 'I am *Brahman*' (अहम् ब्रम्हास्मि), otherwise this ego may cause problem as was in Rāvaṇ's ego; this is consistent with the *cit-acit Viśiṣṭādvaita*. However, one could argue that अहम् ब्रम्हास्मि feeling should also lead to positive energy that we must follow all the positive attributes of *Brahman*. Thus, the latter (*Jīvātman* NOT losing its identity) concept is not needed.

In the **Nāstika Dvi-Pakṣa Advaita** (the atheist version of the DAMv framework), however, *Jīvātman* and *Parmātman* are the lower wakeful normal state (self) and the highest (*samādhi*) state of consciousness, respectively, and hence they are not the same. In addition, the attributes (such as subjective experiences, thoughts,

perceptions, cognition etc.) of *Jīvātman* are *realized*/manifested from *potential*/unmanifested attributes of *Parmātman*/*Brahman* who also lives in us and who can be *realized* in *samādhi* state with bliss/happiness of highest degree. This is the interpretation of Aitareyaopnishad.III.3-4.p15-18 of (Jagadguru Rāmabhadraṁchārya, 2000a) in terms of the *Nāstika Dvi-Pakṣa Advaita*. Furthermore, in this *nāstika* framework, there is no soul/*Jīvātman*/*Parmātman* after death; but the unmanifested dual-aspect *Brahman* (that has *potentialities* for all entities) is eternal; and *karmas* (it is a supernatural that appears to be a cultural universal) and intense unfulfilled desires may be stored in cosmic-memory-field (if it exists) from which information related to dead people may be acquired by some rare individuals as in parapsychology phenomena (such as knowledge of information related to dead people). Thus, the DAMv framework brings both *Āstika* and *nāstika* views closer.

**(ii). *Cit* (mind) and *acit* (matter)**

In Adi Śankarāchārya's *Advaita*, *jagat* is *mithyā* (illusion) but is based on aspectless *Brahman*, whereas *Jīvātman* and *Parmātman* are manifested or realized from the *potentialities* of *Brahman*. However, this view has explanatory gap problem: (i) how can *jagat*, *Jīvātman* and *Parmātman* be created from aspectless, adjective(*viśeṣaṇa*)-less, action-less, attributeless *Brahman*? And (ii) how *Jīvātman* can be the same as *Parmātman* (manifested *Brahman*) or (unmanifested) *Brahman*?

In both *cit-acit Viśiṣṭādvaita* and *Dvi-Pakṣa Advaita/Sāṃkhya*, **(a)** the mental aspect of each entity-state (or *cit*-entity) is created/manifested/*realized* from the *potentialities* of the mental-aspect of (or *cit*) the unmanifested state of *Brahman*, and (b) the physical aspect of the same entity-state (or *acit*-entity-state) is created/manifested/*realized* from the *potentialities* the physical-aspect of (or *acit*) the unmanifested state of *Brahman*. As per (Jagadguru Rāmabhadraṁchārya, 2000h).p.40-44, (a) '*trividham*



*brahmetaṭ* (त्रिविधं ब्रह्मेतत् : *ShwetAshwataropanishadi* (1/1/12)) *cit* (mind, *bhoktā*), *acit* (matter, *bhogyā*), and *Parmātman* (manifested *Brahman*, *preraka*/stimulating/setting in motion) all three can be considered, in certain (such as above) sense, (unmanifested, *potential*) *Brahman*; and (b) *Parmātman* is present in us in all 4 states of brain (deep sleep, dream, wakefulness, and *samādhi* states) along with *Jīvātman*, in analogy to oil is present in sesame seeds.

### 4.2.3. *Dvaitādvaita Vedānta*

*Dvaitādvaita* (*Bhedabheda vada*, duality and nonduality at the same time)<sup>101</sup> was proposed by *Nimbarkāchārya*, who categorizes the existence as *chit* (*cit*, *jīva*), *achit* (*acit*, *jagat*), and *Isvara* (*Brahm*/*Brahman*). *Isvara* is independent and exists by Himself, while *cit* and *acit* have existence dependent upon Him. However, *cit* and *acit* have attributes (*gunas*) and capacities (*Swabhāva*) different from *Isvara*. Thus, *cit* and *acit* are not different from *Brahm* and are also different from Him simultaneously.

“This *Brahman* is both the *Upādāna* (material cause) and the *Nimitta* (efficient cause). It is the material cause in the sense that it enables its natural *shaktis*, viz. the *cit* and the *acit* in their subtle forms, to be manifested in gross forms; and it is the efficient cause in the sense that it unites the individual souls with their respective fruits of actions and means of enjoyments. [...] The *jīva* [the *cit* or individual soul] is the knower also; and he can be both knowledge and the possessor of knowledge at the same time [...] The *jīva* is atomic in size; at the same time his attribute, knowledge, is omnipresent, which makes it possible that he can experience pleasure and pain in any part of the body [...] The *jīvas* are different and in different bodies, and so are infinite in number. [...] The *acit* [the *jagat*] is of three different kinds: viz. *prāk'ta* (matter), *aprāk'ta* (non-material), and *kāla* [time?]. *Prāk'ta*, or what is derived from *Prak'ti*, the primal



matter, *aprāk'ta* is defined negatively as that which is not the product of *Prak'ti*, but its real nature is not clearly brought out. These three categories in their subtle forms are as eternal as the *cit* or the individual souls. [...] *Prak'ti*, or the primal matter-the stuff of the entire universe is real and eternal like the individual souls ... though eternal and unborn, has yet *Brahman* for its cause. It consists of the three qualities of *sattva*, *rajas* and *tamas*".<sup>102</sup>

From above, one can argue that (i) there is distinction between God/*Brahm* and individual souls (*jīvas/cit*), but at the same time a *jīva* is derived from *Brahm*. (ii) There is distinction among individual souls. (iii) There is distinction between *Brahm* and matter (*acit*), but at the same time matter is derived from *Brahm*. (iv) There is a distinction between soul/*cit* and matter/*acit*. (v) There is distinction among various types of matter; this distinction is real similar to *Brahman* is real. (vi) There is separation between *jīva* and body at the time of death. These are summarized in Table 1.

#### 4.2.4. *Dvaita Vedānta*

In *Madhvāchārya's Dvaita* school of *Vedānta* (Sharma, 1986, 2000), there is a strict distinction (i) between God (*Brahman*)<sup>103</sup> and individual souls (*jīvas*), (ii) among individual souls, (iii) between God and matter, (iv) between soul and matter, and (v) among various types of matter. These five differences make up the universe (*prapancha*).<sup>104</sup> The relationship of *Brahman*, *jīva*, and matter (*jagat*) are summarized in Table 1.

#### 4.2.5. *Shuddhādvaita Vedānta*

In *Vallabhāchārya's Shuddhādvaita*, the individual soul is not the Supreme (*Satcitānanda*) clouded by the force of *Avidyā*, but is itself *Brahman*, with one attribute (*ānanda*) rendered imperceptible. The

soul is both a doer and enjoyer. It is atomic in size, but pervades the whole body through its essence of intelligence. Unlike *Advaita*, the world of *Māyā* or material world is not regarded as unreal because it is a power of *Ishvara* (who is not only the creator of the universe but is the universe itself). Vallabhāchārya interprets the *Bṛhadāraṇyaka Upaniṣad* that *Brahman* desired to become many, and he became the multitude of individual souls and the world. Although *Brahman* is not known, He is known when He manifests Himself through the world.

In all the philosophical traditions, it is common practice to describe how the Supreme Entity *Brahman* is related to us and our surroundings. In the system of *Shuddhādvaita Vedānta*, otherwise known as *Brahmavād*, the One, the Ultimate Reality is the only category. Every other thing has proceeded from it at the time of creation, is non-different from it during creation and merges into it at the time of dissolution. The animate souls and the inanimate objects are respectively its parts and modifications. The animate souls are its parts because they retain to some extent the essential qualities thereof namely consciousness and joy. The inanimate objects are its modification because the above said qualities are absent therein (Sharma, 1968).<sup>105</sup>

Thus, there is a no distinction (i) between God (*Brahman*) and individual souls (*jīvas*), (ii) among individual souls, and (iii) between God and matter, but matter is derived from *Brahman*. There seems to be distinction (iv) between soul and matter, but (v) unclear among various types of matter. The relationship of *Brahman*, *Jīva*, and matter (*Jagat*) are summarized in Table 1.

#### 4.2.6. *Achintya-Bheda-Abheda Vedānta*

*Achintya-Bheda-Abheda* (founder Chaitanya Mahaprabhu, 1486-1534) is a school of *Vedānta* representing the philosophy of inconceivable one-ness and difference, in relation to *Brahman* and

also between God and his energies. This is middle path between the absolute monism of *Advaita* and the dualist monism of *Dvaitādvaita*. *Brahman* and the *jīvas* are ‘inconceivably, simultaneously one and different’. The *jīva* is intrinsically linked with *Brahman* and yet at the same time is not the same as *Brahman*; the exact nature of this relationship being inconceivable to the human mind. Any object and its energy are non-different such as fire and power of burning.<sup>106</sup>

The *jīvas* (individual souls) are all separated parts of *Brahman*; in bound state the *jīvas* are under the influence of matter; in the liberated state the *jīvas* are free from the influence of matter; the *jīvas* and the material world are both different from and identical to the Lord (*Brahman*).<sup>107</sup> The relationship of *Brahman*, *Jīva*, and matter (*Jagat*) are summarized in Table 1.

### 4.3. Problems of Hinduism (Vedānta, Upaniṣhads, Gītā, and Sāṃkhya philosophy)

The metaphysics of *Advaita* is idealism, which has the reverse of the explanatory gap problem of materialism, namely, how matter-in-itself arises from consciousness (mind). If the matter-in-itself is argued as ‘congealed’ mind, then what is the mechanism of ‘congealing’ process?

The *Vedānta* (other than *Advaita*), *Upaniṣhads*, *Gītā*, and *Sāṃkhya*<sup>108</sup> philosophies have directly or indirectly the ‘built-in’ interactive substance dualism.<sup>109</sup> This is because, after death, a liberated soul (*mukta jīvātman*: mental entity) is separated from its dead body (physical entity), where all entities are categorized in to mind and matter (western system). An unliberated soul has subtle body (physical entity) attached to it that has the traces of *karmas* and intense desires responsible for rebirth, whereas a liberated soul is beyond the cycle of rebirth. This means that the liberated soul is a

separate substance/entity (mental entity) and the dead body is a separate substance/entity (physical entity). These two substances interact when we are alive in such a way that they appear *inseparable*. However, both (soul and dead body) and all other entities are parts of the same fundamental entity (one can call Him with different names such as God, *Allah*, *Brahman*, dual-aspect entity, physics' vacuum, and so on) whether we are alive or dead does not matter.<sup>110</sup>

However, the interactive substance dualism has the seven problems, which are discussed in (Vimal, 2010d) and (Vimal, 2011i): (i) association or mind-brain interaction problem, (ii) problem of mental causation, (iii) 'zombie' problem, (iv) 'ghost' problem, (v) neurophysiological many-one/many relation problem, (vi) causal pairing problem, and (vii) developmental problem; they are discussed in Section 7.3 below. We need to address these problems, which can be done using the DAMv framework (Vimal, 2008b, 2010c) in Chapter 5.

## CHAPTER 5

# Solution of the Problems of Science and Hinduism by Seventh Sub-school of Vedānta (*Dvi-Pakṣa Advaita*)

### 5.1. Extended Dual-Aspect Monism (*Dvi-Pakṣa Advaita*) Resolves the Problems

In the extended Dual-Aspect Monism or the DAMv framework (*Dvi-Pakṣa Advaita*), *Puruṣa* (mental aspect, consciousness, mind) and *Prakṛti* (physical aspect, matter) are *inseparable* aspects of the state of fundamental dual-aspect entity (such as *Brahman*) *with varying degrees of dominance of aspects depending on the levels of entities*.<sup>111</sup> This framework does not have problems and hence addresses the problems of interactive substance dualism, *Gītā*, *Upaniṣads*, *Sāṃkhya*, and *Vedānta*. The theist version of this new DAMv framework can be named as the *Āstika Dvi-Pakṣa Advaita* (आस्तिक द्विपक्षाद्वैत), or *Dōharī-Pahalū Advaita*, where *Dōharī* or *Dvi* means dual, *Pahalū* or *Pakṣa* means aspect, *Advaita* means monism. Its atheist version can be named as *Nāstika Dvi-Pakṣa Advaita* (नास्तिक द्विपक्षाद्वैत).

So far, the DAMv framework is *optimal* (because it has the least number of problems) and *general* (because all other metaphysical views can be derived from this as special cases). For example:

(A) In interactive substance dualism (O'Connor & Wong, 2005) and theist religions<sup>112</sup>, at the time of death, soul appears to separate from body, which implies that *Puruṣa* (mental aspect, consciousness, mind) and *Prakṛti* (physical aspect, matter) are two independent/separate entities. These definitions of *Puruṣa* and *Prakṛti* in the *Dvi-Pakṣa Advaita* (DAMv framework) may be somewhat different from that of *Sāṃkhya*. When we are alive, then they interact in us. The interactive

substance dualism can be derived from the DAMv framework by hypothesizing the following premises: **(i)** In soul (if it indeed exists after death!)<sup>113</sup>, the mental aspect *Puruṣa* (consciousness) is dominant and its physical aspect *Prakṛti* (matter) is latent/recessive or is in *potential* form. This is in analogy to: some traits are dominant and hence are expressed, whereas some are recessive and hence they are not expressed as per genetic theory. At deep ontological level in quantum physics, entities are mindlike (Stapp, 2009a, 2009b), so mental aspect (*Puruṣa*) is dominant, and the physical aspect (*Prakṛti*) is latent. On other words, the soul if exists might be mindlike quantum dual-aspect entity after death. **(ii)** In the dead body or its constituents, *Prakṛti* (physical aspect) is dominant and its mental aspect *Puruṣa* is latent.

In the *Āstika Dvi-Pakṣa Advaita*, the post-death state of *jīvātman* (soul) has dominant mental aspect and latent (potential) physical aspect. During conception in the reproductive process, when sperm and egg interact, the dual-aspect ‘soul’ might also interact with them and is then embodied as self (i.e., the aspects change their dominance with the states of soul; in other words, the physical aspect of the state of soul changes its dominance from latent to some appropriate higher degree of dominance as needed). One could argue that the physical aspect of the *potential* state of soul is *realized* via the interaction with the physical aspects of various states of interacting egg and sperm. This is because of *the doctrine of inseparability* between the physical aspect (structure) and the mental aspect (functional and experiential sub-aspects of consciousness) of a brain-state. This triad (structure, function and experience) needs to be tightly linked to avoid problems such as the relevant problems of interactive substance dualism.

To avoid category mistake (Feigl, 1967), it is necessary that interactions should be between the aspects of the same category, i.e., mental-mental or physical-physical interactions are allowed, but cross-interaction (mental-physical or physical-mental) is not allowed.



This is another reason for the ‘soul’ being a dual-aspect entity. In other words, the physical aspect of the state of soul that has been latent after death has to increase its dominance so that it can interact with physical aspects of the states of sperm and egg. Similarly, the mental aspects of the states of sperm and egg that have been latent before interaction need to increase their dominance for interacting with mental aspect of the states of ‘soul’. It should be noted that there is no scientific evidence for the existence of soul after death; so the above is just a speculation.

The soul before death is the self that has scientific evidence; there are three stages of self: protoself, core self, and autographical self as discussed in (Damasio, 2010) and summarized in (Vimal, 2012a). In the *Nāstika Dvi-Pakṣa Advaita* (atheist version of the DAMv framework), the self arises later during development—which involves cortical midline structures (Northoff, 2007; Northoff & Bermpohl, 2004; Northoff et al., 2006)—via matching and selection mechanism as discussed in (Vimal, 2008b, 2010c). Again, interactions should be mental-mental and physical-physical type, but not mental-physical type between egg and sperm to avoid category mistake.

(B) Materialism (science) can be derived by hypothesizing the following premises: (1) The physical aspect (*Prakṛti*) is dominant and its mental aspect (*Puruṣa*) is latent in inert matter or dead body; (2) both are equally dominant when a subject is alive. This then is *Nāstika Dvi-Pakṣa Advaita*, which is completely scientific.

(C) Idealism (matter from mind) can be derived by hypothesizing the following premise: At deep ontological level in quantum physics, entities are mindlike (Stapp, 2009a, 2009b), so mental aspect (*Puruṣa*) is dominant, and the physical aspect (*Prakṛti*) is latent. The same is true for soul (*jīvātman*) and God (unmanifested *Brahman*). This then is the *Āstika Dvi-Pakṣa Advaita*.

The view of Śankarāchārya and Neti-Neti, namely the aspectless *Brahman*, can be derived from the DAMv framework (*Dvi-Pakṣa*

*Advaita*) as a special case as follows: In this framework, the mental and physical aspects of the states of each entity including the fundamental primal entity (that has many names: *Brahman*, Implicate Order, empty-space at ground state of quantum field with minimum energy, unified field, and so on) are *inseparable* and their degrees of dominance vary with the levels of entities. The state of this fundamental primal entity at the unmanifested state before Big Bang has latent physical and mental aspects. That is the reason this primal entity appear aspectless. In *Brahma Sutra*, this primal entity is called *kāran Brahman*, which is the same or similar to Śankarāchārya's *Brahman* or its *Neti-Neti* definition. When the primal entity is manifested after Big Bang, it has innumerable states; these are called the states of *kārya Brahman*.

Thus, the dual-aspect monism addresses the explanatory gap problem (how mind can arise from matter) of materialism and that of idealism (how matter can arise from mind). This is because matter can arise from the physical aspect and mind can arise from the mental aspect.

The DAMv framework can address the critique on interactive substance dualism related to health issue (Mehta, 2011). Moreover, scientists/atheists can argue that about 9-magnitude earthquake in Japan triggering tsunamis (that caused over 10,000 deaths and billions of dollars damage) is not consistent with God as a savior. Perhaps, theists need to redefine the functions of God and how He operates to satisfy critiques.<sup>114</sup> The scientific version of the DAMv framework (*Nāstika Dvi-Pakṣa Advaita*) can explain tsunamis and similar incidents better than the theist version *Āstika Dvi-Pakṣa Advaita*.

**Table 1. Relationship of *Brahm*, *Jīva*, and matter (*Jagat*): Premises of various metaphysics**

Theist Metaphysics	<i>Brahm</i> and <i>jīva</i>	<i>Brahm</i> and Matter	<i>jīva</i> and <i>jīva</i>	<i>jīva</i> and Matter	Matter and Matter	<i>jīva</i> -body- separation at death?	ISD, M, I, problems?
<i>Gītā/Vedas/ B' hadāranyaka Upaniṣad</i>	N/Y	Y	N	Y	Y	Y	ISD/I: Y
<i>Advaita</i>	N	Y?	N	Y?	N?	Y/N?	I/ISD?:Y
<i>Trika Kashmir Shaivism</i>	N	Y/N	N	Y/N	N?	Y?	ISD/I: Y
<i>Viśiṣṭādvaita</i>	Y	N	N	Y?	N?	N?	ISD/I: Y
<i>Dvaitādvaita</i>	D/Y	D/Y	Y	Y	Y	Y?	ISD/I: Y
<i>Dvaita</i>	Y	Y	Y	Y	Y	Y	ISD: Y
<i>Shuddhādvaita</i>	N	N/D?	N?	Y?	N?	Y?	ISD/I: Y
<i>Achintya-Bheda-Abheda</i>	Y/N	Y/N	Y	Y	N?	Y?	ISD/I: Y
<b><i>Āstika Dvi-Pakṣa Advaita</i> (आस्तिक द्विपक्षाद्वैत ) (proposed)</b>	<b><i>N<sub>m</sub></i> <i>Y<sub>p</sub></i> in degree</b>	<b><i>Y<sub>m,p</sub></i> in degree</b>	<b>N</b>	<b><i>Y<sub>m,p</sub></i> in degree</b>	<b>N</b>	<b><i>Y<sub>d</sub></i></b>	<b>N</b>
<b>Atheist Metaphysics</b>							
<i>Sāṃkhya</i>	N	Y	N	Y	Y	Y	ISD: Y
<i>Lokāyata/nāstika/Cārvāka</i>	N, na	N	Y?	N	Y	na	M: Y
<i>Buddhism</i>	na	na	Y?	Y	Y?	N?	MI?: Y
<i>Jainism</i>	na	na	Y	Y	Y?	Y?	ISD: Y
<b><i>Nāstika Dvi-Pakṣa Advaita</i> (नास्तिक द्विपक्षाद्वैत ) (proposed)</b>	<b><i>N<sub>m</sub></i> <i>Y<sub>p</sub></i> in degree</b>	<b><i>Y<sub>m,p</sub></i> in degree</b>	<b>N</b>	<b><i>Y<sub>m,p</sub></i> in degree</b>	<b>N</b>	<i>Jīva</i> (soul) does not exist after death	<b>N</b>

**Legend:** *Brahm*: Brahman/Brahm/God/Puruṣa/fundamental entity, where the mental aspect is dominant and the physical aspect is latent in the DAMv framework. *Jīva*: *Jīva*/Jeeva/soul/self, where the mental aspect is dominant and the physical aspect is latent in the DAMv framework. Matter=Prakṛti/Jagat, where the physical aspect is dominant and the mental aspect is latent in the DAMv framework. *Jīva*-body-separation: Do *Jīva* & body/matter get separated at the time of death? Y = Yes = distinction exist. N = distinction does not exist, or it is dual-aspect or inseparable. *N<sub>m</sub>* : no distinction between mental aspects; *N<sub>p</sub>* : no distinction between physical aspects. *Y<sub>m</sub>* : distinction exists between mental aspects; *Y<sub>p</sub>* : distinction exists between physical aspects; *Y<sub>mp</sub>* : distinction exists between mental aspects and between physical aspects. *Y<sub>d</sub>* : distinction exists but they

remain dual-aspect entities with varying degrees of dominance depending on levels. D = Jīva or matter derived from Brahm. ? = unclear/controversial. na = not applicable. ISD = Interactive substance dualism. I = Idealism. M = materialism.

## 5.2. Theist/atheist phenomenon

### 5.2.1. God gene and acquired traits

Some of the problems of *Advaita* were addressed by *Viśiṣṭādvaita*, where *Brahman* is assumed to have dual-aspect (mental and physical) and is both cause and effect (implying ‘all in one and one in all’ view).

**Table 2. Theist versus Atheist Phenomenon**

Theism	Atheism
<i>Vedas/Bṛhadāraṇyaka Upaniṣad</i>	<i>Sāṃkhya</i>
<i>Gītā</i>	<i>Lokāyata/nāstika/Cārvāka</i>
<i>Advaita</i>	Buddhism
<i>Viśiṣṭādvaita</i>	Jainism
<i>Dvaitādvaita</i>	
<i>Dvaita</i>	
<i>Shuddhādvaita</i>	
<i>Achintya-Bheda-Abheda</i>	
<b>Āstika Dvi-Pakṣa Advaita</b> (आस्तिक द्विपक्षद्वैत ) <b>(proposed)</b>	<b>Nāstika Dvi-Pakṣa Advaita</b> (नास्तिक द्विपक्ष ाद्वैत) <b>(proposed)</b>

However, this has the problem of theist-atheist phenomenon because *Viśiṣṭādvaita* is a theist framework (assumes *Brahman* as God) and unable to address atheist/science's framework. We simply cannot ignore the contribution of science in our lives.

The problems of *Viśiṣṭādvaita* can be addressed by the *Dvi-Pakṣa Advaita* (DAMv framework). Here, it is assumed that the theist-atheist phenomenon is a subject-specific because scientists seem to have speculated about the existence of 'God gene', which when expressed entails subjects to be theist (it may also be acquired); otherwise subject is atheist.<sup>115</sup> Moreover, the existence of soul, spirit, and God is NOT mind-independent because atheists do not accept their existence, i.e., these assumptions are mind-dependent. In other words, we can have a compromise to live peacefully until things are crystal clear: theists can assume the dual-aspect *Brahman* as God (then this framework is *Āstika Dvi-Pakṣa Advaita*) and atheist can assume *Brahman* as dual-aspect entity at fundamental level (such as physicist's vacuum, deep quantum potential or Bohm's Implicate Order) from where all universes (including human beings) emerge via co-evolution (then this framework is simply the atheist version of the DAMv framework or *Nāstika Dvi-Pakṣa Advaita*).

Theist versus atheist phenomenon is also consistent with various *ṛṣis* who were founders of various philosophical views and theist and atheist religions. It is assumed that they were accomplished *yogis* with *samādhi* state as shown in Table 2.

### 5.2.2. God Gene hypothesis

(Hamer, 2005) proposes the followings, where information is also from other sources:

**(1) *Spiritual Convictions as of 2005*** (p.4-6): It is indeed strong; as per surveys, more than 95% of Americans believe in God; 90%

meditate or pray; 82% believe in miracles performed by God; more than 70% believe in life-after-death.

**(2) Spirituality genes and religious memes** (p.13-14): Spirituality is different from religions. Spirituality is (a) an ultimate mental (non-material) reality that involves private feelings, thoughts, mystical experiences, and revelations (p.13), (b) associated with religion (p.13), (c) believing in something larger than oneself (p.6), (d) an inner path that enables individuals to discover the essence of their existence, and/or (e) the “deepest values and meanings by which people live” ((Sheldrake, 2007).p.1-2). Whereas, religion is a collection of (a) cultural systems, (b) belief systems, and (c) worldviews, which relate humanity to spirituality and/or moral/ethical values. Spirituality is heritable and has stronger genetic component than religion. Religion is mostly transmitted by *memes*, which are “self-replicating units of culture, ideas that are passed on from one individual to another through writing, speech, ritual, and imitation” (p.13). As per Albert Einstein (1879-1955), “Religion without science is blind; science without religion is lame.”

**(3) The God gene hypothesis:** There is a biological mechanism for spirituality: “we have a genetic predisposition for spiritual belief that is expressed in response to, and shaped by, personal experience and the cultural environment. These genes ... act by influencing the brain’s capability for various types and forms of consciousness, which become the basis for spiritual experiences”(p.8). Many different genes are involved in spirituality and environment influences are equally important.

**(4) Essential premises for the proof of a genetic component to spirituality:** For this, there are five premises (p.9-13):

**(i) Measurement:** The self-transcendence scale of (Cloninger, Svrakic, & Przybeck, 1993) was used to measure spirituality in a questionnaire called the Temperament and Character Inventory (TCI) that has a 240-question true-false quiz assessing 7



dimensions of personality including 3 components of spirituality: self-forgetfulness (11 questions), transpersonal identification (9 questions), and mysticism (13 questions). This scale provides (a) a numerical measure of subject's capacity to reach out beyond oneself, (b) an experience of all entities being as parts of whole or one great totality or at-one-ness, (c) a yardstick for faith and enlightenment.

**(ii) Heritability:** Twin studies (comparing identical twins with fraternal twins) were used to determine if spirituality is inherited and to what extent.

**(iii) Identifying a specific gene:** A specific individual gene (God gene) was identified that is associated with the self-transcendence scale of spirituality and codes for the 'vesicular monoamine transporter 2' (VMAT2). The [VMAT2](#) is an [integral membrane protein](#) that controls the amount of [monoamines](#) to transport — particularly [neurotransmitters](#) such as [dopamine](#), [norepinephrine](#), [serotonin](#), and [histamine](#)—from cellular [cytosol](#) into [synaptic vesicles](#). Many other genes and environmental factors might be involved in spirituality.

**(iv) Brain Mechanism:** The [monoamines](#) influence spirituality by altering consciousness (awareness/subjective-experiences of self and objects, thoughts, memories, emotions and perceptions), which includes mystical experiences and self-transcendence. [Monoamines](#) link objects and experiences with emotions and values (Edelman, 1989; Edelman, 1992).

**(v) Selective Advantage:** God genes offer some direct evolutionary advantage: They, in natural selection, provide innate sense of optimism, which (a) gives the willpower to live and procreate at the psychological level and (b) promote better health and quicker recovery from disease at the physical level. This would prolong life, help raise children and pass on the genetic heritage.

**(5) Self-Transcendence** (p.18-20): This term describes spiritual feelings that can be independent of traditional religiousness. In this state of mind, subjects feel that they themselves and others (people, places, and objects) are unified and are parts of one whole (universe). Self-transcendent subjects (self-actualizers) feel compassionate with other living beings and to nature in general. They experience “a sense of wholeness and unity with the universe, with everything and everyone” (p.20).

**(6) Three components of spirituality** (p.23): There are three subscale of self-transcendence in TCI, namely, self-forgetfulness, transpersonal identification, and mysticism. Men scored 18% lower on self-transcendence than women (p.36).

**(i) Self-forgetfulness** (p.23-25): This trait includes, for example, sometimes (a) deeply immersing in work to the extent forgetting place and time, i.e., the ability to get entirely lost in an experience; (b) falling in love deeply to the extent forgetting the boundary between the two lovers, and (c) feeling of not doing wrong in work, sports, or music. Spiritual people have such type of feelings more frequently.

**(ii) Transpersonal identification** (p.26-28): This trait includes, for example, (a) risking life to make the world better place to live; (b) feeling of a sense of unity with all surrounding things; (c) a concern for protecting animals and plants from extinction; (d) a feeling of connectedness to a larger universe and everything in it, such as human and nonhuman, animate and inanimate, anything and everything that can be heard, smelled, or seen; (e) a feeling of deep and emotional attachment for other people, animals, trees, flowers, streams, or mountains; (f) a feeling that everything is part of one living organism; and (g) making personal sacrifices to help others, such as fighting against war, poverty, or racism. As per [Einstein](#), “Try and penetrate with our limited means the secrets of nature and you will find that, behind all the discernible concatenations, there remains something subtle, intangible and inexplicable. Veneration for

this force beyond anything that we can comprehend is my religion. To that extent I am, in point of fact, religious.”

**(iii) *Mysticism or Cloninger’s ‘spiritual acceptance versus rational materialism’*** (p.28-34): This trait includes, for example, (a) an openness to things not literally provable, (b) finding oneself moved by a fine speech or piece of poetry, (c) feeling of a spiritual link with other people that is ineffable, and (d) getting fascinated by data that are unexplained by science. Einstein was profoundly spiritual but not conventionally religious (he rejected the Orthodox Judaism at age 12). As per Einstein, “There is a central order to the universe, an order that can be directly apprehended by the soul in mystical union.” He connected mysticism, creativity, and spirituality as, “The most beautiful and most profound religious emotion that we can experience is the sensation of the mystical. And this mysticality is the power of all true science. If there is any such concept as a God, it is a subtle spirit, not an image of a man that so many have fixed in their minds. In essence, my religion consists of a humble admiration for this illimitable superior spirit that reveals itself in the slight details that we are able to perceive with our frail and feeble minds.” As per Hershey (who won Nobel Prize for showing that DNA is genetic information), “To find one good experiment and then keep on repeating it over and over again.”

If we combine all above, we come as close as science can measure ‘what it feels like to be spiritual’. In this way, we can experience religious ecstasy.

**(7) *Inherited disposition*** (p.39-55): University of Minnesota researchers calculated heritabilities 41-52%, which suggested that genes were responsible for 41-52% of the variation in religiousness from one twin to next in their study of 53 pairs of identical twins and 31 pairs of fraternal twins (that are equivalent to regular siblings) (Bouchard Jr., Lykken, McGue, Segal, & Tellegen, 1990). This implies that the reason of believing that religion can help in answering life’s

questions is partly their DNA and partly environmental (such as non-heritable biological, physical, and intellectual). The self-transcendence scores were far more alike for identical twins (correlations: 40 for males, 49 for females) than that for fraternal twins (correlations: 18 for males, 26 for females). Shared environment (such as same general parenting style, income level, social class, schooling, and religious upbringing) had no significant effect; unique environment (factors not shared by twins, such as different schoolteachers, one gets measles and other does not) accounted for 42-52% of variance. (Kirk, Eaves, & Martin, 1999; Kirk, Maes et al., 1999) reported that 43% of the variation in church attendance is more likely to be due to shared data, not genes; the remaining variation was due to the combination of the unique environment and a limited genetic component. Thus, spirituality (measured by the innate self-transcendence that arises from within but still needs to be developed like any other talents but genetic predisposition is present from the beginning) and religiousness (measured by church attendance and learned from parents, teachers, religious leaders, and peers) are fundamentally different. As per William James, “I myself believe that the evidence for God lies primarily in inner personal experiences”, and spirituality comes from within.

**(8) A God gene** (P.56-78): A [gene](#) is a molecular unit of [heredity](#) of a living [organism](#). It is a name given to some stretches of [DNA](#) and [RNA](#) that code for a [polypeptide](#) or for an [RNA](#) chain that has a function in the organism. A [gene](#) is in relation to the [double helix](#) structure of [DNA](#) and to a [chromosome](#). [DNA](#) consists of two long [polymers](#) of simple units called [nucleotides](#), with [backbones](#) made of [sugars](#) and [phosphate](#) groups joined by [ester](#) bonds. These two strands run in opposite directions to each other and are therefore [anti-parallel](#). Attached to each sugar is one of four types of molecules called [nucleobases](#) (informally, [bases](#): [adenine](#) (A), [cytosine](#) (C), [guanine](#) (G), and [thymine](#) (T)). It is the [sequence](#) of these four nucleobases along the backbone that encodes information. This

information is read using the [genetic code](#), which specifies the sequence of the [amino acids](#) within proteins. The code is read by copying stretches of DNA into the related nucleic acid RNA in a process called [transcription](#). Within cells DNA is organized into long structures called [chromosomes](#). During [cell division](#) these chromosomes are duplicated in the process of [DNA replication](#), providing each cell its own complete set of chromosomes.

The [God gene](#) hypothesis proposes that a specific [gene](#) ([VMAT2](#)) predisposes humans towards [spiritual](#) or [mystic](#) experiences. The [God gene](#) hypothesis is based on a combination of behavioral genetic, neurobiological and psychological studies. The major arguments of the theory are: (1) spirituality can be [quantified](#) by psychometric measurements; (2) the underlying tendency to spirituality is partially [heritable](#); (3) part of this heritability can be attributed to the gene [VMAT2](#); (4) this gene acts by altering [monoamine](#) levels; and (5) spiritual individuals are favored by [natural selection](#) because they are provided with an innate sense of optimism, the latter producing positive effects at either a physical and psychological level.

The information in DNA is stored in the form of 4 bases (A, G, C, and T), which punctuate the long string/strand of the DNA molecule at regular intervals. Each DNA molecule consists of two strings wound around each other in the double helix. Every time there is an A on one strand, a T appears on the other, and every time there is a G on one strand, it is matched with corresponding C. These base-pairing rules allow the DNA to be faithfully copied when cells divide. The information content is derived from the order of bases. Three bases specify one of the 20 amino acids, a building block of a protein (such as hormones and neurotransmitters). For example, ATG is methionine and GTA is valine. The conversion of DNA-information to protein-information involves transcription and translation. Our DNA has about 35000 genes each code for its own distinct protein. The differences between individuals are due to variations (polymorphisms) that occur approximately once every 1000 bases between unrelated

humans. Each human contains about 3 billion bases of DNA. This implies that there are about 3 million differences between DNAs of two unrelated humans.

A [God gene](#) is the VMAT2 (vesicular monoamine transporter 2) gene. VMAT2 [polymorphism](#) is clearly associated with self-transcendence. [Polymorphism](#) occurs when two or more clearly different [phenotypes](#)<sup>116</sup> (*form* or *morph*) exist in the same population of a species; it is related to [biodiversity](#), [genetic variation](#) and [adaptation](#); it is genetic variations. One of the polymorphisms of VMAT2 gene is A33050C: a single base, which could be either a C or an A; it is related to chromosome 10. This VMAT2-polymorphism is clearly associated with self-transcendence. For example, subjects with a C in their DNA (on one or both chromosomes, C/C and C/A genotypes) scored significantly higher than those with an A (A/A genotype), on overall self-transcendence and self-forgetfulness scales. The effect was in the same direction but “just short of statistical significance” with mysticism and transpersonal identification. Thus, this single-base change somehow affects every feature of self-transcendence: (a) “from feeling at one with the universe to being willing to sacrifice for its improvement” and (b) “from loving nature to loving God”. This one gene is enough to predispose subjects toward spirituality, although it might not make the subject a saint, a prophet or a seer.

**(9) Monoamines and mysticism** (p.79-89): (Pahnke, 1966; Pahnke & Richards, 1969), based on the writings of yogis, saints, seers, and scholars, proposed 9 components of mystical experience (that has universal fundamental characteristics not restricted to any particular culture or religion): transcendence of space-time (~ self-forgetfulness), unity (of subject and objects ~ transpersonal identification), sacredness, positive mood, and sense of objective reality (this triad ~ Cloninger’s ‘mysticism’), ineffability (part of self-transcendence), persistent positive change in attitude and behavior, transiency, and paradoxicality. Self-transcendence being part of subject’s character is



long-lasting, whereas mystical experiences being extraordinary are transient. The drug psilocybin (mimic of the monoamine serotonin) leads to some of the above experiences and altered-consciousness, and supports the link between spirituality and altered-consciousness.

**(10) Consciousness that is altered during mystical experiences via God gene** (p.90-118): Our wakeful consciousness is selective, continuous, and personal. It is a process (not a ‘thing’) with two stages: (i) core/primary consciousness that interprets raw sensory data as integrated scene, which is required for (ii) higher/secondary/autographical consciousness that recognizes self acts and feelings, cognizes mental images, and conceives past, present and future. Dominant view of science is materialism. For example, materialist (Edelman, 1992) proposes that consciousness arises from the interactions/communication both within and between the thalamocortical system and limbic-brain stem system using principles of re-entrant and neural-Darwinism (Edelman, 1989, 1993).

Our emotions and feelings (such as happiness, sadness, being excited, and anxiousness) and values are mediated by monoamines (catecholamines such as dopamine for ‘feeling good’, adrenaline, and noradrenaline related to unexpected stress and alertness; and indole-amines such as serotonin that relieves feelings of depression) wrapped and unwrapped, as a gift, via the encoding by gene VMAT2. Monoamines alters the consciousness, increases sociability and intimacy, and eventually leads to mystical experiences (boundless joy/bliss, inner light perception, and unification of subject and objects).

(Olds, 1956; Olds & Milner, 1954) activated medial forebrain bundle that stimulated dopamine neurons leading to the nucleus accumbens ([pleasure center](#)) in the basal forebrain; the release of dopamine in the nucleus accumbens produces great [pleasure](#) and feeling of good (such as in sex). Further investigations revealed that the pleasure center of the human brain is a distributed system of brain regions, which include subcortical regions (such as the [nucleus accumbens](#) and [ventral pallidum](#)) and cortical regions ([orbitofrontal cortex](#) and [anterior cingulate cortex](#)) (Kringelbach, 2009). In *samādhi*/mystical state, one experiences bliss; perhaps, this may be related to activating [pleasure center](#).

**(11) How the brain sees God, God spot, and premises of God gene theory** (p. 119-139): (D'Aquili & Newberg, 1999; Newberg, d'Aquili, & Rause, 2001), after 1 hour meditation, there is *increased* activities in (i) the frontal cortex and the thalamus, (ii) the dorsolateral prefrontal cortex, (iii) the inferior and orbital frontal cortex, and sensorimotor and dorsomedial cortices, all partly responsible for thinking and planning. (iv) the thalamus and cingulate gyrus (components of limbic system) also has increased activities. However, (v) there was *decreased* activities during meditation in posterior parietal lobes. There was a strong correlation between decreased activity in the left superior parietal lobe and increased activity in the left prefrontal cortex. The posterior parietal lobes are orientation-association areas and responsible for situating/orienting the self in environment. The information from vision, hearing, and touch is received by this part of brain and is organized in 3D picture of body and its position in space. The right parietal lobe locates the body within space and left parietal lobe is responsible for defining the limits of the body. The overall effect is to distinguish self (subject, body) and nonself (objects in environment or nonbody). In other words, the diminution in activity in left and right parietal lobes implies the experience of the unification of subject and objects. The mechanism is as follows: Meditators focus all of their mental energy on primary consciousness (thalamocortical attention system), they decrease their secondary consciousness (parietal-limbic system responsible for discriminating self and nonself) to clear their thoughts and emotions and lose the usual sense of self. Meditators become one with the world and the world becomes one with them by redirection of a few nanovolts of electrochemical energy. In other words, there is the unification of subject and objects. There is a gradient of self-transcendence starting from the aesthetic appreciation at one end to Absolute Unitary Being at the other and all other intermediate steps in between. It should be noted that sexual drives are controlled by the hypothalamus, which mediates emotional value of mystical experiences. The [Sex-to-Samādhi yogic technique of Osho](#) (Osho, 2012) might be based on this pathway. This is one of the three meditative experiences at *samādhi*-state. The second experience is boundless joy/bliss due to the activation of [pleasure center](#) as discussed above. The third experience is inner light perception, which may due to the activations of visual areas and frontal lobe area.

**God Spot** (p.135-137): Nonbeliever Persinger stimulated his own temporal and parietal lobes (God spot) using TMS (Transcranial Magnetic Stimulation) and experienced God and others had mystical experiences (feeling of rising, floating away into space) (Persinger, 1987). Temporal lobe response is specific for religion (Persinger, 1983, 1987; Ramachandran & Blakeslee, 1998; Ramachandran, Hirstein, Armel, Tecoma, & Iragul, 1997).

**Three premises of God gene theory** (p.137-9): **(i)** The central to spirituality is the sense of self. **(ii)** The brain process of consciousness causes our sense of self and of the world around us, which is related to the primary consciousness. **(iii)** Monoamines play central role in feelings, emotions, and values via VMAT2 gene, which is related to the secondary consciousness. Once meditation starts, the meditators focus all of their mental energy on the brain's association area. This results the partial shutdown of parietal lobe orientation area that is mediated by thalamus. This in turn sends off signals to the limbic system via the limbic system via the hippocampus, amygdala, and hypothalamus. This results in varying degrees of mental excitement depending on the individual. The feeling of spirituality is related to emotions, not intellect. It is the subject's genetic makeup that determines how spiritual s/he is. We feel God, we do not know Him.

**(12) Evolving faith** (P.140-160): **Evolution of God genes** (p.141-2): (Wilson, 1998) proposes multiple mechanisms for the evolution of God genes: **(i)** Genes, which make people open or susceptible to religions/spirituality, might have evolved through the selection of tribes competing against one another. **(ii)** Genes, which relieve anxiety, might have evolved by allowing people to become members of a cohesive group. **(iii)** Some religious traditions (such as dietary laws of Judaism kosher: what foods to eat or not to eat) have direct advantage for natural selection. **(iv)** As per (Dawkins, 1998), genes' role is only indirect in spirituality and religion by enabling the neural-networks of brains to transmit information related to culture.

**Faith Healing, religion and health, placebo, power of prayer, monoamine effects, nocebo effect, and selfish spiritual gene** (P.143-146): Faith and beliefs certainly have placebo effect. **(v)** If spirituality and religion can improve human health and prolong life, God genes certainly have selective advantage. Frequent visitors to religious places (such as temple, church, mosque and so on) lived longer because they have good health habits such as no smoking.

Religious organizations promote good health habits and lifestyles (such as work out, get married and stay married, refrain from alcohol consumption, develop a greater number of friendships, and so on). If God genes improve health and longevity and promote spirituality and faith, people will less likely to become ill and die early. Therefore, it will be more likely that they will pass on these genes to their children. Evolution cares only how many children one produces, not how long one lives. (Harris et al., 1999) suggested, “prayer may be an effective adjunct to standard medical care.” Prayer is popular because of its irrefutability, economical (does not cost money, time, and effort), feeling good; it releases dopamine (‘feel good’ chemical). As long as patients believe that they are getting real drug or treatment, placebo treatments (such as sugar pills) can relieve symptom or even cure a disease (such as depression, Parkinson disease, pain management, ulcers, rheumatism, dysmenorrhea, herpes, asthma, seasickness, acne, migraines, and various neurological conditions); they are about 60% effective as the real medicine. Therefore, faith in God should have the same effect as placebo and perhaps more. For example, placebo release dopamine in Parkinson’s disease as does the medicine levodopa; dopamine is ‘feeling good’ brain chemical; dopamine is one of several monoamines that are influenced by VMAT2 gene. Nocebo is the opposite of placebo and its effects are the causation of sickness, or even death, purely by expectation/belief; for example, evil-*tāntrik*’s sickness and death and ‘voodoo death’. These might be related to shift in serotonin level, which is ‘feel bad’ brain-chemical and may lead to negative emotions such as fear, anxiety, hostility, and pessimism; these effects have poorer recovery from disease and shortens life span. In other words, faith or belief including God alters the brain.

**(13) Religion from genes to memes** (P.161-179): Although gene-based spirituality is private and related to inner feelings and beliefs, it is entangled with meme-based religion that is more public and structured form. As per (Dawkins, 1998), memes are transmittable unit of culture, such as songs, poems, articles, books, and advertising jingles. (Blackmore, 1999) defines memes as “instructions for carrying out behaviors, stored in brains (or other objects) and passed on by imitation”. Memes, like genes, are selfish because they only care if they are efficiently copied from one brain to another; they do not care about the harm done to the copier/brains, such as meme

‘smoking cigarettes is cool’. As genes are useful for understanding biology, memes are useful for understanding the transmission of culture. The differences are as follows: (i) genes are for all living beings whereas memes are limited to human except some simple memes (such as British swallows open milk bottles) that lack complexity and richness of human memes. (ii) Gene-copying is limited (a female cannot have more than 20 children), whereas meme-copying is unlimited (30-sec interesting advertisement can be copied over millions). (iii) Genetic evolution is slow, whereas meme can change overnight. One could ask if memes are purely cultural, genetic, or mixture of both. The research of identical twins seems to imply that memes are cultural, but the predisposition to believe them may be partly genetic. In other words, both memes (culture) and genes contribute on personal religious beliefs. Parents have little impact on children; if they try to impose their beliefs, result is opposite to their expectation because children want to establish individual identity. Many religious beliefs, such as existence of life after death, soul, God, and continuance of consciousness, are due to the power of cohesion, which can be achieved by (i) their mutual support for other beliefs, and (ii) tendency or sometimes requirements that one should marry and have children with people of one’s own faith.

**(14) DNA is carrier of information** (P.180-196): Both functional and historical cellular information are carried by DNA. The functional cellular information consists of instructions that certain types of proteins and RNA molecules make certain cells and tissues at various stages of development. Since the DNA contains also the historical cellular information and is the product of evolution and reproduction, which links each organism to its preceding generation, person’s immediate ancestors (such parents, grandparents, and so on) and long-term biological ancestors and cousins (such as chimpanzee, gorilla, and other creatures) can be determined using, for example, Y chromosome markers for males. The complicated dance between genes for spirituality and religious memes, such as DNA studies of Jews and Hindus show sociocultural religious practices related to marriages.

**(15) God is still alive** (P.197-215): One could argue that as science and technology progress, faith in God will decrease. However, this hypothesis seems rejected. Peking man was *homo erectus* (1.5



MYA), who evolved smarter than his ancestor 500,000 year ago in China; he engaged in mystical belief system: ritual cannibalism and skull preservation. For [Azetics](#) (in central [Mexico](#)), cannibalism represented direct route to divinity; Binderwurs (in India) ate dead to please the goddess Kali. Our own species, Homo sapiens, appeared in Africa 150,000-200,000 years ago. Neanderthal man appeared about 100,000 years ago in Europe and Near East, who began to bury his dead. In Europe, they appeared 60,000 years later. They were primarily hunters and gatherers. Then about 32,000 years ago, there were the portraits of lions, bears, rhinos, and mammoths; this implies that Homo sapiens admired their strength and inner power; one bear skull placed on a rock altar; this suggests a cult of cave bear worship. Then spirituality and mysticism were well developed starting from 6000 years ago in the Vedic system of India and various other parts of world. All these suggest that God is still alive.

**Science and religion:** There is no way to test objectively if life-after-death, the continuation of consciousness, soul, and rebirth exist. (Dawkins, 1998) argues that there is no reason to believe gods exist and quite good reason for believing that gods do not exist. Evolution is sufficient to explain life, but cannot reject God. Hamer argues three ideas: (i) The hypothesis of a God gene VMAT2 is silent on the existence of God; it only suggests that a subject is predisposed on spirituality or not. It is beyond theism and atheism. Atheists can argue that spiritual experiences like all other experiences must be interpreted in terms of biologically constructed brains. Theists can argue that God let us recognize his presence via God gene and prewired God module and the brain-scan experiments of Persinger, Ramachandran, and Newberg. (ii) Spirituality is partly genetic; this does not mean that it is hardwired. Spirituality/enlightenment is based on practice; it takes lots of time and practice to attain *samādhi*/enlightened state; there is significant positive correlation between meditation practice and self-transcendence. (iii) Spirituality is based in consciousness and is genetic (such as God gene) and universal; whereas, religion is based in cognition and is memetic (such as culture, traditions, beliefs, and ideas) and cultures have their own forms of religion. Both are beneficial to our physical, mental, and social health; both make us feel better and actually make us better people; they mutually help each other. The self-transcendence (self-forgetfulness, transpersonal identification, and



mysticism) is measure of spirituality is partially inherited; VMAT2 is one of the God genes that codes for a protein, which control the flow in and out of monoamines that modulate consciousness and emotions. Spirituality is about the way we perceive the world and our role in it, which is a consciousness mediated process. Religions survive because they provide essential social services, confidence, guidance in life, and solace from life's calamities. However, established religions have negative sides as well, such as wars, crusades, and jihads (such as 9/11). Our genes (such as God gene) can predispose us towards spirituality; but do not tell us what to believe in; faith and beliefs in any religion are cultural and evolve over time.

**Critique and limitations:** (1) A less misleading and more precise title of (Hamer, 2005) might be: “a Self-Transcendence Gene: How Self-Perception Is Hardwired into Our Genes” in place of “the GOD gene: How Faith Is Hardwired into Our Genes”.

(2) (Hamer, 2005) does not explain spirituality completely, which is too complex to elucidate by a single measure.

(3) (Hamer, 2005) does not elucidate species-specific (such as human in general) spirituality. Perhaps, the reason is that it is based on behavioral genetic research that can explain only individual differences in spirituality.

(4) (Hamer, 2005) does not address if human beliefs are true; it explains to some extent why humans believe. Atheists can argue that God gene can entail that God does not exist, whereas theists can argue that God gene is another sign of creator's ingenuity to acknowledge and embrace His presence. One could argue that spiritual beliefs and feelings are product of brain.

(5) This is a long way from a ‘God Gene’, as PZ Myers notes: “It's a pump. A teeny-tiny pump responsible for packaging a neurotransmitter for export during brain activity. Yes, it's important, and it may even be active and necessary during higher order

processing, like religious thought. But one thing it isn't is a 'god gene'."

**(6)** Walter Houston, the chaplain of Mansfield College, Oxford, and a fellow in theology, told the Telegraph: "Religious belief is not just related to a person's constitution; it's related to society, tradition, character—everything's involved. Having a gene that could do all that seems pretty unlikely to me." However, as per (Hamer, 2005), "This book is about whether God genes exist, not about whether there is a God".

**(7)** As per Neil Gillman, "God is not something that can be demonstrated logically or rigorously [...] [The idea of a God gene] goes against all my personal theological convictions. [...] You can't cut [faith] down to the lowest common denominator of genetic survival. It shows the poverty of reductionist thinking." However, as per (Hamer, 2005), "My findings are agnostic on the existence of God [...] If there's a God, there's a God. Just knowing what brain chemicals are involved in acknowledging that is not going to change the fact."

**(8)** John Burn, medical director of the Institute of Human Genetics at the University of Newcastle in England, said, "If someone comes to you and says, 'We've found the gene for X,' you can stop them before they get to the end of the sentence." Hamer also emphasizes that a genetic root for spirituality is not the same as a genetic root for religion. "Spirituality is a feeling or a state of mind; religion is the way that state gets codified into law. Our genes don't get directly involved in writing legislation" (Kluger, Chu, Liston, Sieger, & Williams, 2004). According to Hamer, "Spirituality is intensely personal; religion is institutional."

**(9)** (Kluger et al., 2004) asked, "Which came first, God or the need for God? In other words, did humans create religion from cues sent from above, or did evolution instill in us a sense of the divine so that we would gather into the communities essential to keeping the species going? [...] If some people are more spiritual than others, is it

nature or nurture that has made them so? If science has nothing to do with spirituality and it all flows from God, why do some people hear the divine word easily while others remain spiritually tone-deaf?”

They address the above questions by hypothesizing the followings (double quotes are from the above article):

(i) *Spirituality in our genome*: “Far from being an evolutionary luxury then, the need for God may be a crucial trait stamped deeper and deeper into our genome with every passing generation. Humans who developed a spiritual sense thrived and bequeathed that trait to their offspring. Those who didn't risked dying out in chaos and killing. The evolutionary equation is a simple but powerful one.”

(ii) *Spirituality as an adaptive trait*: “Hamer not only claims that human spirituality is an adaptive trait, but he also says he has located one of the genes responsible, a gene that just happens to also code for production of the neurotransmitters that regulate our moods. Our most profound feelings of spirituality, according to a literal reading of Hamer's work, may be due to little more than an occasional shot of intoxicating brain chemicals governed by our DNA. ‘I'm a believer that every thought we think and every feeling we feel is the result of activity in the brain,’ Hamer says. ‘I think we follow the basic law of nature, which is that we're a bunch of chemical reactions running around in a bag’.”

(iii) *Faith is beyond cause and effect*: “The very meaning of faith, after all, is to hold fast to something without all the tidy cause and effect that science finds so necessary.”

(iv) *Many possible God-genes*: “Hamer is careful to point out that the gene he found is by no means the only one that affects spirituality. Even minor human traits can be governed by the interplay of many genes; something as complex as belief in God could involve hundreds or even thousands.”

(v) *Spirituality is genetic but religion is cultural (memetic)*: “As it turned out, the identical twins had plenty of remarkable things in common. In some cases, both suffered from migraine headaches, both had a fear of heights, both were nail biters. Some shared little eccentricities, like flushing the toilet both before and after using it. When quizzed on their religious values and spiritual feelings, the identical twins showed a similar overlap. In general, they were about twice as likely as fraternal twins to believe as much—or as little—

about spirituality as their sibling did. Significantly, these numbers did not hold up when the twins were questioned about how faithfully they practiced any organized religion. Clearly, it seemed, the degree to which we observe rituals such as attending services is mostly the stuff of environment and culture. Whether we're drawn to God in the first place is hardwired into our genes. 'It completely contradicted my expectations,' says University of Minnesota psychologist Thomas Bouchard, one of the researchers involved in the work. Similar results were later found in larger twin studies in Virginia and Australia."

(vi) *The three types of experiences in Samadhi/mystic/revelation state are bliss, inner light percept and feeling of unity with universe:* "The deeper that people descend into meditation or prayer, Newberg found, the more active the frontal lobe and the limbic system become. The frontal lobe is the seat of concentration and attention; the limbic system is where powerful feelings, including rapture, are processed. More revealing is the fact that at the same time these regions flash to life, another important region--the parietal lobe at the back of the brain--goes dim. It's this lobe that orients the individual in time and space. Take it off-line, and the boundaries of the self fall away, creating the feeling of being at one with the universe. Combine that with what's going on in the other two lobes, and you can put together a profound religious experience."

(vii) *God as an artifact of the brain:* " 'In India in Buddha's time, there were philosophers who said there was no soul; the mind was just chemistry,' says Thurman. 'The Buddha disagreed with their extreme materialism but also rejected the 'absolute soul' theologians.' Michael Persinger, professor of behavioral neuroscience at Laurentian University in Sudbury, Ont., puts the chemistry argument more bluntly. 'God,' he says, 'is an artifact of the brain.' [...] If human beings were indeed divinely assembled, why wouldn't our list of parts include a genetic chip that would enable us to contemplate our maker? 'Of course, concepts of God reside in the brain. They certainly don't reside in the toe,' says Lindon Eaves ... 'The question is, To what is this wiring responsive? Why is it there?' "

(viii) *God gene central to survival:* "Those religious believers who are comfortable with the idea that God genes are the work of God should have little trouble making the next leap: that not only are the genes there but they are central to our survival, one of the hinges upon

which the very evolution of the human species turned.”

(ix) *God-concept preloaded in genome*: “For one thing, God is a concept that appears in human cultures all over the globe, regardless of how geographically isolated they are. When tribes living in remote areas come up with a concept of God as readily as nations living shoulder to shoulder, it's a fairly strong indication that the idea is preloaded in the genome rather than picked up on the fly. If that's the case, it's an equally strong indication that there are very good reasons it's there.”

(x) *God experience as an adaptation and a built-in pacifier*: One of those reasons might be that, as the sole species--as far as we know--capable of contemplating its own death, we needed something larger than ourselves to make that knowledge tolerable. ‘Anticipation of our own demise is the price we pay for a highly developed frontal lobe,’ says Persinger. ‘In many ways, [a God experience is] a brilliant adaptation. It's a built-in pacifier.’

(xi) *Religion as social organizer*: “But the most important survival role religion may serve is as the mortar that holds a group together. Worshipping God doesn't have to be a collective thing; it can be done in isolation, disconnected from any organized religion. The overwhelming majority of people, however, congregate to pray, observing the same rituals and heeding the same creeds. Once that congregation is in place, it's only a small step to using the common system of beliefs and practices as the basis for all the secular laws that keep the group functioning. ... religion as social organizer [...] ‘Religions represent an attempt to harness innate spirituality for organizational purposes—not always good,’ says Macquarie University's Davies.”

(xii) *Religious wars as adaptive way of keeping population down*: ‘All religions become a bit secular,’ says Wilson. ‘In order to survive, you have to organize yourselves into a culture.’ [...] In a culture of Crusades, Holocausts and jihads, where in the world is the survival advantage of religious wars or terrorism? One facile explanation has always been herd culling—an adaptive way of keeping populations down so that resources aren't depleted.”

**(10)** (Silveira, 2008, Spring) analyzes the God Gene in a Nonmajors Laboratory Course as follows (double quotes from this article):



(i) *Controversial spiritual gene VMAT2*: “In his book [(Hamer, 2005)], Hamer contends that one’s predisposition toward spirituality is influenced by genetic factors. More controversially, he proposes that the VMAT2 gene is one of many potential genes that impinge on spirituality. Hamer identifies one particular variation, a change from an A to a C, present in 28% of the alleles in his data set, as a marker for the more ‘spiritual’ version of this gene” (Silveira, 2008, Spring).

(ii) *VMAT2 gene contributes to the variation in receptiveness to spiritual belief*: “Hamer used the self-transcendence scale of the TCI as a measure of spirituality. The test does not focus on a belief in a higher being or religious practice, but rather the ability to be immersed in the moment, identification of oneself as a part of the universe as a whole, and one’s degree of openness to the unexplained. The self-transcendence score has three subscores: ST1, creative self-forgetfulness versus self-consciousness; ST2, transpersonal identification; and ST3, spiritual acceptance versus rational materialism. The ST1 subscale probes a person’s tendency to ‘lose oneself’ in an experience. The ST2 facet measures how strongly one feels connected to nature and the universe, including the physical environment and people. Finally, the ST3 ‘mysticism’ subscale assesses the subject’s acceptance of things that cannot be rationally explained, such as miracles or a ‘sixth sense’ (Cloninger et al., 1993). [...] the self-transcendence score is drawn from 33 questions, the majority of which must be answered “true” for a point to be awarded. [...] The first chapter overviews the book, outlines the idea that there may be a genetic component to spirituality, and describes some caveats about the study and its findings. These caveats raise important issues, such as the very limited contribution that any one gene, including VMAT2, would have to the complex trait of spirituality, and that the study does not address the validity of any particular belief. [...] Finally, it is important to emphasize, as Hamer does, that the project is not seeking to investigate whether any particular spiritual belief is valid. Rather, Hamer’s book and this project explore whether there is a genetic component underlying some of the variation in people’s receptiveness to spiritual belief and whether VMAT2 in particular contributes to that variation. [...] is this particular variation in the DNA correlated with the variation that is seen in the personality test scores? Hamer’s preliminary work provides a motivation for focusing on VMAT2 variations, but it is not



proscriptive; he notes that the variation he sees could at best explain only a small fraction (<1%) of the variation in spirituality. Along with exploring the effects of other genes on spirituality, an understanding of the changes, or set of changes, in *VMAT2* that contribute to spirituality would be a valuable addition to Hamer's work" (Silveira, 2008, Spring).

(iii) *Polymorphism, VMAT2, genotype and phenotype*: "Because the change is in an intron, any observed significant correlation would presumably reflect other associated changes in the gene's coding or regulatory sequences. This consideration presumably also affects Hamer's work, as the known A/C transversions all fall in introns or the 3' untranslated region (Edwards, 2001; dbSNP, 2006), except for three in the promoter region, none of which have similar frequencies to Hamer's SNP (Lin *et al.*, 2005). There is substantial linkage disequilibrium among the SNPs in this gene (Lin *et al.*, 2005), so it is likely that one polymorphism is coinherited with other changes to form a haplotype. In his book Hamer explains that he examined a single SNP as a means to test an associated set of changes in *VMAT2*. As noted previously, the indirect nature of potential correlations between genotype and phenotype is actually an advantage in our case" (Silveira, 2008, Spring).

**(11) God gene undermines faith:** (The Washington Times, 2004) reports as, "An American molecular geneticist has concluded after comparing more than 2,000 DNA samples that a person's capacity to believe in God is linked to brain chemicals. His findings have been criticized by leading clerics, who challenge the existence of a 'God gene' and say the research undermines a fundamental tenet of faith - that spiritual enlightenment is achieved through divine transformation rather than the brain's electrical impulses. [...] Hamer, who in 1993 claimed to have identified a DNA sequence linked to male homosexuality, said the existence of the 'God gene' explained why some people had more aptitude for spirituality than others. 'Buddha, Muhammad and Jesus all shared a series of mystical experiences or alterations in consciousness and thus probably carried the gene,' he said. 'This means that the tendency to be spiritual is part of genetic makeup. This is not a thing that is strictly handed down from parents to children. It could skip a generation. It's like intelligence.' [...] Hamer insisted, however, that

his research was not antithetical to a belief in God. 'Religious believers can point to the existence of God genes as one more sign of the Creator's ingenuity -- a clever way to help humans acknowledge and embrace a divine presence,' he said."

**(12)** (Doughty, 2005) raises the following questions and then comments on (Hamer, 2005): "Why do human beings appear universally to believe in God? [...] why human beings developed the concept of the supernatural, spirituality and God in the first place.",

(i) *Religion's functions*: "Religion is useful as a sort of social cement, as a support for certain moral values, and as a way to resolve the problem of mortality by giving the appearance of meaning to our individual and communal lives. Religion, in one way or another, promotes personal and social steadiness or, seen from a slightly different perspective, religion is an essential ideological instrument of social control. Whether established and maintained through consensus or coercion (though normally both), religion matters."

(ii) *Science and religion*: "Nature is amoral and scientists ought not to extrapolate ethical lessons from their studies; religion, on the other hand, is a quest for ethical and metaphysical knowledge and ought not to tread upon the territory reserved for science."

(iii) *Science and religion as the dual-aspect of life*: These two great 'magisteria,' as Gould called them, are dual aspects of human life and should both be revered as long they do not trench upon each other's turf." This is very close to the idea of this book, i.e., science and religion of *inseparable* physical and mental aspect of each state of human life. There is no problem, as long as each observes its own domain: (a) science explaining the physical aspect such as the neural-networks, chemicals and electrical attributes, and their activities of brain; and (b) religion explaining the mental aspect such as consciousness/experiences. If they cross their domains, the explanatory gap problem appears and category mistake is made. For example, when science starts explaining the experiences/consciousness, then (Levine, 1983)'s explanatory gap problem of materialism occurs: how can experiences be explained by the non-experiential matter like brain? In addition, the mind arising from brain makes the category mistake. Similarly, if religion crosses to explain physical matter-in-itself from consciousness then explanatory gap of idealism arises and category mistake is made.

(iv) *Self-transcendence, twins, and genes*: “Hamer, praised by E. O. Wilson, the putative patriarch of sociobiology, is a ‘leading laboratory researcher’ in the field of ‘genetics, molecular biology, and psychology.’ His most recent quest is for a biological explanation of faith. The search begins with a review of some scales developed by psychologist Roger Cloninger that purport to measure the concept of ‘self-transcendence.’ Composed of three sub-sets, self-transcendence is composed of ‘self-forgetfulness’ (as in the tendency to become totally absorbed in some activity such as reading); ‘transpersonal identification’ (a reported feeling of unity in the universe); and ‘mysticism’ (a willingness to believe in extra-sensory perception, and so on). Here we seem to have empirical measures of warm and fuzzy feelings. Hamer is careful to state that these three scales combine to indicate a predisposition toward religion but not any particular relationship to any organized faith. The next step was to discover if these behavioural or attitudinal tendencies were the product of nature or nurture. Hamer assures us that Siddhartha Gautama, Jesus and Mohammed all had plenty of self-transcendence. [...] Lo and behold! A connection was found by studying pairs of twins who had been separated and raised in different families.”

As per (Hamer, 2005), “we rounded up a bunch of people and measured their self-transcendence. Then we looked at a bunch of genes and looked for differences. And we found this one gene that was at least correlated with self-transcendence. It's called VMAT2, which stands for ‘vesicular monoamine transporter no. 2.’ It handles one type of brain chemical, monoamines, that have a lot to do with emotional sensitivity.”

“Hamer assures us that Siddhartha Gautama, Jesus and Mohammed all had plenty of dominant VMAT2”.

(v) *Alternative title of (Hamer, 2005)*: Hamer writes. “What I meant to say, of course, was ‘a’ God gene, not ‘the’ God gene.”

“Given the weakness of its conclusions, Hamer might better have entitled his book: A Gene That Accounts for Less Than One Percent of the Variance Found in Scores on Psychological Questionnaires Designed to Measure a Factor Called Self-Transcendence, Which Can Signify Everything from Belonging to the Green Party to Believing in ESP, According to One Unpublished, Unreplicated Study.” [...] Most of all, though, it is important to look on pages 211-212 of *The God Gene*, where Hamer also retreats from his subtitle. ‘Just because

spirituality is partly genetic doesn't mean it is hardwired,' he says. 'Spirituality takes practice'."

(vi) *Memes and genes*: "The concept of a 'meme' was formulated by fellow selfish-gene geneticist Richard Dawkins [(Dawkins, 1998)]. A meme is a little chunk of culture (e.g., natural gas furnaces, the concept of zero, chariots, tuxedos or McDonald's golden arches). Dawkins claims that genes and memes share the capacity to be replicated and are passed down by a sort of natural selection. According to Hamer, whether memes are true or false, tonic or toxic, brief or enduring is of no consequence. What matters is that 'if a meme can efficiently colonize the human brain, it will.' God, we must imagine, is a very successful meme."

(vii) *Gay gene, God gene, VMAT2, faith, and problem*: "First, in 1993, Dean Hamer [(Hamer, Hu, Magnuson, Hu, & Pattatucci, 1993)] first became famous for discovering Xq28, the so-called 'gay gene.' His claim still awaits replication. [...] Hamer's previous causation theories to eugenics at least as persuasively as Hamer links VMAT2 to God. [...] He admits that moving from slight correlation to clear causation is difficult. He says that VMAT2 amounts to no more than a genetic predisposition, and that faith also takes practice. [...] In the end, however, Hamer has produced a flawed work not only insofar as scientific method is concerned, but also in the basic conceptual instruments with which human thought and behaviour are to be understood."

(13) (Koenig & Bouchard Jr., 2006) argues for **genetic contributions to religiousness**, "religiousness and related variables are formed by socialization processes within the family and that genetic influences are largely irrelevant. Despite this perception, there are reasons why one should examine the possibility of genetic influence on religiousness. First, religiousness may be a biological adaptation, and it may be worthwhile to try to understand it from this perspective. Second, studies that control for or estimate genetic influence provide a clearer picture of the true environmental influences on the trait. Finally, unless religiousness is unlike most other psychological characteristics, it should be heritable. [...] Is Religiousness a Biological Adaptation? [...] Universality and complexity of a trait or characteristic strongly suggests that it is an evolutionary adaptation (Buss, Haselton, Shackelford, Bleske, &

Wakefield, 1998; Williams, 1966). Yet it is also clear that religious fervor can lead to genetic extinction for particular individuals as witnessed by celibate religious orders over the centuries and suicide bombers in recent years. [...] religiousness could influence reproductive fitness by encouraging (a) families to have more children, (b) better health practices (avoidance of alcohol and drugs), or (c) greater paternal involvement in the care of children [...] If Religiousness Is Just Another Trait, It Should Be Heritable ... “all human behavioral traits are heritable.” Religiousness and related variables are no exception and should not be left out of the purview of behavior geneticists. As Lynch and Walsh (1998) have pointed out, “Almost every character in almost every species that has been studied intensively exhibits nonzero heritability” (p. 174). [...] religious affiliation, the religion that one practices, is cultural and little influenced by genetic factors. Genetic influence is more specific to religious behaviors and traits. [...]

Hamer (2004) has written a book with the title *The God Gene*. Hamer, however, is a careful investigator and in the text makes it clear that individual genes will account for only a tiny fraction of the variation in a trait. The gene he discusses (VMAT2, also called SLC18A2) may be important in influencing the kinds of traits we are discussing, as their products modulate mechanisms through which psychoactive drugs work on the central nervous system. [...] In conclusion, religiousness and the rest of the TMVT [Traditional Moral Values Triad: religiousness, authoritarianism, and conservatism] are moderately heritable, especially in adulthood. Certainly, family influences are important in childhood, and further research should be carried out to determine the specific factors at work. More research also needs to be done to explicate the genetic influences seen on these traits. A moderate heritability for a trait does not mean that there is one gene for that trait. The influence is quantitative; that is, there are many genes, acting within the context of the environments, that support the development of these traits.”

**(14) Religiousness is heritable:** (McNamara, 2006b) argues that religiousness is heritable as follows:

(i) *Religion has cultural (memetic) and genetic components:* “Religion appears to be a cultural universal. [...] Twin studies have shown that religiousness is moderately to highly heritable (see volume I, chapter



3). Genetic studies have implicated specific genes in religiousness (mostly genes that code for regulatory products of monoamine transmission in limbic-prefrontal networks; for reviews, see Comings, Gonzales, Saucier, Johnson, & MacMurray, 2000; D’Onofrio, Eaves, Murrelle, Maes, & Spilka, 1999; Hamer, 2004; see also volume I, chapter 3).”

(ii) *Neural correlates and neurochemical mechanisms*: “Consistent with these preliminary genetic studies, neurochemical and neuropharmacologic studies have implicated limbic-prefrontal serotonergic and dopaminergic mechanisms in mediation of religious experiences (see volume II, chapters 1 and 2; volume III, chapters 1 and 10). Neuroimaging and neuropsychologic studies have implicated a consistent set of neurocognitive systems and brain activation patterns in religious activity (mostly limbic-prefrontal networks (see volume II, chapters 2, 3, 8, and 9; volume III, chapter 7).”

(iii) *Religious cognition*: “A cognitive psychology of religious belief has revealed both the unique aspects of religious cognition as well as its commonalities with other basic cognitive processing routines (see volume I, chapters 6, 9, and 10; volume II, chapter 10). Finally, changes in self-reported religious experience by individuals suffering from obsessive-compulsive disorder; schizophrenia, Parkinson’s disease, and temporal lobe epilepsy are in the expected direction if the previously mentioned neurocognitive networks (limbic-prefrontal) do in fact mediate core aspects of religiousness (see volume II, chapters 1 and 8; volume III, chapter 1).”

(iv) *Evolution of religiousness*: When it comes to biologic correlates of religiousness, the best available theory is evolution. Thus, several of the essays in these volumes discuss potential evolutionary and adaptive functions of religion. [...] For those scientists who think the evidence supports some variant of an adaptationist position (see volume I, chapters 4, 5, 7, and 10; volume II, chapter 4; volume III, chapter 6), the questions shift to what part of religiousness is actually adaptive and what functions might religiousness enact? Some theorists suggest that it is reasonable to speak about a “common core” religious experience fundamental to all forms of religiosity (see volume I, chapter 7; volume III, chapters 5 and 6). Some investigators suggest that the aspect of religiousness that was “selected” over evolutionary history was the capacity for trance,



placebo responding, or altered states of consciousness, or ASC (see volume I, chapters 5 and 7; volume III, chapter 6). The capacity for trance, placebo responding, and ASC, of course, would yield both health benefits and a rational or even irrational belief states over time. [...] There may therefore be enough data to reconstruct the evolutionary history of ritual practices in certain human lineages. [...] While tremendous progress has been made in identifying neurobiologic correlates of religiousness, it will be a challenge to place these findings in new theoretical frameworks that can do justice to the richness and complexity of the religious spirit.”

**(15) *God module’ and God gene have misled scientists:*** (Kirkpatrick, 2006) critiques as, “Just as evidence for a ‘God module’ [(Persinger, 1983, 1987; Ramachandran & Blakeslee, 1998; Ramachandran et al., 1997)] in the brain has misled scientists into shaky speculations about what that module ‘is for,’ Hamer [(Hamer, 2004)] and others have been misled into speculating about why we have genes ‘for’ religion. Although Hamer [(Hamer, 2005)] explicitly acknowledges that this is a fallacious line of reasoning, he inexplicably succumbs to temptation and offers wild speculations about the evolutionary function of religion and the genes alleged to produce it.”

### 5.2.3. God Module hypothesis

**(1) *God modules/religion regions:*** If some neural structures (such as temporal lobe, especially left side) are stimulated, subjects have intense religious experiences (Persinger, 1983, 1987; Ramachandran & Blakeslee, 1998; Ramachandran et al., 1997). Such neural structures are called God modules.

(Haarsma, 1999) elaborates further and provides critique on (Ramachandran et al., 1997): “Experiments were performed on three patients suffering from a type of temporal lobe epilepsy in which seizures are often accompanied by intense mystical or religious experiences. Patients were sometimes preoccupied with mystical thoughts between seizures as well. The scientists found that

increased activity in a particular brain circuit was associated with a heightened involuntary response to religious symbols and words. [...] Christians do not (or should not) believe that our relationship to God occurs entirely within immaterial souls, of which our bodies are mere vessels. Our whole being --- soul and body, mind and brain --- should respond to God. Nor do our brains have a singular ‘God module’ as the site of all religious activity. Our relationship to God is personal and complex, not limited to just one kind of experience. No doubt many parts of our brain participate in many kinds of religious experiences. The temporal lobe [religion region], for example, is known to be important for intense emotional experiences. We should expect it to participate in intense religious experiences. It is certainly intriguing that a particular sub-region is rather specialized, at least in these patients, for religious imagery.”<sup>117</sup>

**(2) Religion is not an adaptation:** (Kirkpatrick, 2006), summarizes some of existing views, critically examines them, and discusses the problems with the hypothesis of *religion-as-adaptation*, and then proposes multiple-by-products hypothesis for religion, which implies that religion is not an adaptation, rather it is just the by-products of a variety of psychological mechanisms that evolved for other purposes.

**2.1. Religion, spirituality, evolution, natural selection, God modules, God genes, and religion-as-adaptation:** **(i)** One could argue that religion/spirituality is a product of evolution, natural selection, and adaptation and hence has adaptive benefits. **(ii)** This argument in neuroscience and genetic researches suggests ‘God modules’ in our brain and ‘God genes’ in our DNA. **(iii)** From above, the claim is that our religious beliefs and behaviors and spiritual experiences can arise from our mind-brain-environment-culture system. **(iv)** If scientifically useless idea of ‘intelligent design’ is rejected, only the theory of evolution by natural selection and adaptive benefits can coherently explain the complex ‘design’ of living organisms. **(v)** The *Homo religiosus* notion is that religion or its some specific aspect(s) is an *adaptation*. In other words, a universal trait or feature of species (such as spirituality/religiosity) is favored over a long time by natural selection. This is because it solved one or more *adaptive problems* in human ancestral environments. **(vi)** The *religion-as-adaptation* hypothesis is that religion is (a) somehow

inherent in human nature or (b) part of the evolved design of the human being. **(viii)** The functions of religiosity/spirituality ranged from the reduction of anxiety (such as fear of death) to providing various meaningful worldviews to the promotion of group solidarity.

**2.2. God Modules in the Brain:** **(i)** A specific patterns of neural activities in temporal lobe is associated with spiritual experiences, which suggests a ‘God module’ in the brain (Persinger, 1987; Ramachandran & Blakeslee, 1998) implying evolution-selection-adaptation function of this brain mechanism. **(ii)** In general, there is no simple 1-1 mapping between a specific function/behavior/experience and specific anatomical brain area(s)/module(s), although the brain/mind is highly modularized. Therefore, a ‘God module’ for a specific religious experience is not tenable. **(iii)** One could argue that religious scientific data can be explained as a by-product of some other functions. For example, spiritual-mystical/religious experiences and their neural correlates might represent a sort of mis- or hyper-activation of other adaptive functions designed for other (nonreligious) purposes by evolution and natural selection.

**2.3. God Genes:** Religiosity/spirituality demonstrates *heritability* because some people are more religious/spiritual than others because of genetic differences based on the study of twins reared apart and together (Waller, Kojetin, Bouchard, Lykken, & Tellegen, 1990) and on the basis of molecular human genetic such as a ‘God gene’/VMAT2 (Hamer, 2005).

**2.4. Problems with religion-as-adaption hypothesis:** (Kirkpatrick, 2006) argued that the issues with *religion-as-adaption* hypothesis can be grouped in to three categories: identifying the phenomenon, identifying the adaptive function, and identifying the design of the purported mechanism.

**2.4.1. Identifying the Phenomenon:** Religion has multiple aspects and hence has definitional problem: **(i) Belief/faith:** One aspect of religion involves certain *beliefs*, for example, belief in an afterlife or supernatural deities/God(s)/*Brahman/Allāh*. **(ii) Behavior:** Second aspect involves certain *behavior*, for example, participation in group rituals or prayer. **(iii) Experience:** Third aspect involves *emotion* or phenomenological experience, for example, powerful spiritual/spiritual/religious experiences. **(iv) Social structure:** Another aspect involves a *social structure* and institutional forms, where there

are hierarchies of power and influence and specific roles. Each research usually investigates one aspect and ignores others. For example, a research focused on a group behavior such as rituals argues for adaptive functional benefit of increased solidarity. It is possible that each aspect has its own adaptive function, related benefit, and underlying mechanism.

**2.4.2. Identifying the adaptive function:** (i) The criterion of the natural selection is that the adaptive genetic instructions are more widely copied in successive generations and the less widely copied genes are selected out. This is because evolution by natural selection is fundamentally about successful production of children who in turn are reproductively successful and so on; it is not about survival. (ii) Scholars argue that religion has many psychological benefits, such as alleviating fears about death, providing comfort, raising self-esteem, making more optimistic. In other words, religion makes us happier, which is unclear how it will lead to producing more children. Since natural selection is blind to purely psychological effects, such as happiness that does not in itself cause more copies of happiness promoting genes to dominate successive generations. Perhaps, happiness has indirect effect on higher success in reproduction.

**2.4.3. Identifying the design of the claimed mechanism:** (i) The adaptationist theory of religion must address the design-problems of the psychological mechanism(s) that produce it: (a) how it works, (b) what its subsystems or components are, (c) how they are interrelated, (d) the kinds of inputs it responds, and (e) what inferential rules it operates on for producing outputs such as religious thoughts, feelings, or behaviors. (ii) The design of a religious adaptation must distinguish behavior from its generating mechanism(s) (Tooby & Cosmides, 1990). (iii) Genes are instructions for building functionally organized biological structures in the developing organism. Genes code for specific psychological mechanisms that reliably produce specific behaviors under certain conditions. Genes do not code for behavior directly. (iv) Therefore, the task would be to develop hypotheses about how the mechanisms or systems in the brain/mind are designed for the related behavior. (v) Religious faith and belief are adaptive because they provide relief from anxiety, they bring comfort, they unify communities, and they teach moral values.<sup>118</sup> (vi) Evolution and natural selection could

reduce anxiety by simply modulating one of its parameters to be less reactive to threats or appropriately recalibrate it.

**2.5. The multiple-by-products hypothesis:** (i) (Kirkpatrick, 1999, 2004, 2006) proposed the multiple-by-products hypothesis, where “religion represents a collection of by-products of a variety of psychological mechanisms that evolved for other purposes”; this is similar to an independently derived view (Atran, 2002; Atran & Norenzayan, 2004). (ii) Kirkpatrick argues that a diverse collection of specialized psychological systems was evolved for other purposes from which the various aspects of religion were assembled. In other words, no new adaptations have since evolved that were specifically designed to create any specific aspect of religion. (iii) According to (Boyer, 1994, 2001), majority of religious beliefs can be explained by combining other evolved psychological mechanisms in a specific manner, which are supported by specific cultural contexts. There other mechanisms were designed for other purposes such as for the understanding of the various aspects of our physical, biological, and interpersonal domains. (iv) *Multiple-by-products hypothesis addresses problems of religion-as-adaptation*, such as: (a) The ‘by-products’ aspect of the multiple-by-products resolves the numerous problems related to identification of adaptive function and design by shifting the problems to other systems (e.g., attachment, kinship, and so on) from which religion arises. (b) The ‘multiple’ aspects address the intractable problem of defining religion or identifying any single central, fundamental characteristic that is shared by all religious aspects. (c) The multiple-by-products framework addresses the problems of the huge individual and cross-cultural differences in religion. For example, the individual or cultural differences can be interpreted as the differences in the specific psychological systems or their relative weighting, which are involved in the processing of religious information in different people. In some societies/religions, since God is perceived as nurturing and loving caregivers, beliefs about God might be embedded primarily in their attachment system. Whereas in other societies/religions, gods are perceived as social exchange partners who can help us only if we meet certain conditions or perform certain kinds of rituals or sacrifices. (d) Religion is adaptive, maladaptive, or adaptively neutral depending on circumstances. This data is consistent more with the *multiple-by-products* framework than *religion-as-adaptation* hypothesis. This is



because if religion is a by-product of other mechanisms, there is no reason to expect that it will always produce systematically adaptive effects. **(v)** Thus, the *multiple-by-products hypothesis* addresses the problems of *religion-as-adaptation* and retains the many strengths of evolution-selection-adaptation framework.

### **(3) Religiosity as an adaptation for health and cooperation:**

Contrary to (Kirkpatrick, 1999, 2004, 2006), (Bulbulia, 2006) argues for the religion-as-adaptation hypothesis. The followings are mostly adapted from (Bulbulia, 2006) but some of the information is also derived from other resources.

**3.1. Religiosity as an adaptation for health and cooperation—self-healing placebo hypothesis and costly signaling hypothesis:** **(a)** The two hypotheses related to the biological functions, which strongly motivate religious commitments (based on imaginary supernatural worlds) that strongly influence how believers lead their lives, are as follows: (i) The *healing placebo hypothesis* postulates that religiosity evolved, adapted, and selected, as a mechanism for self-healing as nature's medicine. (ii) The *costly signaling hypothesis* proposes that "religiosity evolved as a hard-to-fake signaling system to motivate trust, solidarity, and cooperation among nonkin in the ancestral world." **(b)** One could argue that cultural processes (such as memes) cannot explain religiosity (Blakemore, 2000; Dawkins, 1976). **(c) Self-healing placebo hypothesis:** A hypothesis for the mechanism for the religious predispositions becoming ingrained in human nature is that the religiosity evolved to nurture placebo health (McClenon, 1997, 2002). Placebos are "beliefs and attitudes whose nonspecific causal properties make us better". **(d)** (Bulbulia, 2006) proposes a hypothesis that "selection amplified dispositions to believe in gods because such beliefs helped our ancestors live longer and healthier, leaving more god-believing progeny." **(e) Costly signaling hypothesis:** Since the costs of religion in terms of time, effort, money, and risk is very high in some respect, some naturalists (such as (Dawkins, 1976)) view religion as disease, a form of mental harm ('barking madness') caused by persuasive rationally disabling ideas or 'memes.' Since religious ideas are brutally successful at reproducing and spreading, they swamp the mind of religious agents and are adapted



for their own success (not ours). Therefore, religious life lacks prosperity intrinsically (Dawkins, 1976).

**3.2. Benefits of religion:** However, the data on religion and health are against the views of Dawkins and the religion is not intrinsically beneficial. For example, the data indicate less immune system dysfunction, hypertension, cancer, coronary artery disease, stroke, and functional impairment, fewer negative health behaviors (such as, drugs and alcohol abuse, smoking, risky sexual behaviors, and inactive lifestyle), and lower overall mortality ((Koenig, McCullough, & Larson, 2001), p. 394). **(g)** In the majority of studies, with respect to mental health, religious involvement correlated with: (i) well-being, happiness, and life satisfaction, (ii) hope and optimism, (iii) purpose and meaning in life, (iv) higher self-esteem, (v) adaptation to bereavement, (vi) greater social support and less loneliness, (vii) lower rates of depression and faster recovery from depression, (viii) lower rates of suicide and fewer positive attitudes toward suicide, (ix) less anxiety, (x) less psychosis and fewer psychotic tendencies, (xi) lower rates of alcohol and drug use or abuse, (xii) less delinquency and criminal activity, and (xiii) greater marital stability and satisfaction.

**3.3. Problems of religion:** The religious data are ambiguous on its adaptive design. Benefits and problems depend on (a) different forms of religiosity and practice (Park, Cohen, & Herb, 1990) and (b) different age-groups (Neighbors, Jackson, Bowman, & Gurin, 1983). Some studies such as (Strawbridge, Shema, Cohen, Roberts, & Kaplan, 1998) suggest that religiosity may worsen stress. Religious placebo healings that is based on imaginary supernatural worlds do not reveal why *religion* heals rather than secular placebos. One could argue that some of religious beliefs and rituals are unhealthy, such as consuming the flesh and blood of the deity, ritually chopping bits of penis off, and believing in Judgment Day.

**3.4. The architecture of religious error (religious healing):** There are three hypotheses for using evolutionary cost-benefit analysis of religious error (healing religiosity) instead of hypothesizing religion as an adaptation: **(i)** When we are in doubt and cannot decide, then the default is to follow what successful people selected the path. This thumb rule on average may bring success, but it can easily propagate error, i.e., superstitions are very risky for cultural/religious agents. Natural selection may tolerate such perceptual error but within adaptive thresholds. **(ii)** Since we are

imperfect beings, the natural selection may actively nurture an error-prone design, such as religious errors as emerging from an architecture wired for safety (not accuracy) that is an actively cost-prone psychological design (Atran, 2002; Guthrie, 1993, 2001). **(iii)** The third hypothesis proposes that error itself is inherently more beneficial than accuracy in a Darwinian world, where natural “selection has been able to trial, develop, and preserve an intricate error-prone psychological design”. This is because (a) “actively distorting the world may be intrinsically beneficial to duped organisms,” (b) structured “error itself may bring powerful reproductive advantages to an error-prone organism”. Examples are self-deception and religious error. Self-deception is an adaptive error, which is a cognitive strategy to deceive oneself and works best when the agent remains unaware of the error. Similar is the case for religious error. If the agent knows that the supernatural entities (such as God, soul, life-after-death, which are the main premises) do not exist, then s/he (such as atheists/scientists) will not believe firmly on supernatural entities (such as God) and the placebo faith healing will not work and the benefits of religions will be reduced or eliminated. This means that errors must be *encapsulated (concealed)* from such problems to work properly.

**3.5. Optimal psychological design for religious healing through stress mitigation, confidence and beliefs:** The *placebo* response pathway to the evolution of religious error might be through *stress mitigation* (McClenon, 1997, 2002). The psychological stress harmfully affects our health leading to poor health (Rabin, 2002). Religious beliefs often imply that the world is a less stressful place because religious practices calm us (Newberg, d’Aquili, & Rause, 2002). Stress typically emerges from the *stressor*-related judgments of how things stand in the world. In ancestral world, life was significantly harsher and hence natural selection has plentiful opportunity to act on our misinterpretation of miserable reality. Such mistakes are called ‘religious healing errors’ or RERRORS, which results good health. Therefore, natural selection could have acted to promote such error to provide hope even if it is based on false reality. A few examples are as follows: **(i)** If RERROR is the belief that stressors are unreal, the stress and anxiety will decrease. For example, varieties of Buddhism and Advaita believe that we live in a world of appearances, where the reality our senses express is

illusionary, which hides a deeper, truer, better, but less stressor-infected reality. In other words, if we firmly believe that our suffering is based on this misunderstanding, it will reduce. **(ii)** If RERROR is the belief that stressors are real but not genuinely stressful in proper perspective. For example, varieties of Christianity believe that “whatever happens, this real world is only passing, and that there is a better world to come, one lacking stressors”. In other words, if we firmly believe that our suffering, although real, is only temporary; therefore, nothing to worry about as it will go away soon. **(iii)** If RERROR is the belief that stressors are real but necessary for better life. For example, varieties of Western monotheisms believe that if we interpret the ups and downs of life as tests and if successfully pass them, a better life will be rewarded by God. **(iv)** If RERROR is the belief that stressors are real, but the gods or ancestors will help us combat them. For example, many Eastern and African religions believe that “the gods have given us healing substance that we can use to fight disease. Here the gods are like antibiotics, real but hidden from view”. The agents prone to RERROR are called *religious healers*, who must make sure that RERROR must remain vague to escape empirical disconfirmation; otherwise, its beneficial effects will be decrease and faith healers will be out of business. Sometimes cost is low and benefits of religious placebos are high, and sometimes it is other way around. As long as beliefs are firm, failure does not discourage agents from their religious healing; usually failures are considered as God is testing their patience and commitments.

**3.6. Informational Encapsulation:** **(i)** RERROR must be significantly encapsulated from its problems for its evolution. Religious healers are in hostile world; so they must detect real threats and avoid them; otherwise, it will not work. **(ii)** “Paradoxically, religious healers should both believe in the gods where doing so is functional and not believe in the gods where doing so is disastrous.” **(iii)** Religion should be considered as last resort, i.e., after natural health care fails. **(iv)** McClenon’s design composed of confidence and encapsulation constraints and a guidance system that tracks healing domains, which is insufficient in explaining religious experiences.

**3.7. Religious and secular placebos, and health-damaging nocebo effects:** **(i)** Religion is enormously costly because practitioners spend massive resources such as time, energy, and material outpouring through the course of their religious practice. **(ii)**

Natural non-religious secular placebo healing (such as sugar pills and meditation) is more economical; it does not depend on this costly practice; and appear fully sufficient to reduce stress and release the body's healing powers (such as relaxation responses). **(iii)** Given “the two variants, religious placebo and secular placebo, it would appear that, all things considered, selection will favor dispositions to the less costly secular alternatives.” **(iv)** *Health-damaging placebo effects*: (a) Aztecs practiced blood sacrifices. (b) Wandering Thai Buddhas meditate in front of vicious animals to focus their hearts (Tiyavanich, 1997). (c) “At one end of the spectrum, we find extraordinary risky and painful ordeals—trials by needles and fire, teeth punching, nonsterile circumcisions, practices of leaping from great heights, soul quests in hostile environments, potent drug use, lifelong celibacy, and much else. At the other end, we find apparently fruitless investments of time and energy through long, tedious rituals for which agents incur massive opportunity costs.” (d) The “foot-blistering traditions of fire walking, ritual scarification, tattooing, and bodily mutilation are common throughout religious cultures. These are far from healthful modes of acting. Even beyond the potentially health-damaging effects of religious ritual, very often religious representations are terrifying, literally, as hell.” (e) These types of terror are incompatible with stress mitigation; this fact is often ignored in religious healing discussions. Therefore, one could argue that religious agents can be prone to health-damaging *placebo* effects. (f) Thus, one needs to address how the *reproductive costliness* of religiosity was tolerated by evolution, adaptation, and natural selection. **(v)** Religion functions as a placebo at some times and as a placebo at others. Since, in general, it appears successful, so placebo dominates placebo effects.

**3.8. Healing and policing functions:** (a) Since we live in a hostile world, both healing and moral religious representations must be strongly encapsulated from their problems for the evolution of religion. This is because religion cannot evolve well if it impairs survival and if god loving and fearing causes us to forget about the necessities of life. (b) If a religious viewpoint encompasses both healing and moral-policing functions, then the costs associated with RERROR are minimized. (c) If the healing-gods and the policing-gods (that enforce reciprocity) belong to the same theological viewpoint, then it may support each separate function through integration. (d)

One can experimentally test these relations from the responses of religious persons (as compared to nonreligious controls) to various forms of supporting and unsupportive signals. For example, if !Kung can show the healing dance cures miraculously desperately ill patients, it will reinforce !Kung social existence and increased solidarity.

**3.9 Placebo Health as a Reproductively Beneficial Costly Signaling Device:** (a) “The most important benefit to integrating the health and moral hypotheses for the evolution of religiosity is that it exposes a powerful selection pressure acting to favor religious placebos over their merely secular alternatives.” (b) !Kung shamans increases the risk of pathogen infection in themselves, which is a costly signal of commitment to him or her. (c) “Far from damaging a religious agent’s reproductive interests, religious healing enhances those interests by restoring and maintaining health and well-being.”

**3.10. Conclusion:** (Bulbulia, 2006) concludes as follows: **(i). Better health for religious agent and self-deception:** (a) Both religion and self-deception are based on false premises but are evolved, adapted and selected. One could ask why. Perhaps, both are useful in our lives. Religion helps in restoring and maintaining individual well-being. Religious people live longer, healthier, and better-adjusted lives, even though religion is costly and risky. (b) Both have optimal design. For example, self-deception works best when it is complete, targeted to exchange, and encapsulated from other problem domains. Religion works best when it is certain, targeted to stress reduction, and encapsulated from other problem domains.

**(ii). McClenon’s hypothesis about the evolution of religious healing:** (a) If we firmly believe in supernatural entities (God, soul, and life-after death), we will be able to adjust to hardship and disease more effectively than nonreligious secularists will. (b) Believers are evolved to distort and bias experience to support religion and religious healing. (c) The hypothesis related to the features of the information processing design that control religious healing is “in promoting well-being, religious healing actually does make the world a less stressful place, and this evidence will be reintegrated into the systems that promote religious conviction and certitude.”

**(iii). Why religious healing is an adaptationist explanation for human religiosity:** (a) One could ask if there is any intrinsic



relationship between religious placebo healing and god worship when nonreligious sugar pills placebo effect does not need any deity. However, both involve firm belief. (b) It is unclear why then evolution-adaptation-selection hypothesis of religiosity would be favored over nonreligious healing belief, when religious placebo healing is risky, often unhealthy (sometimes leads to early death), and costly in effort and time. In addition, celibacy and unhealthy rituals in religion are against reproductive germ lines.

**(iv). Benefits of cooperation and high risk of commitments:** (a) Religiosity generates intense individual and group-level benefits by helping individuals to cooperate rather than defect. (b) Enhanced cooperation and coordination among members of society due to religion provide powerful incentives to the blind evolution, selection, and adaptation of religious dispositions in us. (c) The benefits of cooperation and religious healings require firm commitments from members, which in turn require hard-to-fake high religious costs, such as risky, time-consuming ritual participation, emotional display, and high stress in defectors in the same family (for example, highly religious wife is busy in rituals and its consequences that may offend non-religious husband).

**(v). Natural selection of religious placebo healing:** (a) If moral religiosity and faith healing originate from the same collection of supernatural commitments, religious healing can be a hard-to-fake signal of the cooperative commitment (see also (Irons, 2001)). (b) The main requirement of religious placebo healing is the truly firm belief and faith; it works for cooperators; it does not work for defectors. (c) Natural selection has a powerful incentive to preserve tendencies to religious placebo healing. This is because it is not costly in terms of reproduction and is very useful. (d) We have physiological constraints on our own ability to heal ourselves, so religious placebo healing is useful.

**(vi). Test for the hypothesis that believers are better than non-believers** Scientific experiments can be designed to test the hypothesis that strong religious believers do better in health (physical, mental, social, and spiritual health), moral values, stressful conditions, and healings compared to irreligious controls; similarly, for spirituality.

**(vii). Optimal design for religion as health and healing:** There are two claims: (a) the optimal design suggests that religiosity has



indeed evolved to help make us healthy: “religiosity is a remedy in nature’s medical bag.” (b) “It appears that the psychosomatic systems regulating health and healing are optimized for social inputs as well as for personal expressions of care and concern.” (c) If scientific empirical testing cannot reject these claims, health care advocates should reconsider the evolutionary approaches to religious healing. (d) Modern healing environments, such as hospitals, are not structured to accommodate religious healing. (e) Researchers should reconsider the empirical studies of the cognitive design that supports nature’s medicine religious healing and elaborates the intriguing pathways related to the evolutionary study of religion and mind.

**Summary:** If one of the spouse is a non-believer or agnostic and the other is very religious; then stress is usually generated between them. The point is that religion can also create problems; it is all placebo effect; for example, !Kung’s shamanism and its healing method has placebo effect and costly method in terms of time, effort, and possible pathogenic infection due to close contact with patients during rituals. Perhaps, spirituality is more secured than religion. For this, practicing meditation and attaining the *samādhi* state is better method because one enjoys 3 kinds of experiences: (1) bliss (million times regular happiness) because limbic-amygdala-nucleus-accumbens ([pleasure center](#)) in the basal forebrain are activated; (2) inner light perception (yogi experiences pleasant light everywhere with eyes closed: visual areas are activated leading to cortical phosphenes); and (3) the unification of subject and the objects when yogi opens his eyes, which is due to the deactivation of parietal lobe (responsible for subject-object discrimination) and activation of frontal lobe.

**(4) The Evolutionary Psychology of Religion:** (Pinker, 2006) evaluates **God gene and God module** claims as follows.

**(i) God gene and God module claims:** One could ask: do we have a ‘God gene’ or a ‘God module’? Some scientists say YES: (Hamer, 2005) for God gene and (Persinger, 1983, 1987; Ramachandran & Blakeslee, 1998; Ramachandran et al., 1997) for God module. The God module is a subsystem of the brain that is shaped by evolution and causes us to have a religious belief and affect religious intensity.

**(ii) Prediction of the claims of religions:** (a) Apparently irrational beliefs/faith must have evolved. (b) Religious/spiritual

claims/predictions can be tested. (c) Some of predictions are as follows: suffering should be proportional to sin; success in life should be proportional to virtue; miracles should be observable; religion gives comfort; religion brings a community together; religion is the source of our higher ethical yearnings and so on. (d) One could ask why the mind should find comfort in false beliefs.

**(iii) Moral values, religious belief as a byproduct, and wish list to God:** (a) We can certainly learn morality from our religion; however, psychology has also identified universal moral feelings such as generosity, compassion, love, guilt, shame, and righteous outrage. (b) Religious belief is a by-product of predisposed emotions that are evolved for various reasons. (c) As per ethnographic surveys, people pray to communicate with God for their wish list such as acquiring job, successful marriage, recovery from illness, success in enterprises, success in the battle field, and so on.

**(5) Traits (language, spirituality), gene(s), neural correlates, God part of brain, and dealing with the fear of death:** (Mathews, 2008) proposes the followings: **(i)** A specific gene or set of genes are responsible for the emergence of a specific trait or universal physical characteristic, which has its neural correlates. For example, our linguistic characteristic is a genetically inherited trait; it has cognitive function, which has neural correlates such as the Wernicke's area, Broca's area, and angular gyrus. **(ii)** Similarly, spirituality is also a genetically inherited trait; it has specific gene(s) (such as VMAT2 gene or God gene); it has spiritual cognitive function of experiencing self-transcendence; and it has neural correlates such as God module(s) from which spiritual cognition, sensation and behavior somehow arise. **(iii)** The belief/faith in gods, soul, life-after-death, prayers, burying or cremating dead-bodies with rites for next life, and so on indicate a behavior. This behavior appears universal trait/characteristic; and is the manifestation of an evolutionary adaptation, which exists within the human brain; it is related to spirituality, which has genetic contribution. In other words, we are perhaps 'hard-wired' to experience such spiritual feelings, in analogy to honeybees are forced to construct hexagonal shaped hives. **(iv)** "God is not necessarily something that exists 'out there,' beyond and independent of us, but rather as the product of an inherited perception, the manifestation of an evolutionary adaptation that

exists within the human brain.” When self-awareness<sup>119</sup> emerged/arose in us, we faced our unique and devastating awareness of death, which is a state of constant mortal threat and unceasing anxiety. It was critical to avoid being extinct that we should be modified in some way to maintain self-conscious and deal with this death-threat. Therefore, we have evolved such an apparently abstract trait of being religious/spiritual to enable us to deal with this unceasing anxiety related to death. **(v)** “Here lies the origin of humankind’s spiritual function, an evolutionary adaptation that compels our species to believe that though our physical bodies will one day perish, our ‘spirits’ or ‘souls’ will persist for all eternity. Only once our species was instilled with this inherent (mis)perception that there is something more ‘out there,’ that we are immortal beings, were we able to survive our debilitating awareness of death.”

**(6) God helmet:** As per <http://en.wikipedia.org/wiki/Neurotheology> (3Feb11), ‘Neurotheology, also known as spiritual neuroscience [(Biello, 2007)], is the study of correlations of neural phenomena with subjective experiences of spirituality and hypotheses to explain these phenomena. [...] Persinger stimulated the temporal lobes of human subjects with a weak magnetic field using an apparatus that popularly became known as the ‘God helmet’ [(Persinger, 1983)]. His subjects claimed to have a sensation of “an ethereal presence in the room’. [...]

The first researcher to note and catalog the abnormal experiences associated with temporal lobe epilepsy (TLE) was neurologist Norman Geschwind, who noted a constellation of symptoms, including hypergraphia, hyperreligiosity, fainting spells, and pedantism, often collectively ascribed to a condition known as Geschwind syndrome. Vilayanur S. Ramachandran explored the neural basis of the hyperreligiosity seen in TLE using the galvanic skin response, which correlates with emotional arousal, to determine whether the hyperreligiosity seen in TLE was due to an overall heightened emotional state or was specific to religious stimuli. By presenting subjects with neutral, sexually arousing and religious words while measuring GSR, Ramachandran was able to show that patients with TLE showed enhanced emotional responses to the religious words, diminished responses to the sexually charged words, and normal responses to the neutral words. These results suggest that the medial

temporal lobe is specifically involved in generating some of the emotional reactions associated with religious words, images and symbols [(Ramachandran & Blakeslee, 1998)]. [...] McKinney's primary thesis that feelings associated with religious experience are normal aspects of brain function under extreme circumstances rather than communication from God. [...] an increase of N-Dimethyltryptamine levels in the pineal gland, or stimulation of the temporal lobe by psychoactive ingredients of magic mushrooms mimics religious experiences.'

**(7) Mystical experiences such as sensed presence and the out-of-body experience:** As per (Persinger, Saroka, Koren, & St-Pierre, 2010), "The human brain is the locus of all human experiences. The substantial microstructural and neuroelectrical differences between the two cerebral hemispheres predicts two major classes of mystical experiences which involve the sensed presence and the out-of-body experience. Their occurrence and their attributions to cosmic origins have been reported for centuries and have been the bases for social belief systems. Direct cerebral electrical stimulation during the 20th century evoked these experiences. In the 21st century the non-invasive, external transcerebral application of complex, physiologically-patterned weak magnetic fields has been shown to produce similar experiences that can be correlatively mapped by quantitative electroencephalographic inferences of interhemispheric coherence. The experimental production and control of these powerful experiences by more sophisticated technologies might be employed to understand the intricate nature and function of mystical/altered states within large populations of human beings."

#### 5.2.4. God Particle hypothesis

**(1) Mass from Higgs field, Higgs boson, and God particle:** As per ([http://en.wikipedia.org/wiki/Higgs\\_boson](http://en.wikipedia.org/wiki/Higgs_boson)), 'The existence of the Higgs boson and the associated Higgs field would be the simplest of several methods to explain why some other elementary particles have mass. According to this theory, other elementary particles obtain mass by interacting with the Higgs field which has non-zero strength everywhere, even in otherwise empty space. [...] Because of its possible role in producing a fundamental property of elementary

particles, the Higgs boson has been referred to as the ‘God particle’ in popular culture, although virtually all scientists regard this as a [hyperbole](#). [...] On 4 July 2012, the [CMS](#) and the [ATLAS](#) experimental teams at the Large Hadron Collider independently announced that they each confirmed the formal discovery of a previously unknown boson of mass between 125–127 [GeV/c<sup>2</sup>](#), [a mass of about 125 [GeV/c<sup>2</sup>](#) ~ about 133 proton masses, on the order of 10<sup>-25</sup> kg ] whose behaviour so far was ‘consistent with’ a Higgs boson, while adding a cautious note that further data and analysis were needed before positively identifying the new particle as being a Higgs boson of some type.’

**(2) Higgs field, Higgs Boson (Higgson), and Brahman:** I provide the proposal of (Hu & Wu, 2012) along with information from other sources and my view based on the DAMv framework as follows: **(i)** The discovery of Higgs Boson (or Higgs-like particle or ‘higgson’) is made by CERN, Fermilab, people at LHC, people at Tevatron and all the theoretical and experimental physicists over the last 50 years. **(ii)** Higgson can be thought of the shadow of universal consciousness. **(iii)** (Lederman & Teresi, 1993) appears to equate Higgs Boson with the God Particle, perhaps inappropriately. This is because God (or universal consciousness) is presumably responsible for the creation of universe and our consciousness. A genuine God particle is an entity from which our Universe was born. If Higgs field is the fundamental unified field in unmanifested state (same or similar to unmanifested state of *Brahman*) and its manifestation is the Higgs Boson (Higgson), then all four major forces, fermions, and bosons should be somehow derived from it. **(iv)** Higgs Boson is a scalar particle of no spin (spin 0), which may be different from fermions (spin ½, 3/2, ...) and bosons (spin 1, 2, ...) if experiments prove that a fundamental scalar particle such as the Higgs boson has different statistical behavior from that of a boson. **(v)** Gravity is instantaneous and might be the manifestation of quantum entanglement. **(vi)** *Higgson as the manifestation of universal consciousness:* One could think that higgson is the manifestation of a more fundamental entity (see also (Zeps, 2012)), namely, the universal consciousness. **(vii)** (Hu & Wu, 2010, 2011a, 2011b, 2011c) have argued that a particle with zero spin (such as Higgs boson or the ‘God Particle’) governed by a matrix law is the precursor of fermions and other bosons; this is further detailed in their principle of existence. **(viii)** As per (Hu & Wu,



2012), “The principle of existence is a unified principle and model of elementary particles, four forces and consciousness and illustrates how self-referential hierarchical spin structure of the universal consciousness provides a foundation for creating, sustaining and causing evolution of elementary particles through matrixing processes embedded in universal consciousness (Hu & Wu, 2010, 2011c)”. **(ix)** (Hu & Wu, 2011b) have conjectured that the new particle discovered at the LHC, if real, is possibly the manifestation of the zero-spin particle of the proposed principle of existence. **(x)** The candid ‘God particle’ should (a) explain the creations of bosons and fermions, the gravitational force, the strong force, the weak force, the electromagnetic force, the origin of the Universe, the universal consciousness, and our consciousness and experiences. **(xi)** The God particle is mathematically omnipotent, omni-active, omnipresent and omniscient, which is Einstein’s ether that is the foundation of existence. It creates, sustains and makes elementary particles.

**(3) Conclusion:** In the extended dual-aspect monism (DAMv or *Dvi-Pakṣa Advaita*), each fermion or boson including Higgs boson and field has *inseparable* mental and physical aspects. Higgs field may be related to primal dual-aspect entity (such as dual-aspect unmanifested *Brahman*) from which universe arose via quantum fluctuations in primal empty-space (ground state of quantum field with minimum energy or zero energy with zero space-time).

### 5.2.5. Neural correlates of religiosity

(Paloutzian, Swenson, & McNamara, 2006) proposed the *neural correlates of religiosity* as follows: **(a)** The frontal lobes and posterior cortical sites (including the temporal lobes, the hippocampus, amygdala, and the limbic system) are in mutual inhibitory balance (Goldberg, 1987; Lhermitte, 1986). **(b)** For example, if the temporal cortical areas were activated then a compensatory inhibitory response would be generated in the frontal lobes. This implies that the neural correlates of religiosity might be frontal-temporal areas, not just neuroanatomical supposition temporal areas or just orbitofrontal cortex (OFC). **(c)** The OFC directly modulates (mutually inhibits) temporal and limbic cortical areas. For example, the damage of OFC leads to social and emotional dis-inhibition, which indicates that OFC inhibits limbic and temporal lobes (Chow & Cummings, 1999;



Schnider & Gutbrod, 1999). **(d)** The superior temporal lobes send projections to the OFC. The medial OFC both sends and receives projections to limbic and the temporal limbic regions (Chow & Cummings, 1999; Nauta, 1979; Zald & Kim, 1996). **(e)** The OFC directly inhibits the amygdala, including the caudal OFC inhibiting central nucleus of the amygdala, which sends efferents to the brainstem and hypothalamus. Thus, medial OFC indirectly controls a range of endocrine and autonomic behavioral responses. **(f)** For example, the reactive aggression is due to the OFC inhibitory control of a limbic system behavior via medial OFC to medial amygdala through the stria terminalis and the medial hypothalamus to the peri-aqueductal gray. **(g)** To sum up, the functional neuroanatomy and clinical temporal lobe epilepsy supports the argument that behaviors linked to the limbic temporal lobes, such as spiritual transformation and religious conversion, require densely interconnected and functional neural networks (NN), such as OFC-limbic-temporal lobe NN system. **(h)** This is because spiritual transformation and religious conversion may be related to a series of neural networks contained in limbic and OFC areas because limbic system normally mediates emotional states, medial temporal lobe mediates language comprehension, hippocampus mediates memory, and OFC mediates personality.

(McNamara, 2006a) discussed PFC, dopamine, and serotonin involvement in religiosity and spirituality as follows: **(a)** the PFC has a supervisory or regulative role because it receives input signals from mediodorsal nucleus of thalamus and sends output signals to the dorsal and orbital prefrontal areas (which sends inhibitory efferent signals to other areas of brain and spinal cord), primary motor cortex, premotor, and supplementary motor areas. **(b)** [Serotonin](#) (5-HT, ‘feeling bad’ chemical) inhibits tonically dopaminergic system especially in the limbic system. Hallucinatory drugs enhance dopamine (DA, ‘feeling good’ chemical) transmission and also religious and/or mystical experiences. Therefore, the removal of the inhibitory 5-HT influence enhances DA activity, which results religious and hallucinatory experiences (Borg, Andree, Soderstrom, & Farde, 2003; Iqbal & van Praag, 1995; Robert, Aubin-Brunet, & Darcourt, 1999). **(c)** (Newberg, Alavi et al., 2001) reported greater prefrontal activation during meditative states using SPECT imaging techniques. **(d)** Dopamine is released during meditation (Kjaer et al.,

2002) and hence DA may be related to spirituality and religiosity. For example, the loss of striatal and prefrontal dopamine in patients with moderate to severe Parkinson's disease is the reason for low levels of religiosity (McNamara, Durso, & Harris, 2006).

(Azari et al., 2001) reported activation in frontal-parietal circuit (dorsomedial frontal, dorsolateral frontal, and medial parietal cortex) during religious recitation using neuroimaging techniques. They argued that (i) these areas are involved in sustaining reflexive evaluation of thought, (ii) the commonsense view is that religious experience is a preconceptual and immediate affective event, and (iii) the philosophical and psychological view is that religious experience is an attributional cognitive phenomenon. Therefore, (iv) religious experience may be a cognitive process which, however, feels immediate.

(Murakami et al., 2012) reported the followings (with a few quotes): **(i)** The Buddhist meditation technique of mindfulness is defined “as bringing one’s complete attention to the experiences occurring in the present moment in a nonjudgmental or accepting way [(Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006)] ..., which decreases emotional reactivity”. **(ii)** In voxel-based morphometry MRI technique, they used the Five Facet Mindfulness Questionnaire: *non-reactivity* to inner experience; *non-judging* of experience; *acting* with awareness, automatic-pilot, concentration, and/or nondistracted; *describing*: finding the words to describe one’s own feelings; and *observing*: noticing and paying attention to one’s own emotions, feelings, body experience, and behavior. **(iii)** The meditators with mindfulness practice had positive correlations between the score of the describing facet and the gray matter volume in the right anterior insular cortex and in the right parahippocampal gyrus/amygdala. **(iv)** “The right anterior insula contains interoceptive rerepresentations that substantiate all subjective feelings from the body and perhaps emotional awareness [(Craig, 2009)] ... The developed right anterior insula volume in individuals with a higher describing score in the present study may facilitate more awareness of their own emotional states, and awareness of their own stressful states may enable them to exert cognitive control over their emotions”. **(v)** “The amygdala is well known to play a primary role in psychological and physiological emotional responses ... The orbitofrontal cortex is related with emotion and emotion regulation ... gray matter volume in the

hippocampus declines by chronic stress ... The amygdala is under tonic inhibitory control via c-aminobutyric acid-ergic mediated projections from the prefrontal cortex ... the basolateral amygdala receives inhibitory input from the prefrontal cortex ... Taken together, the developed amygdala volume, if it includes the basolateral amygdala, in individuals with higher describing scores in the present study may allow superior cognitive control of emotional responses by the prefrontal cortex. **(vi)** “The amygdala and anterior insula related with the describing facet of mindfulness tendency are parts of the somatic marker circuit. The amygdala is trigger of emotional/bodily states in response to environment, and the anterior insula is mapping of bodily/emotional states gives rise to conscious ‘gut feelings’”.

### 5.2.6. Conceptual analysis of theist/atheist phenomenon

- (1) Theists reject atheism and science’s materialism (by definition).
- (2) Atheists and science’s materialism reject theism (by definition).
- (3) (1) and (2) are in conflict and increase the likelihood of wars.
- (4) The DAMv framework (dual-aspect monism with dual-mode and varying degree of dominance of aspects depending on the levels of entities) encompasses both views (1) and (2).
- (5) Theist-atheist phenomenon is subject-specific.
- (6) (4) and (5) predict peace.
- (7) Therefore, (4) should be examined further to determine if it is the truth.

To sum up, the fundamental Truth should be independent of theist/atheist phenomenon. We could call the dual-aspect *Brahman* as God/*Ishvara*/*Allah* if we are theists or we could interpret the dual-aspect *Brahman* as the fundamental dual-aspect quantum field, empty-space (Krauss, 2012) with ground state quantum field with

minimum energy, or the dual-aspect Bohm's Implicate Order if we are an atheist/scientist.

### 5.3. Evolution of Universe

(Pal & De, 2012) summarizes the materialistic view as, '**General view for the evolution of universe:** Big Bang → Universe → [Fields + Particles & Antiparticles + STC] → [Matter and Fields + STC] → Matter and Fields + STC + Life as well as consciousness. [...] The brain can also somehow 'tune into' fundamental proto-consciousness built into the quantum geometry of the universe', where STC is space time continuum. However, there is no scientific evidence for the tuning mechanism. Moreover, one could argue that the proto-consciousness (all subjective experiences *potentially* superposed) in the mental aspect of the state of each entity in DAMv framework. In analogy to this, the DAMv view can be written as follows.

#### ***The evolution of universe in the DAMv framework***

The evolution of universe in the DAMv framework (Vimal, 2008b, 2010c, 2012a) is the co-evolution of the physical and mental aspect of the state of universe starting **from** the physical and mental aspect of the state of quantum empty-space at Big-Bang **to** finally the physical and mental aspect of the states of brain-mind over 13.72 billion years can be summarized as (Vimal, 2012b): [Dual-aspect unmanifested state of *Brahman*, dual-aspect *Śūnyatā*, dual-aspect quantum empty-space/void, or dual-aspect Implicate Order: same entity with different names] → [Quantum fluctuation in the physical/mental aspect of quantum empty-space] → Big Bang → [Very early dual-aspect universe (Planck epoch, Grand unification epoch, Electroweak epoch (Inflationary epoch and Baryogenesis)): dual-aspect universe with dual-aspect (unified field → four-fundamental forces/fields: gravity as curvature of space, electromagnetic, weak and strong) via inflation in dual-aspect space-time continuum] → [Early dual-aspect universe (Supersymmetry breaking, Quark epoch, Hadron epoch, Lepton epoch, Photon epoch (Nucleosynthesis, Matter domination, Recombination, Dark ages)): Dual-aspect 'fundamental forces/fields, elementary particles

(fermions and bosons), & antiparticles (anti-fermions)’ in dual-aspect space-time continuum] → [Dual-aspect Structure formation (Reionization, Formation of stars, Formation of galaxies, Formation of groups, clusters and superclusters, Formation of our solar system, Today): Dual-aspect ‘matter (fermions and composites, galaxies, stars, planets, earth, and so on), bosons, and fields’ and dual-aspect ‘life and brain-states (experiential and functional consciousness including thoughts and other cognition as mental aspect and neural-networks and electrochemical activities as physical aspect) in dual-aspect space-time continuum] → [Ultimate fate of the dual-aspect universe: Big freeze, Big Crunch, Big Rip, Vacuum metastability event, and Heat death or dual-aspect Flat Universe (Krauss, 2012)]. In the DAMv framework, the dual-aspect unified field has the *inseparable* mental and physical aspects, which co-evolved and co-developed eventually over 13.72 billion years (Krauss, 2012) to our mental and physical aspects of brain-state. The mental aspect was latent until life appeared; then its degrees of dominance increased from inert matter to plant to animal to human; for awake, conscious, active humans, both aspects are equally dominant; for inert entities, the mental aspect is latent and the physical aspect is dominant.

In the DAMv framework, the dual-aspect quantum empty-space/void at the Big Bang evolves into the space-time continuum. The dual-aspect unified field is a dual-aspect entity, which evolved to dual-aspect bosons and fermions. Their mental aspects are ‘latent’. When the life with brain appeared, the brain has many dual-aspect states depending on exogenous stimuli and endogenous activities. A brain-state has *inseparable* mental and physical aspects: its mental aspect includes experiences, thoughts, cognition and so on, and its physical aspect includes neural-nets and their electrochemical activities.

As per (Hawking, 1989), ‘The Heisenberg’s uncertainty principle established that the Void is filled with infinite pairs of virtual particles and antiparticles. These pairs would have an infinite amount of energy and therefore, by Einstein’s equation:  $E = mc^2$ , they would have an infinite amount of mass’ (reproduced from (Pal & De, 2012)). Thus void/empty-space/vacuum/*Śūnyatā* contains innumerable virtual particles, which come into existence and then disappear within Planck time ( $5.39 \times 10^{-44}$  s) and cannot be



measured, and hence the name ‘virtual particle’; real particles are those which can be measured.

One could argue for the following **hypothesis that combines both science and Hinduism views** for the evolution/creation of universe in the DAMv framework:

(i) We can hypothesize that there was a primal entity/field from which *somehow* other entities arose. We can call this entity by any name you like. Let us call it *Brahman*.

(ii) We can categorize all entities in two categories: mind/non-matter and matter/non-mental. Since both mind and matter *somehow* arose from *Brahman*, one could attribute *inseparable* dual-aspect to this primal entity and every other entity. This is needed to eliminate many problems such as category mistake. In other words, we can consider that *Puruṣa*/Self/*Ātman* is the mental aspect and *Prakṛti* is the inseparable physical aspect of the states of *Brahman*, which had cause and effect combined. Here, the term ‘*Brahman*’ is the dual-aspect fundamental energy that is inherent in each entity.

(iii) A spontaneous perturbation—including peculiar adjustment of consciousness and/or quantum fluctuations (Vimal, 2010g) or ‘cosmic Desire’ in the mental aspect of the unmanifested state of *Brahman*—led to the separation of effect from cause.

(iv) Since both aspects are *inseparable*, the physical aspect of the unmanifested state of *Brahman* was also perturbed. The perturbation in both aspects in turn led to the evolution of a dual-aspect *Hiraṇyagarbha* (Cosmic egg)/*Mahat*. This then led to the evolution of the dual-aspect *Virāt* (the initial state of manifested *Brahman*). The perturbation has chaotic butterfly effect (as per chaos theory) leading to Big Bang (Cosmic Fire). In other words, *Virāt* was further evolved through Cosmic fire such as Big-Bang/quantum bounce (Vimal, 2010g): The physical aspect of *Virāt* co-evolved into the various



entities of physical universe (*Adhibhūta*) with related inseparable mental aspect (*Adhyātma/ Adhidaiva*) of each entity.

**(v)** Both aspects co-evolved to various states of manifested *Brahman*. Over billions of years (about 13.72 billion years) various dual-aspect galaxies, stars, planets and so on were formed. Eventually our dual-aspect earth was formed and dual-aspect single cell appeared. In other words, further evolution/creation of lower levels kept the *inseparable* dual-aspect intact with varying degrees of the dominance depending on the levels of entities (physical aspect is dominant in inert entities and both aspects are equally dominant in us when we are fully awake).

**(vi)** Then there was Cambrian explosion about 542 MYA (millions years ago): a profusion of dual-aspect animals with shells and skeletons began to appear (as in the fossil record). So many dual-aspect life forms appeared during this time. Eventually modern brain was co-evolved with its mind as a dual-aspect entity, which may be the latest manifested state of *Brahman*.

**(vii)** Inert entities including DNA, RNA, proteins and all molecules have dual-aspects where the physical aspect is dominant and the mental is recessive/latent in them. In neural-network(NN)-states, both aspects are equally dominant when we are fully conscious and awake. So when we see red rose, we experience redness, its fragrance, warm feeling (this is the mental aspect of related NN-state); its related neural-network and activities in brain are the physical aspect. Both are equally dominant because we can experience the mental aspect and objectively measure the physical aspect using functional MRI.

To sum up, *Bḥadāraṇyaka Upaniṣad* claims that all entities including our souls/selves are in God/*Brahman* and vice versa. This is consistent with *Dvi-Pakṣa Advaita*: *Brahman* is the fundamental dual-aspect ‘energy’, which is inherent in each dual-aspect (mental

and physical) entity and takes on various forms. *Brahman* always exists in various manifestations or transformations via evolution.

## 5.4. In search of equivalence between science and religions to bring them closer

In Dual-Aspect Monism (DAM), each entity-state has *inseparable* mental and physical aspects. This is elaborated in 3 essential components of DAMv framework: [1] DAM (Vimal, 2008b) with [2] dual-mode (Vimal, 2010c) and [3] varying degrees of aspects depending on the levels of entities (Vimal, 2012a).

Here, the fundamental entity—such as unmanifested *Brahman*, empty space with quantum fluctuations (Krauss, 2012), Implicate Order/quantum potential (Bohm, 1980; Bohm & Hiley, 1985), and so on: the same entity with different names—has *inseparable* mental aspect ('cosmic mind') and physical aspect ('cosmic quantum structure' or physical empty space with quantum fluctuations). Since aspects are *inseparable*, one can start from the fluctuation in 'cosmic mind', which will automatically translate to the quantum fluctuations in physical aspect of dual-aspect empty space. Either way is fine in the DAMv framework. Modern physicists, such as (Krauss, 2012), start from quantum fluctuations in physical empty space; it is not really empty; it is the ground state quantum field with minimum energy; Krauss has done good job in this, but his framework is materialism, which has problems. Our mind/consciousness/subjective-experience (mental aspect of NN-state) and related neural-network (NN) and its activities are the result of co-evolution and co-development of mental and physical aspects of unmanifested *Brahman*, respectively.

**Table 3. Science versus Religion**

Parameters	Science/atheism: <i>Nāstika Dvi-Pakṣa Advaita</i>	Religions/ theism: <i>Āstika Dvi-Pakṣa Advaita</i>
1. The fundamental entity involved in the evolution and/or creation of universe and perturbation	The evolution (without external agent such as God) of the physical aspect of unmanifested state of dual-aspect <i>Brahman</i> which could be the dual-aspect empty space at ground state of quantum field with minimum energy (Krauss, 2012). The random process such as spontaneous quantum fluctuation or slight asymmetry (matter being more than antimatter leading to instability in empty space) in the above empty space leading to Big Bang and then further evolution. Physical and mental laws. Nature. Quantum fluctuation in empty-space could be the act of Nature as the brute-fact (that is the way it is!) at quantum level for the creation/evolution of universe via Big Bang.	God/Creator as the mental aspect of unmanifested state of dual-aspect <i>Brahman</i> . Since the physical and mental aspects are <i>inseparable</i> , the quantum fluctuations in empty-space can be translated automatically as the fluctuations in the cosmic consciousness ( <i>Brahman</i> /God) (a peculiar adjustment of consciousness <sup>120</sup> in the mental aspect of unmanifested state of <i>Brahman</i> ( <i>kāran-Brahman</i> )) for the creation and then evolution of universe via Big Bang.
2. Life-after death	If soul exists to account for the <i>karmas</i> , it must be a new dual-aspect entity that science still needs to discover directly or indirectly by its effect. (Hari, 2008, 2010a, 2010b, 2011a, 2011b) proposed that it may be the tachyon.	Soul/ <i>jīvātman</i>
3. Big Bang	Consistent	Consistent
4. Flat universe	Consistent	Not inconsistent, but cyclic universe is better
5. 'something' (universe) out of 'nothing' (empty space)/ <i>Śūnyatā</i>	Consistent	Consistent

## 5.5. Future Researches

**1. Brute fact investigation:** The dual-aspect monism framework has the problem of dual-aspect ‘brute’ fact (that is the way it is!), although it is justified as we clearly have neural-networks in brain (physical aspect) and related subjective experiences (mental aspect); however, it is indeed an assumption. This assumption is similar to the assumption of God, soul, *Brahman*, physics’ vacuum, strings in string-theory, and other fundamental assumptions in all frameworks. Further investigation is needed to address the brute fact problem.

**2. Origin of subjective experiences:** It is unclear where subjective experiences (SEs) come from? The hypotheses of the origin of SEs are: **(i)** All SEs are derived from God/*Brahman*/*Allāh* as in all theist religions. **(ii)** All SEs pre-exist as superposed in the mental aspect of each entity (Vimal, 2009h). **(iii)** Only cardinal SEs pre-exist as superposed in the mental aspect of each entity and rest are derived from them (Vimal, 2009i, 2009j). **(iv)** All SEs are derived from the interaction between one proto-experience (PE) and 3 *gunas* (qualities), which are superposed in the mental aspect of each entity (Vimal, 2009b). Or **(v)** SEs *potentially* pre-exist as superposed in the mental aspect of each entity-state and somehow *actualized* during matching and selection processes (Vimal, 2008b, 2010c). The last one is still mysterious, but should be acceptable by most science based investigators because one could argue that every entity that empirically exists must potentially pre-exist in analogy to a tree potentially pre-exists in its seed. Further research is needed to investigate which hypothesis is correct.

## CHAPTER 6

### Epilogue

**1.** My framework is DAMv (**D**ual-**A**spect **M**onism (Vimal, 2008b) with dual-mode (Vimal, 2010c) and **v**arying degrees of the dominance of aspects depending on the levels of entities (Vimal, 2012a)), where each entity has *inseparable* mental and physical aspects. So *Brahman* is a dual-aspect fundamental entity. It has two versions atheist (*Nāstika Dvi-Pakṣa Advaita*) and theist (*Āstika Dvi-Pakṣa Advaita*) because atheist-theist phenomenon seems to be genetic and/or acquired (Vimal, 2011h); therefore the fundamental framework should encompass both.

**2.** The *Nāstika Dvi-Pakṣa Advaita* (*nāstika/atheist/scientific* version of the DAMv framework) can be described better by comparing with the *Āstika Dvi-Pakṣa Advaita* (which is close to *cit-acit Viśiṣṭādvaita*) as follows:

**2a. Creation of Universe:** In the DAMv framework, *Brahman* is fundamental dual-aspect primal entity; in its unmanifested state (before or at Big Bang), *Brahman* has dominant physical aspect and latent mental aspect; this is called *kāran Brahman*.

The physical aspect of the unmanifested state of empty-space (at the ground state of quantum field with minimum energy) with quantum fluctuations leading to Big Bang for the creation and then evolution of universe in the *Nāstika Dvi-Pakṣa Advaita* is equivalent to the fluctuations in cosmic consciousness (the mental aspect of the unmanifested state of *Brahman* (*kāran-Brahman*)) leading to the creation and then evolution of universe in the *Āstika Dvi-Pakṣa Advaita*. This is because the mental and physical aspects of unmanifested state of *Brahman*/*Śūnyatā*/void are

*inseparable* and hence fluctuations in physical aspect can be translated automatically to that in mental aspect and *vice versa*.

A manifested state of *Brahman* is called *kārya Brahman* that started after Big Bang. There are innumerable manifested states of *Brahman*. *Kārya Brahman* has varying degrees of dominance of aspects depending on the levels of entities. Inert entities have dominant physical aspect and latent mental aspect. Over 13.72 billion years after Big Bang, *kārya Brahman* eventually evolved into us; when we are awake and conscious, both aspects are equally dominant; when we in deep sleep, our physical aspect is more dominant than our mental aspect, that is why we are non-conscious; in the dream state, both aspects seem dominant to some extent because we experience something, but it is different from wakeful state. In *samādhi-state*, both aspects are dominant and we experience (a) Bliss (*atishaya Ānanda*), (b) the unification of the self with surroundings objects/environment, and (c) ‘inner light perception’; this triad, especially the Bliss, is called God/*Ishvara*/*Parmātman*/*Sat-cit-ānanda*. Therefore, we should meditate and reach to this state and meet our God living in each of us; this is our final goal of life as per *Vedānta*. This is rigorously consistent with modern science because *yogis* have experience them over 6000 years and we can also measure its physical aspect (activities in the related NN) using functional MRI.

**2b.** The manifestation of self/*jīvātman* in the *Nāstika Dvi-Pakṣa Advaita* from the unmanifested state of *Brahman* is the same as that in the *Āstika Dvi-Pakṣa Advaita*.

**2c.** *Parmātman* (*kārya-Brahman*) as the manifestation of *kāran-Brahman* of the *Āstika Dvi-Pakṣa Advaita*, living in us, is equal/equivalent to the highest state of consciousness in the *Nāstika Dvi-Pakṣa Advaita*.

**2d.** The merging of *mukta-jīvātmā* in *Brahman* in the *Āstika Dvi-Pakṣa Advaita* is equivalent to the merging of *mukta-jīvātmā* in the



mental aspect of the state of its dead body-brain system as every entity is *Brahman*. In other words, this event is equivalent to the superposition of *potential* subjective experiences (SEs) of objects and subject (self) in the mental aspect of the unmanifested (potential) state of *Brahman* (*kāran-Brahman*) after death in the *Nāstika Dvi-Pakṣa Advaita*. It is unclear what happens to unliberated soul/*jīvātman* and its remaining *karmas* and intense unfulfilled desire presumably embedded in the subtle-body of soul after death because of the lack of scientific evidence for ‘soul, *Parmātman* (*kārya-Brahman*), and the life-after-death’ **after** death.

**3.** From Table 1, *Vedas*, *Gītā*, *B’hadāranyaka Upaniṣad*, *Sāṃkhya*, *Jainism*, *Buddhism*, *Viśiṣṭādvaita*, *Dvaitādvaita*, *Dvaita*, *Shuddhādvaita*, *Achintya-Bheda-Abheda* and *Trika Kashmir Shaivism* have the ‘built-in’ interactive substance dualism because they imply that soul (self) separates from its dead body after death and hence they are two separable substances; but they interact when we are alive. *Advaita* is based on Idealism and has the reverse of the explanatory gap problem of Materialism, namely, how matter-in-itself (not its appearance) arises from consciousness (mind). *Lokāyata/nāstika/Cārvāka* has the explanatory gap problem of Materialism.

**4.** Interactive substance dualism has the seven problems; mentalistic idealism and materialism have their explanatory gap problems.

**5.** From (3) and (4) all theist and atheist religions and *Lokāyata/nāstika/Cārvāka* have problems.

**6.** In the DAMv framework, each entity has two *inseparable* aspects (mental and physical) with varying degrees of dominance of aspects depending on the levels of entities. The theist version of this framework is called the *Dvi-Pakṣa Advaita* (द्विपक्षद्वैत, or *Dōharī-Pahalū Advaita*). This framework does NOT have those problems. This is because we argue that in the post-death state of soul (if it indeed exists after death!), the mental aspect is dominant and its physical aspect is latent/recessive. Whereas, in the dead body, it is other way

around (the physical aspect of the state of the dead body-brain is dominant and its mental aspect is latent).

**7.** The seven problems are addressed by replacing the built-in interactive substance dualism with the DAMv framework.

**8.** From (3)-(7), *Dvi-Pakṣa Advaita* (द्विपक्षाद्वैत , or *Dōharī-Pahalū Advaita*) resolves the problems of various frameworks.

**9.** The theist/atheist phenomenon is subject-specific because it has genetic disposition or acquired traits. In other words, the fundamental truth (the dual-aspect *Brahman*) is independent of mind-dependent theism/atheism.

**10.** The doctrine of ‘All (entities) in One (*Brahman*) and One (*Brahman*) in All (entities)’ is still maintained.

**11.** The interactive substance dualism is built-in in all religions; if it is replaced with the DAMv framework, then the criticism of the related seven problems is addressed in all religions, as further discussed in (Vimal, 2011i).

**12.** Conscious robot/artifact is consistent with the DAMv framework and Materialism, somewhat consistent with Idealism, but it seems inconsistent with interactive substance dualism and theism.

**13.** Our goal is to bring science and Hinduism (and also all religions: see (Vimal, 2011i)) closer by including ‘real’ science (not just logic based pseudo-science) in Hinduism. The *Dvi-Pakṣa Advaita* indeed accomplishes this goal. This is because Hinduism (and also all other religions) starts from the mental aspect of the unmanifested primal entity (idealism: matter from mind, *Brahman*/cosmic-consciousness, subjective first person perspective), whereas science starts from the physical aspect of the unmanifested primal entity (materialism, mind from matter, objective third person perspective). However, these two aspects are *inseparable* in the *Dvi-Pakṣa Advaita* (the DAMv framework). In other words, one can start from either aspect, but it gets translated automatically, appropriately, and faithfully to other aspect because of the *doctrine of inseparability* (1-1 correspondence).

Thus, the *Dvi-Pakṣa Advaita* (the DAMv framework) unifies Hinduism (and also all other religions) and science rigorously.

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## ENDNOTES

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<sup>1</sup> [R.W. \(Dick\) Richardson](#) (a mystic) comments, “I have never needed a religion to teach me how to live my life nor any other man, woman, or institution. I got born onto this world and I live it. Simple as that. No religions or philosophies or institutions or beliefs or crutches needed for the job. All I have needed has been learned from living life itself. [...] And my job is not uniting science with religion. And I see no reason why they need to be united AT ALL. Should Chess be united with Golf? Two different things.” It may be true that for some people religion may not be needed that teaches them how to live; however, in general, it is useful; that is why evolution did not select it out and we still have religion. Spirituality that includes mysticism has genetic traits, for example, some of us have ‘God gene’. Since science and religion/spirituality are inseparable aspects of our lives, they should be united. You may not be religious, but you are spiritual because you are a mystic as per the definition of spirituality which includes self-transcendence (such as self-forgetfulness, transpersonal identification, and mysticism) (Hamer, 2005). Richardson replies, “OK, I would not argue with that”.

<sup>2</sup> In the DAMv framework, *Brahman* is the fundamental dual-aspect primal entity. The unmanifested state (before or at Big Bang) of *Brahman* has dominant physical aspect and latent mental aspect; this state is called *kāran Brahman*. The innumerable manifested states of *Brahman* are called *kārya Brahman*, which started after Big Bang. A *kārya Brahman* has varying degrees of dominance of aspects depending on the levels of entities. The states of inert entities—*kārya Brahman*—have dominant physical aspect and latent mental aspect. Over billions of years after Big Bang, *kārya Brahman* evolved into us. When we are alive, awake, and conscious, both aspects are equally dominant. When we are in deep sleep, our physical aspect is more

dominant than our mental aspect, and hence we are non-conscious. In dream state, both aspects seem dominant to some extent because we experience something, but it is different from wakeful state. In *samādhi-state* or perhaps *mystic-state*, both aspects are dominant and we experience BLISS, unification of self with its environment, and ‘inner light perception’ (Caponigro, Jiang, Prakash, & Vimal, 2010; Prakash & Caponigro, 2009; Prakash, Haq, Prakash, Sarkhel, & Kumar, 2009); this triad, especially bliss (*ānanda*) is called God/*Ishvara*/*Satcitānanda*. So we should meditate and reach to this state and meet our God; this is our final goal of life as per *Vedanta*. After death, in liberated soul, the post-death state of soul has dominant mental aspect and latent physical aspect. In un-liberated soul, the latent physical aspect (subtle body) carries traces of *karmas*, unfulfilled intense desire, and so on. However, the state of the dead body—also that of inert entities—has dominant physical aspect and latent mental aspect. It is unclear if soul indeed exists after death: see (D'Souza, 2009) for some debatable evidence and (Stenger, 2011)'s rejection of the life after death. One could argue that all entities are *Brahman* in different forms and *Brahman* is in all entities in various forms (All in One and One in All).

<sup>3</sup> **Crtique1:** I have continued difficulty with the terminology, ‘*acit*’. You may forward to me any original scholarly document that uses and analyzes the word.

**Author:** The term ‘*acit*’ was used in (Radhakrishnan, 1960)'s *Brahma Sūtra* (BS) (pages: 45, 53, 54, 71, 78, 79), BS? I.2.9, BS II.3.14, Bhāskara, Rāmānujāchārya-Rāmānandārchārya-Rāmabhadraāchārya's *cit-acit Viśiṣṭādvaita*, and Nimbārkaāchārya's *Dvaita-Advaita*.

As per (Radhakrishnan, 1960), “Yādav Prakāśa ... does not recognise any fundamental distinction between *cit* and *acit*; *acit* is only *cit* in an unmanifested state. While Bhāskara believes that the individual soul is one with *Brahman* and the world of matter, *acit*, is



both different and non-different from *Brahman*. ... *Brahman* exists as God or *Īśvara*, and individual souls or *cit* and the world or matter, *acit*. [p.45 ...] [Rāmānujāchārya, B.U. III.7: *Antaryāmin Brāhmaṇa*] *Brahman* comprises within himself all elements of polarity, matter with its various modifications and souls of different classes and degrees. These are real constituents of *Brahman*. *Cit* (soul) and *acit* (matter) are the body of the Lord. [p.53 ...] According to R. [Rāmānujāchārya] there are three kinds of *acit*, *prakṛti* or matter, *kāla* or time and *śuddha-tattva* or pure matter. *Acit* is *prakṛti* or primal matter and its modifications. [p.54 ...] *Brahman* is the controller of all sentient entities and non-sentient world. He is both knowledge and knower. *Cit* and *acit*, the sentient and the non-sentient, are the powers of the Lord. *Cit-śakti* consists of three factors, knowledge, *jñāna*, volition, *icchā*, and the action *kriyā*. The *acit-śakti* consists of the elements, earth, water, fire, air, and ether. [p.71] According to Nimbārka there are three equally real and coeternal realities (*tri-tattva*), *Brahman*, *cit*, and *acit*. While *Brahman* is the controller, *niyantṛ*, *cit* is the enjoyer, *bhoktṛ*, and *acit* is the enjoyed, *bhogyā*. *Acit* or non-sentient reality is of three kinds, (i) *prākṛta* or what is derived from *prakṛti* or primal matter, (ii) *aprākṛta* or what is not derived from *prakṛti* but derived from a non-material substance of which the world of *Brahman* is made and (iii) *kāla* or time. There is a difference of nature between them, *svarūpa-bheda*. Souls and matter, *cit* and *acit*, have a dependent reality, *para-tantra-tattva* [p.78-79].”

**NM:** The word “*acit*” is found in dictionaries and also in philosophical texts. Refer the Apte dictionary and also the Monier Williams dictionary. In the Śrīrāghavakṛpābhāṣya of Guruji, Śrībhāṣya of Rāmānujācārya, Tantrasāra of Abhinavagupta, and the Pāñcarātra text Sātvatatāntra attributed to Nārāyaṇa, the word “*acit*” means inanimate or “*Jaḍa*”. “*Cit*” means animate or “*cetana*” and “*acit*” means inanimate or “*Jaḍa*”.



**Critique1:** Grammar: *cit* as we were saying is a noun; *acit* can be an adjective reference, not the opposite of *cit* as a noun. *Sat* has the opposite *asat* - both are nouns. *Sukha* has the opposite *asukha* - both are nouns. *Acit* (classical *aceta*) can represent an object that is devoid of *cit* and is an adjective (*bahubrihi*); here *cit* is individual consciousness, not the cosmic source in *cit-ānanda*.

**Author:** From references, it depends on the context. For example, (i) in the phrase '*cit-acit Viśiṣṭādvaita*', both *cit* and *acit* are used as *viśeṣaṇas* (adjectives, qualifiers). (ii) In Nimbārka's *tri-tattva* (*Brahman*, *cit*, and *acit*), all appear nouns. Perhaps, NM can verify this. In the *Dvi-Pakṣa Advaita* (the DAMv framework), *cit* can be used as the mental aspect of a state of *Brahman* (first person perspective) and *acit* can be used as the *inseparable* physical aspect of the same state of *Brahman* (third person perspective), i.e., as adjectives/qualifiers of a state. If you claim otherwise, then you need to give us authentic references as we gave you.

**NM:** अचिदित्युक्ते नञ् (२-२-६), नलोपो नञः (६-३-७३) एतयोः पाणिनिसूत्रयोः नञ्तत्पुरुषसमासो भवति न तु बहुव्रीहिसमासः। मन्येऽहं यद्वन्तः नञ्तत्पुरुषनञ्बहुव्रीहयोर्मध्ये संभ्रान्ताः। तयोर्भेदबोधनाय संस्कृतव्याकरणस्य किमपि पुस्तकं द्रष्टव्यम्। अपि च भवद्विराङ्गलभाषायाः सिद्धान्तानि संस्कृत उपयुज्यन्ते, "noun" च "adjective" चेत्याङ्गलभाषायां शब्दानां भेदः, न तु संस्कृते यत्रैकैव शब्दो एकस्मिन्सन्दर्भे विशेष्यो भवति सन्दर्भेऽपरे च विशेषणो प्रभवति। यदि न मन्यसे तर्हि संस्कृतेन सप्रमाणमुत्तरं दीयताम्।

अचित् is नञ् तत्पुरुष (nañ tatpuruṣa) compound by the Paninian rules "nañ" (2-2-6) and "nalopo nañah" (6-3-73) and not बहुव्रीहि समास (bahuvrīhi) compound. I think Critique1 is confusing नञ् तत्पुरुष with नञ् बहुव्रीहि . And applying English grammatical concepts to Sanskrit - "noun" and "adjective" are properties of words in English, not in

Sanskrita where the same word with no change can be the Viśeṣya in one context and Viśeṣaṇa in another. On disagreement, Pramāṇa is needed. See (Apte, 1987).p.11.

As I mentioned, in Sanskrit the same word can be used as what one calls "noun" in one context and as what one calls "adjective" in another context. The difference exists in English but not in Sanskrit.

1. रमेशः विजयते - रमेश, the Lord of रमा is victorious, here रमेश is what one calls noun in English.

2. रामं रमेशं भजे - I sing of राम, who is रमेश. Here रमेश is an adjective of राम.

The confusion arises since Critique1 is applying English concepts to grammar. One problem I find with Advaita is that it bloats the believer's ego in some cases (not all cases). "I am Brahman so I am always correct, I do not need to learn from others ... whatever I say is correct even if I know Sanskrit or not". .. So I would not bother convincing such people.

**Critique1:** That's Ok. *Mīmāṃsā* (मीमांसा) will be helpful.

**Author:** It seems that Critique1 accepts *acit*. Furthermore, *Dvi-Pakṣa Advaita* unifies science and all religions and has the least number of problems. It is consistent with [Vasudhaiva Kutumbakam](#) (वसुधैव कुटुम्बकं : the whole world is one single family): *Maha Upanishad* (Chapter 6, Verse 72): अयं बन्धुरयं नेति गणना लघुचेतसां उदारचरितानां तु वसुधैव कुटुम्बकं : Only small men discriminate saying: One is a relative; the other is a stranger. For those who live magnanimously the entire world constitutes but a family. Therefore, it is beyond (and does not discriminate with respect to) national origin, race, creed, color, caste, religion, and so on. It searches for the Fundamental Truth that encompasses all views including Critique1's view of Śaṅkarāchārya's Advaita.

<sup>4</sup> **Summary of Metaphysics:** Metaphysics is the foundation of everything. All entities of this universe can be categorized in two

categories: mind and matter. This leads to 4 major *metaphysics*: [1] **materialism**: mind from matter (brain); [2] **idealism**: matter from mind; [3] **interactive substance dualism**: mind and matter can exist independent of each other but can interact for example in us when we are alive and awake; and [4] extended **dual-aspect monism** (the DAMv framework: *Dvi-Pakṣa Advaita*): each entity has *inseparable* mental and physical aspects with varying degrees of dominance of aspects depending on the levels of entities. Frameworks [1]-[3] have problems; [4] is the best so far.

<sup>5</sup> Currently, where could be the unmanifested state or initial manifested state of dual-aspect *Brahman*? It could be (i) in the (empty) space between the quarks inside a (dual-aspect) proton where virtual particles emerge and disappear un-predictively, which makes up 90% of the weight of proton (<http://www.youtube.com/watch?v=7ImvlS8PLIo> and [http://www.youtube.com/watch?v=rdvWrI\\_oQjY](http://www.youtube.com/watch?v=rdvWrI_oQjY)), (ii) it could related to (dual-aspect) Higgs-field, and (iii) many other places in all over universe where entities are still evolving.

<sup>6</sup> The *inseparable* mental and physical aspects are latent (in potential form) in the unmanifested (*avyakta*, potential) state of *Brahman*. Our SEs (ourselves and experiences) were *potentially* superposed in the mental aspect of the unmanifested state and other manifested states of *Brahman*. They are *realized* in us and to some extent in animals. We, i.e., our SEs and brains-bodies are co-evolved (over billions of years since Big Bang) and co-developed *realized* manifested (*vyakta*) entities from the mental and physical aspects, respectively, of the unmanifested state of *Brahman*. To address the continuity of self across all states of brain-mind, the proto-self (brain-stem as its neural correlates) is active in all states (such as deep sleep, dream, wakefulness, and *samādhi* states) of brain until death (Damasio, 2010; Vimal, 2012a).

*Brahma-sūtras* seems to claim that **(a)** the individual-unliberated self/soul in all states of brain (including the state of deep sleep as well as at the time of departure/dying) is different from (or a subset/part of) the unmanifested state of *Brahman* (but see BS:I.4.18, below); and **(b)** “R. [Rāmānujāchārya] states that we have here declarations of general unity, that all conscious and non-conscious beings are the effects of [*kāran*] *Brahman* and have [*kārya*] *Brahman* for their inner self” ((Radhakrishnan, 1960).(BS:I.3.42-43:p311-312), which is consistent with (Rāmānujāchārya, 1904).(BS:I.3.43-44:p352-353)); and **(c)** the soul at *samādhi*-state (final release or *mukti*, when we are conscious and blissful) and/or *mukta*/liberated soul is in contact with [*kāran*] *Brahman* (Radhakrishnan, 1960).(BS:IV.4.17:p560-561): “the released souls have all powers except those of creation, preservation and destruction of the world” (p.560); see also (Rāmānujāchārya, 1904).(BS:IV.4.17:p766-767); Śankarāchārya seems to argue for equality in all respect (*mukta-jīvātmā* = *kāran Brahman*).

In the DAMv framework, *māyā* (material universe, *jagat*) is transiently real (in the sense that the world—our brain-body, earth, planets, sun, our solar system, galaxies, and so on—will die one day; it is not eternal) but it is not a defect. The *māyā* contains all physical universe(s) + cognition and other mental entities except soul/*jīvātman* (if it exists after death!). In other words, *māyā* is a dual-aspect entity and is the manifested dual-aspect *Brahman*. The physical aspect of the state of world is the physical universe including brains-bodies; and its *inseparable* mental aspect is the cognition of all beings including proto-self, core-self and autobiographical self in each individual, and the ‘mind’ of universe—the first person experience of universe. For knowing that one has to be universe which is not possible; so, we do not know how our universe experiences; for us, the mental aspect appears as latent in our objective third person perspective.

As per (Rāmānujāchārya, 1904).(BS:I.4.18:p384), “the abode of deep sleep is the intelligent Self which is different from the individual Self, i.e. the highest Self [...] the highest Self which then is the abode of the individual soul”. As per (Radhakrishnan, 1960).(BS:I.4.18), “It is *Vedānta* view that during sleep the soul becomes one with *Brahman* and it is from *Brahman* that the world and the *prāṇa* proceed. [p323 ...] All these lead to the conclusion that the Self [*Brahman*] exists beyond both *prāṇa*, life-principle, and *jīva* or the individual soul [p324 ...] the souls spring from and merge in *Brahman* ... The souls are one with *Brahman* in so far as they are its effects ... [as per *Bhedābheda Advaita*, individual soul] is neither absolutely different nor non-different from *Brahman*, as sparks are neither different nor non-different from fire [BS:I.4.20:p326] ... Audulomi teaches that the soul is altogether different from *Brahman* up to the time of its final release when it is merged in *Brahman* [identity] ... When the erroneous knowledge of *jīva* is removed, *jīva* realizes its identity with *Brahman* ... The individual soul is described as non-different from the Highest Self for it is the Highest Self that lives in the form of the soul ... Ś [Śankarāchārya]. believes in absolute identity. The individual soul and the Highest Self differ only in name. [BS:I.4.21-22:p326-8]”.

From above, the state of brain at non-conscious deep sleep seems equivalent to a state of manifested *Brahman*.

As per (University of Liège, 2008, October 8), “By using functional magnetic resonance imaging (fMRI) combined with electroencephalography (EEG), researchers have evidenced that ... slow oscillations are associated with brain activity increases during non-REM sleep ..., therefore discarding the concept of brain ‘quiescence’ that prevailed for a long time in the characterization of non-REM sleep. Besides, these activity increases are located in specific brain areas, including the inferior frontal gyrus, the parahippocampal gyrus, the precuneus and the posterior cingulate cortex, as well as the brainstem and cerebellum”. Brain-stem is also

assigned as neural-correlates of proto-self (Damasio, 2010), which is active during all states of brain including non-conscious non-REM deep sleep until death. In the DAMv framework, dream is due to random fluctuation of neural activities as the physical aspect of dream-state and the related SEs are its mental aspect; brain has ability to make up some story based on them. From above, the proto-self seems is a state of manifested *Brahman*.

As per (Radhakrishnan, 1960), “*Brahman* alone is both the efficient [such as potter] and material [such as clay being the cause of pot] cause of the world [BS:I.4.23:p329]. [*Brahman* is the origin (from which world emerges) and the dissolution of world (which gets absorbed in *Brahman*) (BS:I.4.25:p331) ... ] R. [Ramānujāchārya] holds that *Brahman* has for its body the entire universe with all its conscious [*cit*] and non-conscious [*acit*] beings and constitutes the Self of the universe. These beings abide in a subtle condition and become one with the Supreme Self in so far as they cannot be designated as something separate from him. When this *Brahman* resolves to become many, it invests itself with a body consisting of all conscious and non-conscious beings in their gross manifest state which admits of distinctions of name and form and thereupon transforms itself into the form of the world [BS:I.4.26:p331].”

“The *Sankhya-tattva-kaumudi* ... argues that a perfect God can have no need to create a world and if God's motive is kindness, Sāṃkhya questions whether it is reasonable to call into existence, beings who while non-existent had no suffering. Sāṃkhya postulates that a benevolent deity ought to create only happy creatures, not a mixed world like the real world. Almost all modern scholars are of view that the concept of Ishvara was incorporated into the *nirishvara* (atheistic) Sāṃkhya viewpoint only after it became associated with the Yoga, the Pasupata and the Bhagavata schools of philosophy. This theistic Sāṃkhya philosophy is described in the Mahabharata, the Puranas and the Bhagavad Gita” (<http://en.wikipedia.org/wiki/Sankhya>).



**Conclusions:** (1) The *inseparable* mental and physical aspects of the unmanifested state of the fundamental primal entity (*kāran-Brahman*) are latent and hence it appears as aspectless and attributeless. (2) The mental aspect of the unmanifested state of *Brahman* (*kāran-Brahman*) co-evolves and co-develops with its physical aspect and eventually (over 13.72 billions of years) we (our mind and brain) are the final products so far. Its mental aspect (such as potter) is the efficient cause and the related *inseparable* physical aspect is the material cause (such as clay-pot system) of our universe which includes us (our mind and brain-body). A wakeful working brain has both aspects equally dominant. At *samādhi* state, the self = *Paramātmān* (a state of *kārya-Brahman*/manifested-*Brahman*) in the DAMv (*Dvi-Pakṣa Advaita*) framework, which is another name for the ‘self at *samādhi* state’. Some areas of brain are active in deep sleep and dream. Since the dead-body does not satisfy the necessary conditions of consciousness (C) as there are no neural activities, no C, i.e., there is no separate self in *Nāstika Dvi-Pakṣa Advaita*. After death, our constituents return to Nature for recycling as dual-aspect entities, so NO pain/pleasure; at end of universe, all manifested entities return back to unmanifested *Brahman*. The soul/self will also return back to the mental aspect of unmanifested state of *Brahman*, in superposed/latent form. (3) Brain has innumerable states, which can be categorized in four: deep-sleep, dream, wakeful, and *samādhi* states. In *samādhi* state, we feel highest degrees of bliss/*ānanda*, the unification of subject and objects, and we have ‘inner light perception’; this *realization* is called *mukti*/liberation. Theist/*āstika* religions have assigned this bliss/*ānanda* to an arbitrarily assumed entity called God or *Paramātmān* (*kārya-Brahman* = a manifested state of *kāran-Brahman*) for many useful reasons, such as (i) reduction of sufferings including the fear of death, (ii) presumed life after death, (iii) rebirth, (iv) the object of meditation, and so on. Some have assumed that *Paramātmān* resides within us along with the self/*jīvātman* to help us further, for example, in meditation.

*Nāstika*/atheists feel that this is not necessary because one can achieve the above by other more appropriate means; for example, Bliss can be realized by intense meditation at *samādhi*-state. *Sāṃkhya* also denies the existence of *Ishvara/Parmātmān* (God) or any other exterior influence. Thus, attaining the *samādhi*-state is the life's ultimate goal for experiencing BLISS, which is a *kārya-Brahman*.

<sup>7</sup> At *samādhi*/mystic/revelation state, compared to normal wakeful state, (a) the areas in the parietal lobe (responsible for situating the self in space) are significantly less active that entails the loss of discrimination of self from the environment resulting the feeling as if the self merges/unifies with the surrounding objects, (b) the happiness center (amygdala system) is more active, leading to the feeling of bliss, love, and care for all, (c) visual areas including frontal lobe are more active leading to the 'inner light perception', (d) temporal lobe interacting with frontal lobe activates the feeling of being religious and spiritual that entails as if God exists.

<sup>8</sup> This is consistent with (Radhakrishnan, 1960), "The difference between the individual soul and the Absolute Self cannot be regarded as fictitious according to this *sūtra* [B.S. I.1.17], though Ś. [Śankarāchārya] holds that there is no difference in reality between the individual soul and *Brahman*. [p260...] [Ś] holds that *Brahman* as the foundation is the indeterminate [unmanifested, noncausal, chance-based, *kāran-Brahman* with unlimited *potentialities*] *Brahman* and *ānanda-maya-ātmā* [आनन्दमय-आत्मा] is only the determinate [manifested, causal, *kārya-Brahman* with limited *realities*] *Brahman*. [p261 ...] Ś. Makes out that the Imperishable [*Bhūta-yoni*, the source of all] is the unmanifested entity which represents the seminal potentiality of all names and forms, contains the subtle parts of the material elements, abides in the Lord [*Brahman*], forms limiting adjunct [non-essential appendage] and being itself no effect is high when compared to other effects."

It appears that Śankarāchārya's *Advaita* implies that *Paramātmā* (*kārya-Brahman*, *ānanda-maya-ātmā*) is artificially inserted *by hand* (by Ramānujāchārya and others) which is unnecessarily extra parameter. This (Ś. believes in *mukta-jīva*/liberated-soul = *Brahman*), to some extent, in the sense of fundamental entity (unmanifested *Brahman*), seems consistent with Buddhism (no soul, but *Śūnyatā* ~ *Brahman*) and *Nāstika* (no soul, but physics-vacuum ~ *Brahman*) system (including *Nāstika Dvi-Pakṣa Advaita*: no soul, but the fundamental dual-aspect primal entity ~ dual-aspect *Brahman*). Self at *samādhi* state realizes bliss (*Paramātmā*, the manifested *Brahman* in each individual); but this is different from unmanifested *Brahman* which does not know anything but has potential of everything. In other words, we just need (i) unmanifested potential *Brahman* and (ii) the manifested/realized *Brahman*, which is *Jagat* and us. We do not need the same *Paramātmā* in each of us because this entity presumably then know our personal stuffs of all beings simultaneously (fiction!) that violates privacy. If this entity was inserted in the system for the object of meditation and placebo-effect (such as in *bhakti-yoga*: going to temple for prayer, which in reality includes useful events such as socialization) for reducing our suffering and the fear of death, then we can achieve the same by other means.

<sup>9</sup> See (Radhakrishnan, 1960).p204.footnote.3: **Chāndo.U.** V.3.3 and V.9.1; **Bṛhad.U.** IV.4.3, 5 and 6; VI.2.4 and 15; **Maitri U.** VI.10; **B. Gītā** XV.7 and 8; Manu XII.16-17; **Brahma S.** III.1.1-7.

<sup>10</sup> There are two hypotheses for the empty-space and the creation of universe: (I) the empty-space with space and with ground state minimum energy and (II) the empty-space without space and without ground state minimum energy (see (Krauss, 2012) and (Hawking & Mlodinow, 2010)).

(1) *Empty-space with space and with ground state minimum energy*: Before beginning of universe (before Big Bang), there was infinite

empty-space that did not have matter and/or radiation. Empty-space (*Śūnyatā*, unmanifested state of *Brahman*, many other names) is the ground state of quantum field with minimum energy (that could be zero: zero point energy or ZPE). Quantum fluctuations in this empty-space led to Big Bang and multiverse. The *nothing* with the ground-state minimum energy of quantum field in empty-space is as if all energies of the infinite empty-space are sucked in at one point to result the Big Bang.

(2) *Empty-space without space and without ground state minimum energy*: As per (Hawking & Mlodinow, 2010), “As recent advances in cosmology suggest, the laws of gravity and quantum theory allow universes to appear spontaneously from nothing. Spontaneous creation [natural phenomena arising from internal forces or causes; independent of external agencies; self-acting] is the reason there is something rather than nothing, why the universe exists, why we exist. It is not necessary to invoke God to light the blue touch paper and set the universe going.”

To sum up, there was a dual-aspect primal entity. There are many names for this entity, such as (1) quantum-vacuum/void/empty-space in physics, and (2) *Brahman*, Buddhist *Śūnyatā*, *Allāh*, God and so on in religions.

(1) Science: dual-aspect primal empty-space might be (a) ground state of quantum field with minimum unrealized physical potential/latent energy and infinite space without matter/radiation, or (b) without space-time, zero unrealized physical potential/latent energy. In both cases, empty-space has quantum fluctuations in its physical aspect.

(2) Religions: *Brahman* is aspect-less entity in its unmanifested state in *Advaita Vedānta*.

In the DAMv framework, the states of all entities including *Brahman* always have *inseparable* physical and mental aspects, but the dominance of aspects vary depending on the levels of entities. Both aspects are latent in the unmanifested state of *Brahman*; therefore, *Brahman* appears as aspect-less entity. There was a *peculiar* change in cosmic consciousness or its mental aspect, which is equivalent to quantum fluctuations in its physical aspect because aspects are inseparable as per the *doctrine of inseparability*.

In Muslim religion, the peculiar change of cosmic-consciousness is equivalent to the 'Will/Command of *Allāh*'.

Human beings appeared 13.72 billion years after Big Bang. The dual-aspect unmanifested state of *Brahman* (called *kāran Brahman*) is a pre-Big-Bang state. The *kāran Brahman* (that has latent aspects, so it appears aspectless) is eternal. The manifestation of *Brahman* starts at cosmic-fire (Big Bang), and then both aspects of innumerable states of universe (manifested states of *Brahman*) co-evolve. The latest manifested state of *Brahman* (called *kārya Brahman*) is at *samādhi/mystic/revelation/sufi* state. Mystics are very lucky people who can experience their mystic state without doing any hard work; a yogi spends all his/her life for this.

Before Big Bang, there cannot be *realized* physical energy/matter/radiation and cannot be *realized* space-time; they will be all in *potential* latent/hidden state; only the unmanifested state of dual-aspect (appearing aspectless) *Brahman* eternally exists. The mental and physical aspects of the unmanifested state of *Brahman* are latent so it appears aspectless as in Śāṅkarāchārya's *Advaita*.

It should be noted that volume, energy, matter, radiation, space-time were presumably (theoretically) zero **before Big Bang** (BB). After BB, the total energy (matter/radiation energy minus gravitational energy) of our universe is zero; however, space-time is not zero; currently, 'time' is about 13.72 billion years; space is almost infinite, so 3D and 4D volume is also close to infinite. Your volume, the volume of India or earth, sun, galaxy etc is not zero; how could it be? If cyclic model of universe is correct, then perhaps after Big Crunch, everything will return back to what it was in pre-BB era. In the flat universe, the volume of universe will never be zero.

Originally there was nothing. Total energy of universe was/is/'will remain' zero; so no violation of conservation of energy. Matter consists of fermions and/or their composites, but matter arose with the help of bosons (see below) as explained [elsewhere](#). Gravitational energy is bosonic energy. In other words, Matter-energy = |Gravitational energy|. Thus, after BB and currently total matter of universe is NOT zero; so total space is not zero; so total volume of universe is not zero.

**Where did the matter in the universe come from?** "In the beginning, there was not yet any matter. However, there was a lot of



energy in the form of light, which comes in discrete packets called photons. When photons have enough energy, they can spontaneously decay into a particle and an antiparticle. (An antiparticle is the exact opposite of the corresponding particle--for example, a proton has charge  $+e$ , so an antiproton has charge  $-e$ .) This is easily observed today, as gamma rays have enough energy to create measurable electron-antielectron pairs (the antielectron is usually called a positron). It turns out that the photon is just one of a class of particles, called the bosons, that decay in this manner. Many of the bosons around just after the big bang were so energetic that they could decay into much more massive particles such as protons (remember,  $E=mc^2$ , so to make a particle with a large [relativistic] mass  $m = ((1-v^2/c^2)^{-1/2}) m_0$ , where  $m_0$  is invariant/rest mass], you need a boson with a high energy  $E$ ). The mass in the universe came from such decays”  
<http://curious.astro.cornell.edu/question.php?number=631/>>.

“The concept of “[relativistic mass](#)” is subject to misunderstanding. That's why we don't use it. First, it applies the name mass - belonging to the magnitude of a 4-vector - to a very different concept, the time component of a 4-vector. Second, it makes increase of energy of an object with velocity or momentum appear to be connected with some change in internal structure of the object. In reality, the increase of energy with velocity originates not in the object but in the geometric properties of spacetime itself” (Taylor & Wheeler, 1992).

For matter to be zero after BB, you need antimatter with equal amount; i.e., symmetry; but there is asymmetry; there is more matter than antimatter; otherwise there would not be matter like sun, moon, galaxy, you and me, USA and India. Source of everything is the dual-aspect unmanifested state of Brahman.

**Before BB:** there was no matter, no space, no volume, no time, no mass; total energy = 0

**At BB (time = 0):** there was no matter, no space, no volume, no time, no mass; total energy = 0; but there are quantum fluctuations.

**After BB:** Total energy of universe = 0 because energy is conserved.

Total (relativistic) mass ( $m$ ) of universe = 0 because  $E=mc^2=0$ . Total matter of universe is not zero because total matter energy = |gravitational energy| = not zero. Total matter is not conserved. Total



space of universe is not zero; it is increasing because of inflation; it is very large. Total volume of universe is not zero because total space is not zero; it is very large.

The following critiques on (Hawking & Mlodinow, 2010) and (Hawking, 1988; Hawking, 1989) related to cosmology are from (Pal, 2011d) and other sources: **(I)** Scientists' claim that the universe arose from nothing is merely a speculation because **(a)** this 'nothing' is the ground/[vacuum state](#) of [quantum field](#) with minimum energy ([zero-point energy](#)); **(b)** [quantum fluctuations](#) (vacuum energy fluctuation in a void) do exist in it; **(c)** some scientists (such as the '**pop up model**' of (Hawking & Mlodinow, 2010) and (Krauss, 2012)) assume that there is the absolute beginning of universe from 'nothing'—with no memory, no pre-history, no prior-universe that has left its seed at its death; **(d)** some propose no beginning and no end (such as (Hawking, 1988; Hawking, 1989) in his '**no-boundary model**' for eternal cyclic universe with the cycles of endless expansion and contraction along with all the physical laws of the earlier universe remain intact); and **(e)** God has not yet been eliminated from the creation event (Pal, 2011d), which seems to imply God may exist also in the void and causing quantum fluctuations in energy. Therefore, this 'nothing' is not a real void/empty-space. The term 'pop up' is used in (Pal, 2011d).

**(II)** As per an atheist philosopher (Parsons, 2006), "*prima facie* the most promising location for a Creator would be in the 'creation' event itself, the origin of the universe." In other words, "the matter regarding the existence or nonexistence of God can only be settled at the creation event itself" (Pal, 2011d).

**(III)** As per (Pal, 2011d), "[As per Hawking] in no boundary model the universe will have no beginning. Or if it was having a beginning, then that beginning was governed by the laws of science and does not need to be set in motion by some god. This generation of the universe cannot be called a spontaneous generation from nowhere, because the seed of the universe was already there. Therefore an atheist scientist who is advocating the **no-boundary model** [(Hawking, 1988;

Hawking, 1989)] cannot at the same time say that as because there is a law such as gravity, so the universe can and will create itself from nothing. A universe that would simply be cannot again pop into existence from nothing [(Hawking & Mlodinow, 2010): **pop up model**]. Whence appeared those laws that governed its beginning?”

(IV) (Pal, 2011d) argues that Hawking’s no-boundary model (Hawking, 1988; Hawking, 1989) is invalid in ‘real’ time because it is valid only for imaginary time (without singularity) that is like a space dimension, i.e., we can also visit our past in time. However, this is empirically impossible in ‘real’ time. Moreover, Hawking seems to believe that the universe had beginning in real time at the Big Bang; however, one needs to address the origin of physical laws (such as general relativity and quantum theory) and the singularity where all physical laws break down (Hawking & Penrose, 1970). One could try to address the origin of physical laws by assuming that they may not there in a realized/expressed form, but they must be there in the potential/latent/unexpressed form at and/or before the Big Bang.

The endless debate between scientific theories and God-theory can be addressed by the the DAMv framework, where (a) the empty-space/void is dual-aspect entity with the *inseparable* physical and mental aspects, (b) scientific theories can address the physical aspect of the states of universe and God-theory can address its *inseparable* mental aspect as long as God is a part of universe and not an external entity, and (c) the quantum fluctuations in the physical aspect of the unmanifested state of universe (i.e., empty-space at ground state of quantum field with zero-point energy) are equivalent to God’s desire/will or a peculiar adjustment of cosmic consciousness in its *inseparable* mental aspect. In other words, Pal’s God theory is somewhat consistent in the theist version of *Dvi-Pakṣa Advaita* (the DAMv framework), where the creation/evolution of universe can be explained from the mental aspect of the unmanifested state of universe (it is somewhat equivalent to God being in the empty-space and causing quantum fluctuations) as elaborated before; whereas,

the scientists' models of cosmology are related to its physical aspect in the atheist version of *Dvi-Pakṣa Advaita* (the DAMv framework).

In the *Dvi-Pakṣa Advaita*, God is part of the universe (not an external agent); for example, Sankarāchārya's *Brahman* is the unmanifested state of *Brahman*/empty-space/universe (called *kāran Brahman*) that appear aspectless because its mental and physical aspects are latent/hidden before the Big Bang (*Virāt*: the cosmic fire). After the Big Bang, the latent physical aspect becomes dominant for its manifestation; the manifested-universe co-evolved with both physical and mental aspects of its innumerable states over 13.72 billion and eventually we appeared. There are innumerable manifested states of *kārya-Brahman*/manifested-universe in the DAMv framework, which is close to Rāmānujāchārya-Rāmānandāchārya-Rāmbhadrāchārya's *cit-acit Viśiṣṭādvaita* (*cit* = mental aspect) (*acit* = physical aspect). In us, God (as an experience of bliss at *samādhi* state = the final state of *kārya Brahman*) resides with the self all the time and is experienced by us as the mental aspect of *samādhi*/revelation/mystic-state of mind-brain system, which is consistent with the *cit-acit Viśiṣṭādvaita*.

(Pal, 2011b) summarizes multiverse theory as follows: "Multiverse theory has successfully shown that no intelligent designer is needed for explaining the fine tuning of certain fundamental physical constants. If the value of these constants were not within certain stipulated range, then the universe we are in would have been a completely different place, barren, lifeless, dead. As per the British cosmologist Martin Rees the number of these physical constants are six. Values of these six constants must be finely tuned in a universe in order that life can emerge in that universe. If there is only one universe, then it is not conceivable how merely by chance, or by sheer accident, all the six constants will be fine-tuned at the same time in that particular universe. So existence of an intelligent designer will have to be posited whose job will be to do this fine-tuning. In multiverse theory this problem has been successfully overcome by positing an infinite number of universes in place of just only one. In each of these universes these constants will take

different values after each big bang, and therefore there will be an infinite number of possible combinations of the values of these six constants, out of which there will be at least one right combination just suitable for producing life. The universe in which there will be this right combination will produce life, and we will also find ourselves in that particular universe only, and thus there will be nothing unnatural in it. So no supernatural agency will be required for explaining as to how these physical constants in our universe are having just those values that are needed for bringing us on earth, because in multiverse theory we find a natural explanation of this phenomenon.” However, (Pal, 2011b) argues against multiverse theory as follows: “Actually what has multiverse theory done in the case of six fundamental physical constants? It has merely transformed an unnatural event into a natural event. What appeared as unnatural in the context of a single universe appeared as quite natural in the context of an infinite number of universes. So its task was to transform an apparently unnatural event into a natural event. That is all, and nothing more than that.” See also below: Notes 11 and 14).

<sup>11</sup> (Swami Krishnananda, 1983).I.2.1.p30.

<sup>12</sup> **Creation of Universe:** As per: (i) (Craig, 1979) uses ancient [Kalām cosmological argument](#) as simple syllogism (Stenger, 2000): (A) Whatever begins has a cause. (B) The universe began to exist. (C) Therefore, the universe has a cause.

(ii) (Ross, 1995).p80 argues that the time proceeds always in forward direction; therefore, it has a beginning. This empirical fact implies that our universe also has a starting point, such as Big Bang for its creation. The Big Bang is strongly supported by astronomical observations, such as: (a) Cosmic Microwave Background (CMB) radiation to validate the remnant of Big-Bang’s heat, (b) galaxies appear to be moving away from us at speeds proportional to their distance as per Hubble's Law, and (c) light elements such as Hydrogen and Helium are abundant in observable universe ([www.big-bang-theory.com](http://www.big-bang-theory.com)).

(iii) (Stenger, 2000) provides argument against Craig's Premise (A) as follows: The fundamental to quantum electrodynamics is that the electron-positron (anti-electron) pairs spontaneously appear momentarily out of 'nothing'. This 'nothing', however, the empty-space at ground state of quantum field with minimum energy and one could still argue that the quantum processes are still causal, even they are though random.

(iv) The classical (including general theory relativity: GTR) and/or quantum physics do not make any fundamental distinction between the backward and forward time directions (with no *arrow* of time) in the time-symmetric universe. If needed, this distinction is put in by hand as a boundary condition. Let us assume that at some point of time, universe was empty/void (no matter, energy, and radiation: nothingness). This void can still be described by GTR as flat universe with time axes from  $-\infty$  to  $+\infty$  (Stenger, 2000).

(v) There could two possibilities about the universe (Stenger, 2000): **(a) universe with eternal void:** The energy-time uncertainty principle for (Fowler, 2008; Hilgevoord, 1996; Smith, 1998) ( $\Delta t \cdot \Delta E \geq \hbar$ ) allows for the spontaneous uncaused/random appearance of energy (matter as rest energy or radiation as kinetic energy of massless particles like photons) for very short time (so that energy conservation is not violated) in a tiny region of space throughout the spacetime void; this is a universe with eternal void without any significant permanent result. **(b) Universe with matter and radiation:** It is possible that a 'bubble of false vacuum' can appear, which is the quantum fluctuation of energy in empty-space (void) as spacetime curvature within a small region of region. This bubble is not a true vacuum due to the spacetime curvature (expressed by a non-zero cosmological constant), but it still does not contain matter or radiation. This bubble will expand exponentially in 'inflation' as per de Sitter solution, eventually leading to our current universe. In other words, for the time-symmetric universe, at time =  $-\infty$  (our deep past), the universe *deflates* exponentially to the void before the



quantum fluctuation and then the universe *inflates* to our current universe manifested with matter and radiation. This possibility is for a beginningless, infinite, eternal, and symmetric universe. The quantum fluctuation can also occur many spatial points in the infinite void leading to [multiverses](#), consistent with the (Linde, 1983)'s chaotic inflationary model, [anthropic coincidences](#), and non-supernatural alternative to the theistic creation (Stenger, 2000).

As per (Radhakrishnan, 1960), “Creation of the world out of nothing describes the absolute independence of God [*Īśvara*] as Creator, the absolute dependence of creation and the distance between them. [p141 ...] The doctrine of creation out of nothing insists that God is not limited by a pre-existent matter or by any conditions external to himself. God’s will the meaning of the world and it is sovereign over both nature and history. [p142 ...] The world is not a completed act, it is still in the process of completion [quantum fluctuation still going on, for example, in the space between quarks]. ... Nothingness is the veil of Being [existence] according to Heidegger. Being conceals itself behind nothingness. Nothingness is most intimately united with Being. It proceeds out of Being and yet conceals it. [p143 ...]” Here, God’s desire/will or a peculiar adjustment of cosmic consciousness (the mental aspect of the unmanifested state of universe) is equivalent to the quantum fluctuation in empty-space/void (the physical aspect of the unmanifested state of universe).

In the DAMv framework, the quantum fluctuation is in the the physical aspect of the unmanifested state of dual-aspect ‘void’/‘empty-space’/*kāran-Brahman*. Since its both mental and physical aspects are *inseparable*, one could argue that this fluctuation is automatically and appropriately translated in to the fluctuation in its mental aspect (‘the consciousness of *kāran-Brahman*’—this is different from wakeful human-consciousness). This is precisely the hypothesis of the fluctuation in the mental aspect of

the unmanifested state of Brahman (called *kāran-Brahman*) in Vedic science.

Pal, a mystic who witnessed inner light perception and bliss (*atishaya ānanda*) (personal communication in 2012), argues for the existence of God (~light) as follows (Pal, 2010a, 2010b, 2011a): **(I)** (a) universe is either created by God, or (b) not created by God (assuming God does not exist). **(II)** If God created the universe, then there are three possibilities after creation of universe: God (a) does not intervene, (b) barely intervenes from time to time, or (c) frequently intervenes. In case of (IIa), scientists will be able explain everything in the universe after its creation; however, they will fail to explain the creation of universe by natural scientific models. To reject God and His creation of universe (IIa), scientists must provide explanation for the origin of universe. If they are successful then they are allowed to claim (Ib), i.e., God does not exist. Otherwise, they cannot reject the existence of God. As per Pal, scientists (such as (Krauss, 2012)) have not yet succeeded in explaining the origin of universe clearly that has consensus. Furthermore, Pal argues that light in its own frame of reference is spaceless, timeless, changeless, deathless, and motionless, which are the properties of his definition of God. Therefore, he proposes that light is God and God exists, although traditionally “God is described in this way: Before creation there was only one God, and there was nothing else, no space, no time and no matter” (Pal, 2012b).

However, there was no light before or at Big Bang; light arose  $10^{-32}$  seconds after Big Bang. **Electroweak epoch** (between  $10^{-36}$  seconds (or the end of inflation) and  $10^{-12}$  seconds after the Big Bang): In traditional big bang cosmology, the Electroweak epoch begins  $10^{-36}$  seconds after the Big Bang, when the temperature of the universe is low enough ( $10^{28}$  K) to separate the strong force from the electroweak force (the name for the unified forces of electromagnetism and the weak interaction). In inflationary cosmology, the electroweak epoch begins when the inflationary epoch ends, at roughly  $10^{-32}$  seconds.

**Photon epoch** (between 10 seconds and 380,000 years after the Big Bang): After most leptons and anti-leptons are annihilated at the end of the lepton epoch the energy of the universe is dominated by *photons*. Therefore, light is NOT changeless and it is not deathless in other than light's own frame of reference. Furthermore, any entity in its own frame of reference is motionless. As per Stenger (1999), "Mystics state that their experience of oneness with God and the universe cannot be described in scientific terms. The more rational statement is that this experience is all in their heads." This seems correct because there are 3 major experiences at *samādhi*/mystic/revelation state: (i) the unification of self with its environment, (ii) bliss (the SE of the happiness of highest degree), and (iii) the inner light perception.

If the hypothesis 'God Himself was that light' is derived from the subjective experience of 'inner light' at mystical or *samādhi* state, then this subjective experience is equivalent to the mental aspect of the manifested state of the dual-aspect *Brahman*. Is it possible to experience, in *samādhi* or mystic state, the quantum fluctuations in empty-space (void) that presumably caused the creation of universe?

All EMRs including light arose from empty-space (with ground state minimum energy and quantum fluctuations) via Big Bang and inflation;  $c$  is speed of light/EMR in vacuum; the spaceless and timeless properties of EMR/light might have derived from the spaceless and timeless empty-space at Big Bang (for special case of  $v=c$ ). Consciousness cannot give this property to EMR/light because of category mistake (mental entity cannot cause or interact with physical entity and *vice-versa*; otherwise, it is a category mistake). We have consciousness. Can we give this property to EMR/light? But does empty-space means spaceless and timeless?

<sup>13</sup> Another example is our mind-brain system: Any modulation in the physical aspect of brain-state is automatically and rigorously translated to its mental aspect, and vice versa. This is because both aspects are *inseparable* (the *Doctrine of Inseparability* in the DAMv

framework). Thus, the modulations of neurotransmission by microglia and astrocytes leading to fine control of neural activity (Pascual, Ben Achour, Rostaing, Triller, & Bessis, 2012) (the physical aspect of brain-state) get translated to modulations in consciousness; for example, modulations is subjective experiences (its mental aspect).

<sup>14</sup> Some investigators consider the quantum entanglement as proof of God, which may be not correct. (Pal, 2012a) summarizes the quantum entanglement as follows: “Let us suppose that a test has been conducted on earth in which two particles have interacted with each other, and then they are separated by a long distance. One particle remains on earth whereas the other particle goes to the outside space. In spite of that the two particles will remain entangled even if distance between them is billions of light years. Measurement of any property of the particle on earth will instantaneously determine what will be the property of the other particle at the distant end. If one particle here on earth is found to be in a state of spin up after measurement, then the other particle will instantaneously take a state of spin down. Now we know very well that nothing can move faster than light. If this is indeed the case, then how does the information that the particle on earth has gone to a state of spin up after measurement travel to the other particle instantaneously causing it to go to a state of spin down immediately? Now this is a well-known fact that such things really happen in nature, that two systems remain somehow correlated with each other even if they are separated after their interaction. This is called quantum entanglement.”

(Pal, 2012a) then argues for the existence of God because scientists are unable to explain the quantum entanglement satisfactorily as follows: “Now scientists have merely stated the fact, but they have not given any explanation as to how the two interacted particles remain entangled after they are separated. ... So from this we can conclude that any point on the surface of earth is potentially

entangled with each and every point in the outer space. But the question is: how? [...] If we accept the fact that there is a God who is equally present at each and every point of this universe, then it is due to His presence that distance from any point of space to every other point of space in this universe will always be zero. [...] So the conclusion of this essay is this: the phenomenon of quantum entanglement clearly shows that basic characteristic of space of this universe is A [spacelessness], which further shows that there is a God.”

What is the underlying mechanism behind [quantum entanglement](#) or nonlocality in Quantum Mechanics? As per (Cohen, 1999), “It is well known that all entangled pure quantum states imply the presence of nonlocal correlations, because any such state must violate some Bell inequality (Gisin, 1991; Popescu & Rohrlich, 1992)].”

As per ((Collins, 2011).p132), “Bell’s theorem rules out any explanation of these [quantum entanglement related] correlations by means of energy exchange. [...] There have been two main responses to these correlations in the literature: (i) the *causal realist* response, according to which these correlations are grounded in some instantaneous causal connection between the two particles or in some non-local and thus instantaneously acting common cause; and (ii) the *causal anti-realist* response, according to which these correlations are not grounded in any further causal facts.”

Therefore, one could argue that, in entanglement or nonlocality, it may be the **correlations** (the instantaneous or faster-than-light acausal relations) that exist between physically separated entities, rather than any causal information transmission because information cannot be transmitted faster than speed of light. Furthermore, one could argue for Higgs field everywhere, which may be involved in the entanglement. Thus, we do not need to invoke external agent God; God needs to be a part of universe such as the mental aspect of states of universe.



As per Pereria, “I am not delegating the Holy Spirit the creator task. I am saying that the world is eternal, and all creation emerges from immanent factors. God is inside, not outside the world (this is Spinozian). [...] I am arguing that there is no Creator, only a potentiality in Nature for Evolution to follow the path towards peace, love, etc. The place of the Father [*Brahman/Isvara*] is practically empty; the Father is a virtual entity. Any person who brings the message of peace, love, etc. takes the place of the Son. God only becomes real if people follow the message and live accordingly. The Holy Spirit is the result of people's actions. The Spirit is the only aspect of God that is really actualized. It is made of people's prayers and feeds back positively on people's prayers. This is how religion effectively works! However, if someone kills or does other kinds of evil in name of God, there is a negative feedback - this person is actually acting against God.” <<http://tech.groups.yahoo.com/group/jcs-online/message/9832>>.

<sup>15</sup> In general, one can explain the creation of Universe from *nothing* (i.e., without initial energy or mass) using classical and/or quantum approach. (Berman & Trevisan, 2010) proposes *classical approach* as follows: one can apply General Theory of Relativity (GTR) (or other classical theories) to understand the evolution of Universe after Planck's time ( $t \sim 10^{-43}$  second). For  $t < 10^{-43}$  second, one needs to accept that Einstein's field equations results the average values for the fluctuating quantities. For example, the quantum fluctuations in empty-space before Planck's time can be averaged using those equations. This is like the Path Integral theory of Feynman (Feynman & Hibbs, 1965), which proposes that paths fluctuate around the average trajectories; this average trajectory can be estimated using classical physics. In other words, the exponential expansion in inflationary phase of the very early Universe can be studied by the equation of state. Classically, total energy = |energy of all matter| – |energy of the gravitational field| = 0. In other words, the creation of the Universe does not need energy or mass as long as it is [Machian](#) (see (Feynman, 1962-63)) Thus, one can explain the creation of the Universe, out of ‘nothing’ using classical physics.

(Krauss, 2012), a nonbeliever-physicist, summarizes the debate between science's evolution hypothesis and religions' creation hypothesis and proposes universe(s) from 'nothing' on the basis of science; this endless debate is addressed by the DAMv framework. They along with information from other sources are given as follows:

**(i) The debate between science and religions:** One could ask interesting questions related to the origin of universe(s) and physical laws in science and that of the external agent creator (*Brahman*, God, *Allāh*, and so on) in religions. One could argue for eternal universe with or without Creator. If we compromise that creator is also universe itself or at the least a part of universe, then we can easily address this debate by the DAMv framework, where each entity-state has *inseparable* mental (M) and physical (P) aspects with varying degrees of the dominance of aspects depending on the levels of entities. The domain of science is the physical aspect and that of religions is the mental aspect. As long as the crossing of domains is prohibited (i.e., materialistic science must not try to explain mental aspects and religions must not try to explain physical aspects), science and religions can develop their models of the creation/evolution of universe(s) without any contradiction because of *the doctrine of the inseparability of aspects*. In other words, for example, the information provided by science related to the physical aspect will be faithfully, automatically, rigorously translated in to the mental aspect because the aspects are *inseparable* (both aspects are in 1-1 correspondence in this sense). That debate will re-start if we make category mistake by crossing of domains, i.e., science starts explaining our consciousness and religions start explaining our material brain. In other words, same-same (P-P and M-P) explanations are allowed but cross explanations (M-P or P-M) are prohibited to avoid category mistakes.

In the unmanifested state of universe/creator/empty-space (pre-Big-Bang state), the aspects are latent, so this state appears aspectless. The manifestations of universe start after the Big-Bang and there are innumerable manifested states of universe.

**(ii) Laws and entities:** From scientific point of view, universe can spatiotemporally infinite and physical laws could be like the layers of onion, with new laws operating at a new scale/entity-level; for example, classical physical laws at larger classical scale and

quantum laws at very small quantum scale. In the DAMv framework, all laws and entities *potentially* pre-exist in the unmanifested state of universe; otherwise they will never be *realized* after the manifestation of universe.

**(iii) Definition of nothing:** (a) for some believers, *nothing* is ‘nonbeing’ (non-existence), in vaguely ill-defined sense; (b) for some believers, *nothing* is ‘as it is’ (exactly as one finds/sees it now without changing anything; (c) for some believers, *nothing* is that from which only God can create something; (d) for some, *nothing* is the ‘absence of something’; (e) for some classical scientists, *nothing* is purely empty space without any real matter and/or radiation; (f) for some quantum scientists, *nothing* is a [quantum vacuum](#): the [quantum state](#) with the lowest possible [energy](#), i.e., the ground state of quantum field with minimum energy without matter and/or radiation; it is not truly empty but contains virtual particles (fleeting electromagnetic waves and particles that pop into and out of existence); and (g) for some physicists *nothing* is no space, no time, no matter, no radiation, no gravitational energy, no energy, no anything and total empty, but virtual particles can exist. The DAMv framework is sympathetic to the definitions (e), (f) and (g).

**(iv) Potential pre-existence:** One could argue that if entities and laws *potentially* pre-exist in the unmanifested state of nothingness, then it is not a state of true nothingness even if they spontaneously arise. In that case, even God cannot create anything if there is no potential for creation. Therefore, the *potential* pre-existence is a brute fact in the DAMv framework.

**(v) Philosophy of science:** It is based on three key premises: (i) we should follow the scientific empirical evidences that are spatio-temporally repeatable; (ii) we must test our hypotheses and theories rigorously; and (iii) scientific experiments are the ultimate judge/referee of truth.

**(vi) Fundamental constants of universe:** There are 6 fine tuned fundamental constants of universe, which are fundamental to present-day physical theory and the known structure of the universe; even a slight change will abolish life. As per (Rees, 1999), [the fine-tuning of the Universe](#) requires six dimensionless [fundamental constants](#): (a)  $N$  = [ratio of the strengths](#) of [gravity](#) to that of [electromagnetism](#)  $\approx 10^{36}$ , which governs the relative importance of gravity and electrostatic

attraction/repulsion in explaining the properties of [baryonic matter](#); (b) *Epsilon* ( $\epsilon$ ) = strength of the force binding [nucleons](#) into [nuclei](#) = 0.007, which governs the [energy output of stars](#); (c) *Omega* ( $\Omega$ ) = relative importance of gravity and expansion energy in the Universe  $\approx$  0.3, which determines the [ultimate fate of the universe](#); (d) *Lambda* ( $\lambda$ ) = the ratio of the energy density of the universe (due to the [cosmological constant](#)) to the [critical density](#) of the universe  $\approx$  0.7; (e) *Q* = ratio of the gravitational energy required for breaking up and dispersing the largest known structures (such as [galactic cluster](#) or [supercluster](#)) to the energy equivalent of its mass  $\approx 10^{-5}$ ; (f) *D* = number of spatial [dimensions](#) in [spacetime](#) = 3. In the God-theory, Creator planned to select each constant of above value, but nothing is explained or predicted. The DAMv framework, since the constants are related to the physical aspect of manifested states of universe, follows science.

**(vii) Multiverse hypothesis:** This hypothesis avoids external agent (God) for the fine tuning of the fundamental constants. In other words, our universe is not unique on large scale. There are presumably  $10^{500}$  different possible consistent 4D universes, which could result from a single 10D string theory.

**(viii) Geometries of universe:** Our universe is expanding starting from the extremely hot, dense Big Bang about 13.72 BYA. Our sun is one of 200–400 billion stars in our [milky-way galaxy](#), which is one of about 400 billion galaxies in the observable universe. These entail [3 types of geometries of our universe](#) depending upon the total amount of matter in it (represented by the curvature  $\Omega$ ): closed, open, or flat. In a *closed universe*, the density of matter (such as stars, galaxies, dark matter) and energy is sufficient to cause space to close back upon itself, i.e., as per General Theory of Relativity, the total energy is zero, curvature  $\Omega > 1$ , and our universe eventually recollapse in the process of *Big Crunch* (the reverse of a Big Bang); this is cyclic model of universe. In an *open universe*, the density of matter (curvature  $\Omega < 1$ ) is such that our universe will continue expanding forever at a finite rate. In a *flat universe*, the total energy is zero, curvature  $\Omega = 1$ , and the expansion of universe slows down, but never stops.

**(ix) Flat universe from nothing:** Some theists argue that the average total Newtonian gravitational energy of each galaxy being zero in a flat, expanding universe is arbitrary, but that scientists use zero

energy to argue against God; this is unclear; it is the total energy (the positive matter/radiation energy plus the negative gravitational energy) of universe that is zero. (Krauss, 2012) assumes that empty-space (without any matter or radiation) and the laws of physics pre-exist. (Guth, 1997)'s 'the ultimate free lunch' implies that universe(s) can be created from such 'nothing'/empty-space, which can have a non-zero energy (even in the absence of any matter or radiation) such as the ground state of quantum field with minimum energy. Since the General Theory of Relativity (GTR) suggests that space will expand exponentially and rapidly to encompass our whole universe, which will get flatter and flatter as the minimum ground state energy of empty space grows. This is because the related gravitational 'pressure' in empty space is negative, which implies that the rapid expansion stores energy *into* space but not vice versa. At the end of inflation, this stored energy of empty space is converted into the energy of real particles and radiations. This effectively creates our universe with the present expansion of the Big Bang. Since the inflation effectively erases the memory of the state of the universe before it began, it is the traceable beginning of the Big Bang. If the initial preexisting universe or metaverse were large, the complexities and irregularities are initially in large scales. After sufficient inflationary expansion, they are smoothed out and/or driven outside of the horizon today to the extent our universe is almost uniform. Eventually, we will have flat universe with the average Newtonian gravitational energy of all objects (total energy = |matter/radiation energy| - |gravitational energy|) being zero. Thus, a universe can begin as a microscopically small region of empty space and expand to our observable universe with matters and radiations from *nothing*. This is because of the dynamics of gravity and quantum mechanics. The process of inflation the energy of empty space (nothing) converts into the energy of something/everything (matters and radiations) in large and flat universe. The major assumptions are (a) space with *nothing* (no matter and no radiation, but has minimum ground state energy of quantum field) pre-exists (i.e., before Big Bang), (b) it can store energy, and (c) the laws of physics like general relativity and quantum mechanics also pre-exist that lead to the consequences of creating our universe. In quantum world, the empty space is "a boiling brew of virtual particles that pop in and out of existence in a



time so short we cannot see them directly. Virtual particles are manifestations of a basic property of quantum systems. [...] These ‘quantum fluctuations’ imply something essential about the quantum world: nothing always produces something, if only for an instant” (Krauss, 2012).p153. The *nothing* with the ground-state minimum energy of quantum field in empty-space is as if all energies of the infinite empty-space are sucked in at one point to result the Big Bang.

As per (Wilczek, 1980, December) “One can speculate that universe began in the most symmetrical state possible and that in such a state no matter existed; the universe was a vacuum. A second state existed, and in it matter existed. The second state had slightly less symmetry, but was also lower in energy. Eventually a patch of less symmetrical phase appeared and grew rapidly. The energy released by the transition found form in the creation of particles. This event might be identified with the big bang ... The answer to the ancient question ‘Why is there something rather than nothing?’ would be that ‘nothing’ is unstable”.

**(x)** *General Theory of Relativity (GTR) and Quantum Mechanics (QM) in the creation of Universe from nothing:* [Einstein](#) once asked “whether God had any choice in the creation of universe” (Krauss, 2012).p.160, where Einstein’s *God* was related to the existence of order in the universe. God/Nature had choices if multiverse model is true because our universe is a part of infinite multiverse of universes with an infinite set of different combinations of laws and varieties of particles and substances and forces; so our universe would not be unique. However, if our universe is unique then God/Nature did not have choice. One could argue that theists’ God (external agent) is unnecessary or redundant.

The GTR could address the dynamics not only of objects moving through space, but also that of space itself (how it evolves). Therefore, the [quantum theory of gravity](#) should explain both the properties of space and objects existing/moving in space from micro/subatomic to macro/cosmological levels. In the [quantum electrodynamics](#) (QED, the quantum theory of electromagnetism) (Feynman, 1950), virtual particles/photons can pop out of empty space spontaneously (at will) but they need to disappear in very short time calculated from the Uncertainty Principle. This entails that small compact spaces may

pop in and out of existence (virtual universes) consistent with the Feynman quantum sum over possible space-time configurations. (Hawking & Mlodinow, 2010) implies that the quantum theory of gravity allows for the momentary creation of space from *nothing*. However, the power for explaining universe from *nothing* by this hypothesis is equivalent to that by the hypothesis of the virtual particles that populate empty space. In QED, the charge can emit coherently many virtual zero-energy-photons that do not have to disappear for a long time. This is because the Uncertainty Principle ( $\Delta E \cdot \Delta t \sim h$ ) implies that the uncertainty in energy from its zero average value (slight change of energy by the emission and absorption of virtual particles) is inversely proportional to the time-period/duration of its observation/measurement. Therefore, virtual particles with zero energy can exist for arbitrarily long time and can travel for arbitrarily long distance before its absorption leading to the possibility of long-range interactions between charged particles. This process can lead to a nonzero real electric field observable at large distance from a charged particle. Similarly, one could argue that a compact universe (such as the one we live in) with zero total energy can spontaneously appear from *nothing* and live for a long time without violating the energy conservation.

As per (Hartle & Hawking, 1983), “There are excited states which represent universes which expand from zero volume, reach a maximum size, and then recollapse”. [The Hartle-Hawking state](#) is related to the state of the universe prior to the [Planck epoch](#), which is a *no-boundary* proposal that (a) the universe is infinitely finite and (b) the time did not exist before the [Big Bang](#). This is because time started after the Big Bang; time did not exist before the formation of [spacetime](#) linked with the Big Bang and then the expansion of the universe in space-time. They propose that if we could travel backward in time toward the beginning of the universe (Big Bang), there was first only space and no time, i.e., the notion of a beginning of the universe is meaningless, the universe has no origin/beginning, it has no initial boundaries, and the universe was a [singularity](#) in both space and time. The implications for the ‘boundary conditions’ on universes (Hartle & Hawking, 1983) that can emerge from *nothing* are as follows: (i) Since the total energy of a universe is zero, universes can spontaneously appear from *nothing* with matter and radiation or

without them (i.e., empty-space). (ii) The process of inflation will be needed for creating a long-lived universe from *nothing* using the above process; this universe that we live in appears flat.

Thus, quantum gravity (GTR+QM) is prerequisite for the creation of universe (that we live in) from *nothing*, where *nothing* means no space, no time, no matter/radiation, no energy, no anything, but virtual particles can pop in and pop out of existence and physical laws (GTR+QM) preexist; but this *nothing* is unstable. This *nothing* is different from the *quantum vacuum* that contains empty-space with the ground-state of quantum field with minimum energy; this *nothing* is something; it has preexisting space, virtual particles, and physical laws (such as GTR and QM). One could argue that virtual particles are spontaneously created, which is acceptable to many. In addition, one could argue for the creation of universe from preexisting empty space. However, then one needs to hypothesize the origin of empty-space from 'no space' by postulating the more *fundamental nothingness* (such as atheist Buddhist [\*Sūnyatā\*](#)) from which empty space may have emerged, which eternally preexisted. In reverse process, our universe may one day return to *fundamental nothing* via comprehensible processes that do not require any external control/direction, such as God. Everything appears as a miracle without science, whereas with science, nothing is miracle as everything can be explained one day. However, we still need to address the origins of physical laws.

**(xi) Origins of physical laws:** Theists can argue that the origin of physical laws and other unknown entities is God (an agent external to universe). However, this argument is not acceptable because it has an explanatory gap problem: precisely how God can do it, i.e., the mechanism of origin of physical laws is unclear.

Alternatively, one could argue that the origin of physical laws can be addressed by multiverse model, where innumerable universes are created from nothing with their own physical laws on arbitrary basis. One of those universes is our universe with its own current physical laws. The multiverse can be either (a) in the form of a landscape of universes existing in more than 3D space (such as in 10D string theory), or (b) in the form of a possible infinitely replicating set of universes in a 3D space (such as in eternal inflation). There is no prescribed *cause* for our universe if the physical laws are random and

stochastic. This allows a universe, such as our universe, would arise with its physical laws. This is because nothing is required to fix the physical laws as they are. The physical laws can vary with the levels (such as classical vs. quantum levels), in analogy to an onion with millions of layers, as [Feynman](#) noted. There could be an infinite number of infinitesimally small to infinitely big regions in a multiverse; some regions may have *nothing* and some may have *something* (e.g., our universe). The physical laws and the fundamental forces and constants of nature are merely accidents correlated to our existence in this landscape of multiverse-anthropic model. For example, life as we know it could not have evolved in our Earth if it were located at a different distance from Sun.

However, all our scientific hypotheses require the *potential for existence* in the *fundamental nothingness*, i.e., the potential for all matters, radiations, conscious subjective experience, and so on.

**(xii)** *The potential for existence in the fundamental (true) nothingness:* If one defines *true nothingness* that does not even have the *potential for existence*, it is unclear that even God, as the *First Cause* (a supernatural agent external to universe), can create universe from this *true nothingness*. This is because it is unclear if the *supernatural* potential for existence is different from regular natural scientific potential for existence as there is no empirical basis. One could argue that atheist Buddhist *nirvana* is the state of *true nothingness*, which involves the concept of [Śūnyatā](#). As per some string theorists the empty-space with positive minimum energy *cannot* be stable, which must decay to a state with negative energy. This implies that our universe will then recollapse inward to a point and our universe will disappear.

**(xiii)** *Summary:* The afterword by atheist-scientist Dawkins in (Krauss, 2012) summarizes as follows: (a) the age of universe is 13.72 billion years; (b) since nothingness is unstable, something (such as our universe) is bound to emerge; (c) virtual particles (particles and antiparticles) pop in and out of existence momentarily from *nothing*; (d) something (universe) from nothing spontaneously happened at the beginning of space and time, via the doctrine of virtual particles, at the Big Bang (singularity); (e) this is followed by the inflationary period, in which our universe and its content took a fraction of a second to expand through 28 orders of magnitude; (f) Stenger,

Weinberg, Peter Atkins, Martin Rees, and Stephen Hawking also argue against external agent such as God; and (g) (Krauss, 2012)'s 'A universe from Nothing' for cosmology is the equivalent to the Darwin's 'On the Origin of Species' for biology; both argue against supernaturalism.

<sup>16</sup> As per (Radhakrishnan, 1960).p271, "God resides in the body but he is outside as well and is all-pervading. [p271 ...] The objection that the Highest Self cannot be a ruler for he has no organs of action is untenable because organs of action may be ascribed to him since who he rules possess organs of action. [p278] [...] Ś. [Śankarācharya] believes that the declaration of the difference between the embodied soul and the Indwelling Spirit has its reason in the limiting adjunct consisting of the organs of action presented by ignorance, and is not absolutely true. For the Self within is one only; two internal selves are not possible. But owing to its limiting adjunct the one Self is practically treated as if were two, just as we make a distinction between the space in the jar and the universal space. R. [Rāmānujāchārya] uses this to establish the difference between the individual soul and the Indwelling Spirit, the Supreme free from all evil. The two are different because the individual soul is the abode and the Indwelling Spirit is the one abides therein [p279-280]".

Similar to the organs of action, one could argue for thinking and experiences that the Highest Self has access to our brain's NNs related to our thoughts and experiences. However, do we have scientific evidence for such *Paramātman*/Highest-Self? The debate between Śankarācharya and Rāmānujāchārya regarding two selves (individual self and Indwelling *Paramātman*) residing in us all the time can be addressed by *Dvi-Pakṣa Advaita*, by hypothesizing that the Indwelling *Paramātman* is the individual self at *samādhi* state (the mental aspect of relevant brain-state) having 3 major experiences as reported by yogis: bliss, inner light perception, and the feeling of unification of subject with all surrounding objects and space.



<sup>17</sup> As per (Radhakrishnan, 1960).p250, “If we accept the view that the Scriptures of the world are the records of the experiences of the great seers who have expressed their sense of the inner meaning of the world through their intense and deep imagination, we will not adopt an attitude of dogmatic exclusiveness.” Therefore, seers’ hypotheses emerge from their **intense and deep imagination** and hence they need to go through the same critical examinations as all scientists’ hypotheses go through. There is no evidence that there exists an entity God who knows what all humans are thinking and experiencing; so God’s omniscience attribute is debatable. However, if God is the three major experiences at *samādhi* state then one could argue that *śrutis* are hypotheses directly from God (*kārya Brahmin* at *samādhi* state).

<sup>18</sup> As per (Radhakrishnan, 1960), “The Buddhist view that there is no permanent Self cannot account for the feeling of self-identity. The Self cannot be reduced to series of passing ideas. On such view it would be impossible to account for the recognition of mental states and their differences. [p.31-32 ...] Ś. [Śankarāchārya who was the founder of *Advaita*] says we have refuted the Buddhist theory of momentary existence for we have proved the eternal continued existence of cause. [p.352 ...] Ś. refers to the different developments of Buddhism and mentions three, the *Sautrāntika* and *Vaibhāṣika* which believe in the reality of every object, *sarvativāda*; and the *Vijñānavāda* which opines that thought alone is real. For the nihilists everything is void or unreal; they adopt *Śūnyavāda*. [...] A series of cognitions of one’s self cannot be the cause. If the series is different in character from the several momentary cognitions of which it is made, then this is to admit a permanent self. If the series is momentary, it cannot be active and bring into being the external and the internal worlds”.

Moreover, (Radhakrishnan, 1960) discussed arguments from Rāmānujāchārya against Buddhist view as, “R. [Rāmānujāchārya]

asks how on the doctrine of momentariness, the aggregates the theory postulates can ever come into being. If we are referred to the doctrine of dependent origination, *pratītya-samutpāda*, it does not solve the difficulty. For though ignorance may lead to desire and so on as they say and in the end to ignorance once again, this does not explain the origination of the aggregates about which there is ignorance. To take the shell for silver may be an act of ignorance. [p378 ...] everything being momentary, the subject who experiences the silver in the shell passes away with that experience”. However, (Damasio, 2010) implies that the proto-self is permanent until death.

Furthermore, (Radhakrishnan, 1960) uses *Brahma Sūtra* (BS) to argue against the doctrine of universal momentariness, “[as per BS: II.2.19:] *If it be said that (groupings of atoms and skandhas are possible) on account of mutual causality (of avidyā and the rest), (we say) they are the cause only of origin (and not of groupings).* [as per BS:II.2.20:] *Because on the origination of the subsequent (moment) the preceding one ceases to be (therefore there can be no causal relation between avidyā and the rest).* ... Between two momentary things, there cannot be any relation for the first has ceased to be, when the second comes to exist. If we say [p.379] that every consequent has in it the essence of the antecedent, we deny the doctrine of universal momentariness. If origin and destruction are the earlier and the later stages of one and the same thing, then the thing is assumed to exist for three moments of time. [as per BS: II.2.21:] *When (the cause) is absent, (if the effect is present) there results the contradiction of the admitted principle or else simultaneously (of cause and effect).* ... If it be said that there may be an effect, even when there is no cause, the main principle of the school that the mind and its states arise on account of the four causes, material cause (*ālambana*), impression (*samanantara*), sense (*adhipati*) and auxiliary cause (*shahakāri*) will have to be given up. If no cause is required, anything may come into being at any time. If it is said that the antecedent continues to exist until the consequent is produced, we accept the simultaneous

existence of cause and effect and reject the theory of universal momentariness. [p380]”

<sup>19</sup> How should we interpret differences in views? One could argue that differences in information obtained at *samādhi*/revelation/mystic state by various *ṣis*/prophets/seers represent different aspects of the same fundamental dual-aspect primal entity (such as unified field, unmanifested *Brahman*) because at this state they presumably have 'direct perception' (consciousness-as-such). For example, atheist religions such as Buddhism perhaps represent more of physical aspect so it is closer to science, whereas theist religions represent more of its mental aspect, so they are closer to God-theory. This is consistent with Toney Nader's (scholar in Vedic Science, personal communication on 10-May-12) view on differences in different *ṣis*/prophets/seers.

<sup>20</sup> As per (Radhakrishnan, 1960) analyzes virtues, meanings of life, ethics, morality, and rebirth hypothesis from both eastern and western perspectives as follows:

(i) *Virtue, ethics, morality, and meaning of life*: Atheists and agnostics can also be virtuous, ethical, and moral; however, the mechanism behind these attributes could be God. The [existentialists](#) of the school of French philosopher [Sartre](#) made effort to investigate the meaning of life in absence of God, and proposed that if universe has meaning then it should have a purpose as well. In [existentialism](#), the individual and his/her experiences is the fundamental to understand human existence and hence [authenticity](#) (being true to one's own [personality](#), [character](#), or [spirit](#)) in addition to [moral thinking](#) and [scientific thinking](#) is an essential ingredient.

(ii) If *the source of all goodness* is God, atheism and agnosticism may not entail the suspension of divine acting. Worship (*Bhakti*) is “conscious recognition of and wholehearted response to the source of all goodness, Devine” [p167].

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(iii) *The hypothesis of rebirth*: One could argue that the incarnation is a continuous process of self-renewal. The rebirth theory hypothesizes the following premises: (a) Self (*ātman*) continues to exist after death.

(b) Our consciousness is breached at death.

(c) We lose memory of the detailed knowledge and the skill and the habits at death.

(d) Our dispositions and tendencies, traces of our *karmas* and intense desire persist after death.

(e) We “start our next life in consequence of having possessed these with more efficient dispositions and a greater power to reacquire the detailed knowledge and insight [(McTaggart, 1927; McTaggart & McTaggart, 1906)]” [p.200].

(f) If we still think that present life has meaning and positive values, the absence of previous life memories need not be taken as serious objection.

(g) “While memory fades, the modifications remain” [p.201].

(h) The attitude of mind, the disposition of character, and the habit of judgement of previous life continues to form the basis of present life.

(j) The development of psychic powers illuminates us to recollect our memories of previous lives, for example, Buddha, as per Aśvaghosha, remembered his previous births and deaths (such as his birth name and place).

(k) There are many views for the mechanisms of rebirth. For example, “McTaggart argues that ‘souls somehow steer their way back to a suitable rebirth’. ‘Each person enters into connection with the body that is most fitted to the connected with.’ As there can be no continuity of life without of continuity of organism, a subtle body which carries the impress of its past tendencies is assumed” [p204].

(l) When the gross body is dead, the soul acquires a subtle body (a shadow of gross body), which is transparent and invisible though it is material.

(m) (Hari, 2008, 2010a, 2010b, 2011a, 2011b) proposes that tachyon might be related to soul and subtle body.

(n) We cannot localize subtle bodies that survive physical death. “The subtle body [symbolized as the size of a thumb] is the reflex image of our personality in all its phases. The *līṅga-śarīra* is the carrier of *karma* and assumes a body which, though different from the present one, is not altogether discontinuous with it” [p.205].

(o) Śāṅkarāchārya accepts that “the individual, when he passes from one body to another, possesses primary *prāṇa*, senses, and *manas*, also *avidyā*, *karma* and previous experience. The *jīva* carries with it the subtle elements forming the basis of the body” [p.205].

(p) “For McTaggart, the universe is not a person but a society of persons, eternal and perfect, each of whom is in love with one or more of the others. Moreover, it is probable that each human mind, as it really is, is identical with one of these persons. Each one of us is, therefore, eternal in reality and this eternity probably appears *sub specie temporis* as persistence throughout the whole of past and future time. This existence is split up into a sequence of many successive lives each beginning with a birth and ending with a death. Belief in rebirth seems to be the least unsatisfactory of the views held about the future of the human being after death” [p.206-7]

(q) “Even as the Supreme Reality is envisaged in the four forms of the Absolute *Brahman*, Personal *Īśvara*, the world-soul and the world, liberated has the feeling of oneness with *Brahman*, communion with *Īśvara* and co-operation with the world-soul for the betterment of the world” [p.207].

(r) “For R. [Rāmānujāchārya], the distinction between the individual soul and the Universal Self is real and so the two can never become one”, whereas, for Śāṅkarāchārya, soul/*jīva* is the same as *Brahman*



(s) “The liberated souls are active wherever a tear falls, wherever an act of injustice or brutality is committed, wherever a heart is seized with despair. [p214 ...] Release relates to the frame of mind. It does not depend on embodiment or non-embodiment. Even after physical death, the released soul may assume individual form to work for the world. That is why it is sometimes said that the released soul becomes one with *Īśvara*, the creative dynamic side of *Brahman*” [p216]

(t) The “world will persist as long as there are souls subject to bondage. It terminates only when all are released, i.e. absolute salvation is possible with world-redemption” [p223]. This is debatable because the life on Earth will end when Sun runs out of its energy/fuel/hydrogen in about 5 billion years.

(u) One could ask (a) what is the source of goodness if it is not God. (b) Are the reports of the individual cases of the memory of past lives authentic and reproducible?

<sup>21</sup> (Saroj Bala, 2012) used astronomical planetarium software to estimate the astronomical-sky-view dates (that is further supported by sedimentology, hydrogeology and drilling data) and proposes the followings: **(i)** the development of indigenous civilization in India might be even before 6000 BC; **(ii)** *Rigveda* era might be 8000-4000 BC; **(iii)** a mighty river system *Saraswatī* referred in *Vedas* and *Epics* might be around 6000 BC as per Remote Sensing pictures taken by [Indian Space Research Organisation \(ISRO\)](#) and corroborated by geological reports; this river system slowly dried up and almost disappeared around 3000 BC; **(iv)** *Vālmiki Rāmāyaṇa* around 5000 BC; **(v)** *Mahābhārata* around 3000 BC; **(vi)** the paleobotanical research reports suggest that certain cultivated varieties of plants, trees and herbs that are mentioned in *Vedas* and *Epics* existed in for more than 8000-10000 years: for example, the remains of cultivated rice, wheat and barley around 7000 BC; melon seeds, lemon leaf, pomegranate, coconut and date palm around 4000 BC; lentils, millets and peas from 3000 BC; use of reetha, amla and shikakai for making shampoo since 2500 BC; **(vii)** the anthropological research reports the DNA dating for Paleolithic continuity started from 60000 BC;

(viii) the Genome studies during the Holocene suggest that the genetic profile of all Indians (in north, south, east and west) is the same and has remained the same since 11000 years; (ix) the inhabitants of the Harappan civilization were indigenous people of northwestern region of the Indian subcontinent; (x) Thus, both north (*Āryans*) and the south (*Dravidians*) Indians are indigenous, have common genetic profile, and hence had common ancestors.

<sup>22</sup> See (Vimal & Pandey-Vimal, 2007) and <http://en.wikipedia.org/wiki/Vedas>, and <http://en.wikipedia.org/wiki/Rigveda>

<sup>23</sup> As per (Saroj Bala, 2012), the date of birth of Lord Rāma was 9<sup>th</sup> *tithi* of *Chaitra* month during day time with: (i) Sun in Aries, (ii) Saturn in Libra, (iii) Jupiter in Cancer, (iv) Venus in Pisces, (v) Mars in Capricorn, (vi) Lunar month of *Chaitra*, (vii) Ninth day after no moon, (viii) *Lagna* as Cancer (Cancer was rising in the east), (ix) Moon on the *Punar vasu* (Gemini constellation and Pollux star). This data was translated by the 'Planetarium Gold' software as 10<sup>th</sup> January 5114 BC at noon. Similarly, the date of exile was 5<sup>th</sup> January 5089 BC, the date the death of Rāvaṇa was 4<sup>th</sup> December 5076 BC, and the date of return to *Ayodhyā* was 2<sup>nd</sup> January, 5075 BC when Rāma was 39 years old.

<sup>24</sup> Vartak used astronomical method for scientific dating to estimate various dates as follows: (i) *Mahābhārata* War seems to be about 5561 BC (Vartak, 1989), (ii) Rāma's period appears to be around 7500 year BC (Vartak, 1999), and (iii) *Rāmāyaṇa* was before the *Mahābhārata* and after *Taittiriya Samhitā* (8357 BC), so *Rāmāyaṇa* period was 8000-6000 BC (Vartak, 1999).

<sup>25</sup> Dr. Narahari Achar (Achar, 2010) showed with astronomical analysis that the *Mahabharata* war was in 3,067 BC. See <http://en.wikipedia.org/wiki/Gita> and <http://en.wikipedia.org/wiki/Vyasa>.

<sup>26</sup> As per (Vartak, 1989), the scientific dating of the *Mahābhārata* War was 5561 BC.

<sup>27</sup> [http://en.wikipedia.org/wiki/Timeline\\_of\\_Eastern\\_philosophers](http://en.wikipedia.org/wiki/Timeline_of_Eastern_philosophers),  
<http://en.wikipedia.org/wiki/Samkhya>,  
<http://www.britannica.com/EBchecked/topic/311732/Kapila>.

As per Nityanand Misra (NM, personal communication in May 19, 2012), *Sāṅkhya* predates *Vedānta* and *Gītā*. This is because, in the *Bhāgavatam*, Kapila is listed as the fifth *avatāra* (SB 1.3.10) and Vyāsa as the seventeenth (SB 1.3.10). Therefore, as per the *Bhāgavatam*, *Sāṅkhya* propounded by Kapila came before *Vedānta* propounded by Vyāsa. In the *Gītā* the Lord says, *siddhānām kapilo munīḥ* (BG 10.26) - I am Kapila amongst the *Siddhas*. Also see BG 3.3:

*loke'simandvividhā niṣṭhā purā proktā mayānagha*  
*jñānayogena **sāṅkhyānām** karmayogena yoginām ||*

<sup>28</sup> [http://en.wikipedia.org/wiki/Bṛhadāranyaka\\_Upaniṣhad](http://en.wikipedia.org/wiki/Bṛhadāranyaka_Upaniṣhad): Author: Yajnavalkya, date of composition: Mid-first millennium BC, place of composition (ancient name): Videha, Mithila (Southern Nepal).

<sup>29</sup> <http://en.wikipedia.org/wiki/Jainism> ;  
[http://en.wikipedia.org/wiki/Rishabha\\_\(Jain\\_tirthankar\)](http://en.wikipedia.org/wiki/Rishabha_(Jain_tirthankar))

<sup>30</sup> See <http://www.humanistictexts.org/Carvaka.htm>,  
<http://en.wikipedia.org/wiki/Lokayata>,  
[http://en.wikipedia.org/wiki/Barhaspatya\\_sutras](http://en.wikipedia.org/wiki/Barhaspatya_sutras),  
<http://en.wikipedia.org/wiki/Kautilya>, and (Mādhava Āchārya, 1996 [1882]).

<sup>31</sup> <http://en.wikipedia.org/wiki/Buddha>

<sup>32</sup> <http://en.wikipedia.org/wiki/Tanakh>

<sup>33</sup> [http://en.wikipedia.org/wiki/Jesus\\_Christ](http://en.wikipedia.org/wiki/Jesus_Christ)

<sup>34</sup> <http://en.wikipedia.org/wiki/Islam>

<sup>35</sup> [http://en.wikipedia.org/wiki/Adi\\_Shankara](http://en.wikipedia.org/wiki/Adi_Shankara)

<sup>36</sup> [http://en.wikipedia.org/wiki/Kashmir\\_Shaivism](http://en.wikipedia.org/wiki/Kashmir_Shaivism);  
<http://en.wikipedia.org/wiki/Vasugupta>

<sup>37</sup> <http://en.wikipedia.org/wiki/Ramānujāchārya>

<sup>38</sup> <http://en.wikipedia.org/wiki/Nimbarka>,  
<http://en.wikipedia.org/wiki/Dvaitadvaita>,

<sup>39</sup> [http://en.wikipedia.org/wiki/Shri\\_Madhvacharya](http://en.wikipedia.org/wiki/Shri_Madhvacharya)

<sup>40</sup> <http://en.wikipedia.org/wiki/Shuddhadvaita> and (Sharma, 1968).

<sup>41</sup> [http://en.wikipedia.org/wiki/Achintya\\_Bheda\\_Abheda](http://en.wikipedia.org/wiki/Achintya_Bheda_Abheda),  
[http://en.wikipedia.org/wiki/Chaitanya\\_Mahaprabhu](http://en.wikipedia.org/wiki/Chaitanya_Mahaprabhu)

<sup>42</sup> *Ātman* is elaborated in *Bṛihadāranyaka Upaniṣhad* ((Swami Krishnananda, 1983).V.6.1.p318-318) as follows: (i) the *Ātman* (self) is *Brahman*; (ii) the *Ātman* appears to be located in our own brain-body system as if it is finite, but is really the infinite cosmic consciousness which is *Brahman*; (iii) the *Ātman* is the smallest entity and *Brahman* is the biggest entity; (iv) since psychological functions such as intellect, feelings, will, etc. are all absent in deep sleep but we (self) still exist, *Ātman* is independent of our mental functions; (v) the *Ātman* is the subtlest of rationality in us and is external to the deepest in us; (vi) the *Ātman* is subtler than the subtle, deeper than the deep, smaller than the small; (vii) the *Ātman* is not small in a mathematical sense, rather smallness is in the sense of subtleness; (viii) the largeness attributed to *Brahman* is due to its infinitude; (ix) the deepest and subtlest *Ātman* in us is the same as the Cosmic Ruler, *Īshvara*, or *Brahman*; (x) the *Ātman* is indivisible; it does not have parts/components and any internal distinctions; and (xi) if our consciousness were limited to our own brain-body system, then consciousness of external objects would not be possible, so consciousness is also outside of brain-body system.

If *Ātman* is the same as omniscient, omnipotent, and omnipresent *Brahman*, then the individual *Ātman* should have these attributes; however, this is not the case. For example, do you know what is going

on other people's mind? The answer is negative. So the *Ātman* is subject-specific and we know only what is going on in our mind; we can only guess what might be going on other's mind by interacting with them. In the *Dvi-Pakṣa Advaita*, *Ātman*/self is the mental aspect of the state of self-related neural-network.

<sup>43</sup> See ('t Hooft, 2005).p4 for 'primitive' quantum field, (Bohm, 1990) for quantum potential, and (Hiley & Pylkkänen, 2005) for "*primitive mind-like quality* at the quantum level via active information". The primal entity has many names depending on science and religions. For example, *Brahman* in Hinduism, *Allāh* in Islām, God in Christianity, *Sunyatā* in Buddhism, the fundamental dual-aspect entity/*Brahman* in our DAMv/*Dvi-Pakṣa Advaita* framework, empty-space or quantum vacuum in physics and so on

<sup>44</sup> Adapted from (<http://en.wikipedia.org/wiki/Materialism>):

**[1] Axial Age** (ca. 800 BC-100 AD): During Axial Age, the term coined by Karl Jaspers, materialism developed, perhaps independently, in many countries of Eurasia, such as India, China, and Greek.

**India** (ca. 800-100 BC): The materialism, in Ancient Indian philosophy, developed by the proponents of the Cārvāka (800-500 BC, discussed in Section 3.2) school of philosophy, Ajita Kesakambali (~600 BC), Payasi (perhaps a contemporary of Buddha (563-483 BC), Kaṇāda (200 or 600 BC), and so on.

Ajita Kesakambali, perhaps the first Indian materialist, proposed the followings: (i) As per Brahmajala Sutta (Theravāda), Ajita propounded *Ucchedavāda* (उच्छेदवाद, materialism: the Doctrine of Annihilation after death) and *Tam-Jivam-tam-sariram-vada* (the doctrine of identity of the soul and body), which denied the separate existence of eternal soul. (ii) We are made of four elements (earth, water, fire, air). When we die, our earthly element returns and relapses to the earth, the fluid to the water, the heat to the fire, the wind to the air, and his faculties pass into space.

Payasi *Payasi-suttanta* and *Rayapasenaijja* (a Jaina work) were devoted to the refutation of Payasi's views. According to *Payasi-suttanta* (a Buddhist work), there is no other world (such as heaven and hell) beyond our own, no rebirth after death other than usual



mechanism from parents (such as transmission of genetic information), and there is no consequences of bad or good karma after death (except name and fame left after death) ((Chattopadhyaya, 1964) P.195); in addition, there is no life after death as per [Payasi Sutta](#).

[Kaṇāda](#) was an advocate of [atomism](#) (the natural world consists of two fundamental components: indivisible [atoms](#) and empty [void](#); atoms move in void, interact, and form clusters of various sizes). The [Nyaya-Vaisesika](#) school (600-100 BC) also developed one of the earliest forms of atomism, but their proofs of God and their hypothesis of consciousness not emerging from material entities excludes them being materialists. [Buddhist atomism](#) and the [Jaina](#) (900-600 BC) school carried forward the [atomism](#).

**China** (ca. 312–100 AD): [Xun Zi](#) (ca. 312–230 BC) developed the [Confucian](#) doctrine based on realism and materialism. [Yang Xiong](#) (53 BC–18 AD) and [Wang Chong](#) (27–c. 100 AD) were other notable Chinese materialists.

**Greek** (ca. 500–270 BC): Ancient materialistic [Greek philosophers](#) were [Anaxagoras](#) (ca. 500–428 BC), [Epicurus](#) (341–270 BC) and [Democritus](#) (ca. 460-370 BC). Their view was [atomism](#).

**[2] Common Era** (ca. 100-1500): Indian materialist [Jayaraashi Bhatta](#) (6th century AD) in his *Tattvopaplavasimha* ('The upsetting of all principles') refuted the [Nyaya Sutra](#) (ca. 200 BC) epistemology. [Ibn Tufail](#) (Abubacer: ca. 1105–1185), the [Arabian philosopher](#) and physcian, discussed materialism in his [philosophical novel](#), *Hayy ibn Yaqdhan* (*Philosophus Autodidactus*), where he vaguely foreshadowed the concept of a [historical materialism](#) (it looks for the causes of developments and changes in human society).

**[3] European Enlightenment** (ca. 1500-1872): [Pierre Gassendi](#) (1592-1655) represented the materialist tradition to oppose the interactive substance dualism of [René Descartes](#) (1596-1650) for the [natural sciences](#) with [dualist](#) foundations. The materialism was followed by [Jean Meslier](#) (1664-1729), [Julien Offroy de La Mettrie](#) (1709-1751), Paul-Henri Thiry [Baron d'Holbach](#) (1723–1789), [Denis Diderot](#) (1713–1784), [Ludwig Feuerbach](#) (1804-1872), and [John "Walking" Stewart](#) (1747–1822: all matter is endowed with a [moral](#) dimension that influenced the philosophical poetry of [William Wordsworth](#): 1770–1850). [Schopenhauer](#) (1788–1860) argued that a

materialist forgets to take account of himself or herself. He hypothesized that an observing subject, in objective third person perspective, can only know material objects through the mediation of the brain. However, in subjective first person perspective, the subject experiences the appearances of material objects. This seems to imply that materialism has problem of explaining experiences, which is currently called the (Levine, 1983)'s explanatory gap problem of materialism.

**[4] Marx's materialism** (1818-1900): Materialists [Karl Marx](#) (1818–1883) and [Friedrich Engels](#) (1820–1895) argued against the [idealist dialectics](#) of [Hegel](#) (1770–1831). They proposed two distinct concepts: [dialectical materialism](#) (every [economic order](#) grows to a state of maximum efficiency, while simultaneously developing internal contradictions and weaknesses that contribute to its systemic decay, i.e., we originate History through active consciousness: originated by [Moses Hess](#) (1812–1875)) and [historical materialism](#) (the materialist conception of history); they are related to [Marxism](#), [Scientific socialism](#), and [Communism](#). As per Marx, physical labor and practical productive activity are required to produce economic needs. [Scientific socialism](#) holds that social customs, values, cultural traits and economic practices are the products of the social environment and are not the property of some immutable natural law (as in idealism).

**[5] Scientific materialists** (1900-present): Many current physicalists or materialists—such as [Willard Van Orman Quine](#) (1908–2000), [Donald Davidson](#) (1917–2003), [John Rogers Searle](#) (1932–), [Jerry Fodor](#) (1935–), and [Daniel Dennett](#) (1942–)—trying how best to accommodate [mind—functionalism](#), [anomalous monism](#), [identity theory](#) and so on. Scientific 'Materialism' is somewhat [reductive materialism](#). [Paul](#) (1942–) and [Patricia Churchland](#) (1943–) proposed [eliminativist materialism](#): some mental phenomena (such as belief, will, consciousness) simply do not exist at all, they are a spurious [folk psychology](#) and [Introspection illusion](#). [Reductive materialism](#) is at one end of a continuum (theories will reduce to facts; also called mind-brain identity theory that asserts that [mental events](#) can be grouped into *types*, and can then be [correlated](#) with types of physical events in the brain. For example, mental pains is correlated with [C-fiber](#) firings) and [eliminativist materialism](#) on the other (certain

theories will need to be *eliminated* in light of new facts), [Revisionary materialism](#) is somewhere in the middle (a concept is only *partially* incorrect because it ignores a few important causal factors).

xxx

<sup>45</sup> Comments and Replies related to the seven problems of Interactive Substance Dualism (ISD) are as follows.

**(1) Association or mind-brain interaction problem:** If nature has two distinct aspects, namely, mind and matter, then how can these distinct aspects of nature ever interact (Stapp, 2009)?

**SH** (Syamala Hari): As I read the Stapp reference, it did not seem to me that Stapp is asking this question. Rather, he thinks that Von Neumann whose physics and philosophy Stapp fully accepts, has answered the question. To quote Stapp from this reference: “Quantum mechanics is therefore *dualistic* in one sense, namely the pragmatic sense. It involves, operationally, on the one hand, aspects of nature that are described in physical terms, and, on the other hand, also aspects of nature that are described in psychological terms. And these two parts interact in human brains in accordance with laws specified by the theory. In these ways orthodox quantum mechanics is completely concordant with the defining characteristics of Cartesian dualism.”

**Author (RLPV):** It is unclear what those laws are that can address the association or mind-brain interaction problem at brain level, neural-network-level, neural-level, molecular-level and electron/ion-level. I had email discussion with Stapp (see Section 2.2 of (Vimal, 2011a)). Von Neumann and Stapp’s views appear to claim the existence of independent conscious observer (soul/*Ātman*, independent of matter) that is necessary in measurements. They make a massive category mistake because mind interacts with matter whereas mind and matter are of two different categories (Feigl, 1967). Interactive substance dualism, materialism (mind from matter), and idealism (matter-in-itself from mind) certainly make category mistake; cross interaction is not allowed.

The ‘dual-aspect monism framework with dual-mode and varying degrees of the dominance of aspects depending on the levels of entities’ (DAMv) (Vimal, 2010c) does not have this problem. Same-same (mind-mind or matter-matter) interaction is allowed because it does not make category mistake; thus, the DAMv framework is a

better option which also makes Von Neumann and Stapp's view less problematic because the mental aspect of observer can interact with the mental aspect of entity that is being measured; same with physical aspects.

## **(2) Problem of mental causation**

**SH:** On pages 20-22 of (Hiley & Pylkkänen, 2005), Hiley and Pylkkänen say the following: Eccles drew on a proposal by (Margenau, 1984), according to which the ... mind may be regarded as a field in the accepted physical sense of the term. But it is a nonmaterial field, its closest analogy is perhaps a probability field. It cannot be compared with the simpler nonmaterial fields that require the presence of matter (hydrodynamic flow or acoustic). . . Nor does it necessarily have a definite position in space. And as far as present evidence goes it is not an energy in any physical sense.

Eccles suggested that this non-material field could change the probability of synaptic vesicular emission, provided that one appeals to quantum principles. He went on to propose that particular quantum effects can be used to control the frequency of exocytosis without violating the conservation of energy. (Beck & Eccles, 1992) concentrated on the function of spine synapses. Here the regulatory function that results from exocytosis occurs only with probabilities much smaller than one for each incoming nerve impulse. They therefore regarded this exocytosis as a candidate for quantum processes to influence neural activity. The appearance of the low transition probabilities in synaptic exocytosis implies that there exists an activation barrier against the opening of an ion channel in the presynaptic vesicular grid. Such barrier transitions can occur either purely stochastically by thermal fluctuations or by stimulation of a trigger process. Beck and Eccles proposed a two-state quantum trigger which activates the gating process by means of quasi-particle tunneling. The calculations given by Beck and Eccles suggest that this is an appropriate place for quantum tunneling to occur, so that the probabilities of exocytosis could be changed by a "mind-field".

Hiley and Pylkkänen consider this in light of the Bohm approach. They say that if the "mind-field" can be seen as containing active information which contributes to the quantum potential then the quantum potential effectively reduces the height of the barrier to increase the probability of exocytosis. Thus they regard the "mind-

field” as initiating a subsequent neural process which finally activates the motor neurons to produce the outward behavior. Thus they think that Eccles's view of the effect on the brain of a nonmaterial mind-field without violating laws of conservation of energy and momentum is possible in reality.

I wish to point out that this intuitive picture of the above action of the mind on its brain is realized in concrete mathematical terms in my paper “Mind and Tachyons: How Tachyon Changes Quantum Potential and Brain Creates Mind” accepted for publication in the Neuroquantology journal. You may take a look at the paper on <http://mind-and-tachyons.blogspot.com/>.

**Author:** Mental causation if has same-same then there is no problem, but if it is cross (mind causing matter or vice versa), then there is the category mistake problem.

**Beck and Eccles’ Mind-Field, Interactive Dualism, and the dual-aspect monism framework** (Vimal, 2010c): (Beck & Eccles, 1992) might be correct as far as quantum process in synapses is concerned for the information transfer between neurons via classical axon-dendritic neural firing (spikes) sub-pathway of both feed forward and feedback pathways.

However, as far as the subjective experience aspect of consciousness is concerned, Beck and Eccles’ mind-field (Beck & Eccles, 1992) has substance-dualism that has problems, so it is controversial. Stapp (Stapp, 1996, 2006) appears extending Beck and Eccles’ framework while addressing some of the problems of substance-dualism; some argue that Stapp’s view is close to solipsism (the skeptical philosophical idea that only one's own mind is certain to exist). However, because of these problems, I have avoided this approach. In neuroscience community (mostly materialists), Eccles’ framework is regarded controversial and there is no general consensus on it.

If we combine our DAMv framework (Vimal, 2010c) and Beck and Eccles’ quantum process in synapses (Beck & Eccles, 1992), then it would have fewer problems. This is because it will avoid category mistake.

Bohm is clearly dual-aspect monist (Vimal, 2010c). If tachyons (Hari, 2008, 2010a, 2010b, 2011a, 2011b) exist, they should be dual-



aspect entities; the mental-aspect of zero-energy tachyon field is the related mind-fields, which should interact with the mental-aspect of related neural-network(NN)-state to avoid category mistake. Similarly, the physical aspect of tachyon should interact with physical aspect of related NN-state.

### (3) ‘Zombie’ problem

**SH:** The assumption that nothing exists which cannot be verified by scientific verification which always takes the third-person point of view, or that outward behavior is important but not subjective experience is one of the assumptions of Dennett's theory and what Searle considers as the deepest mistake in Dennett's book, *Consciousness Explained*. Moreover, creation of a zombie itself is a problem that is being debated. A robot which simulates any given behavior of a human being can be constructed for sure, but first of all, it has to be constructed by conscious human beings; the robot does not come into existence all by itself. (Actually the purpose of creating robots is to have them carry out tasks without human intervention!). I would think neither can zombies come into existence on their own, at least we have not seen that happen. As far as I know, it is not yet a proven fact that a biological duplicate of a human being but which has no consciousness can be created; even if it is proved that it can be created by human beings, for that very reason, it presents no argument against mental causation in dualist theories. The “subtraction of the mind from the brain” has to be done by very intelligent minds with motivation to do it.

The remark “it makes no difference what happens in the world, because it does not cause behavior” is confusing. Even a zombie, if it exists, exhibits behavior which means responds to changes in the external circumstances.

On the other hand, how does a dual-aspect theory show that a duplicate of the neurophysical configuration of a given human being cannot be created or can be born somewhere else in the world by mere chance? A dual-aspect theory can only say that if a duplicate exists it is a complete duplicate of that person in both physical and mental make up.

**Author:** Materialism has problem; I agree. However, substance-dualism’s ‘zombie’ problem implies epiphenomenalism, which is also a problem.

I re-wrote this section as: **‘Zombie’ problem:** Substance dualism allows brains without conscious experiences (zombies) by subtracting the latter from the former. This implies ‘epiphenomenalism’: “mental events are caused by physical events in the brain, but have no effects upon any physical events” (Robinson, 2011). My zombie twin behaves just like me but it has no conscious experiences (Eerikäinen, 2000).

Yes, the DAMv framework (Vimal, 2010c) rejects zombie because the molecule-by-molecule replication of human will be conscious as the mental and physical aspects are inseparable. The DAMv framework predicts conscious robots.

**(4) ‘Ghost’ problem:** The suggestion here is that a dualist theory would allow for various paranormal phenomena and that none of them has yet been scientifically verified.

**SH:** The primary objection to a dualist theory is in fact that it can never be proved scientifically. That is true if the mental aspect is not scientifically defined. The tachyon hypothesis mentioned under problem (2) [the problem of mental causation] above provides the possibility to overcome this objection. As a matter of fact, even dual-aspect theories have not been experimentally verified as yet and neither does a completely monist theory exist which can claim that it has solved the mystery of consciousness. On the other hand, there are scientific experimental results which support dualist theories; for example, the delay and antedating of peripheral sensations experiments by Libet (Libet, 1996a, 1996b; Libet, Wright, Feinstein, & Pearl, 1979) cannot be explained by monist or dual-aspect theories but their results are possible in a dualist theory! (The paper referenced under problem (2) actually explains the Libet paradox.) Also, what about unconscious thought? For example, see (Westen, 1999).

**Author:** Libet is sympathetic to materialistic emergentism. As per (Wolf, 1999), “The ‘delay-and-antedating’ paradox/hypothesis refers to the lag in time of measurable cerebral electrical activity associated with a conscious sensory experience following a peripheral sensation. To account for this paradox, Libet suggested subjective antedating of that experience. In a series of studies (Libet et al. 1979, Libet 1996) several subjects’ brains showed that neuronal adequacy (critical neural activity) wasn’t achieved until a significant delay time

D as high as 500 msec following a stimulus. Yet the subjects stated that they were aware of the sensation within a few msec (10-50 msec) following the stimulation. Put briefly, how can a subject be aware of a sensation, that is, be conscious of it, if the subject's brain has not registered that 'awareness'? Many plausible arguments have been offered and refuted by (Libet, 1996a, 1996b; Libet et al., 1979) and others (Bergenheim, Johansson, Granlund, & Pedersen, 1996)."

As per (Libet et al., 1979): **(i)** Subjective experience of a peripherally-induced sensation does not have significantly delay compared to the experience of a cortically-induced sensation. **(ii)** However, the putative delay is up to about 500 ms to elicit the peripherally-induced experience for achieving the required 'neuronal adequacy'. **(iii)** A hypothesis is proposed to explain this puzzle: "for a peripheral sensory input, (a) the primary evoked response of sensory cortex to the specific projection (lemniscal) input is associated with a process that can serve as a 'time-marker'; and (b), after delayed neuronal adequacy is achieved, there is a subjective referral of the sensory experience backwards in time so as to coincide with this initial 'time-marker'." **(iv)** This hypothesis was experimentally tested in human subjects by appropriately implanted electrodes on the [medial lemniscus](#) (LM) and the surface of somatosensory cortex (C); the results maintained the hypothesis. The LM is the pathway in the [brainstem](#) that is composed of [medulla oblongata](#), [pons](#), and [midbrain](#) and carries sensory information from the [gracile](#) and [cuneate nuclei](#) of [medulla oblongata](#) to the [thalamus](#). The midbrain is comprised of [tectum/colliculi](#), [tegmentum](#), ventricular mesocoelia, [cerebral peduncles](#), and several nuclei and fasciculi. **(v)** In this experiment, the test stimuli to LM and C were arranged to require the minimum train duration of 200 ms or more for producing any conscious sensory experience in each case. **(vi)** "Each such cerebral stimulus could be temporally coupled with a peripheral one (usually skin, S) that required relatively negligible stimulus duration to produce a sensation." **(vii)** "The sensory experiences induced by LM stimuli were found to be subjectively timed as if there were no delay relative to those for S, that is, as if the subjective experience for LM was referred to the onset rather than to the end of the required stimulus duration of 200 ms or more." **(viii)** "On the other hand, sensory experiences induced by the C stimuli, which did not excite

specific projection afferents, appeared to be subjectively timed with a substantial delay relative to those for S, that is, as if the time of the subjective experience coincided roughly with the end of the minimum duration required by the C stimuli.” (ix) “A temporal discrepancy between corresponding mental and physical events, i.e., between the timing of a subjective sensory experience and the time at which the state of 'neuronal adequacy' for giving rise to this experience is achieved, would introduce a novel experimentally-based feature into the concept of psychophysiological parallelism in the mind-brain relationship.”

As per (Libet, 1996b), “I had previously proposed a hypothetical ‘conscious mental field’ as an emergent property of appropriate neural activities, with the attributes of integrated subjective experience and a causal ability to modulate some neural processes.” This implies that mind causes modulations in neural processes, which seems to make category mistake. This mistake can be avoided by the DAMv (*Dvi-Pakṣa Advaita*) framework, where the changes in mental aspect of neural-network(NN)-state is faithfully, rigorously, and automatically translated into the modulations in the inseparable physical aspect (neural processes) of that NN-state because of the *doctrine of inseparability* of mental and physical aspects.

Substance dualism can also explain the Libet’s paradox, but two different kinds of substances are needed, which is not necessary and less parsimonious as per the Occam’s razor. If *Atman* exists after death then it must be a dual-aspect entity because it carries the *Karmic*-impressions in the subtle body (physical aspect) for re-birth if *Brahman* is not realized and/or the intense desire for worldly entities still remains.

The dual-aspect monism (Vimal, 2010c) can address Libet’s paradox as follows: The phenomenal subjective experience (SE) of the sensation within a few msec (10-50 msec) following the stimulation is the mental aspect of related phenomenal-neural-network(NN)-state and the activity and this NN is the physical aspect. We need to investigate this early NN for faster route. Perhaps, this phenomenal awareness does not require re-entry and attentional related NN, which is time consuming as it may take up to 500 msec. The temporal delay of about 500 msec gives enough time to activate many re-entry and attentional related NN and hence this SE might be

access awareness/consciousness that can be reported precisely. Again, both aspects of related access-NN-state are involved, which needs further investigation. The atheist version of the *Dvi-Pakṣa Advaita* (DAMv) framework rejects ghosts because the mental and physical aspects are *inseparable*.

The data related to unconscious processing (Westen, 1999) can be explained by the DAMv framework. A unconscious thought, in the DAMv framework, is the mental aspect of the NN-state related to unconscious thought and its physical aspect is the related NN and activities as in conscious SEs (Vimal, 2010a, 2010b, 2010d, 2011g).

### **(5) Neurophysiological many-one/many relation problem**

**SH:** Whatever the theory of consciousness one may be pursuing, monist, dual-aspect, or dualist, the mental state is not directly accessible by scientific instruments. A monist claims that the phenomenal information of Chalmers, is a property of the physical brain states; a dual-aspect theorist believes that a given mental state is the other aspect of the mind/brain with a corresponding physical state; a dualist believes that mental and physical states are states of different substances with some rules of correspondence. No matter what the theory is, the relation between mental and physical states whether one-to-one, many-to-one or many-to-many, it can only be inferred in experiments in which the human subject whose brain is being measured reports his/her mental state to the experimenter. The experimenter only measures the physical state but not the mental state directly. So what is the difference between the various theories as regards neurophysiological testing? If the relation is not one-to-one, so be it, let the truth reveal itself.

A mental state is similar to a state of software in a computer; a corresponding hardware state (a neurophysical state in the case of the brain) is one which is a mapping of the software state. A computer's software can be coded in different languages. Depending upon the design, the same computer may carry more than one physical representation of the software like binary, hexadecimal, etc. But the brain's material is not electronic; hence the relation could be different (many-to-one, one-to-many etc.).

**Author:** The many-to-one or many-to-many relation is not unique type of relationship; it is less parsimonious. The DAMv framework (Vimal, 2008b, 2010c, 2012a) has *inseparable* mental and



physical aspects and hence has 1-1 relationship and does not have this problem. Psychophysical data are mostly from first person perspective, such as in color matching, which can be objectively recorded and analyzed as in (Vimal, Pokorny, & Smith, 1987). It is unclear what the advantage of interactive substance dualism (ISD) is if the DAMv framework can explain everything what ISD can. The criterion of the selection of metaphysics can be the lesser number of problems when two or all views can explain all the empirical data. The DAMv framework has the least number of problems, compared to all other views, which is the one of the main points for selecting it.

### **(6) Causal pairing problem**

**SH:** Quite a few researchers have presented rebuttals of Jaegwon Kim's ((Kim, 2005).p78-83) arguments about this problem. Starting from birth, the mind/brain keeps learning by receiving sensory inputs from the environment (including interactions with other living beings) and keeps accumulating experiences and strategies to respond to future inputs, in other words, information. This is a neurophysically proven fact. Hence the mind IS emergent and therefore overcomes the pairing problem according to (O'Connor & Wong, 2005). Why do you assume that the emergence is only materialistic? It is so in an electronic computer which does not have any phenomenal information to begin with but the brain is different from the computer in this very aspect. For example, see my article referenced under problem (2). It shows that more mental substance (in the form of tachyons) is created in every interaction with the environment. So a dualist theory does not assume that the emergence of brain/mind is purely materialistic. Along with materialistic emergence, new phenomenal information is also created and accumulated in the brain.

**Author:** Both materialistic and mentalistic emergences have their own explanatory gap problems. Emergentism is a mysterious view. ISD has causal pairing problem because of its own explanatory gap: how the separable mind (*Ātman*) can pair with matter (neural-network, neural, molecular, and electronic/ionic levels). The DAMv framework (Vimal, 2008b, 2010c, 2012a) does not have this problem because of the inseparability of aspects.

### **(7) Developmental problem**

**SH:** Life begins with the interaction of a certain mind (a chunk of some phenomenal information or mental substance) with some matter. Just like a complex program cannot be loaded into a pocket calculator, all the complex features present in the initial chunk of mind cannot function until the physical brain develops adequately. As life goes on, the brain gradually develops and is gradually able to manifest all the features that are dormant initially and at the same time, the mind also learns and accumulates more and more information. What the mind in a brain learns depends upon what it receives from outside as well as what its content already is at that time. (A computer's response depends upon both the input and the software content of the computer.) However, this does not necessarily mean that the self is powerless and is a slave of the physical system. Even twins brought up in a similar environment and looking alike may develop different behavioral tendencies if the initial content of their minds is different. For example, one may turn out to be a musician while the other is not; hence the development of the physical system itself could be guided by the initial mind or what you call self. So, the self starts life by starting interaction with matter and moulds the physical development later on as well. Of course, all this has to be proved scientifically but the point is that dualism does not necessarily imply that self is powerless as you say.

In a dual-aspect theory, the mental aspect acts on the physical aspect, for example, in a way similar to the quantum wave acts upon its particle in Bohm's theory. But to create a new mental feature, a new physical configuration has to be created first by interacting with some external material agent, which is then accompanied by its mental aspect. So, the emergence of self does depend upon material interactions. In the twins example above, a dual-aspect theory cannot accept the fact that one is a musician and the other is not.

**Author:** The objection related to the DAMv (*Dvi-Pakṣa Advaita*) framework is not tenable. The Cross interaction (mind on matter or vice versa) makes a massive category mistake. ISD (mind interacts with matter), materialism (mind from matter), idealism (matter from mind) all makes category mistake. The DAMv framework (the dual-aspect monism framework with dual-mode and varying degrees of the dominance of aspects depending on the levels of entities) does not make this mistake because aspects are *inseparable*, mind does not

act on matter or vice-versa. Furthermore, there is no mysterious emergence in the DAMv framework as discussed in (Vimal, 2012a) because a specific SE is selected from the SEs embedded in the mental aspect of neural-network-states via the matching mechanism. The DAMv framework accepts the fact that one is a musician and the other is not because the NN-states of twins can be different.

To sum up, The DAMv framework (Vimal, 2008b, 2010c, 2012a) is a better framework and is a middle path between materialism and interactive substance dualism (ISD) & idealism. It is unclear why we still need ISD instead of the DAMv framework.

**SH:** It does not seem to me that you addressed any of the various points I mentioned except for the one disagreement that substances of two categories cannot interact; this could be the basic assumption of DAMv which a dualist theory does not accept.

Tachyonic matter is above the light barrier whereas ordinary matter is below the barrier. The relativity theory says neither one can ever cross the barrier to go to the opposite side. Tachyon theories consider them as different substances and that interaction is possible; they do not say that a tachyon inevitably accompanies a material particle. So if you say tachyons and ordinary matter are dual aspects of the same thing, it may be so in a philosophical sense because everything is an aspect of the absolute *Brahman* but in scientific sense, one has to show first theoretically how a tachyon inevitably accompanies a material particle.

**Author:** I think that I have addressed all relevant issues. The *doctrine of inseparability of aspects* is for each entity; an entity could be the fundamental primal *Brahman*, tachyon, or any other entities. The degrees of the dominance of aspects vary with the levels of entities. In other words, the mental (M) aspect a brain-state can be a specific SE and its physical (P) aspect can be related NN and its activities; so both aspects are dominant in the wakeful conscious state of brain/mind. The mental aspect of the state of an inert matter appear latent in third person perspective; however, we need to be that matter to understand what its first person perspective might be. Its physical aspect appears dominant. We know from physics with evidence that physical aspects (P-P) interact, i.e., same-same interactions (P-P and M-M) are allowed. Cross-interactions (M-P or P-M) are prohibited because there is no scientific evidence and they

make category mistake. Perhaps, interactive substance dualism, materialism, and mentalistic idealism do not honor category mistake. They allow subjective experiences (SEs) (such as redness) to interact with matter (such as redness-related-V4/V8/VO-neural-network); please give us some evidence for SEs interacting with matter and precisely how.

**SH:** In our experience of the world, we have not seen a purely material interaction that is, an interaction involving only lifeless matter ever generate phenomenal information. So even in a dual-aspect theory in which you say the mental aspect is dominant in living matter but not in lifeless matter, at least one participant in an interaction should be living matter for the result to produce recognizable experience. So, for example, when one sees a red flower first and then a blue flower later, and recognizes that the latter color is different from the former, this awareness is the result of an interaction in which the red experience and the blue experience both must have been participants. Because a computer on the other hand, can also tell the outside world that the latter color is different from the former but it never has any experience. When the new awareness of blue color is produced in the brain, in all quantum theories of consciousness I know, there should be an accompanying quantum collapse of the physical brain (for example, (Stapp, 1995)). What the quantum theories do not say is why a quantum collapse of the physical brain should produce awareness when no collapse of a lifeless quantum system ever produces awareness. At least we have not so far seen that happen. In my paper mentioned in my comments, I showed that new tachyons (new SEs) are produced when the collapse occurs.

**Author:** In the DAMv framework (Vimal, 2008b, 2010c, 2012a), the mental aspect is from the subjective first person perspective and the physical aspect is the objective third person perspective. This means, we do not know what the subjective first person perspective might be for inert entities, we have to be them to know (if any!).

I agree with you that materialism (that uses classical physics) cannot explain subjective experiences. In the DAMv framework (Vimal, 2008b, 2010c, 2012a), I have precisely and rigorously shown how a specific SE is selected via quantum conjugate matching mechanism. I had long email discussion with Stapp related to

quantum collapse, which is given in Sections 1.3 and 2.2 of (Vimal, 2011a). For example in Section 1.3:

**(I)** Since horizontal cut is needed to conform to quantum mechanics (QM), there are 4 possible horizontal cuts in the DAMv framework (Vimal, 2008b, 2010c, 2012a):

(HC1) *Mind-Matter Interaction*: The Heisenberg type horizontal cut between (a) the mental aspect ('abstract ego') of observer-dependent cognitive feedback signals related higher level brain areas including cortical midline structures (CMS) for self and their neural activities and (b) the physical aspect of stimulus-dependent feed-forward signals related lower and intermediate level brain areas and their neural activities/representations. This is close to Stapp's framework in QM.

(HC2) *Matter-Mind Interaction*: The horizontal cut between the physical aspect of cognitive feedback observer-dependent part of neural-network and the mental aspect of feed-forward stimulus-dependent part of neural-network. This cut does not appear interesting and relevant.

(HC3) *Matter-Matter Interaction*: The horizontal cut between the physical aspect of cognitive feedback observer-dependent part of neural-network and the physical-aspect of feed-forward stimulus dependent part of neural-network. This is usual neurophysiological feedback-feed-forward signal interaction.

(HC4) *Mind-Mind Interaction*: The horizontal cut between the mental aspect of cognitive feedback observer dependent part of neural-network and the mental aspect of feed-forward stimulus dependent part of neural-network. This is a novel mind-mind interaction and is proposed in the DAMv framework.

The horizontal cuts (HC1) and (HC2) involve 'category mistake' (Feigl, 1967; Vimal, 2010c) because mind and matter are two different categories and it is not crystal clear how the observer-dependent mental aspect can interact with stimulus-dependent physical aspect. Orthodox QM assumes that they simply interact, as the *brute fact*, is not sufficient because of the failure of "principle of understandability" for many investigators; it is also mystery to me.

One could argue that if the 'abstract ego' acts by her 'intention' to make measurements and to perform experiments in a certain way, then this intention has to be expressed in terms of neural-activities,



and brain areas must be involved for generating certain action. In other words, HC1 has to take the help of HC3 for the interaction of ‘abstract ego’ with matter, where HC3 is a matter-matter interaction. The horizontal cuts (HC3) and (HC4) are less objectionable because they avoid category mistake.

HC3 and HC4 are precisely and rigorously implemented in (Vimal, 2010c). Furthermore, if the matter-matter matching via the interaction between the physical aspects of neural signals as in HC3 is accomplished then mind-mind matching is automatically, rigorously, precisely, and faithfully accomplished. This is because the physical and mental aspects of an entity are in 1-1 relationship and cannot be separated because of the *doctrine of inseparability*. If there is any change in one aspect then that change will be reflected in other aspect faithfully, precisely and automatically. Similarly, *vice-versa*, i.e., if mind-mind matching via the interaction between the mental aspects of neural signals as in HC4 is accomplished then matter-matter matching is automatically accomplished because physical and mental aspects of an entity-state are *inseparable*.

**(II)** The DAMv framework maintains that (i) the mental and physical aspects of an entity never get separated and (ii) have 1-1 relationship, and (iii) if any change occurs in its physical aspect (in the objective third person perspective) that change will be reflected in its mental aspect (in the subjective first person perspective) and *vice-versa*. Thus, this framework maintains the principle of the causal closure of the physical-mental (not just physical). Therefore, the mystery of ontology is uncovered. In other words, the mental part could NEVER veer of in some completely tangential direction because both aspects will never get separated as this is **substance monism** and property dualism in the sense of inseparable dual-aspect (the DAMv) framework. However, in substance dualism or materialism this mystery remains.

**(III)** In the DAMv framework (Vimal, 2008b, 2010c, 2012a), the physically described aspect, evolving in accordance with the Schrödinger equation, matches the experienced reality via the matching and selection mechanism as briefly elaborated above in (I). The details are given in (Vimal, 2010c). My use of the term ‘soul’/ ‘*jīvātman*’ has the same meaning as ‘abstract ego’ because both have independent existence and independent ontology.

**(IV)** Please note that, in the DAMv framework, both aspects never get separated from each other; both aspects co-evolve and co-develop very closely as detailed in (Vimal, 2008b). Therefore, I do not see any failure.

**(V)** The matching mechanism involves the interaction between stimulus-dependent feed-forward signals and cognitive feedback signals in a re-entrant neural-network. Then the selection of specific subjective experience (SE) out of many possible SEs occurs; this is what I mean by the term ‘collapse’ of many SEs to one specific SE. It takes time for these neural processes. I agree that there are problems with Penrose-Hameroff OR-Orch model (Hameroff & Penrose, 1996; Hameroff & Penrose, 1998; Hameroff & Powell, 2009) but they are trying their best to address them (Hameroff, 1994; Hameroff, 2009; Hameroff & Penrose, 1998). My framework involves 5 pathways. If their quantum pathway turns out to be wrong, then there are still 4 more pathways to work on.

**(VI)** I do not see that my framework is not compatible with physics. Details are given in (Vimal, 2010c, 2010e, 2010f, 2010g).

Furthermore, *Bṛihadāraṇyaka Upaniṣhad* that has ISD and idealism honors category mistake and implicitly implies the DAMv framework. For example, the following implies the dual-aspect nature of light and our visual system. “The sun connects itself with the eye by the rays that he projects. The rays emanate from the sun and impinge on the retina of the eye. Then the eyes begin to see the brilliance of the light of the sun, and the same light when it falls on an object of sense becomes responsible for the perception of that object through the eye. But, it is not merely the light of the sun that is responsible for this perception of the object outside. There is something inside us without which perception would be impossible. The conscious element within us that peeps through the eyes and receives the impressions of light emanating from outside brings about connection with the form of light outside. It may appear for all precise purposes that light is inert and unconscious and that we are conscious; that the perceiving individual is conscious and that the light that is responsible for the perception of an object is inert, physical. The Upaniṣhad, at least, does not believe in an ultimate physicality of things. Even the so-called physical objects are ultimately spiritual in their nature, because logic and ratiocination

compel us to accept that dissimilars cannot come together and coincide. Consciousness cannot come in contact with that which is dissimilar in its character. Light and consciousness cannot come in contact with each other if consciousness were something different in nature from the light through which perception is made possible. If light is wholly material, unspiritual, or non-spiritual, bereft of the element of consciousness, consciousness cannot come in contact with it. Then there would be no such thing as the perception of an object. So the Upaniṣhad says that the idea that light outside is physical, and not endowed with consciousness, is erroneous. There is a Puruṣha in the sun as well as in the eye. The consciousness that is responsible for the action of the eye in the perception of an object, the consciousness which actually becomes aware of the presence of an object, is connected with the Puruṣha, or the consciousness in that which emanates the light, or projects the light. ‘The Puruṣha in the sun is the Puruṣha within you.’ *Dakṣiṇe’kṣan puruṣaḥ tāv etāv*: That which is within him, that which is within me, that which is within you and that which is within the sun—they are one. If the two are not one, there would be no connection between light and eye. The connection between the light and the eye and the correlativity of the action of light and the action of the eye implies that there is a similarity of structure, similarity of being, similarity of essence and reality between the sun and the eye” ((Swami Krishnananda, 1983).V.5.2.p313). These arguments can be for both ISD and the DAMv framework, but latter has the least number of problems so it is better.

<sup>46</sup> The color area ‘V8/V4/VO’ refers to visual area V8 of Tootell-group (Hadjikhani, Liu, Dale, Cavanagh, & Tootell, 1998; Tootell, Tsao, & Vanduffel, 2003), visual area V4 of Zeki-group (Bartels & Zeki, 2000), and VO of Wandell-group (Wandell, 1999); they are the same human color area (Tootell et al., 2003). VO is ventral-occipital cortex.

<sup>47</sup> In the DAMv framework, for OBE/NDE, the mental aspect of the relevant NN-state (a psychophysical entity) appears projected outside (as we experience outside objects). However, activities (such as visual and auditory) are still going on in NNs (but not detected clinically). To reject this hypothesis, subject must wear eye-patches and ear-plugs effectively so no external stimulus-information can travel inside

visual and auditory system. Under these conditions, the DAMv hypothesis predicts no visual and auditory OBE/NDE related to external objects; however, endogenous OBE/NDE can still occur.

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<sup>48</sup> The hypothesis of life-after-death based on Out of Body Experiences (OBEs) and Near Death Experiences (NDEs) is pseudoscience: the science-like that is based on logic without scientific solid evidence for the interpretation of data. OBEs/NDEs as discussed by (Laws & Perry, 2010) and others along with my comments are as follows:

**(i)** OBEs are “episodes, during which a person’s consciousness seems, according to their subjective recall afterwards, to ‘leave’ the body, and therefore the physical brain, remaining aware of physical surroundings.”

**(ii)** OBEs frequently combine NDEs. NDEs appear “to transcend physical surroundings and enable subjects to perceive an ‘after life’ scenario.”

**(iii)** OBEs are usually associated with extreme emotional/physical factors such as (a) NDEs: survival after death, actual short periods of *brain death*, or flat lining, which less open to delusion, fraud, or contamination by sensory input during minimal consciousness; and (b) extreme stress, drug intoxication, shamanic journeys, and telepathy.

**(iv)** OBE/NDEs are reports have been accumulated over many years and across many cultures; they are now increasing because of improved technology for resuscitation of patients.

**(v)** OBE/NDEs usually “include the sensation of ‘rising’ out of one’s body, and actually being able to ‘hover’ above it and look down on it, being still visually and aurally aware of surroundings even if unconscious, from a viewpoint outside the physical body, somehow independent of physical eyes or ears.”

**(vi)** “Sometimes this disembodied consciousness moves to another room or place, even outside. Especially if the subject is in extremis, in a coma or flatlining, the experience may then go on to the classic NDE. The subject moves through a dark tunnel, with a light at the end. They may ‘see’ their life history, the ‘life review’ feature. They emerge into this light, to awareness of feelings of peace, happiness, an awareness of a benign intelligence, a state they would wish to stay

in. Typically, they encounter loved ones who have previously died, who explain to the subject, that they can't stay but must return to their body until the time is right."

**(vii)** "These experiences occur in many cultures, indeed, sometimes a culture- or religion-specific figure is present, but generally, the experiences do not conform to the taught dogmas of the subject's religion or culture. There is often a 'boundary' between the subject's state and that of their loved ones, which may be culturally determined, eg a river, a line, a wall, that must not be breached. Instead, the subject is guided or sent back into the body. The conscious subject typically recalls their experience as very clear, detailed, and coherent. The individual commonly reports this as a life-changing experience, with feelings of peacefulness, lack of fear of dying, and happiness which remain with them and shape the rest of their lives."

**(viii)** "It has to be said that sometimes the experience of the OBE/NDE is not so positive. Frightening, 'warning' experiences are also reported. There is a tendency to associate these with would-be suicides, being 'warned' against self-slaughter, or drug fuelled states, but there are some instances of negative NDEs not associated with these states. These instances are not so often cited, for obvious reasons."

**(ix)** "We'd all like to think that if consciousness survives death, of which those who have NDEs become subjectively convinced, it will be a pleasant experience. This feature of 'wishful thinking' can become a distorting factor, in the Chinese Whispers effect."

**(x)** (Greyson, 2000) found that 98 reported NDEs and 38 did not. These NDEs were linked to dissociative experiences, such as periods of time unaccounted for, feeling unfamiliar with one's surroundings even one's own body or amnesia. These were not psychiatric disorder, rather they were non-pathological responses to stress.

**(xi)** (Lange, Greyson, & Houran, 2004) surveyed using the Greyson's NDE scale (Greyson, 1983, 1990) reported that NDEs reflect peace, joy and harmony with increasing intensity. As per QM, the observer influences and determines the observed. However, the interactive substance dualism (truly detached independent scientist/observer) has problems.

**(xii)** (French, 2005) proposed the following explanations of NDEs:



(a) Spiritually, consciousness detaches from its neural correlates that presumably provides glimpse of afterlife. (b) Psychologically, NDEs can be considered as the defense mechanism in extreme danger. (c) Biologically, NDEs may be due to anoxia, cerebral hypoxia, hypercarbia, which cause the release of endorphins and other brain neurotransmitters; these induce temporal lobe hyperactivity and hallucinations. (d) Rationale: A patient with near-death brain does not show any measurable activity (such as ‘flatlining’). Therefore, This type of patient’s experiences may not be sensory-stimulus dependent. To test this hypothesis patient should have ear plugs and eye patches; if NDEs disappear then NDEs could sensory-stimulus dependent. Otherwise, one of the factors for NDEs might be the physiological effects of anoxia/hypoxia. (e) Furthermore, similar experiences are reported during the electromagnetic stimulation of the brain, the use of drug ketamine, and extreme fatigue. Therefore, one could argue that NDEs might be hallucinations (not real experiences) induced in a damaged brain.

**(xiii)** One could argue for NDEs/OBEs/consciousness may be outside of the brain because these experiences have well-organized narrative, great clarity of thoughts, and recall, whereas hypoxia has mental confusion. To test this hypothesis, authentic empirical verification of some of NDEs/OBEs (such as seeing doctors, nurses, and things outside of room and so on) is needed. If verified rigorously, then it will not be easy to reject interactive substance dualism.

**(xiv)** Some of NDEs/OBEs may not be easy to verify scientifically, such as (a) peaceful ‘out of body’ experience, (b) the tunnel, (c) the wonderful light holding ‘god’ like intelligence and love, (d) deceased loved ones waiting for us, (e) the life review, and (f) the feeling that everything that happens actually makes sense.

**(xv)** (Yamamura, 1998)’s Japanese-study reported that 14 out of 48 deep coma patients, who subsequently reported NDEs, such as (a) flying in a dark void with a light ahead, (b) encountering relatives and friends, and (c) returning to the world in response to a voice calling, (d) finding ‘sincere values’ afterwards, and (b) viewing death as a peaceful calm experience.

**(xvi)** (Lai, 2007) Taiwanese-study reported that 45 (young, religious women were usually in this group) out of 710 dialysis patients reported NDEs, such as (a) OBEs, (b) precognitive visions, (c) tunnel

experiences. After effects were (a) being kinder to others and (b) being more motivated towards better life. These effects suggest that NDEs have (a) evolutionary advantage and (b) real psychological positive effects, even if we do not know NDE's intrinsic underlying mechanisms. For example, if in NDE, the patient's deceased mother is waiting for him/her at the end (real or hallucination does not matter much if belief is strong), a sense of good feeling arises and the fear of death reduces.

**(xvii) Consciousness outside vs. inside:** OBEs/NDEs are reported (a) under extreme stress, such as traumatic childbirth, (b) during fleeting *brain death* or (b) the use of shamanic plants, drugs, meditation and so on. Subjects report 'seeing' people, light, rivers, walls, and so on. How could someone 'see' with non-functional physical eyes and cortex?

One could speculate that some form of consciousness operates outside the brain-body system and perceives in more than 3D (10D in string theory). One could further speculate that returning patient's brain 'translates' what was perceived 'outside' 3D perception into 'normal' 3D using their own culturally influenced imagery in just a few seconds.

On the other hand, if NDEs/OBEs are just brain-constructs, the whole NDE happened in seconds as consciousness returned from the unconscious state and nothing happened during the state of clinical death. The brain tried to make sense of the interruption in self-consciousness. One could argue that afflicted brain may have tendency, developed through natural selection, to help the species live less traumatized lives after major trauma. However, NDEs/OBEs are for very few patients, not all. In other words, this hypothesis of NDEs/OBEs is true for very few privileged patients, not all. Patients who do not have NDEs/OBEs and who have PTSD will contradict this hypothesis. Therefore, it is unclear if the natural selection is the underlying mechanism of NDEs/OBEs.

**(xviii) Brain and Quantum Processes:** One could argue that the brain itself uses quantum processes, which could range up to  $10^{-15}$  s. (Persinger and Koren, 2007; Persinger et al., 2008) argue that brain-space can contain very large amount of information and space-time increments. (Radin, 1997; Radin, 2006) argue for QM to explain psychic phenomena scientifically. (Schwartz, Stapp, & Beauregard,

2005) have proposed neurophysical model of mind-brain interaction using quantum physics in neuroscience and psychology.

**(xix)** *Remote viewing as NDEs/OBEs*: NDEs/OBEs also include remote viewing when clinically dead, such as (a) rising out of the body and ‘seeing’ the doctors and nurses in the ICU, (b) ‘listening’ their conversation and/or nurse’s remark, and (c) ‘seeing’ if doctor drops something. As per orthodox thinking, patients should not have no coherent thoughts or experiences during clinical death. In the ‘standstill’ procedure (in 1991, patient PR), for brain surgery to take place, (a) the body is deeply chilled, (b) the brain is drained of blood, (c) the heart is stopped, (d) anaesthesia is applied (so it is not near death procedure), and (e) PR entered the room while awake. The period for the actual ‘standstill’ and flatline was only a few minutes. (Sanborn, Malmberg, & Shiffrin, 2004) described a clear timeline of events in the operating room and PR’s reported OBEs that presumably occurred during flatline; however, one could raise questions on the authenticity of the PR’s report although it has witnesses. PR observes her own operation or part of it from outside her own body such as: (a) ‘hearing’ instruments and conversations of medical staff, (b) ‘seeing’ procedures applied to her own operation including the bone saw, (c) ‘hearing’ remarks made on the smallness of her veins, and (d) ‘experiencing’ the classic transcendental NDEs. PR’s hearing may be due to incomplete anaesthesia and earplugs without soundproof (Augustine, 2007) and other OBEs may be due to hypoxia (Woerlee, 2011, June 20).

**(xx)** *Speculations*: One could further argue that: (a) brain may still be functional in some relevant way in clinical death; (b) there may be some forms of consciousness that may be detectable as science advances, such as related to quantum processes at subatomic levels or superfast speeds; and (c) gamma brainwaves were recently detectable, so as technology advances, other waves may be detected. If we have even one case that could be scientifically/empirically verified, then we may be able to model better. Other parapsychological phenomena (shamanic journeys, telepathy, and telekinesis) and models may be interesting as well. It would be interesting to investigate biological equivalents of quantum tunnelling, the uncertainty principle, and string theory. (Sheldrake, 2005; Schmidt, 2004) found small but statistically significant effects

of mind on mind and (Radin and Ferrari, 1991) seems to find the effect of mind on matter. These may involve non-local indirect interactions; currently understood mechanisms cannot explain them. The ‘influence of the observer on the observed’ is one of the premises of QM. In other words, just one verifiable case of OBE could revolutionize biomedical science as quantum physics did to classical physics.

**(xxi)** Alternative explanations: One could argue NDEs/OBEs might be hallucinations; signals might have come from their long-term memory to some extent. In other words, OBEs/NDEs are all long-term memory activated information remain intact after clinical death, it tries its best to survive by making up stories. This means we have excellent protective system. In OBE, the patient’s brain-mind-state may construct experiences that *appear* as OBE in its mental aspect, but its physical aspect may still be some relevant NN and their residual activities.

(Beauregard, Courtemanche, & Paquette, 2009) measured brain activity in subjects with NDEs using fMRI and EEG during Meditation and Control condition. In the Meditation condition, subjects mentally visualize and emotionally connect with the ‘being of light’ supposedly encountered during their NDEs. In the Control condition, subjects mentally visualize the lamp light. The fMRI-activated areas were right brainstem, right lateral orbitofrontal cortex, right medial prefrontal cortex, right superior parietal lobule, left superior occipital gyrus, left anterior temporal pole, left inferior temporal gyrus, left anterior insula, left parahippocampal gyrus and left substantia nigra. The EEG-activated (a) theta power were detected at FP1, F7, F3, T5, P3, O1, FP2, F4, F8, P4, Fz, Cz and Pz; (b) alpha power at FP1, F7, T3 and FP2; and (c) gamma power at FP2, F7, T4 and T5. These brain regions are also involved in positive emotions, visual mental imagery, attention or spiritual experiences.

(Fox, 1962) proposed that OBEs are related to astral projection that is a record of OBEs. (Tart, 1967) analyzed the content of OBEs that include: (a) possessing a nonphysical body, (b) floating, (c) ‘seeing’ one’s physical body from the outside such as by hovering over it, (d) thinking of a distant place while ‘outside’ and suddenly finding

oneself there, and (e) being absolutely convinced the OBE was not a dream.

(Persinger, 1974) analyzed the temporal sequence of OBEs as: (a) a progression from 'being pulled by a force', (b) awareness of the 'consciousness' looking down on the physical body, (c) floating sensations 'like the wind', (d) movement through space by 'thinking' or 'willing', and (e) a voice telling the person to 'return' or 'go back' to the body. In the lifetime of a normal person, OBEs are not expected except when a brain is in pathological state, such as in the acute minor functional reorganization of the right hemisphere (a) during extreme metabolic states that typically diminish the blood flow or perfusion rates, (b) after mild brain injury (Persinger, 1994), or (c) during appropriate electrical stimulation within the temporoparietal regions.

(Saroka, Mulligan, Murphy, & Persinger, 2010) produced artificial OBEs (such as the self detached from the body and moving through space) in normal subjects using a brief exposure to the magnetic field generated from 64 solenoids designed to affect the brain-fields. Within a few seconds after the 5-min stimulation, (a) subjects felt mild lightness followed by (b) the feeling of floating, then (c) intermittent 'rushes of anxiety or sensations of falling' similar to motion sickness, (d) these 'rushes' became more and more frequent and were associated with feelings of dissociation from the body and a loss of body image and awareness, (e) the experience lead to the feeling that subject's head was floating above the spot where his body was sitting, (f) then subject could not distinguish between his limbs, his torso, or the surrounding space and objects in the room, and (g) subject asked to terminate the experiment, and then he felt fatigue and headache. Left temporal lobe (linked with the sense of self and consciousness) and right prefrontal areas (associated with spatial navigation) had high EEG-activities in 4-7 and 15-21 Hz band. The signals for the 'left temporal-right prefrontal coherence' started from left temporal areas to left frontal areas to the right frontal areas. This reconstructs the autobiographical memory about where, when, and with whom an event occurred (Buckner & Petersen, 1996) and then 'mental timetravel' could entail OBEs. The above coherence entails (a) the feeling of separation of the self from the body, (b) the 'movement in space', (c) 'thought' as the central frame of reference to control this



movement, and (d) the feeling of being somewhere else. If the magnetic field stimulation is stopped suddenly, OBEs decreased. Furthermore, one could argue that the states of consciousness are analogous to quantum states embedded with cerebral fields, where the fields contain quantized points.

Transcendental Meditation *Siddhi* also leads to the feeling of lightness and flying/floating. The intrusion of left hemispheric field in right hemisphere space can be interpreted as: (i) the intrusion is the physical cause for OBE as per physicalism, (ii) soul/self can be separated from its body (disembodiment) as per interactive substance dualism or theist religions, (iii) OBE is the mental aspect of the state whose physical aspect is self-related neural-network that also involves left-temporal and right-frontal areas along with CMS, and is caused by the intrusion as per dual-aspect monism. The interpretation (iii) is *optimal* because it has the least number of problems. It is indeed amazing how powerful the brain is.

*An alternative hypothesis:* At near death state, system may become introverted (immersed in thinking and experiencing process for survival purpose, in analogy to head of the state is put into best protected cell from war. Outside, there may be no sign of life, but self might still be alive with intact memory before information-theoretic death and with very little nutrients in analogy to hibernation. I might be thinking/experiencing deeply but outside I might appear unconscious or dead. Varied experiences might occur for the survival of the system.

<sup>49</sup> See also <http://en.wikipedia.org/wiki/Hiranyagarbha> and [http://en.wikipedia.org/wiki/Hindu\\_cosmology](http://en.wikipedia.org/wiki/Hindu_cosmology)

<sup>50</sup> One could ask: the mental or physical aspect of ‘what’. Strictly speaking, it is the mental or physical aspect of the *state* of an entity (or the state of the representation in the brain/mind system (Velmans, 2008)), such as mental or physical aspect of neural-network (NN)-state. However, ‘the mental or physical aspect of entity’ is also sometimes used in my other articles with the same meaning. A subjective experience (SE) is an *expressed/actualized/realized* first person conscious experience that occurs/arises/emerges during

interaction between feed-forward signals and feedback signals in a NN, which satisfies the *necessary* ingredients of consciousness (Vimal, 2011e) such as the formation of NNs, wakefulness, re-entry, attention, working memory (Rowlatt, 2009), stimulus at above threshold, and NN-proto-experiences (PEs). In general, PEs are precursors of SEs. In hypothesis **H<sub>1</sub>**, PEs are precursors of SEs in the sense that PEs are superposed *potential* SEs in unexpressed form in the mental aspect of the state of each entity, from which a specific SE is *realized* through the matching and selection processes in brain-environment system (Vimal, 2010c). In hypotheses **H<sub>2</sub>** and **H<sub>3</sub>**, PEs are precursors of SEs in the sense that SEs *somehow* arise/are realized/emerge from PEs, as elaborated above and in (Vimal, 2012a) and (Vimal, 2009i, 2009j, 2010e).

<sup>51</sup> The dual-mode concept is derived from the framework of thermofield dissipative quantum brain dynamics (Globus, 2006; Vitiello, 1995).

<sup>52</sup> Entropy is related to time in the thermofield dissipative quantum brain dynamics (Globus, 2006; Vitiello, 1995).

<sup>53</sup> We categorize all entities of our universe into two categories: mental (M) and physical (P) entities. Then reductionism (M reduces to P), physicalism (M from P), idealism (P from M), and non-Cartesian interactionism (James, 1890/1952; Lowe, 2006; Scharf, 2010)/interactive-substance-dualism (M-P or P-M interactions) make category mistake because of the cross-interactions (such as M-P or P-M). Only dual-aspect monism with *inseparable* mental and physical aspects, with same-on-same (M-M or P-P) interactions, is free from such mistake.

<sup>54</sup> As per (Swami Krishnananda, 1983), “In this [liberated or *Samādhi* state] state, all social relationships also get engulfed. All feelings which are associated with the human personality are transcended once and for all. All the values that you regard as worthwhile in life are superseded at one stroke. You have feelings for father, mother,

brother, sister, high, low, etc. in waking life in this individual state, but when you reach the Absolute you have no such relationships. All relationships are completely overcome in the unity of that Being. There is neither father nor mother. *Atra pitā'pitā bhavati, mātā'mātā, lokāḥ alokāḥ*. The father becomes no father; the mother becomes no mother; and the worlds cease to be worlds. Though these worlds, these universes are present there, no doubt, they are no more called worlds; they become the very substance of that experience of liberation. [22.p244...] 'While one does not see anything there, one sees everything there'— *yad vai tan na paśyati, paśyan vai tan na paśyati*. Seeing, one sees not. It is enigmatic no doubt, very difficult to understand how it is that seeing, one sees not. One sees all and yet sees not anything as a particularised entity. It is a single comprehension and not a perception in succession. It is not looking at things, seeing objects one after another in a linear series. It is a total, instantaneous awareness of all things. You cannot say that anything is being seen there, because anything that is to be seen has become a part of the Seer himself. [23.p245...] *Na tu tad dvitīyam asti, tato'nyad vibhaktam yat paśyet ...* The being of the object has become the being of the Self which sees and which has to see. Inasmuch as there is a total transcendence of duality, a complete abolition of the distinction between one and the other, the desire to perceive ceases. And so, there is a 'non-seeing' of anything, and yet a seeing eternally of everything. [23.p246...] If you can station your consciousness in this feeling of unity with things, if you can fix yourself in this identity and free yourself from the trammels of desire for external objects, you are in Brahma-loka just now. Brahma-loka is not the distant world of Brahma. It is the world which itself is Brahman, the Absolute— *eṣa brahma-lokaḥ*. The two, the world and Brahman, become one. ... All the joys of the entire cosmos put together would be only a small drop of the bliss of this Supreme Being. ... The Supreme Being is the pinnacle of happiness. The Absolute is the climax of all joys. Nothing can be compared to that state of perfection. [32.p247]" ((Swami Krishnananda, 1983).IV.3.22,23,32.p244, 246, 247).

In *samadhi* state, there are three kinds of experiences: the Bliss, the inner light perception, and the unification of self/subject with environment/objects.

<sup>55</sup> ***Brhadāraṇyaka Upaniṣhad: V.5.1: Satya: Sa-ti-ya vs. KANT's noumenon-phenomenon-noumenon:*** As per (Swami Krishnananda, 1983), “Truth is an object of meditation. [...] Sa [MIR-truth], ti[cMDR=untruth], ya [MIR-truth]—these are the three letters which form the word Satya.’ Now, symbolic is the interpretation of the meaning of these three syllables. The Upaniṣhad tells us that truth envelopes everything and there is that particular character about truth which is encompassing everything. It is present everywhere, in every part of this world, and what you call untruth is a meagre frail existence in the middle of this all-consuming, all-enveloping Being which is truth. Or to put it in more plain language, the phenomenon [appearance: cMDR] that we call this creation, which is sometimes called the unreal or the relative, is enveloped by the real or the neomenon [noumenon: thing-in-itself: MIR]. The neomenon is real; the phenomenon is the unreal. But the phenomenon is enveloped by the neomenon. Reality encompasses the whole of existence. It is present everywhere, it covers untruth from all sides as if to swallow it and to give it only the character of an appearance. Even what you call appearance or phenomenon has an element of reality in it. So the Upaniṣhad says that truth is present even in untruth. The Absolute is present even in the relative; the neomenon is present even in the phenomenon; reality is in the appearance also. If reality were not to be in the appearance, there cannot be any appearance at all because appearance must also appear. If the reality element were not to be present in appearance, appearance will not appear even. Then there would be no such thing as appearance. The relative reality that we attribute or conceive to what we call appearance is due to the presence of a degree of reality in it. So, reality is present everywhere. It covers unreality from both sides, from every side. Likewise, is the import of the syllables of this word Satya. Sa is reality; Ya is reality; the middle one, Ti, is unreality. [...]

The commentators tell us that the middle syllable, Ti, is called phenomenal, a form of death or unreality, because this letter Ti occurs in such words as Mṛtyu, Anitya and such other words which denote unreality or phenomenality. So the Upaniṣhad apparently suggests that those who cannot conceive the magnificence of truth,

as it is in itself, may do well to contemplate at least the etymological significance of the word [...]

The first and the last letters of the word Satya may be contemplated as the periphery of this universal manifestation of truth; the circumference as it were; the aspect of reality which covers unreality from both sides, within as well as without. Satya, or truth, is inside as well as outside. It is only in the middle that it does not appear to be. But even this appearance is made possible only on account of the preponderance of an element of Satya in it, says the Upaniṣhad. *Prathama uttame akṣare satyam. Madhyato'n`tam*: 'Only in the middle there is an apparent unreality.' *Tad etad an` tam ubhayataḥ satyena parig`hītam*: 'From both sides untruth is covered by truth' as it were, overwhelmed by truth and flooded by truth. So even where you see impermanence, there is permanence hiddenly present. Even where you see transiency, there is eternity manifested. Even in temporality, there is the presence of Absolute Being because even the conception, the sensation, the perception, etc. of what is not real is made possible only because of the presence of the real. So, on either side there is truth and in the middle only there is a phenomenal experience which is regarded by us as untruth" ((Swami Krishnananda, 1983).BU:V.5.1.p310-311).

**Critique1:** If you analyze carefully, you discover that 'untruth' as an object does not exist. So many of the statements here would need rephrasing.

**Author:** The statement is from the *B'hadāraṇyaka Upaniṣhad* translated by Swami Krishnananda ji; it is not mine. But it looks logical to me and makes this *Upaniṣhad* consistent with Kant; East meets with West, which is good news.

**Critique1:** The concept is from Br U. he should keep the word asat that doing a translation. Some of the words defy appropriate translation. As I said, English is not a concept language! There are many people like these. They copy from Max Müller etc., erroneous! In Kant and the western literature, untruth is evil. Bipolar, truth and untruth, good and evil. In Br U etc., no evil, it's nonexistence due to misperception. Big difference!



**NM:** First of all, I find no problem with Swami Kirishnananda Ji's translation. Here is the full mantra

āpa evedam agra āsuḥ | tā āpaḥ satyam asṛjanta | satyam brahma |  
 brahma prajāpatim | prajāpatir devān | te devāḥ satyam evopāsate |  
 tad etat tryakṣaram sa-ti-yam iti sa ity ekam akṣaram |  
 tīty ekam akṣaram | yam ity ekam akṣaram |  
 prathamottame akṣare satyam **madhyato'nṛtam** |  
 tad etad anṛtam ubhayataḥ satyena parigrhītam |  
 satyabhūyam eva bhavati |  
 naivaṃvidvāṃsam anṛtaṃ hinasti ||  
 Bṛhadāraṇyaka 5.5.1 ||

When the Upanishad uses the word "anṛtaṃ" (which your mail faithfully quoted), I have no idea why Critique1 says "*he should keep the word asat*". Where does the word "asat" come into the picture? This is arguing for the sake of arguing, it is like saying "I disagree with you because I must disagree with you."

"anṛta" is a concept which is also present in our well known national emblem - "satyameva jayati nānṛtam" (Muṇḍaka 3.1.6). If Critique1 thinks the concept does not exist, but our Upanishads say it does, their commentators expound on it, then I would trust the Upanishads and their commentaries than Critique1.

Secondly it is ludicrous to suggest that Swami Krishnananda copied from Max Mueller. Swami Krishnananda authored no less than 50 books, his knowledge of Samskrita and Vedas is well known. The problem with Critique1's arguments is that he even does not bother to read before responding. At least he could have googled Swami Krishnananda to know about the author before making comments like this.

Lastly, I am seriously surprised with the way Critique1, without doing any homework at his end, goes about trashing the opinion of scholars who have spent tens of years mastering Samskrita, analyzing, meditating, thinking, as if they were school kids - be it Gururji or Swami Krishnananda (or even Max Mueller whose knowledge of Samskrita is widely respected even if one does not agree with him). What makes it worse is that Critique1 himself hardly knows any Samskrita - as has been exposed in multiple emails with him. I think he has a bloated ego, which gets punctured again and again by what he calls parroting kids, but he bloats it up again - if he really thinks English is not a concept language and he is particular about words, he should spend 12 years learning Panini's grammar and then talk.

To sum it up, what you have quoted from Swami Krishnananda looks like a good translation to me, and I would not bother with either the opinions of or the unwillingness to agree by Critique1.

**Author:** Thanks. I agree with NM.

<sup>56</sup> According to the historian (Thurston, 1994), “Not only did Āryabhata believe that the earth rotates, but there are glimmerings in his system (and other similar systems) of a possible underlying theory in which the earth (and the planets) orbits the sun, rather than the sun orbiting the earth. The evidence is that the basic planetary periods are relative to the sun.”

<sup>57</sup> <http://www.amartya.de/ayurv2.htm> and (Barrow, 1992; Filliozat, 1970; Kak, 1987, 1994; McClain, 1978; Seidenberg, 1978; Staal, 1988; van Nooten, 1993).

<sup>58</sup> [http://en.wikipedia.org/wiki/Sri\\_Yantra](http://en.wikipedia.org/wiki/Sri_Yantra)

<sup>59</sup> <http://en.wikipedia.org/wiki/C%C4%81rv%C4%81ka>

<sup>60</sup> The 6 *pramāṇas* are: [\*pratyakṣa\*](#) (perceptual subjective experience), [\*anumāna\*](#) (inference), [\*Upamāna\*](#) (analogy), [\*arthāpatti\*](#) (superimposition of known apparant knowledge), [\*Anupalabdhi\*](#) (skepticism in the face

of non-apprehension), and Āgama (knowledge using *texts* such as Vedas; *Āptavākya*, *Śabda pramāṇa*).

<sup>61</sup> <http://prajnaquest.fr/blog/prehistoric-svabhavavada/>

<sup>62</sup> When the constituting elements naturally come together, interact, and create the forms without any purpose (*Cārvākas* were opposed to teleology/purpose), then it is simply accidental/chance. This accidental/chance view of the world is the mechanistic on the whole or the *yad'cchāvāda*.

<sup>63</sup> <http://en.wikipedia.org/wiki/Humanism>

<sup>64</sup> According to Carruthers (personal communication), “very few materialists endorse a brute identity claim. Most are reductive representationalists of one sort or another.” However, the contextual emergence of higher-level stable mental states from lower-level neurodynamics is a non-reductive framework (in analogy to temperature as an emergent property), where contingent contextual conditions are necessary (Atmanspacher, 2007).

<sup>65</sup> Levine’s argument is in the context of Philosophy of Science. One could ask: what is the impact of a detected problem in scientific explanation for a metaphysical view? Is science relevant to metaphysics? Why? In my view, for consciousness research, borders between various departments should melt and one should be able to take advantage of critical information from one department to another. Therefore, argument in the context of Philosophy of Science should be relevant to metaphysics, and *vice-versa*.

<sup>66</sup> <http://en.wikipedia.org/wiki/Samkhya> : Hindi version.

<sup>67</sup> As per (Radhakrishnan, 1960).(BS:II.2.1-10), “Even according to *Sāṃkhya*, the original disturbance of the three *guṇas* [*sattva*, *rajas*, *tamas*] from the condition of equipoise which is essential for creative manifestation cannot be due to the unintelligent *pradhāna* [which is *Prak'ti* with 3 *guṇas*]. Clay does not change into pots without the

help of a potter... So *pradhāna* cannot be the cause of the world [and emotions] unless there is an ultimate intelligent principle. [p367...] R. [Rāmānujāchārya] says that the *Sāṃkhya* assumes three *guṇas* and not one ultimate cause [*Brahman*] ... if they [*guṇas*] are unlimited and therefore omnipresent, then no inequality can result and so no effects can *originate*. To explain the origination of results, it is necessary to assume limitation of the *guṇas*. [p368...] *Puruṣa* is indifferent and so cannot cause action or cessation from activity. God [*kārya Brahman*], on the other hand, as a principle of intelligence, can act or not[,] as he chooses. [p369...] If nearness [of *Puruṣa*/soul] to *prakṛti* makes the soul capable of fruition, i.e., of being conscious of pleasure and pain which are special modifications of *prakṛti*, it follows that as *prakṛti* is ever near, the soul will never accomplish emancipation. ... how can the indifferent *Puruṣa* move the *Pradhāna*? [p370 ...] *Pradhāna* is non-intelligent and *Puruṣa* is indifferent [inactive] and there is no third principle and so there can be no connection between the two. If the soul sees and *pradhāna* is capable of being seen, then capacities which are permanent imply the impossibility of final release. For Ś [Śāṅkarāchārya], the Highest Self [*Brahman*] endowed with *māyā* is superior to the *Puruṣa* of the *Sāṃkhya*. ... *Pradhāna* cannot be active as the three *guṇas*, *sattva*, *rajas*, and *tamas* abide in themselves in a state of equipoise without standing to one another in the relation of principal and subordinate. For activity the equipoise should be disturbed. There is no external principle to stir the *guṇas*. ... so the world cannot originate. If it be said that there is a certain inequality even in the state of *pralaya*, then creation would be eternal. ... We may infer the nature of the *guṇas* from that of their effects and say that *guṇas* are of an unsteady nature and so enter into a relation of mutual inequality even while they are in a state of equipoise. Even then ... non-intelligent *Pradhāna* cannot account for the orderly arrangement of world. [p371 ...]

[**Critiques on *Sāṃkhya*:**] [1] Ś. points out that the *Sāṃkhya* mentions seven senses and sometimes eleven. In some places it teaches that the subtle elements of material things proceed from the great principle, *mahat*, at others from the self-sense or *aham-kāra*. Sometimes it speaks of three internal organs, and sometimes of one only. Besides, it contradicts Scripture which declares that the Lord is the cause of the world. ... [2] R. criticizes ... the *Sāṃkhya* view. The

eternally non-active, unchanging *puruṣa* cannot become witness, an enjoying and cognizing agent. It cannot be subject to error resting on superposition for these are of the nature of change. Mere proximity to *prakṛti* cannot bring about changes. The *Sāṃkhya* teaches that *prakṛti*, when seen by any soul in her true nature, retires from that soul ... But as the soul is eternally released and above all change, it does not see *prakṛti*; nor does it attribute to itself her qualities. *Prakṛti* cannot see herself as she is non-intelligent; she cannot impute to herself the soul's seeing of itself as her seeing of herself. R. says that these difficulties are to be found in the theory of an eternally unchanging *Brahman* which, being conscious of *Avidyā*, experiences unreal bondage and release. He feels that the *Advaita* doctrine is more irrational than the *Sāṃkhya* which admits a plurality of souls. [p372]”.

The atheist and theist version of the *Dvi-Pakṣa Advaita* (DAMv) framework can address these problems easily because the intelligent self and subjective experiences are *potentially* superposed in the mental aspect of the unmanifested state of *Brahman*.

<sup>68</sup> “From the causal [cause-effect, subject-object] condition there is a descent into the subtle state [Cosmic-Mind (*Mahat/Hiraṇyagarbha*), Cosmic-‘I’-sense (Cosmic-*Ahaṃkāra/Virāt*), transcendent (*Adhidaiva*), mental (*Adhyātma*), and physical (*Adhibhūta*)], and from the subtle there is a descent further into the grosser condition which we call the five elements—earth, water, fire, air and ether, and everything that is constituted of these five elements” (Swami Krishnananda, 1983).p400-401).

*Condensation process*: “we have some description of the condensation of the dense form of things, gradually taking place in the process of creation—the subtle becomes gross. The cosmic waters hardened, as it were, became solid, gradually, and the Earth [physical universe] element was formed. [...] The condensation of the cosmos, right from the causal condition down to the physical, through the subtle, may be said to be the manifesting activity of God [unmanifested state of *Brahman*]. [I.2.2.p38...] Not merely astronomers of ancient times, but even modern scientists have come to the conclusion that even our physical personality, this bodily individuality can be regarded as nothing but a condensation of



cosmic stuff [but this stuff is material stuff] which has been projected by the forces of Nature, and which emanated from the interstellar space, and that the body can be reduced to an ethereal substance so that it loses its substantiality and solidity, a concept to which we cling so much. [IV.2.1.p218-9 ...] The entry into a new body is also a great mystery. It is a gradual condensation of material forces into solidified matter in the way in which it is necessary for the fulfilment of the desires present in the subtle body. And at that time, the Prāṇas that were withdrawn from the previous body are once again released into action. [IV.3.36.p257...]

It is something like the ideas present in the mind of a painter. The baby has not been projected yet on the canvas, but what will appear on the canvas or a cloth outside is already present in his mind. That ideation which is to project itself externally in the shape of visible objects—that is Īshvara; that is truth for all practical purposes; that is Brahman itself. It is called Saguna Brahman, or Kārya Brahman. It is the manifested form of Brahman— *satyam brahma*. That creates Prajāpati, Hiraṇyagarbha, the subtle form of things which as an outline of the future universe to be manifested is visible. In the beginning it is only in a form of thought; only an idea in the Cosmic Mind. Now it is appearing outside as a bare outline, like the drawing with a pencil which the painter sketches on the canvas before the actual painting is started. The idea of the painter is visible now in the form of outlines in pencil. They have been projected into a grosser form, yet they have not taken a complete form. That Hiraṇyagarbha becomes Virāt, the projected universe. The whole painted picture of the universe in its completed form is what is called Virāt. [V.5.1.p309-310]” (Swami Krishnananda, 1983).

In the atheist and theist version of the *Dvi-Pakṣa Advaita* (DAMv) framework, the above view of condensation process of the *Bḥadāraṇyaka Upaniṣad* metaphysical cosmology is related to the subjective mental aspect of the unmanifested and various manifested states of dual-aspect *Brahman*. Since aspects are inseparable, this can be automatically and faithfully translated into objective physical aspect of modern physics’ cosmology starting from quantum fluctuations in empty-space to Big Bang to evolution of universe to ourselves.

<sup>69</sup> ((Swami Krishnananda, 1983).p397-406) provides interesting information from *Nāsadīya-Sūkta* and *Puruṣha-Sūkta* of the *Veda*, and *Puruṣhavidha Brāhmaṇa* of the *Bḥadāraṇyaka Upaniṣhad* as follows:

**(i)** The term ‘nothing’ is defined as imperceptibility of objects: “originally, it appeared as if there was nothing, there was just non-being. [...] It is not that something comes out of nothing. Nothing can come from nothing. It is not nothingness that ‘was’, it is rather an imperceptibility of things. Originally, it was nothing in the sense of an imperceptibility of all things, because space, time and objectivity of things were all comprehended in the bosom of what are called the ‘original waters’, the ‘cosmic waters’, a symbology which is familiar to all religious and mystical doctrines. There was, therefore, nothing visible, because nobody was there to see things. The seer and the seen were clubbed together into a single mass of content, which could not be described in any other way except that it was non-being. It was imperceptible not because it was really so, but because it was not an object of the perception of anyone. Neither was it an object of the perception of anyone, nor was there any chance of its being perceived by anyone, on account of the absence of subjects, and therefore absence of objects.” ((Swami Krishnananda, 1983).p397-8).

**(ii)** He then relates nothingness with unmanifested state of *Brahman* and discusses the process of creation as, “This supreme imperceptibility was the Supreme Being Himself, who revealed Himself as this creation, gradually, in grosser and grosser forms, in various degrees of manifestation, known to us these days, in philosophy, as *Īshvara*, *Hiraṇyagarbha*, *Virāt*, and the diversity of experiences. He became the supreme seer and ‘consumer’ of everything [...] He was the Subject of everything; there was no object before Him. As He was the experiencer of all things in an identity of Himself with all things, He could not be regarded as an individual subject, and the objects could not stand outside Him; hence He was in a position to convert everything into the Subject of experience in the sense of ‘Identity of Being’. [p397-8 ...] [T]here was One Being at the origin of things and It is the Cause for the Primal Will to create. So the ‘Will-to-create’ is the expression of the Universal Being, whose identity with this Will is of an inscrutable nature. [p399...] The characteristic of the Supreme Being is said to be an eternal ‘I’, or the

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Consciousness ‘I-Am-That-I-Am’, ‘I-Am-What-I-Am’, or, merely, ‘I-Am’, or even the word ‘Am’ is redundant; there is just ‘I’, the Absolute. This was the Primary Status of Being. [p400...] One tended to become the many in the form of space, time and objects. ... The One does not suddenly become the multitude. According to the Upaniṣhad, the One becomes two. There is a split of feeling or experience, as it were, which alienates the Self into the subject and the object. It is a peculiar state of consciousness where oneself becomes the object one’s own self. The Absolute is neither the subject nor the object, because these appellations, subjectivity and objectivity, do not apply to a state where Consciousness is not thus divided into two self-alienated aspects. The Supreme, somehow, becomes Its own Object. This is what we call [the condition of] the state of Īshvara” ((Swami Krishnananda, 1983).p397-400).

**(iii)** He elaborates further the process of creation of separate subject and objects from inseparable subject-objects consciousness as, “There was, thus, the beginning of a cosmic subject-object consciousness, inseparable one from the other. Now, this split becomes more and more accentuated as time passes, so that there is a greater and greater intensity and density of this feeling to isolate oneself from oneself, into the object of one’s own perception and experience. It is oneself experiencing oneself—the subject deliberately condescending to become an object of its own self for purpose of a peculiar kind of joyous experience, which the scriptures describe as *Lilā*, or play of God. What else can be the explanation for that tendency in one’s consciousness where one begins to will the objectivity of one’s own Universal Subjectivity? This is apparently a logical contradiction, but the whole of creation is nothing but that; it is a logical contradiction, indeed; logically it has no meaning, and it cannot be deduced; but yet it is there. The relationship between the individual and the Absolute is not logically inferrable from any kind of premise, it cannot be deduced from any kind of assumption, nor can we argue it out by any kind of inductive process. But we have to take things as they are [p400 ...] There is, therefore, a split of the One into two, and the two becomes a multitude with the same creative urge, continuing in every part of the manifested individualities; that means to say, there is a tendency to go down and down into greater and greater forms of objectivity. From the causal condition there is a

descent into the subtle state, and from the subtle there is a descent further into the grosser condition which we call the five elements—earth, water, fire, air and ether, and everything that is constituted of these five elements [this is just reverse of materialistic science]”((Swami Krishnananda, 1983).p400-1).

**(iv)** Swami Krishnananda elaborates manifestations in Adhibhūta (external universe), Adhyātma (internal perceiver), and the Adhidaiva (the link) further from the Upaniṣhad as, “the manifestation was twofold and then it was threefold, and then it was multiple. It was twofold in the sense that the Subject became the Object, and the whole universe was its own Body which it opposed to its own consciousness as that on which it contemplated as ‘I-am-I’. Then the consciousness of the threefold creation came into being; the threefold creation being called, in the language of the Upaniṣhad, the Adhibhūta, or the physical, external universe; Adhyātma, or the internal, individual perceivers; and the Adhidaiva, or the connecting link between these two. The transcendent spiritual presence which connects the subject of perception with the object of perception is the Adhidaiva. There is a peculiar principle which operates between the seer and the seen, on account of which this seeing becomes possible, but that transcendent element in the process of perception and external experience is always invisible to the normal ways of consciousness”((Swami Krishnananda, 1983).p401).

**(v)** He then elaborated how objects are interconnected as, “It is not true that finite objects are complete in themselves; it is also not true that they are merely interconnected and therefore one is hanging on the other. [...] All this creation is the manifestation of the One Supreme Being; nevertheless, not one particular object can be taken as the ‘All’. Why? Because, the Supreme Being is ... in every particular object. It cannot be regarded as an object, because the Self is not an object. [p402 ...] the causal, the subtle and the gross appearances are nothing but the appearances of Brahman in space and in time, by means of causal connection. There was an Awareness, says the Upaniṣhad, at once generated at this stage of creation when Consciousness rose to its status and identified itself with all the multiplicity of creation and knew ‘I-am-I’. This Consciousness of ‘I-am-I’, in spite of the multiplicity of objects, is called Virāt; this is Hiraṇyagarbha; this is Īshvara; this is what we

call God, or the Creative Principle. [...] There cannot be success in any walk of life where objects are regarded as non-selves ... No object is an object in or to itself; it is a Self by itself, from its point of view”(Swami Krishnananda, 1983).p402-3).

**(vi)** He then discusses human desires as, “The movements of the human nature in the form of desires, called Eshanas [The three Eshanas/desires: Arthaishana/Vittaishana (the desire for wealth), Putraishana/Daraishana (the desire of wife and children), and Lokaishana (the desire for name and fame and heaven)], or the primal urges of the personality, are the gropings of the very same cosmic force, attempting to unite itself with every blessed thing in creation, searching for the Selfhood in things. These are the functions of hunger, sex and renown. [p405 ...] It is an unawakened urge of the Universal, and these are the blind forces of Nature; they are also the Absolute Law working, only they are not conscious of themselves. [p406]” ((Swami Krishnananda, 1983).p405-6).

<sup>70</sup> As per ((Swami Krishnananda, 1983).I.2.1.p30), “The effect gets isolated from the cause by a peculiar adjustment of consciousness within the cause, not necessarily involved in change or modification of the cause, but only a state of mind or consciousness. Now, when the effect gets psychologically isolated from the cause, there is the seed sown for the further diversity of creation.”

In the DAMv framework or *Dvi-Pakṣa Advaita*, since the mental and physical aspects are *inseparable*, ‘a peculiar adjustment of consciousness’ in the mental aspect of unmanifested state of *Brahman*/empty-space is automatically, faithfully, and rigorously translated into the quantum fluctuations in the physical aspect of unmanifested state of empty-space/*Brahman*.

<sup>71</sup> The highest Reality is *Brahman*, *Purusha*, or the Absolute ‘I’ (Swami Krishnananda, 1983).(p.72) who existed before the creation of universe (space, time, and objects) and He knew only Himself (*tad ātmānam evāvet*: knowledge of the Self) ‘I am the All’ (it did not exclude anything) (Swami Krishnananda, 1983).(p.89). *Brahman* is eternally devoid of relative attributes (such as all SEs (e.g., hunger, thirst, sufferings, happiness etc), perceptions, functions, actions, cognition, thoughts, and so on that are based on brain as in humans)



(III.5.1) (Ādi Śankarāchārya, 1950).p480. The hypothesis of *Purusha* might have an empirical basis because of ‘self’ in us. The *Rṣis* empirically might have observed gross phenomena, such as there are a large number of humans and subjectively each has ‘self’ in our daily conventional mind-dependent reality (cMDR). Then they might have thought that one could combine all selves to one single ‘Self’ such as *Purusha*, i.e., every self can be derived from Him. Similar rationale could be true for the physical entity *Prakṛti*. Then they empirically might have observed how baby is born by the interaction of man and woman. So *Rṣis* hypothesized that *Purusha* and *Prakṛti* interacted and the latter metaphorically became pregnant and this state was called *Hiraṇyagarbha* (Cosmic Egg: (Swami Krishnananda, 1983).p.79) and then *Virat* (cosmic fire, Big Bang) was born with *Purusha* and *Prakṛti* as His parents for further creation (see I.4 of (Swami Krishnananda, 1983)). In *samādhi* state, *Rṣis* have three experiences or empirical observations: (i) the bliss, (ii) the inner light perception, and (iii) the unification of subject/self and objects. These could have been extrapolated to (i) ānanda part of Sat-cit-ānanda (सच्चिदानन्द: eternal bliss consciousness), (ii) light as God, and (iii) unified monistic primal entity *Brahman*, respectively. The neural-correlates (the physical aspect of the *samādhi* state of brain-mind system) include (i) happiness center in amygdala-NN, (ii) visual areas, (iii) parietal lobe deactivation for losing discrimination of subject and objects, and the activation of frontal lobe for unification of subject and objects, respectively.

Thus, *Rṣis* generalized their empirical observations (such as ‘self’/‘being’ is more potent than thought that is more potent than action) of our daily cMDR in a straight forward manner to cosmic level.

<sup>72</sup> As per ((Swami Krishnananda, 1983).p.82), “This universe, which is the grand manifestation of God, which is the miraculous manifestation of Him, was once upon a time unmanifest; and He was withdrawing all these forms into Himself before creation took place. After the creation, He has become the colours and the sounds and the pageantry of creation.”

<sup>73</sup> It seems that *Virat* had *inseparable* mental and physical aspects: mind (from the father *Purusha*) and matter (from the mother *Prakṛti*) emerged from *Mula-Prakṛti* (unmanifested undifferentiated state of *Brahman*) as elaborated in ((Swami Krishnananda, 1983).V.5.1.p308-309): **(i) Cosmic Waters of the potentiality**: “In the beginning, what was there? There was an undifferentiated, unmanifested, indistinguishable something. *Āsīt idam tamo bhūtam aprajātam alakṣanam apradartyam avijyān prabhūtam sarvogataḥ*: It was as if there was a Cosmic sleep. It looked as if it was darkness. It was of the characteristic of darkness because there was no light of sense perception. There was no one to see anything. That which was to see and that which was to be seen, both were resolved into that which is now designated here as apparent darkness. How can you designate it except as absence of light, because we always define light as the instrument of perception and perception does not exist there. There were no objects because there was no world. There was not this manifestation. It was like a Cosmic ocean. It was like water spread out everywhere, not the waters that we drink, but a symbolic term applied to designate the undifferentiated condition of matter, the potential state of Being, *Mula-Prakṛti* in its essentiality where the Trigunas—*Satva*, *Tamas*, *Rajas*—are in a harmonised state. There is *Gunatamya Avastha*; there is a harmonisation of the three Gunas, so that you do not know what is there. Everything is there and yet nothing appears to be there. Such a condition of homogeneity of potential being is usually called, in philosophical symbology, ‘Cosmic Waters’. They are called *Nāraḥ* in Sanskrit, and one who is sporting cosmically in these Universal Waters is called *Narayanaya*. So *Īshvara* Himself is called *Nārayanaya*. *Nārayanaya* is that Being who sleeps, as it were, in the Cosmic Waters of the potentiality of being. Such was the state of affairs originally. *Āpa evadam agra āsuḥ* : So, in all these cosmic, cosmical and cosmogonical descriptions in the scriptures of different religions we are told that in the beginning there was a universal state of liquidity, as it were, a symbolic way of putting into language the condition of homogeneity of the Ultimate Cause of the universe” ((Swami Krishnananda, 1983).V.5.1.p308).

**(ii) Virāt as projected universe, which is the projection of Divine Will**: “*Tā āpaḥ satyam aṣṛjanta, satyam brahma, brahma prajāpatim*: That condition becomes the precedent to the manifestation

of something which we call the Creator of the universe. The Creator of the universe, or the Divine Will which projects this whole universe, is a blend of this universal potentiality and the great Absolute. That particular state where the Absolute appears as a Will to create or manifest is, for all practical purposes, the original creative condition [**perturbed state**]. That is called Satyam because there the true state of affairs can be seen. The original condition of all those things that are to be manifested are to be found there in their originality, in their archetypal being. It is something like the ideas present in the mind of a painter. The baby has not been projected yet on the canvas, but what will appear on the canvas or a cloth outside is already present in his mind. That ideation which is to project itself externally in the shape of visible objects—that is Īshvara; that is truth for all practical purposes; that is Brahman itself. It is called Saguna Brahman, or Kārya Brahman. It is the manifested form of Brahman— satyam brahma. That creates Prajāpati, Hiranyagarbha, the subtle form of things which as an outline of the future universe to be manifested is visible. In the beginning it is only in a form of thought; only an idea in the Cosmic Mind. Now it is appearing outside as a bare outline, like the drawing with a pencil which the painter sketches on the canvas before the actual painting is started. The idea of the painter is visible now in the form of outlines in pencil. They have been projected into a grosser form, yet they have not taken a complete form. That Hiranyagarbha becomes Virāt, the projected universe. The whole painted picture of the universe in its completed form is what is called Virāt” ((Swami Krishnananda, 1983).V.5.1.p308-9).

(iii) **Virāt is the origination of gods:** “From that Being, all the gods come— *devāḥ satyam evopāsate*. What are these gods doing? They are contemplating their own origin. The first manifestation in individual form are the celestials. The celestials are supposed to contemplate a Universal Sacrifice. This Universal Sacrifice contemplated in the minds of the gods is the subject of the Puruṣa-Sūkta of the Veda. It is a Universal Sacrifice, a sacrifice performed without any kind of external materials. All the materials necessary for the sacrifice were present in the minds of the gods, says the Sūkta. The gods performed the sacrifice through the materials culled from the body of the Puruṣa Himself, who is the Supreme Sacrifice. ‘So the Devas performed this Upāsana in the form of meditation on their

own cause, the Virāt, by attuning themselves to its Being. They contemplate the Satya, or the truth which has manifested itself as Īshvara Hiraṇyagarbha, and Virāt’— *devāḥ satyaṃ evopāsate*” ((Swami Krishnananda, 1983).V.5.1.p309).

<sup>74</sup> **Madhu-Vidyā as subject-object/organism-environment interaction:** (i) “Usually, consciousness and object are regarded as exclusive of each other. The one cannot be in the position of the other. The perceiver is conscious, and the object is what is experienced by consciousness. The two are categorised as two distinct characters in the field of experience. Where the subject is, the object cannot be; and vice versa. The object cannot be the subject and the subject cannot be the object; consciousness cannot be matter and matter cannot be consciousness. This is our usual notice of things and our practical experience, too. But the Madhu-Vidyā gives us a revolutionary idea in respect of what we usually regard as a field of the duality of subject and object. The Madhu-Vidyā is an insight into the nature of things, which reveals that there are no such things as subjects or objects. They are only notional conclusions of individual subjects from their own particular points of view, the one regarding the other as the object, so that there is a vast world of objects to a single individual perceiver, and this is the case with every other perceiver, also. The fact of experience itself is a repudiation of the phenomenal notion that subjects are cut off from objects, as if the one has no connection with the other. If there has been a gulf of difference, unbridgeable, between the experiencing consciousness and the object outside, there would be no such thing as experience at all. The great revelation of the sage Dadhyañ Ātharvaṇa is that the Adhyātma and the Adhibhūta are linked together by the Adhidaiva, and a transcendent Divine Presence connects the phenomenal subject and the phenomenal object, through an invisible force, so that we have a universe of interrelated particulars, one entering the other, one merging into the other, one coalescing with the other like the waves in the ocean, and not the universe we see with our eyes, as a house divided against itself. [...] So, the Madhu-Vidyā reveals to us the truth of the immanence of the Reality that is universal in every particular, so that there can neither be an ultimate cause nor an ultimate effect in a world of mutual dependence and correlativity of

things. Madhu-Vidyā is the knowledge of the correlativity of the subject and the object in such a way that they merge one into the other, cancelling the subjectness and the objectness of each, embracing each other in a union of their particularities, and revealing their inner essence called the Madhu. This applies to everything that is outside in the world called Adhibhūta, everything that is inside called Adhyātma, and everything that is transcendent called Adhidaiva. So, from three points of view the sage describes the correlativity of everything in the universality of being” ((Swami Krishnananda, 1983).II.p408-409).

(ii) At *samādhi* state, subject and objects appear to merge with each other. Madhu-Vidyā seems the extrapolation of this observation to normal wakefulness by the *ṣi Dadhyañi Ātharvaṇa*. Mutual dependence is similar to [Pratītyasamutpāda](#) (प्रतीत्यसमुत्पाद or dependent co-origination: (Vimal, 2009a) by Buddhist Nāgārjuna and organism-environment interaction in modern science.

<sup>75</sup> (a) The **four Mahāvākyas** are: (i) *prajñānam brahma* - "Consciousness is Brahman" (प्रज्ञा नं ब्रह्म = आत्मा ही ब्रह्म है) (*Aitareya Upaniṣhad* 3.3 of the *Rig Veda*), (ii) *ayam ātmā brahma* - "This Self (Atman) is Brahman" (अयम् आत्मा ब्रह्म : यह आत्मा ब्रह्म है) (*Mandukya Upaniṣhad* 1.2 of the *Atharva Veda*), (iii) *tat tvam asi* - "Thou art That" (तत्त्वमसि : तुम वही हो) (*Chandogya Upaniṣhad* 6.8.7 of the *Sama Veda*), and (iv) *aham brahmāsmi* - "I am Brahman" (अहं ब्रह्मास्मि : मैं ब्रह्म हूँ) (*Bḥadāranyaka Upaniṣhad* 1.4.10 of the *Yajur Veda*).

(b) “He knew, ‘I Am the All, the Absolute’; and whoever knows thus, becomes the All. This is the essence of **Brahma-Vidyā**, the highest wisdom of life” (Swami Krishnananda, 1983).p.88.

(c) **Ātma-Vidyā** or *Adhyātma-Vidyā* is the knowledge of the Self, which is ‘I am the Brahman’ because Śankarāchārya equated *Ātma-Vidyā* (knowledge of the Self) with *Brahma-Vidyā* (knowledge of Brahman). *Brahma-Vidyā/Ātma-Vidyā* is very useful in meditation.

(d) This is also related to **Madhu-Vidyā**: “The earth [whole physical creation] is the honey of all, and everyone is the honey of the earth. [...] Just as the objective world and the subjective individual are organically connected, so is this animating consciousness in the objective world correlated with the individual consciousness. One is



hanging on the other, one is connected with the other, one is dependent on the other, one is incapable of being without the other. That Being which animates the cosmic and the individual aspects of creation is called the Luminous Immortal Being [*Puruṣha/Brahman/Ātman* or the Self of all beings] ((Swami Krishnananda, 1983).II.5.1).p132-3).

Similarly, *Madhu-Vidyā* is that each entity (such as water, fire, air, sun, moon, laws, directions, mind, truth, human, self, and so on) is the honey of all beings and all beings are the honey of that entity, i.e., (i) “the contemplation of all things by the contemplation of anything” ((Swami Krishnananda, 1983).II.5.15.p137), (ii) “the knowledge of the interdependence of things and the vital connection of everything, under every condition, at every time, everywhere” ((Swami Krishnananda, 1983).II.5.16.p138), and (iii) “In every form He appears in a corresponding form” ((Swami Krishnananda, 1983).II.5.19.p139).

**(e) The nature of the inner controller:** Moreover, *ṛṣi* is asked what is the nature of the inner controller (*Brahman*), the Immanent Principle, and the *sutra* (thread) in which all the worlds are strung together? The answer is: “the Supreme Vital Force of the cosmos [the force of *Brahman*] can be regarded as the thread on which everything is strung, because all bodies, whatever be their structure, are formed in the mould of this Vital Energy. It is this Vital Force of the cosmos that has taken the shape of all these forms, whether they are the forms of the world or are the forms of individual beings. Outside, the very same Energy looks like the world, and inside, as a content thereof, it looks like individuals. It is the subtle constitutive Essence of the whole universe. [...] That universal Vital Force is the thread. It is a thread in the sense that it is the power which holds all bodies in proper positions. And every body, individual or otherwise, is strung on this thread in the sense that everything is a form taken by it, and therefore, controlled by it. So, you will not find a place where this is not, and you will not find anything operating unless it Wills. It is His Will and His Action that appears outside as the action of people” ((Swami Krishnananda, 1983).(III.7.1-2).p169). The *Madhu-Vidyā* is consistent with the doctrine of dependent-co-origination ([\*Pratītyasamutpāda\*](#)) of Nagarjuna (Vimal, 2009a).

**(f) Vital Force and Vital Energy:** Furthermore, “When a person is alive, why does that person look whole and complete and integrated? And why is it that when something happens at the time we call death, there is dismemberment of the body and parts of the body get dislocated and hang loosely without being held firmly? What is the cause? The cause is that this Vital Force was holding the limbs of the body in unison and harmony when the body was alive. What we call life is nothing but the operation of this universal Energy through a particular body. When the particular function through this individual body does not take place, the Energy withdraws itself. There is then no sustaining power left in the building-bricks of the body. So the bricks collapse. There is, therefore, the return of the constituents of the physical body to their sources. They cannot be held in the form which they were assuming when the body was alive. So the body of an individual is nothing but a form assumed, or taken by certain elements. And it begins to function by the action of this Vital Energy. When this action of the Vital Energy is withdrawn, it is called death, or demise of the individual. So, we say that the parts of the body of a dead person get loosened and they are not able to perform the functions that they were doing earlier, merely because this principle is absent. [...] The Immanent Principle is the *Antaryāmin* [*Brahmin/Ātman*], the one that controls everything from within. It is a very peculiar something, whose existence cannot be known for reasons which will be obvious, as we go further. Yet, nothing can be more powerful than that. That which is most powerful and capable of controlling everything is that which cannot be observed by anything, or seen or known. What is that? That is what we call the internal Reality of the cosmos. That we call the *Antaryāmin*, the Immanent Reality [*Brahmin/Ātman*] [...] This is the *Antaryāmin*, or the internal ruler of everyone—earth, water, fire, air, ether; everything that is external everything that is internal also, like the physical organs, etc. [...] This description of the *Antaryāmin*, or the internal Ruler, is given from three standpoints—the transcendent, or the *Adhidaivika* description, the physical, or the objective, known as the *Adhibhautika*, and the internal or the subjective, known as the *Adhyātmika*. All the gods, all the celestials are controlled by this principle. All the elements are controlled by this principle. And every individual being also is controlled by this principle. [...] Every being is

controlled by it. [...] This is the Self; this is the internal Ruler; this is the Reality. This is immortal, O Uddālaka. Everything else is useless. Other than this, nothing has any sense or meaning,— *ato'nyad ārtam*. This is the only Being that is worthwhile considering and approaching and realising” ((Swami Krishnananda, 1983).(III.7.2-23).p.169-173).

**(g) Unmanifested primal entity (Brahman):** Unmanifested ether pervades everywhere in space-time. “The manifested universe consisting of the Sūtra exists in the unmanifested ether ... in the past, present and future, in its origin, continuance and dissolution” ((Ādi Śaṅkarāchārya, 1950).(III.8.4).p.515). “This is strung in a subtle ethereal principle. You cannot call it by any other name. That ethereal principle has not the distinction of pervasion of objects. It is subtler than that which pervades. And that which you are speaking of as what is above and what is below and what is between and what is the past, present and future, that is rooted in some undifferentiated something. That undifferentiated reality can be designated as ether. It is not the physical ether; it is an unmanifest ether— *avyākṛita ākāṣa*. [...] What is this Avyākṛita Ākāṣa? ... This principle which you call unmanifest ether, the undifferentiated background of that which is everywhere, (as a matter of fact, Gārgi is referring to the very same ‘Sūtra’ of which Uddālaka spoke earlier. This ‘Sūtra’, or the thread in which everything is strung, is that which is above and below and between and it is the past, present and future. It is rooted in something. That something is an indescribable, unmodified and homogeneous substance, they call it Avyākṛita) in what is that rooted? Has it also some foundation? [...] This foundation is nothing but the Absolute. Beyond that, there can be nothing. That is the immaculate Absolute ... It is imperishable. ... The final point of all answers to every question is the imperishable Reality. That is the last resort of all thought, all speech and all definition. The great ones say, this is Akṣara” ((Swami Krishnananda, 1983).(III.8.4-8).p.175).

<sup>76</sup> **Prāṇa:** “The Universal Being manifests itself in various ways, as has been mentioned, and one of the forms in which it is manifest is the Cosmic Prāṇa, the universal energy which functions not only in organic beings, but also in inorganic objects. The tendency to life, the

urge for self-perpetuation, is an indication of the operation of the Prāṇa in everything. There is an effort exerted by everyone and everything in this world to exist. There is an incessant struggle for existence. This attempt to exist somehow, to live and to perpetuate oneself, is the action of the Prāṇa in all created entities. This Prāṇa is universal; it is everywhere. What we call cosmic energy is ultimately identifiable with the creative principle, Hiraṇyagarbha. It is universally present, and is equally spread out in everything. Life and non-life are only the manifestation or non-manifestation of it, or the higher degree or the lower degree of manifestation of it, but not the absence of it. Prāṇa is not absent even in so-called inorganic things. The vibratory activity that we discover even in lifeless matter is the action of Prāṇa. The gravitational pull exerted by objects, though they are inanimate, is the work of Prāṇa. The cohesive force that we discover in chemical elements, or physical objects, any kind of attraction, pull, whether it is organic, inorganic or even psychological, all this is the work of the universal Prāṇa. It exists in everyone. In the human individual, particularly, it is markedly manifest.” ((Swami Krishnananda, 1983).II.2.p384-5).

<sup>77</sup> **Liberated Ātman:** Why is the self not conscious (of objects, actions and their results) after attaining oneness with *Brahman/Purusha* (this occurs when *Ātman* is liberated or *mukta Ātman* when samādhi state is realized). This because everything is the Self without objects, actions, and results (Ādi Śaṅkarācārya, 1950)p375. “Knowing of objects only is there before liberation [death]. With liberation, that object has become part of knowing itself; It has become one with the Knower. The Knower alone is; there is no such thing then as ‘knowing’. Therefore, ... it is not possible to have cognition and perception and mentation and understanding, in the usual sense, in that Absolute which is Supernal Felicity of Plenum [...] The reason why you cannot have perceptual knowledge or cognitional awareness in the totality of things is because of the fact that everything is connected with everything in that knowledge” ((Swami Krishnananda, 1983).II.4.12-14.p131).

<sup>78</sup> **Cyclic Universe:** “With this [V.15.1-4] prayer, the soul leaves the body and then it is taken over to the realm of Agnī, or Flame, or the

god of Fire. Then, upwards, through the passage of the Sun, it reaches Brahma-loka, or Prajāpati-loka, the realm of the Creator, through several further stages, and then it attains the Supreme Absolute. The opinion is generally held that the soul will be in Brahma-loka till the end of the universe. When the universe is dissolved, Hiranyagarbha, Brahma, also gets back to the Source. At the end of the cosmic dissolution, the soul, with Brahma, the Creator, goes back to the Absolute. Until that time, it remains there. This is the belief of some teachers of the Upaniṣhads” ((Swami Krishnananda, 1983).V.15.4.p341-342). This is consistent with [cyclic \(closed\) universe](#) (Visser, 2011).

<sup>79</sup> Other explanatory gaps are:

**(2)** Originally, if there was ‘nothing’, then how can *Purusha* be present?

**(3)** How can the purely mental entity *Purusha* interact with purely physical entity *Prakṛti* (this is massive category mistake) to result the cosmic state *Hiranyagarbha*? How can it, in turn, result the *inseparable* dual-aspect entity Cosmic *Ahamkāra/Virāt* that has both mental and physical aspects?

**(4)** The separation of *Adhidaiva* aspect seems to suggest that God is not responsible for our sufferings. This implies that we are responsible for our own sufferings. Thus, it is unclear if worshipping Him will end our sufferings except the [placebo effect](#) of doing *pooja* in terms of the reorganization of brain through belief system. Belief indeed works; there are scientific evidences for treating [Parkinson’s disease](#) (de la Fuente-Fernandez et al., 2001) and [depression](#) (Eastman, Young, Fogg, Liu, & Meaden, 1998) using placebo (Benedetti, Mayberg, Wager, Stohler, & Zubieta, 2005).

We “should worship Him as the Self of beings—*Ātmetyevopāsīta*” (p.84); He is everything and is everywhere; “He is also immanent, i.e., indwells everything” (p.84). “The one Lord [*Brahman*] is hidden in all beings, all-pervading and the Self of all (Sv. [Svetasvatara Upanissad].VI.II)” (Ādi Śankarāchārya, 1950).p117. Thus, He transcends suffering and happiness. If this important concept is not understood well, it will lead us to superstitions and blind faith, which is NOT useful and sometimes lead us to darkness (just opposite of ‘*Tamaso mā jyotir gamaya*’: from darkness, lead us to light): “correct



understanding alone can lead to our well-being” (Ādi Śankarāchārya, 1950).p44. Therefore, to address this explanatory gap problem, one could argue from *Dvi-Pakṣa Advaita* that (a) since rituals are exoteric symbolic expression of esoteric thoughts and hypotheses related to cosmology and to our daily lives and (b) socialization in positive environment is useful, it is worth doing rituals as an active process (i.e., understanding the meanings and actively applying in our daily lives appropriately) even if they have passive placebo effects with respect to our sufferings. To end sufferings, *Dvi-Pakṣa Advaita* recommends to follow Buddha’s 4 noble truths ([http://en.wikipedia.org/wiki/Four\\_Noble\\_Truths](http://en.wikipedia.org/wiki/Four_Noble_Truths)) and 8 noble paths ([http://en.wikipedia.org/wiki/Noble\\_Eightfold\\_Path](http://en.wikipedia.org/wiki/Noble_Eightfold_Path)). “Any object to which one clings [leading to bondage], other than the Self, shall be the object of sorrow, one day or the other” (I.4.8:p86).

**(5)** The order of creation (in creation theory) at lower levels (below *Virāt*) is humans, animals, plants, and then five elements- ether, air, fire, water, earth ((Swami Krishnananda, 1983)p.79) without any acceptable explanation/justification. This is inconsistent (as the order is reversed) with the theory of evolution.

For example, “the soul can assume various forms, psychic as well as physical [presumably by condensation process]. First, there is a manifestation of the intellect. That is the *Jīva-Bhāva* or the individuality in us. The root of individuality is the intellect, and it grossens itself into the mind, the *Prāṇas*, the senses, and lastly the physical body. It is not the physical body that is manufactured first. It is the intellect that is manifested first. The cause comes first, the effect afterwards. The subtlest cause is the intellect principle. Then there is the grosser one—the mind; then the still grosser one—the *Prāṇas*; then the senses; then the physical body. All this takes place in a very inscrutable manner. It does not mean that the intellect is there, clearly observing things as it does when it is very active in a physical body after rebirth. It is in a potential state, just as the tree is present in a seed. Its manifestation is supposed to be prior to the manifestation of other things, namely, *Prāṇas*, body, etc. So there is first *Vijñāna* or the intellect, then the mind, the *Prāṇas*, the senses, and only lastly the physical body constituted of the gross elements—earth, water, fire, air and ether— *pr̥thivīmaya āpomayo vāyumaya ākāśamayas*” ((Swami Krishnananda, 1983):IV.4.5.p262).

In the DAMv framework: (a) Hinduism and other religions (that usually involve creation theory) can start from the mental aspect of the unmanifested fundamental primal entity (such as dual-aspect *Brahman*) and evolve it to innumerable manifestations in terms of only mental aspects (without worrying about physical aspects) and eventually to our mental aspect of brain-states (i.e., the functional and experiential aspects of consciousness) because all the manifestations can be translated to related physical aspects automatically, faithfully, rigorously because of *the doctrine of inseparability*. (b) Science (that usually involves evolution theory) can start from the physical aspect of the unmanifested fundamental primal entity (such as dual-aspect *Brahman*) and evolve it to innumerable manifestations in terms of only physical aspects (without worrying about mental aspects) and eventually to our physical aspect of brain-states (i.e., structures: the brain and its activities) because all the manifestations can be translated to related mental aspects automatically, faithfully, rigorously because of *the doctrine of inseparability*. In that way, there is no category mistake. In other words, the process is co-evolution of mental and physical aspects of unmanifested state of primal entity *Brahman* into innumerable manifested states of *Brahman*.

**(6)** It is claimed that Brahman/absolute does have ‘eyes’ as we do, but He is able to see whole universe (*Brahmanda*); similarly for other perceptions, experiences, and thought processes (He does not have brain-based ‘mind’ as we do but It is omniscience). This claim has an explanatory gap: what are mechanisms for these abilities? One might argue: since Brahman is in each of us and in each entity, He might be seeing, perceiving of sensory experiences, feelings, thinking, knowing through us; this is because we are Him and He is us. However, there is binding/unifying problem: how can all of us (our minds) be bound in a single Brahman? There is a sort of discussion on this topic in ((Ādi Śankarāchārya, 1950):III.9.28.7.p565-8): “there can be no knowledge in the absence of the body and organs. [...] to say that the liberated man knows the blissful Self is meaningless. [...] ‘Knowledge, Bliss,’ etc., must be interpreted as setting forth the nature of Brahman [as brute fact assumption], and not signifying the bliss if the Self is cognised.”

**(7)** Another claim is that *Karma* is the cause of rebirth ((Swami Krishnananda, 1983):III.2.13.p157), which requires presumably the existence of soul/*Ātman*. However, one could argue that the consequences/effect of good or bad *Karma* can be experienced in current life (in wakefulness and dreams: see IV.3.10-12.p232-235), and hence rebirth (and hence the existence of *Ātman*) is not necessarily justified. For example, “What desires you cannot fulfil in waking, you can fulfill in dream by creating a mental world of your own and manufacturing those objects which you need but which you could not have in waking life. Whatever you need, you can manufacture out of your own mind, and then, of course, your desires are fulfilled” (IV.3.12.p234).

Furthermore, a related claim is: “when the body, which has been manufactured for the purpose of serving as an instrument for the fulfillment of these impulses [of unfulfilled desires], gets exhausted and becomes finally unfit for action, then there is what is known as death. There is a period of transition, which varies from person to person and from condition to condition, between physical death and the time of rebirth. And then, those impulses which could not be manifested for action through the previous body, regain their strength and project themselves through the new body that is fitted into the mental structure by the circumstance of rebirth.” ((Swami Krishnananda, 1983):IV.3.7.p228). However, it is unclear how and where those impulses will be preserved after death and before rebirth (if any!).

“The experience of these three states, waking, dream and sleep, one not identical with the other, each differing from the other in every respect, would be impossible unless there be a uniform feeling of identity of personality, which passes through all these states. This is proof enough of the independence of consciousness [immortal *Ātman*] from the psychophysical personality” ((Swami Krishnananda, 1983):IV.3.16.p238). One could argue it is the ‘proto-self’ (Damasio, 2010) and/or ‘core-self’ (Damasio, 1999; Newen & Vogeley, 2003; Trehub, 2007, 2009) that is continuous across various states of mind and across life-time; the assumption of independent immortal *Ātman* is not necessary.

**(8)** It is claimed that it is all God’s *Līlā* (play) or God’s Will; He created us and the world (via creation theory) because He was a sort

of getting bored being just by Himself. If the goal of life is to merge with Him, then what is the point of creation as we were already merged with Him before creation? On the other hand, the evolution theory suggests we (our 'mind') are evolving more and more every day and at *samādhi* state we can experience the triad SEs: the bliss, the inner light perception, and the unification of subject and objects; this state with the triad SEs is called the fullest state *kārya Brahman*, *Īshvara*, God in us; this is because it generates loving care for all, and all the God-like qualities in us.

(9) Since *Brahman* is in each entity including matter, metaphysical views could also be panpsychism, materialism, dual-aspect monism, and so on in addition to idealism and interactive substance dualism. Therefore, it is unclear which view is the correct one. The critical criterion could be the number of problems. The DAMv framework (*Dvi-Pakṣa Advaita*) has the least number of problems, so it is the best framework so far.

(10) Another claim is that self/*jīva* is closer to *Brahman*/Self during deep sleep compared to wakefulness and dream. The justification as given below needs reconsideration as per current neurophysiology of deep sleep: "The external form of the individual, which has an apparent consciousness, intelligence and a capacity to act, is not the true Self of the individual, because all these appurtenances of action, and the so-called individuality of ours, cease to be self-conscious in sleep. The energy is withdrawn; consciousness is withdrawn; the ability to perceive is withdrawn. It appears as if life itself has gone. There is a practical non-existence of the individual for all conceivable purposes. What happens is that the central consciousness, which is the Self, draws forth into itself all the energies of the external vestures, viz. the body, the *Prāṇa*, the senses, the mind, etc., and rests in itself without having the need to communicate with anything else outside. It is only in the state of deep sleep that the self goes back to its own pristine purity. [...] in the waking state the self is entangled in object-consciousness, whereas in sleep it is withdrawn into itself. [...] It [self] is in the cosmic space, the ether of consciousness [during deep sleep] — *eso'ntar-hṛdaya ākāśaḥ tasmīñ chete*. [II.1.17.p.378...] in dream what happens is that the impressions of the experiences one had in waking become objects of experience. So the world of dreams is nothing but the world of

impressions of past experience. [II.1.17.p379...] the activity of the mind [*manas*] which is the medium [*liaison*] between the physical body and the self inside. The mind is not conscious by itself. [...] the mind is a kind of transparent substance, we may say, through which the light of the self passes. And it completely absorbs the consciousness into itself. It becomes apparently self-conscious. [...] The body is charged with the force of the self by means of the mind which moves through the currents called *Hitas* [...] The body had no consciousness even before, and its real nature is exposed now in sleep. It appeared to be conscious on account of the vibration of consciousness which was communicated to it through the mind. The mind having been withdrawn in sleep, consciousness also automatically withdraws itself, because the consciousness we have is nothing but mental consciousness. And when the mind is thus withdrawn, everything that is sustained by the mind also is put to sleep. You cannot know that you are breathing; you cannot know that you have any personality at all. The senses also cease to act. The eyes, the ears and the other organs of perception are active consciously on account of the operation of the mind, again. The eyes cannot see really, because they are, in fact, unconscious substances. They are fleshy bodies; they are made up of the five elements, they are not conscious entities. But how is it possible that they are seeing, hearing, etc.? That is because they are charged with consciousness. [II.1.19.p380...] The Self is a Universal Being which manifests itself as individuals in dream and waking. But in sleep these distinctions get abolished, or obliterated, on account of the return of all particularity into the Universal being which is the true Self of all. But this true Self in sleep remains unconscious of itself due to strange reasons. If only we are to be awake in sleep, we would be universally aware at one stroke, and we would not be aware of individualities; we would not be aware of space, time and objectivity. There would be an oceanic awakening into a Being which is the Being of each and every one. That would be the status we would achieve if we are to be conscious in sleep, but, unfortunately for us, we are not conscious in sleep. So we go like fools, and come back like fools, as if nothing has happened. Some wondrous thing has actually happened. A tremendous change has taken place in sleep, but we are totally unaware of this marvellous event. [II.1.19.p381...] This is an



indication to you ... as to what the Ultimate Reality is. This is the state into which one enters in sleep, and it is not any particular form or a shape. It is Universal Existence. This is the Ātman; this is Brahman. [II.1.19.p382...] there is an exhaustion, a fatigue at the end of the day, and then the mind goes back to that source from where it has come originally and to which it really belongs. [...] We do not know whether to call it a soul, or a mind, or an ego, or a personality, or what. Some mix-up and a mixture of everything is there which we call the individual. It returns to its source for the sake of refreshing itself from the exhaustion to which it has been subjected by the search for happiness in the outer world. Other people are of the opinion that it is the Reality that pulls the individual back to itself, in sleep. Whether one is aware of this state or not is a different matter, but the pull is there. [II.1.19.p383...] the Self is the Ultimate Reality from which everything proceeds in various ways [II.1.20.p384]" ((Swami Krishnananda, 1983):II.1.17,19,20.p378-384).

**(11)** The hypothesis of Jagadguru Rāmbhadrāchārya is: God can remove suffering of a person. See [http://www.jagadguruRāmabhadraacharya.org/videos/sundar\\_kand?id=1](http://www.jagadguruRāmabhadraacharya.org/videos/sundar_kand?id=1). However the hypothesis of Jagadguru Kripālu and also Brhadāranyaka Upaniṣhad is: God cannot eliminate suffering of a person, He can only guide us how to remove suffering. It is the responsibility of that person then whether s/he wants to follow the guidance to remove her/his own suffering. See in the last video #3 (To establish and maintain) of <http://www.jkp.org/home.html>. Who is correct and why?

**NM** (A disciple of Jagadguru Rāmbhadrāchārya): I am sure the contradiction is only apparent, and the statements are made in a specified context. Can you please cite the exact quotes in *Sanskrit* or *Hindi* with verse numbers and time in video?

Even in RCM [*RāmCharit Mānas*], there are apparent contradictions, like

*Karma pradhan bisva kari rakha*

*Jo jasa karai taasua phala chakha*

This means that lord *Rama* has himself made the law of karma rule for the happiness and suffering of beings.

But, also

*Rama raja nabhagesa sunu sacharachara Jagath maanhi*

*Kala karma svabhava guna krita dukha kahuhu naanhi*

For the *Kripā* of lord Rama is capable of "*kartumakartumanyathaakartum*," which is why *Tulsidas ji* calls the lord as "*gayi bahora*". There are many verses in *vedas* and *puranas* which say that the bondage of *karma* goes away when the Lord shows his *Kripā* - that is my interpretation. "*tasmin drishte paravare*".

**Author:** Thanks for elaborating. I got an impression after listening the video carefully, especially when he explains the power of *Ram ji* and *Hanuman ji*; if we pray them on regular basis they will remove our sufferings.

My interpretation of both *Jagadgurus* and a neuro-mechanism might be as follows: during prayers, our brains get re-organized and we have psychosomatic effects that help in minimizing our sufferings. If we actively follow God's and Guru's guidance in every moment of our lives, then it is faster; if we are passive, then it takes long time; there is also placebo effect. Buddhism's 4 noble truths and 8 noble paths (which are active processes) are useful in reducing suffering. To sum up, if we want to see the faster effect, we really need to put right efforts, rather than waiting for God to help us out (like a lazy person). This active approach is consistent with the *Dvi-Pakṣa Advaita* (DAMv) framework and also with both *Jagadgurus*.

**NM:** There are rules and there are exceptions. Newtonian mechanics rules have quantum mechanics as exceptions when speed of matter approaches speed of light. Even in *Paninian* grammar you have rules and exceptions.

Similarly *karma* is the general rule, while *Kripā* is the exception. Which is why *Tulsidas* says in the episode of *Ahalya*

*asa prabhu diinabandhu hita kaarana rahita dayaala*

The lord is compassionate on some beings like *Ahalya* and *Ajamila* without reason. *Kripā* in that sense is like a random variable. Also one does not get either *Guru* or knowledge of god without *Kripā*.

*Binu hari Kripā milahin nahin santaa*

And

*Raama Kripā binu sunu khagarai*

*Jaani na jaaya raama prabhutai*

That is my view.

**Author:** Perhaps, *Kripā* is a chaos related random variable, which may have ‘butterfly effect’. However, then Jadaguru Kripālu interprets *Kripā* in a little different way. Please listen him between 3 and 4:30 mins of the last video #3 (To establish and maintain) of <http://www.jkp.org/home.html>, and let me know if you agree with him and me for the active approach.

**NM:** I am not qualified to agree with or comment on the discourse of Kripālu ji, but as I understood it, there is no contradiction. Kripālu ji says that God and saints do not shower *Kripā* on everybody (sab par Kripā, sab ka Kalyan). This per my understanding is the general rule of karma which is the deterministic component of the Jiva's path to paramārtha which is what you call as the active approach. *Kripā* of Rama can then be thought as the exception of the general rule or the random variable added to the deterministic trend. When the random noise is too high, like a ten sigma or six sigma event, then the output is much further from the deterministic trend, in other words the *Kripā* of Lord is a force in the same or opposite direction as the force of karma. The vector addition of forces produces a net force which determines final result. But since *Kripā* is only on rare individuals like *Ahalya* and *Ajamila*, the active approach is to be followed as you say - i.e. one has to perform *sadhana* as prescribed by *Vedas* and *guru*, and follow the path of saints. To sum it up, I see no contradiction. Note that once the Jiva comes face to face with Lord Rama, the *karma* bondage is no longer there. As *Mundaka Upaniṣhad* says (2.2.8): *kshiyante chaasya karmaani tasmin drishte paravare*.

**Author:** As long as we agree that the active approach is necessary, in general, for reducing suffering, there is no contradiction. In rare cases also, devotees, such as *Ahalya* and *Ajamila*, must have gone through sublimation process (converting negative energies into positive), which also involves serious active effort.

<sup>80</sup> **What happens during and after death, and then rebirth:** The *Bṛihadāraṇyaka Upaniṣhad* (Br.U.) hypothesizes what happens during and after death as follows. The soul (if exists) is separated from its dead-body at death. Then soul acquires a subtle body with

*Karmic* impressions along with its unfulfilled intense desires, i.e., the forces of *Karmas* cling with it. Then rebirth occurs depending on the *Karmas* and desires. However, this hypothesis cannot be proved or disproved. Therefore, we do not know if it is true.

[1]. **Process of death:** The *Br.U.* hypothesizes the process of death by giving an example: “Just as a bullock cart which is heavily loaded with material, almost beyond its capacity, dragged by two powerful bulls, creaks and groans because it is heavily loaded and moves slowly and reluctantly because of the weight, somewhat in a similar manner this individual about to expire moves out of the body reluctantly like a heavily laden cart, pulled by forces which belong to the other world, with creaks and groans caused by the weight of attachment that he still has to this world. That weight does not allow him to go freely. So he makes a kind of ‘creaking’ sound, as it were. There is difficulty in breathing, or hard breathing. The *Prāṇas* depart; they are about to leave the body. In sleep, the *Prāṇas* do not leave the body. Though the mind is withdrawn from the body, the *Prāṇas* are not withdrawn. So there is no death in sleep. Life is still present, though the mind is absent. But in the death condition, *Prāṇas* also are withdrawn. So, there is no connection between the subtle body and the physical body at the time of death. In sleep the connection is maintained, and so you return to waking life once again through this body only. But when the *Prāṇas* are withdrawn, the last connection that obtains between the subtle body and the physical body is snapped, and the two are separated. At that time of the separation of the *Prāṇas* from the physical body there is inordinate breathing. What kind of breathing it is will differ from person to person. When a person is about to depart, indications will be seen in the physical body as well as in the mind. The person becomes emaciated and weakened in every respect. When the soul, with the subtle body, is about to leave the physical body, several phenomena take place. The physical body shows a tendency to disintegrate, and the mind shows a reluctance to the maintenance of it. The senses become feeble and they refuse to energise the body, as they had been doing before” ((Swami Krishnananda, 1983):IV.3.35.p254). Since there is no scientific evidence for soul after death, it is unclear if these processes of death are correct, as implied by the atheist version of *Dvi-Pakṣa Advaita*.

**[2]. Processes after death and before rebirth:** Simultaneously to the process of death, “another activity goes on in another atmosphere, in a very subtle and unconscious manner. There is a desire in the soul that departs, to materialise itself in another form. The subtle body accordingly, even before leaving the present body fully, begins to draw to itself the necessary material forces available to it at that particular spot or atmosphere where it can continue its activities and fulfill its desires which are yet unfulfilled” ((Swami Krishnananda, 1983): IV.3.35.p254-255). Since there is no scientific evidence for soul after death, it is unclear if these processes exist, as implied by the atheist version of *Dvi-Pakṣa Advaita*.

**[3]. Nature of subtle body:** “The subtle body will be wrenched from every limb of the physical body. At present the subtle body has become one with the physical body ... the subtle body permeates the physical body and has got identified with the physical body. That is why we have sensation. If you touch a finger, you can feel the sensation; there is the feeling of touching. The feeling is not of the physical body; it is of the subtle body only ... the sensation that you feel in the body is not the sensation felt by the physical body. It is the sensation conveyed through the instrumentality of the physical body to the subtle body. So the feeler, the experiencer is the subtle body whose presiding deity is the mind. But, at the time of death, the subtle body is withdrawn. During life, it has become one with the physical body in every detail; it has become one with every cell of the body. It has become identified with every limb of the body—with the eyes, with the ears, with every sense-organ. When, at death, it is withdrawn from the physical body, it becomes a kind of painful experience, because it is not a natural separation. It is a separation caused on account of unfulfilled desires which the present physical body cannot fulfill. It is not a separation caused by exhaustion of desires. There is a difference between a dry leaf falling from a tree and a green leaf being plucked. The physical body is dropped, not because the desires have all been fulfilled, and there is no further need for a body, but because this body is unsuitable for the fulfillment of the remaining desires. And so, there is a handing over charge by one officer, as it were, to another one. The function is not finished, only the personality changes. After death also, there is a



continuity of the same activity of the mind, but there is a little awkward feeling in the middle, when the physical body is dropped.

‘The body becomes thin.’ There is an experience of various ups and downs in the physical body at the time of death. As a fruit may be plucked from a tree, the subtle body is wrenched out of the physical body from every limb, from every cell, every sense, every organ, and it departs. It, the subtle body, then gravitates automatically by the law of the universe, to the spot where it can find its new habitation. The elements which are the building bricks of the new body, the future body, get collected by the force of the pull of this magnet, which is the subtle body. The subtle body is like a magnet which pulls the iron filings which are around. The iron filings are the elements—earth, water, fire, air, ether. The necessary part or aspect of the elements is pulled, dragged, withdrawn from Nature’s storehouse and absorbed into its being by the subtle body. It does not absorb everything and anything, only that which is necessary. Individuals vary in their physical form and shape, etc. because their subtle bodies differ in their nature. According to the need felt, the quantity of material that is drawn varies in shape and proportion. So individuals differ, one from the other” ((Swami Krishnananda, 1983):IV.3.36.p255-256).

Furthermore, the *relationship between subtle body and mental impressions* is elaborated as follows: “*Tasya haitasya puruṣasya rūpam*: This Puruṣa within us manifests himself in the subtle body as various colours. Now, these colours mentioned here actually represent the various types of impressions out of which the subtle body is made. It is difficult to distinguish between the impressions of the mind and the constitution of the subtle body. Well, something like the threads and the cloth which are related to each other, the mental impressions and the subtle body are related. The whole range of activity of the mind is what is called the subtle body, like the magnet[ic] field of a electromagnetic installation. It is not a substance in the ordinary sense; it is a limitation set upon the mind by its own activities in the form of impressions of experience. They are compared to colours because they are constituted of the three Guṇas of Prakṛiti—Sattva, Rajas and Tamas. Sattva is generally said to be white, Rajas reddish, and Tamas is black. And by mutual permutation and combination of these three properties, we can have

other colours also. So, the subtle body is a mixture of these three Guṇas in various intensities or degrees, on account of the difference in the intensity of the thoughts of the mind, the feelings of the mind and the impressions created by mental activity” ((Swami Krishnananda, 1983):II.3.6.p393).

If soul exists after death (but there is scientific evidence), subtle body is the physical aspect of soul, as per the theist version of *Dvi-Pakṣa Advaita*.

**[4]. Process of rebirth:** “The entry into a new body is also a great mystery. It is a gradual condensation of material forces into solidified matter in the way in which it is necessary for the fulfillment of the desires present in the subtle body. And at that time, the Prāṇas that were withdrawn from the previous body are once again released into action. As in an airplane, when it takes off, the wheels are pulled up, and when it lands, the wheels are thrust back once again so that it may land on the ground, likewise the Prāṇas are withdrawn when there is a take-off from the physical body by the subtle body which runs like a plane to the new habitation which it has to go and occupy, and when it comes to the spot it projects the Prāṇas once again, and catching hold of the elements makes them its own in the form of a new physical body. These elements become the new body. That is called rebirth. The manifestation of a new physical form by the gravitational force of the subtle body, which is determined by the intensity of unfulfilled desires, is the process of rebirth.

The Upaniṣhad says, just as when a king leaves his palace and goes out on a journey, the news about his departure is conveyed to various parts of the country and the officials everywhere get ready to receive him with all the necessities such as boarding, lodging, security and various other needs of the king in that particular place towards which he is moving, likewise, the particular realm of beings, the particular atmosphere towards which the soul is gravitating, gets stirred up into activity because of its impending departure from here. “The king is coming. We have to make ready several amenities for his stay, etc.” The officials confer among themselves and prepare the things that are required for his reception. Likewise, the forces of Nature begin to act in respect of this soul, which has to materialise itself in a new form, in the particular realm where it is going to take birth. [IV.3.36.p256 ...]

‘At the birth of every event the whole universe is in travail undergoing the birth pang.’ The whole universe begins to feel that some event is taking place, and so the necessary contributions are made from every quarter of the universe. [IV.3.37.p256 ...] The forces that work for the purpose of the materialisation of a new body for the individual that departs from the present body are stimulated by cosmic purposes. It is the whole universe that acts IV.3.37.p257 [...] when the soul is about to depart from the body, all the energies in the system get gathered up. The distractions of the senses and the Prāṇas cease, and there is a sort of centralisation of all energy. The faculties of the ears, the nose and the various other senses together with the Prāṇas, centre themselves in a particular place. [IV.3.37.p257-8 ...] The Prāṇas do not work in the usual manner. They withdraw themselves from the limbs of the body, and the senses also withdraw themselves from the various organic parts. There is thus a centralisation of activity, and everything comes together [IV.3.37.p258...]

There is then an urge to get expelled from this body. The subtle body wishes to get out of the physical body. That aperture through which it is to go out, gets opened up by the force it exerts, and the way in which the subtle body seeks exit from the physical body varies. They call this exit the departure of the Prāṇa, for the Prāṇa is the vehicle of the subtle body. The Prāṇa leaves the physical body. Through any one of the various orifices of the body, it may find its exit according to the nature of the destination that it has to reach. The energy of the eyes, etc. gets withdrawn, so that one cannot see properly at that time, one cannot hear properly, one cannot smell, one cannot taste, one cannot speak, one cannot think, one cannot understand, because these senses which were placed in various locations of the body for the purpose of discharging certain duties through the organs, have fulfilled their duties. The officials are withdrawn to the centre, as it were, because their work in the outlying areas is finished. This is what happens at the time when the soul departs from the body. [IV.3.38.p258 ...]” ((Swami Krishnananda, 1983):IV.3.36-38.p256-258). Since there is no scientific evidence for soul after death, rebirth of some of the attributes is possible via genetic transmission in children to some extent, as per the atheist version of *Dvi-Pakṣa Advaita*.

**[5]. The process of death, the nature of desire, and the fate of unrealized and realized soul after death:** (Swami Krishnananda, 1983) interprets the process of death proposed in Br.U. as: “It is said that all the energies get centred in the heart. The brain also stops functioning [during death]. There is no thinking faculty at that time. There is feebleness. The breathing becomes slow. There may be a heaving just at the time of the exit, but otherwise, there is a slowing of the breath on account of the withdrawal of the activity of the Prāṇa from the various parts of the body. What happens when the energies get centred in the heart? [...] Then there is no seeing. So, even if the eyes are open, there is no seeing at that time [IV.4.1.p258-9 ...]

He [dying man] cannot touch; he cannot think; he cannot smell; he cannot hear; he cannot understand ... There is a flash of light, as it were, bursting forth through some part of the heart. That is the only consciousness that he has, not the consciousness of body, not the consciousness of sense-activity, not the consciousness of people around, of objects around, etc. There is only a feeble, meagre, failing self-consciousness. He cannot even feel that he exists ... The belief is that if the departs through the crown of the head, one reaches Brahma-loka ... if it passes through the eyes one goes to the sun, and so on and so forth. If it is a vertical movement, it is supposed to be the indication of ascending to a higher region. If it is a horizontal movement or a downward motion, then it is supposed to be a descent to the lower worlds or to this particular world itself. *Tam utkrāmantam prāṇo’nutkrāmati* : When the centre of consciousness, which is in the form of this little light, rushes out of the body, the Prāṇa goes with it. When the Prāṇa goes, all the energies of the senses also get gathered up together and leave with the Prāṇa.

*Prāṇam anūtkrāmantam sarve prāṇā anūtkrāmantī*: Now this term *vijñāno bhavati* has a special sense. It seems to imply that there is a feeble consciousness of the future stage that is Vijñana. There is a total unconsciousness of the previous condition. One loses touch with the earlier body and, therefore, there is no connection with the previous life at all. Inasmuch as the senses have been withdrawn from the previous body, there is no recognition of the previous world, the previous relations, the previous society, etc., etc. There is a tendency to recognise the presence of a new atmosphere. That is the functioning of the Vijnana. The intellect slowly stirs into action when

there is a possibility of fresh materialisation, that is, the preparation for a new body— *sa vijñāno bhavati, sa vijñānam evānvavakrāmati; taṁ vidyā -karmaṇī samanvārabhete pūrvaprajñā ca*. When there is such a departure of the individual, something must be going with the individual. What is it that goes with us when we leave this world and enter the other world? Do we take something when we go? We have a lot of property, many possessions and acquisitions. We have cherished many values in this life. Do they all come with us? The Upaniṣhad has a simple answer to this question. Whatever knowledge has become part of your life, that will come with you, not the knowledge that is in the books or in the libraries. This knowledge is not going to come with you. The knowledge that has become part of your actual daily life, through which you have been thinking and working, that knowledge will come with you. That action that has become a part of your very life itself, not merely an externally compulsive action, but an action that is voluntary, of your own accord, which you have done and you like it, which you feel has a meaning in it, which you feel is your action, which you have done with a purpose, will produce a result in a very fine form. And that form which is very fine is called Apūrvā, something subtle and invisible. It is of the form of energy. This Apūrvā comes with you. The impressions which have been accumulated by the mind by various thoughts of perception, cognition, etc., called Vāsanās or Samskāras, they accompany the departing individual. It is a psychic complex that actually departs from the body. Whatever is our mind in its complex state goes with its own constituents. Nothing extraneous will come with it. We cannot take anything from this world which has not become a part and parcel of our own minds, our own feelings. That is the meaning of saying, that which has become part of your life will come with you. Nothing else comes with you. Many things there are in this world which cannot be regarded as part of our life. They are extraneous appurtenances. They do not come with us. But that which is absorbed into our own life by the feelings, that will come with us. [IV.4.2.p259-260 ...]

There is an activity, as we observed, taking place in the other realm at the time of the departure from this body ... There is an activity, as we observed, taking place in the other realm at the time of the departure from this body ... even without your consciously



thinking of the destination, forces of nature begin to work for you. They spontaneously work, and that preparation that is being made there to receive you to another realm is the foot that you have kept there already before you lift the other foot from this world. It is not a physical foot that you have placed, but a feeler which has connected you with the future realm in a very subtle manner. This shows the interconnectedness of all things. We are not cast into the winds by forces of which we have no knowledge. Everything is connected with us, and all the forces of nature keep an eye over us. Exactly in the manner in which it is necessary for us to have experiences in the future life, in that particular manner alone do the forces of nature work [IV.4.3.p261 ...]

a new body is formed out of the ingredients collected from nature ... the material forces, earth, water, fire, air, and ether are the elements out of which bodies are formed. The present body is made up of these elements. The future body also will be made up of these elements ... But the wood is the same. It is not new wood that he is using. Likewise, they are the same elements that work wherever you go, whatever be the birth that you take, and whichever be the shape the soul assumes in whichever realm, in its new incarnation. Even if it is in a very highly elevated state like that of a Gandharva, or a Pitr, or a celestial in paradise, even if such a lustrous body is to be assumed by the soul, it is made of nothing but this same material. It is formed of these elements only in their finer essences. When they are gross, they look like the bodies we have. When they are fine, they begin to be transparent like glass ... one can take any form; one can be reborn in any shape, maybe a Gandharva, a celestial, or any other being. You may even go to the realm of Hiranyagarbha, assuming the subtlest form of matter known as the Prakritis. Any form the soul can take. It can adjust and readjust the material elements according to the need which is indicated by the nature of the mind that actually reincarnates. [IV.4.4.p261-2 ...]

The deepest longings of the human individual are supposed to determine his future. *Sa yathākāmo bhavati, tat kratuḥ bhavati, yat kratuḥ bhavati, tat karma kuruṣv, yat karma kuruṣv, tat abhisampadyate*: ‘Whatever is your deepest desire will decide the nature of your determination, of the way to act.’ [By the time we are fed up with even a few things, the body also goes. But the desire has not gone. Last wishes should be

fulfilled otherwise rebirth will occur to fulfill these wishes.] The deepest longing of the soul, the desire of the mind or the urges of one's personal nature will influence the will, the volition. The will is nothing but the exoteric function of the desire within. 'As the desire is, so the will is; as the will is, so is the action. And as is the action, so is the consequence, or the result thereof.' Everything seems to be in our hands. Our weal and woe, our future, our destiny is actually operated upon by the deepest mechanism that is inside us. The switchboard of the cosmos, as it were, seems to be inside our own hearts. [IV.4.5.p263 ...]

When we leave this world, we take nothing [physical, social, etc] with us. [...] But we take something with us. Like an encrustation that has grown upon us, the forces of Karma cling to our subtle body which alone departs when the physical body is shed. *Lūṅgam mano yatra niṣaktam asya*: 'The mind which is the ruling principle in the subtle body carries with it the result of its actions, the Karma-Phala' which clings to it like a leech. It will not leave it, wherever it goes. [...] our Karma will find us wherever we are. [...] the laws of the cosmos catch that individual who has been responsible for the particular action. [...] the subtle body is taken to the exact spot where it can fulfil all its wishes. [...] The fulfilment of a desire is not the way to freedom from desire. [...] fire is never satisfied by any amount of clarified butter that you pour over it. It can swallow numerous quintals of clarified butter. The more butter you pour on it, the more ferocious does the fire become. So is desire. [...] A person who does not desire, who is freed from desires, whose desires have gone, whose desires have been fully satisfied, whose desire is only for the Self [...] If your desire is for anything other than the Self, it is not going to be fulfilled, because you are asking for that which is not there. [...] one who has desire centred in the Universal Self is one whose desires are all fulfilled at one stroke, which in other words means that all desires have left him. Why have all desires left that person? Because all desires have been fulfilled, the reason being that the desire itself has become merged in the Universal Self. [...] If a person is to shed his physical body in that circumstance, without any desire remaining except for the desire of the Universal Being, what happens is that his Prāṇas do not move hither and thither in search of a new location; they do not move. The subtle body does not depart in space and in

time; on the contrary they, the Prāṇas, and the senses dissolve like bubbles in the ocean then and there— *na tasya pr āṇā utkrāmanti, brahmaiva san brahmāpyeti* . ‘He has been contemplating throughout his life on the Absolute Self. He gets identified with the Absolute Self then and there.’ This is called in the terminology of the Upaniṣads and the Vedānta philosophy Sadyamukti, instantaneous liberation. It is an immediate salvation of the soul, which is attained on account of freedom from desire that has arisen on account of desire for the Ātman. This is the glorious destination of the spiritual adept who spends his life in contemplation on the Universal Being” ((Swami Krishnananda, 1983):IV.4.6.p265-267). Since there is no scientific evidence for soul after death, everything (brain, body, mind, self, etc.) merges with Nature after death as discussed in the atheist version of *Dvi-Pakṣa Advaita*.

**[6]. Mortality and Immortality:** “Mortality is a condition that is imposed upon the spirit due to the encrustation of desire. It is in its essential nature. We are not mortals, essentially. Our essential nature is that of immortality, deathlessness, eternity, that of a durationless Being. If we were really mortal, we would not be capable of becoming immortal. [...] We are free souls. And we are going to assert the freedom of our real nature by uncovering it through the practice of Yoga. The mortal does not become immortal, really. The immortality that has been hidden under the cover of mortality gets revealed or manifested. That is actually what happens when it is said that one becomes immortal. It is by transcending mortality that one reaches immortality” ((Swami Krishnananda, 1983):IV.4.7.p267). In my view, doing good *karmas* and giving good *sanskāras* to children is essential for the attaining immortality to some extent via genetic transmission if soul does not exist as argued in the atheist version of *Dvi-Pakṣa Advaita*.

**[7]. Experiences during Meditation and Guṇas:** “The lights and sounds, etc. that we experience in meditation are caused by that effect of Sattva, Rajas and Tamas [*Guṇas*] in us. [...] We are not wholly Sattvic; wholly Rajasic or wholly Tamasic we are not. None of us is constituted entirely of one quality. We are an admixture of one, two or three in different proportions. According to the proportion of admixture of these properties of Prakṛiti—Sattva, Rajas, Tamas—we have different experiences in meditation. We sometimes see yellow,

sometimes white or blue or green, etc., hear sounds of various types and intensities, feel touches or various other sensations, all mentioned in the Yoga Śāstras. They are not indications of any final achievement, but only symbols of our having attained some success in deep concentration of the mind. One should not mistake visions of colours and auditions, etc., for achievement of Brahman, Brahma-Sākshātkāra, or liberation. They are only symbolic of your concentration of mind. You have succeeded to some extent in fixing your attention upon the object, and so a particular quality of yours has come to the fore. When it acts, it produces these experiences. They are sort of light posts which only indicate what is happening to you on the way, and are not signs that you have actually reached the goal ((Swami Krishnananda, 1983):IV.4.9.p270). In my view, yogic meditation to attain *samādhi*-state via *Dvi-Pakṣa Advaita* is the optimum goal of life.

**[8]. Avidyā, extroversion, introversion, and suffering:** “Avidyā or ignorance is the concept that the action, the notion and the external movement are all based on the presumption or assumption that Reality is externally present, and can be contacted only through the senses and through externalised activity [this is called extroversion]. This is one extreme movement, and the result of this kind of engagement is supposed to be suffering in future lives on account of entanglement in the urges of the senses, bereft of the knowledge or the enlightenment of the Self. The other extreme is total withdrawal from externality into internality. This is called introversion. [...] It is capable of producing a result much worse than that produced by the ignorance of the person who believes in an externality of activity. That man of knowledge is an egoistic man, generally, because of the presumption that he knows everything. But, what he knows is substanceless. It is mere information. [...] may go to a still worse darkness” ((Swami Krishnananda, 1983):IV.4.11.p271-2). Therefore, a middle path (such as *Dvi-Pakṣa Advaita*) is the best.

**[9]. Samsāra, Bondage, Objects, Subjects, Mokṣha, End of Karma and suffering, and Brahma-loka:** “When you consider everyone as an object, you are in Samsāra. That is called bondage. Everyone is an object. I am an object for you and you are an object for me. So, everyone is an object only. The whole world is filled with objects. The consideration of the whole world as a conglomeration of

objects merely, and nothing more than objects, is called Samsāra, or bondage. But you can shift your emphasis to the subjectness of beings. Why should I regard myself as an object of you? Am I not a subject by myself, so also you? So, if everyone is a subject, there is only subjectivity everywhere. Look at the wonder. The moment you shift your emphasis of consideration, the very world of objects has become a world of subjects. That is called Mokṣha. So, in one and the same place there is bondage and liberation at one stroke, and in the same person you can see both object and subject, both friend and foe. Viewed as an object he is an enemy, and viewed as a subject he is a friend. This is the great point of view taken by the knower of Brahman. In his case no Karma arises, either good or bad, because these appellations are inappropriate in that supreme condition of a person —*eṣa nityo mahimā brāhmaṇasya na vardhate karmaṇā no kanīyān*—as he only sees subjects and no objects. [...] He sees himself in himself, nothing else. He does not see people; he does not see the world; he sees himself in himself. Now, does it mean that he sees only the personal self? [...] ‘He sees the Self in everything’, not looking at himself only as the Self but looking at everything as the Self. [...] This is Brahma-loka, the world of Brahma. It does not mean some distant world of Brahma; it means the world itself is Brahma” ((Swami Krishnananda, 1983):IV.4.23.p289-291). Since *samādhi*-state has 3 major SEs (bliss, inner light perception, and unification of subject and objects), which entails maximum possible happiness, it is useful to attain this state to minimize suffering consistence with *Dvi-Pakṣa Advaita*.

<sup>81</sup> See also <http://en.wikipedia.org/wiki/Prana> that describes 5 *prāṇas* or *vital currents*: **(i) Prāṇa**: “Responsible for the beating of the heart and breathing. Prana enters the body through the breath and is sent to every cell through the circulatory system.” **(ii) Apāna**: “Responsible for the elimination of waste products from the body through the lungs and excretory systems.” **(iii) Uḍāna**: “Responsible for producing sounds through the vocal apparatus, as in speaking, singing, laughing, and crying. Also it represents the conscious energy required to produce the vocal sounds corresponding to the intent of the being. Hence Samyama on udana gives the higher centers total control over the body.” **(iv) Samāna**: “Responsible for the digestion of



food and cell metabolism (i.e. the repair and manufacture of new cells and growth). Samāna also includes the heat regulating processes of the body. Auras are projections of this current. By meditational practices one can see auras of light around every being. Yogis who do special practise on samana can produce a blazing aura at will.” (v) **Vyāna**: “Responsible for the expansion and contraction processes of the body, e.g. the voluntary muscular system.” “In Yoga the Prāṇa is further classified into [five] subcategory Upa-prāṇa with following items”: (a) **Naga**: Responsible for burping. (b) **Kurma**: Responsible for blinking. (iii) **Devadatta**: Responsible for yawning. (iv) **Krikala**: Responsible for Sneezing. And (e) **Dhananjaya**: Responsible for opening and closing of heart valves.

<sup>82</sup> [http://en.wikipedia.org/wiki/Kashmir\\_Shaivism](http://en.wikipedia.org/wiki/Kashmir_Shaivism)

<sup>83</sup> Adapted from <http://www.kashmirshaivism.org/introduction.html>

<sup>84</sup> As per (Kak, 2010b), “According to the Vedic view, reality, which is unitary at the transcendental level, is projected into experience that is characterized by duality and paradox. [...] The *bindu* or dot in the innermost triangle of the Śrī Cakra represents the potential of the non-dual Śiva-Śakti. When this potential separates into *prakāśa* (the *aham* or I-consciousness, Śiva) and *vimarśa* (the *idam* or this-consciousness, Śakti) it is embodied into *nāda*, *kalā* and *bindu*. *Nāda* is the primal, unexpressed sound (interpreted by human ear as *omkāra*) and *kalā* is the “*kāma kalā*,” the desire to create, which the Vedas tell us is the desire “May I be many” (Chāndogya Up. 6.2.1.3). *Bindu*, as the potential universe ready to separate into various categories is Mahātripurasundarī. Śiva as *Prakāśa* (luminosity or consciousness) has realized himself as “I am”, through her, the *Vimarśa Śakti* (Nature as the reflector). It must be stated that within the Yogic tradition, it has always been believed that Tantra is a part of the Vedas itself. In the Devī Sūkta (Rgveda 10.125), the Goddess describes herself as supreme. In the Śrī Sūkta of the Rgvedic hymns (appendices), the goddess Śrī is associated with prosperity, wealth, and fortune, and she is spoken of as deriving joy from trumpeting elephants. The Śrī Sūkta, addressed to Jātavedas of Fire, was invoked at the fire ritual. In Kauṇḍilya’s Arthaśāstra (14.117.1) there is

reference to the goddess being invoked for the protection of a fort. In the Bṛhadāraṇyaka Upaniṣad 7.4 there is a reference to the goddess Vāc. The Vedic triads, together with the dyadic male and female components, enlarge through expansion (*prapañca*) so the universe is a projection (*vimarśa*) of the Absolute's self illumination (*prakāśa*). [...] The three cities in the name of Lalitā Tripurasundarī are that of the body, the mind, and the spirit, or that of will (*icchā*), knowledge (*jñāna*) and action (*kriyā*). They may also be seen as the knower, the means of knowledge, and the object of knowledge; the three guṇas of *sattva*, *rajas* and *tamas*; *agni* (fire), *sūrya* (sun) and *candra* (moon); *sr̥ṣṭi* (creation), *sthiti* (preservation) and *laya* (dissolution); intellect, feelings, and sensation; subject (*mātā*), instrument (*māna*), and object (*meva*) of all things; waking (*jāgrat*), dreaming (*svapna*) and dreamless sleep (*suṣupti*) states; as *ātma* (individual self), *antarātma* (inner being) and *paramātma* (supreme self) and also as past, present and future.”

It is unclear how does the non-dual Śiva-Śakti divide into Śiva (I-consciousness or the mental aspect in 1<sup>st</sup> person perspective) and Śakti (this/object-consciousness or the physical aspect in 3<sup>rd</sup> person perspective).

<sup>85</sup> As per Kak (personal communication in April, 2011), “Re your question on how to classify the Trika system with its dichotomy of *Puruṣa* and *Prakṛti*, I can only say that this is consistent with the Vedic view of the transcendent ‘ground’ getting projected in these dual categories. My intuition (not just understanding) of the *Vedas* as well as *Trika* is that one cannot build linguistic or materialistic models of explanation related to the relationship between the transcendent and the projected. The ‘mental’ (one must separate it into the instrumented mind [functional aspect of consciousness] which is governed by physical processes and that of ‘enclosing’ ‘awareness’ – the *Śiva* within) is thus partly connected to the physical. What is the evidence of these connections? I provide this evidence in (Kak, 2009). I don't say the *jagat* is ‘unreal’ in the normal meaning of the term ‘unreal’. It is ‘unreal’ only in its transitoriness but otherwise it is a projection of the *Brahman*. What is the relationship between *jīva* and *Paramatmā*? The answer to this is in the *Rgvedic* hymn as well as the Upaniṣhad that compares these to

the two birds on the tree. The projection is *Māyā* which is the net that separates the *jīva*-bird from *Śiva* [*Paramatmā*].”

However, what is the mechanism of projection? This metaphysics is either (a) the neutral monism (a branch of dual-aspect monism) that has explanatory gap problem (how aspects are derived from transcendent ‘ground’) or (b) dual-perspective/dual-aspect monism, but it is unclear if both aspects/perspectives are *inseparable*.

As per (Kak, 2009), “In the view that consciousness is complementary to space, time and matter, it needs material support to be embodied as ‘awareness’. Conversely, it is meaningless to speak of a universe without observers. [...] observers are essential in the universe. [...] the brain-machine has awareness whereas the computer does not [...] In the archaic view, the universe is conscious. In more sophisticated versions of this archaic view, consciousness itself is the ground stuff of reality and on this ground the complex of space, time and matter is seeded. [...] One cannot speak of information in a universe without observers. [...] If the set of choices is infinite, then the ‘information’ generated by the source is unbounded [...] The increase of information with time is a consequence of the interplay between unitary (related to pure states) and non-unitary (related to mixed states) evolution, which makes it possible to transform one type of information into another. This complementarity indicates that a fundamental duality is essential for information [...] The receiver can make his estimate by adjusting the basis vectors so that he gets *closer* to the unknown pure state. The information that can be obtained from such a state in repeated experiments is potentially infinite in the most general case. But if the observer is told what the pure state is, the information associated with the states vanishes, suggesting that a fundamental divide exists between objective and subjective information. [...] Some ascribe awareness of the brain to the fact that the brain is a self-organizing system which responds to the nature and quality of its interaction with the environment, whereas computers can’t do that. [...] self-organization is a necessary pre-requisite for consciousness, it is not

sufficient. [...] Quantum mechanics is not a local theory in the sense that parts far apart cease to be causally connected to each other; entanglement between particles persists no matter how apart they are. It cannot be assumed that as the universe evolved, interaction between different isolated parts of it came about in a non-unitary manner, leading to creation of information. The entropy at the origin should not change as the universe evolves. [...] The working of the ‘consciousness principle’ in the laboratory may be seen in the quantum Zeno effect in which the process of observation increases entropy. This principle, rather than the creation of complex molecules by chance, leads to the rise of life in the universe. Consciousness interpenetrates the universe, but it needs appropriate physical structures to be embodied.”

It is unclear how the life and consciousness (experiences) arise from the observation-process and how space-time and matter arise from consciousness.

As per (Kak, 2010a), “In India, the Vedas declare reality as transcending the subject-object distinction and then self-consciously speak of their own narrative as dealing with the problem of consciousness. [...] Parallels between the Vedic view and quantum theory are well known. For example, both suggest that reality is consistent only in its primordial, implicate form. The Vedas insist that speech and sense-associations cannot describe this reality completely. [...] Vedic narrative insists that ordinary linguistic descriptions of reality will be paradoxical. In quantum physics also use of ordinary logic or language leads to paradoxes such as: the present can influence the past, effects can travel instantaneously, and so on. The Vedic model of mind provides a hierarchical structure with a twist that allows it to transcend the categories of separation and wholeness. In it, the lowest level is the physical world or body, with higher levels of interface forces, the mind, intuition, emotion, with the *universal self* sitting a top. The lower levels are machine-like whereas the self is free and conscious. The individual’s idea of consciousness arises out of associations with events, illuminated by the consciousness principle. The most striking part of this model is

the nature of the *universal self*. Considered to transcend time, space and matter, the *self* engenders these categories on the physical world. Mind itself is seen as a complex structure. Although it is emergent and based on the physical capacities of the brain structures, it cannot exist without the *universal self*. One implication of these ideas is that machines, which are based on logic, can never be conscious. The Vedic theory of mind is part of a recursive approach to knowledge. The Vedas speak of three worlds, namely the physical, the mental, and that of knowledge. Consciousness is the fourth, transcending world. [...] These questions are examined in the later Vedic tradition within the frameworks of both Vaiṣṇavism and Śaivism. [...] The 25 categories of *Sāṃkhya* form the substratum of the classification in Kashmir Śaivism. [...] In Vaiśeṣika, the mind is considered to be atomic and of point-like character, anticipating Leibniz's theory of monads, although it is different from it in a crucial sense. According to the Vedic traditions, mind itself must be seen as a complex structure. Whereas mind is emergent and based on the capabilities of neural hardware, it cannot exist without the universal self. [...] We argued that machines fall short on two counts as compared to brains. First, unlike brains, machines do not self-organize in a recursive manner. Second, machines are based on classical logic, whereas nature's intelligence may depend on quantum mechanics. Quantum mechanics provides us a means of obtaining information about a system associated with various attributes. A quantum state is a linear superposition of its component states. [...] The counter-intuitive nature of quantum mechanics arises from the collapse of the state function by the observation. This renders the framework nonlinear, and irreversible if the time-variable is changed in sign. [...] The strangeness of quantum mechanics is a consequence of its superpositional logic. But quantum mechanics has characteristics that are intuitively satisfying and it may be interpreted in a manner that allows free will and consciousness. The evidence from neuroscience that we reviewed showed how specific centres in the brain are dedicated to different cognitive tasks. But these centres do not merely do signal processing: each operates within the universe of its experience so that it is able to generalize individually. This generalization keeps up with new experience and is further related to other cognitive processes in the brain. It is in this



manner that cognitive ability is holistic and irreducible to a mechanistic computing algorithm. Viewed differently, each agent is an apparatus that taps into the universal field of consciousness. On the other hand, AI machines based on classical computing principles have a fixed universe of discourse so they are unable to adapt in a flexible manner to a changing universe. This is why they cannot match biological intelligence. [...] Second, the material world is not causally closed, and consciousness influences its evolution. Matter and minds complement each other. [...] It is most fascinating that starting with the machine paradigm one is led to the ultimate end of a universal mind, whereas in India the traditional view is to postulate a universal mind in the beginning out of which emerges the physical world!”

As long as primal implicate form has dual-aspect (mental and physical) and category mistake is not made, the co-evolution of consciousness from the mental aspect of unmanifested implicate state and brain from its physical aspect is possible without making category mistake. However, both idealism-based quantum physics (such as (Stapp, 2009a)) and Vedic system involve idealism at the deepest level and substance dualism at classical level, which have problems.

<sup>86</sup> See also [http://en.wikipedia.org/wiki/Advaita\\_Vedanta](http://en.wikipedia.org/wiki/Advaita_Vedanta) and [http://en.wikipedia.org/wiki/Adi\\_Shankara](http://en.wikipedia.org/wiki/Adi_Shankara) . *Brahman* alone is truth, the jagat is unreal [i.e., not eternal, rather jagat is transitory], individual self is none other than *Brahman* <<http://www.hindudharmaforums.com/showthread.php?t=4629>>.

<sup>87</sup> <http://en.wikipedia.org/wiki/Mayavadi>

<sup>88</sup> See Śankara’s *adhyāsa-bhāṣya* in his commentary on the *Brahma-sūtra*: <http://nisargadatta.wordpress.com/2006/01/16/an-article-on-adhyasa-bhasya-sankaras-introduction-to-brahma-sutra/>. <http://en.wikipedia.org/wiki/Adhyasa>: **Adhyāsa** (अध्यास) means “superimposition or false attribution of properties of one thing on another thing.”

<sup>89</sup> “In metaphysics, pluralism claims a plurality of basic substances [such as fire, air, water, earth] making up the world. ... Descartes defined each substance as that analytical point at which "we can understand nothing else than an entity which is in such a way that it need no other entity in order to be." Monism holds a godlike oneness of being in an existence of a single substance. Dualism visualizes two substances — material and mind”  
<(http://en.wikipedia.org/wiki/Pluralism\_(philosophy)> ).

<sup>90</sup> Critique1 seems to be a very faithful Advaitist, where *Brahman* is an aspectless primal entity and provides critique on the definition of *Brahman* based on the dual-aspect monism.

**Critique1:** *Advaita* has no color. It's not One, but that all is whole, akhanDa. Any differentiation is local perception. Any separation between jīva and body such as at the time of death is not *Advaita*. Separation is perception. The body never existed; it is an illusion. That's the trap. Theory is not based on experience. *Advaita* is what's. There is no value judgment. It's a definition of a concept.

**Author:** The attributeless, colorless, and aspectless *Brahman* in Śāṅkarācārya's *Advaita* is a special case of the *Dvi-Pakṣa Advaita* when both mental and physical aspects of unmanifested state of *Brahman* are latent before manifestation; that is why this state of *Brahman* appears aspectless. The innumerable manifestations of *Brahman* occur after Big Bang (cosmic fire, *Virāt* state). Moreover, the phrase ‘the body never existed; it is illusion’ really means that the body is not eternal as jīva is; rather body is of transitory nature; it dies so it is considered illusion with respect to eternal jīva. Furthermore, our differences are because we are thinking in different domains of reality. My view is mostly in our daily conventional mind dependent reality (cMDR) and addressing our daily problems and we all know that our body-brain system exists although it is not immortal as it dies. I am not defining *Brahman* based on the ultimate mind dependent reality (uMDR) of *samādhi* state, where yogis experience the unification of subject (self) and objects. I am also not defining *Brahman* based on the mind independent reality (MIR), which is either unknown or partly known via cMDR/uMDR.

Kapila ṛṣi who gave us Sāṃkhya, the founders/authors of Buddhism, Jainism, Brihaspati-sutra, and so on were accomplished

yogis and presumably achieved the *samādhi* state also. Their views are different from Advaita, even Ramānujāchārya and Madhvāchārya differ. Thus, truth is controversial; perhaps, each view highlight different attributes of the same unmanifested *Brahman* or unified field.

In cMDR, body and *jīva* do get separated; we all witness during death; dead-body is cremated. [We do not know if soul and/or God even exist and perhaps that does not matter much.] That is where interactive substance dualism comes in. In cMDR, matter and dead-body are NOT illusion. Illusion in cMDR is just like imagining an elephant that is physically not there; or optical illusions as in magic show or illusions in science museum. Otherwise, our daily activities are real in cMDR although they are not eternal. I think that everybody will agree on this.

As per Critique1's interpretation of *Advaita*, our bodies and whole material world are illusion and never existed, so the question of the separation of *jīva* and body does not arise during death. *Brahma satyaṃ jagat mithyā, jīvo brahmaiva nāparah*. Does this mean death, birth, life, and the *jagat* are all *maya* (illusion)? Perhaps, they are considered *māyā*, *mithyā*, or illusion because they are transitory in nature, i.e., they are not eternal.

I do not know what happens in uMDR; I never been there. Perhaps, if one were in uMDR, it will be easy for to agree with *Advaita* his/her body never existed. Neo-Kantians argue that MIR is partly known via cMDR/uMDR because mind is a product of Nature. Of course, it is all appearances (mind constructs our perception of objects); in that sense it is all *maya* (illusion). If this is what *Advaita* says, then it is close to idealism (consciousness is the fundamental reality) and has well known explanatory gap problem: how matter-in-itself can arise from non-material consciousness. Just saying matter-in-itself arise because it is congealed mind, in hand waving way, is NOT going to satisfy many researchers; we have to show precisely how mind congeals to matter-in-itself. For example, how color neural-network (anatomical) will arise from color consciousness.

Our goal is to bridge science and all religions for world peace in cMDR to address terrorism and wars based on religions. The problems of interactive substance dualism (ISD) are genuine and neurophysiology has rejected ISD; neuroscience will certainly reject if

we claim our bodies, car, table, temple, church, brain etc. never existed.

**Critique1:** You are working hard on this, but the basic fundamentals go wrong. *Brahman* has no definition. It's a perception, a realization, has no description. Whatever you describe is not *Brahman*. There is a built in mathematical beauty in this. This is not religion or a matter of argument. Because it's so, there is no counting. All counting is only in this universe and limited by time. *Brahman* has no time. One gets a thrill when one conceives this! I don't know who had this masterful idea. Upaniṣads ascribe it to Yajñavalkya. *Brahman* is unmanifest. When manifestation occurs we have *Īshvara*, God or theism (mono, poly whatever). Manifestation is an extrapolation because "creation" has to take place. People can differ if the "creation" is an illusion or if it's sensory. They do, so we have *Advaita*, *Dvaita*, *Viśiṣṭādvaita* etc.

**Author:** I agree with you in that sense, but the aspectless Brahmin can be derived from the *Dvi-Pakṣa Advaita* by considering both the mental and the physical aspects latent at the primal unmanifested state of *Brahmin*. It appears that there are multiple meanings attributed to the term 'Brahman'. The meanings attributed to the term 'Brahman' by you from various sources are: *Brahman* (i) is a subjective (direct) perception by a subject (*kārya Brahman*), (ii) is a subjective realization by the subject, (iii) has NO (reportable) description by the subject who realizes *Brahman*, (iv) has no time, i.e., is timeless or beyond time (and perhaps space-less/beyond space), (v) the subject gets a thrill/bliss when s/he conceives *Brahman*, (vi) is aspectless, attributeless, colorless, etc (also called *kāran Brahman*). and (vii) is also an unmanifested entity (*kāran Brahman*): is this correct? Theism (or atheism), such as *Advaita*, *Dvaita*, *Viśiṣṭādvaita* etc. (or *Sāṃkhya*, science, Buddhism etc.) arises after manifestation of *Brahman*: is this correct? This is your understanding, and I agree with you in the sense of special cases of *Dvi-Pakṣa Advaita* (the DAMv framework) as elaborated before.

The DAMv framework has attributed additional and perhaps extended meaning to it: 'Brahman' is a fundamental dual-aspect entity (primal entity in its unmanifested state), where mental and

physical aspects are *inseparable* (and latent at its unmanifested state). From its physical aspect, physical universe including our brain co-evolved. From its mental aspect our consciousness including our personal first person experiences co-evolved with its physical aspect (neural-networks of our brain), which is the best product of evolution, so far, that has ability to conceive *Brahman*/God/*Īshvara*. In other words, a brain-state has two *inseparable* aspects: (i) personal first person subjective experiences (SEs) and (ii) the related public third person perspective neural-network and its activities as its *inseparable* physical aspect that can be empirically measured by functional MRI. There are innumerable brain-states. If any change occur to one aspect, that change gets translated into other aspect faithfully, automatically, and rigorously with 1-1 correspondence.

As per living Jagadguru Rāmabhadraṇāchārya, Rāmānandāchārya's *cit-acit-Viśiṣṭādvaita* (about 1300 AD) attributes a different meaning to the term 'Brahman': Brahman has 'cit' (chit, mind) and 'acit' (achit, matter) as adjectives (*viśeṣaṇas*), which is somewhat close to the first component (dual-aspect monism) of the DAMv framework, namely, mind and matter are the two aspects of the states of *Brahman*. The *inseparability* of aspects is unclear although soul acquires subtle body that has traces of *karmas*, which seems to imply that mental and physical aspects are *inseparable*.

The second component of the DAMv framework is that there are two modes for acquiring 'NOW': The two modes are: (1) the *non-tilde* mode that is the physical and mental aspect of cognition (memory and attention) related feedback signals in a neural-network of the brain, which is the cognitive nearest past approaching towards present; and (2) the *tilde mode* that is the physical 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. 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 dual-mode concept is derived from the framework of thermofield dissipative quantum brain dynamics. This is highly mathematical and discussed in (Vimal, 2010c).



The third essential component of the DAMv framework is that the degrees of the dominance of aspects vary with the levels of entities. For example, (i) in the unmanifested state of *Brahman*, both aspects are latent so it appears as if it is aspectless; (ii) in classical inert matter (including a dead body), physical aspect is dominant and mental aspect is latent, whereas (iii) at deep quantum level, (a) mental aspect is dominant and physical aspect latent and (b) entities behave mindlike as in entanglement phenomenon of quantum particles (information is transferred instantaneously across universe). (iv) When we are fully awake conscious and active, the both aspects are dominant. (v) When a human dies, his/her dead body is like a classical inert entity. (vi) If soul exists, then a soul has dominant mental aspect and *inseparable* latent physical aspect where the traces of our *karmas* and unfulfilled intense desires are encoded for the next birth. (vii) When mother conceives a baby, there may be the tuning among the respective physical aspects (and/or *inseparable* mental aspects) of (1) sperm, (2) egg, and (3) relevant soul (it exists!) for its re-birth.

**Critique1:** Feel free to coin new words [terms] suiting to the concept but you need to leave the frozen words [such as *Brahman*] alone. *Vedanta* philosophy is a general knowledge philosophy, this universe is one of the many universes that *Brahman* creates and could be creating. Multi-verses is a latest mathematical speculation and is in tune with the *Vedanta*. Any perception of ours as regards "mind", "body" is only local. There is a difference when we say "mind" in the terrestrial sense and "mind" in the *Brahman* sense. The latter has the attribute of incomprehensibility and the former is unlimited though confined in the body. By stating "*Bṛhadāraṇyaka*" got it wrong etc doesn't do well to your paper or theory. Such distortion is unwarranted.

**Author:** Some terms such as sun and earth, are frozen, but their attributes changed; for example, in ancient time it was assumed that sun orbits around earth; but later it was found earth orbits around sun. The meaning attributed to the term *Brahman* varies depending on the commentators; for example, *Brahman* is aspectless for Śaṅkarāchārya in *Advaita* but has two aspects (*cit* and *acit*) for Rāmānujāchārya. There are over 40 different meanings with some overlapping meanings attributed to term 'consciousness' (Vimal, 2009f). Thus,

unless there is a consensus, the terms cannot be considered frozen. The meaning attributed to the term 'mind' varies with the levels of entities as per the third component of the DAMv framework, where the degrees of the dominance of aspects vary with the levels of entities. This means, the mental and physical aspects of the unmanifested state of *Brahman* are certainly not the same the mental and physical aspects of our brain-states. It is good idea not follow any view blindly and criticism is not distortion as long as justifications are provided because criticism improves our views; here goal is to investigate the fundamental truth; so if *Brhadāranyaka Upaniṣad*, our religions, and science have problems so we should have courage to say so and try our best to address those problems. This is what I have done in this book and I found a framework that tries to unify science and religions.

**Critique1:** *Brahman* has no aspect, mental or physical.

**Author:** If the unmanifested state of *Brahman* has no aspect, then where do mental and physical aspects arise from? And precisely how? In my view, aspectlessness is just a special case of the DAMv framework as explained above, i.e., the unmanifested state of *Brahman* appears aspectless because both aspects are latent/hidden at this state.

**Critique1:** Now you got it. *Brahman* doesn't create the universe and has nothing to do with it. The manifestation is done by a quantity called *Mahat* which emanates from *Brahman* in an undefined manner (assumption). This takes us to *Sāṃkhya* and to humans. As far as *Brahman* is concerned, the universe doesn't exist, there is no differentiation. No guru, no *chelā*.

**Author:** Your claim is: an entity '*Mahat*' emanates from *Brahman* in an undefined manner. This is a fundamental assumption, i.e., it is a 'brute fact' (that is the way it is!). What are the justifications and/or evidences? This is an explanatory gap problem of this view (*Mahat* from *Brahman*)? You proceed step-by-step, I will show you the problems of this view (Idealism).

**Critique1:** No evidence. It's the theory. Modern string theory is leading towards it. I don't know how the early philosophers deduced it. This throws away the non-uniqueness of the present universe and everything connected to any nonsensical theology. You

have to dive into mathematics and cosmology to admire the beauty of this speculation.

**Author:** What is the connection between *Mahat-from-Brahman* and string theory. In addition, string theory can also lead to other views, such as materialism and dual-aspect monism (Vimal, 2010g). How could we decide which one is the best framework?

**Critique1:** I want to reiterate again my old observation on the nomenclature of the word *Brahman* through etymology. *Brahman* is not an object to have manifestation. Brahman "is". All objects, manifested or unmanifested, make *Brahman*. It's a collective noun, and not quantifiable. While I admire your deep pursuit to create bridges, I would think you appreciate the terminology. Ram is a concept, so it's with *Brahman*. The only difference is we can call many objects as Ram, but *Brahman* is singular. Nomenclature is important in furthering knowledge.

**Author:** You are claiming the *Brahman* 'is', which seems to imply that whatever exist today is *Brahman*, which includes its both manifested and unmanifested states: All is *Brahman*. In this sense, I agree; I would also agree with the phrase 'All (entities) in One (*Brahman*) and One in All'. However, we have the difference of opinion in details. You strictly, rigidly, and faithfully follow Śankarāchārya. I am not a follower of anybody blindly. My goal is to understand the fundamental truth and unify science and religions. My framework is the *Dvi-Pakṣa Advaita* (the DAMv framework); its theist version is close to *cit-acit Viśiṣṭādvaita* and also has addressed its problems and problems of all other theist views. In the *Dvi-Pakṣa Advaita*, the dual-aspect *Brahman* in its unmanifested state appears aspectless because both aspects are latent; it is called *kāran* (causal) *Brahman*. However, after the Big Bang (Virāt, cosmic fire), it manifested in innumerable states, they are called *kārya* (active, effect) *Brahman*. If you read (Radhakrishnan, 1960) *BrahmaSutra*, you might agree with me. It should be noted that the theist-atheist phenomenon is genetic and/or acquired, so the Fundamental Truth should encompass both; and it is not possible to change anybody's inherent view and it is not needed either.

**Critique1:** It's the use of words. "Sky" and "ocean" are different words. *Brahman* is a singular word. It "is," not here or there, not now or earlier. Anything you think is not *Brahman*!

**Author:** In (Radhakrishnan, 1960)'s *Brahma Sūtra* and other authentic references mentioned in various sections of the main texts, *Brahman* is defined in various ways by various *āchāryas*. The theist *Dvi-Pakṣa Advaita* was even verified personally by Jagadguru Rāmabhadraāchārya ji that it is same or very close to the *cit-acit Viśiṣṭādvaita*. You have not given me even one authentic reference for your definition. Your definition is vague that "anything you think is not *Brahman*". If your *Brahman* is mind-independent entity then it is unknown (because to know anything you need to use your mind) and hence not very useful. If it is your own definition then you need to justify its utility. You also need to discuss with Jagadguru Rāmabhadraāchārya why his or the *cit-acit Viśiṣṭādvaita* of Rāmānandāchārya and/or Rāmānujāchārya is wrong and your definition ("anything you think is not *Brahman*") is the only definition that is correct. I leave the validity of your definition to Shri Nityānanda Misra (the disciple of Jagadguru Rāmabhadraāchārya). I think that he already said that you are wrong and he gave you many authentic references. Please see his previous email.

**Critique1:** Scholarship is not arbitrary interpretation. As long as you keep the terminology clear, you would be readable. There was a prominent Indian painter who wanted to "paint" the genitals of Indian icons. Some in the west and in India thought it was "freedom of speech." Such efforts do not last. Many interpretive Rāmāyaṇas have been written, they die. By keeping the tradition which is the understanding, you would make a readable essay. Lately I am hearing of some Christian Bhāratnāṭyam. Trying word manipulation to distort a concept is a missionary method of creating confusion and I oppose. You should too. All concepts and remnants of colonialism must end! Distortions are subtle, but are political in intent!

**Author:** I have tried to define my terms at appropriate places. If you find anywhere that my terminology is unclear, let me know. My goal is to unify science and all religions. My approach is to find the metaphysics (the foundation of everything) that is close to the Fundamental Truth and that supports all views by deriving them as special cases. The DAMv framework (*Dvi-Pakṣa Advaita*) does a good job on this. For example, your and Śankarāchārya's view of aspectless *Brahman* can be derived from it as a special case as follows: In the *Dvi-Pakṣa Advaita*, the mental and physical aspects of

the states of each entity including the fundamental primal entity (that has many names: *Brahman*, Implicate Order, empty-space at ground state of quantum field with minimum energy, unified field, and so on) are *inseparable* and their degrees of dominance vary with the levels of entities. The state of this fundamental primal entity at the unmanifested state before Big Bang (cosmic fire) has latent physical and mental aspects. That is the reason this primal entity appear aspectless. In *BrahmaSutra*, this primal entity is called *kāran Brahman*, which is the same or similar to yours and Śankarāchārya's *Brahman* or its *Neti-Neti* definition. When the primal is manifested after Big Bang, it has innumerable states; these are called the states of *kārya Brahman*. The rest of story is in the main texts of this book.

**Critique1:** Again you have to come out of the time concept, Big Bang etc. These are extrapolated ideas, neither physical nor metaphysical; for example, see 'From Unmanifest to Manifest' at <https://www.dwarkamai.com/articles/69-from-the-unmanifest-to-manifest>.

**Author:** As per above reference, "The 'unmanifest' is eternal and is not conditioned by time. The 'manifest' is always glorious at birth and then subject to demise. The transition from 'unmanifest' to 'manifest' is an individual comprehension which is different in different human beings. In Sanskrit, the 'unmanifest' is termed *asat*, one that is unphysical, and the 'manifest' is termed *sat*, one that is physical. *Brahman* is a repository of *sat* and *asat*. All *sat* manifests from *asat*. [...] The natural question is if we have access to the "unmanifest." We have to understand that the "unmanifest" is not sensible to our senses, hence the only possibility of comprehending the "unmanifest" is to go beyond our sensory perception."

This does not explain the mechanism of transition from unmanifest to manifest and how universe is created or evolved from the unmanifested state of *Brahman* to its innumerable manifestations. In addition, it is unclear how *sat* (physical) manifest from *asat*/(unphysical). It is claimed that *sat* and *asat* originate from *Brahman*, which seems to imply 'Neutral Monism' (close to dual-aspect monism) that mental (unphysical) and physical aspects can be derived from third neutral entity: *Brahman*. In other words, *Brahman* has the mental and physical aspect in hidden form; this is what I am also trying to say.



I think that you have misunderstood the DAMv framework; it does not have any problem and the best framework so far; you need to seriously study (Vimal, 2008b, 2010c, 2012a) before reading (Vimal, 2012c, 2012d) for the search of the fundamental truth. Your explanation is just a half story and has severe metaphysical problems of idealism (and interactive substance dualism), which has been rejected long time back because of the problems. If you agree with 'Neutral Monism', then it is close to the DAMv framework but it has the explanatory gap problem.

**Critique1:** All "frameworks" are speculative; I am not wedded to any. My difficulty is with the nomenclature. Names are created and get frozen after acceptance. New names can be created, but not distorting the existing ones. "Air" is a name, there is no "causal" air, and so is the case. Such things may occasionally happen in poetry, but *śāstra* is different than *sāhitya*.

**Author:** Well, in metaphysics and philosophy, names are NOT frozen unless there is clear consensus; they can have multiple meanings depending on the investigators. For example, the term 'consciousness' has over 40 different (some overlapping) meanings (Vimal, 2009f). The same is true for *Brahman*. If you carefully with open-mindedness read (Radhakrishnan, 1960)'s *Brahma Sūtra* and its commentaries by various *āchāryas*, *Brahman* has multiple definitions depending on *āchāryas*. Nityānanda Misra (NM) and Jagadguru Rāmbhadrāchārya (guruji) can affirm this. As a matter of fact, when I met guruji, his first sentence reflected this that every *bhāsyakāra* interprets the same *sūtra* in his own framework.

**Rajendra M. Trivedi (RMT):** I fully agree with guruji and your telling to Critique1.

**NM:** I also agree with RMT and the Author.

**Critique1:** One could argue that Sanskrit has precision and there is one-to-one correlation. Sanskrit to English Translation may lead to confusion.

**Author:** I agree that sometimes translation may lead to confusion. I like unique terms with 1-1 correspondence. However, unfortunately, this is not the case and also this is not practical. This is because all terms are mind-dependent, and we cannot expect that the minds/thoughts of all of us must remain the same. If we do functional MRI on a specific term, we will find different brain-areas

will get activated depending on an individual; of course, there are some common areas, such as Broca's area (BA 44) for the production of language and Wernicke's area (BA 22) for the understanding of written and spoken language. Even hard science, like physics, does not have consensus on the definition of certain terms, such as empty-space/vacuum. There is hardly any consensus on the definitions of certain terms like 'consciousness', 'Brahman', 'God', 'self' as I discussed before. That is why we are doing research with the hope that one day we will have consensus.

*Śankarāchārya's Nirviśeṣādvaita* defines 'Brahman' as an aspectless entity. However, *Ramānujāchārya* and *Rāmānandārcharya/Rāmabhadraāchārya* have found serious problems in *Śankarāchārya's Nirviśeṣādvaita*. Therefore, the definition, in *cit-acit Viśiṣṭādvaita*, that *Brahman* is a dual-aspect entity; so are the definitions by other remaining 4 sub-schools of *Vedānta* including many *ṛṣis* and philosophers such as (Radhakrishnan, 1960). It is different matter whether one agrees with others. Disagreement is allowed until we have consensus.

Some terms indeed have 1-1 correspondence, such sun, moon, earth and so on because there is consensus.

In my view, as long as terms (that do not have consensus), are precisely predefined, we should be free to use them because there will not be any confusion (at the least there should be consensus on this proposal!). For example, in the DAMv framework, if I predefine that the state of *Brahman* has *inseparable* mental and physical aspects and then use it, nobody should have confusion on what I am proposing. It is fine if you reject it as long as you give justifications so that I can sharpen my thinking process.

**RMT:** As per Swami Tejomayananda, "Disciplined person knows true Freedom. For an undisciplined person, majority of time goes in to searching; not searching for the *Brahman*, but searching for misplaced things." English and Sanskrit or Vedic Culture and Thinking had and has misunderstanding. The meaning does not translate the same from Sanskrit to English which creates confusion. To find the truth we all need to be open and understand that limits which depends on one's cognition. *Brahman*, to understand the universe, and to find the same within take a process. Discuss with Dr. Tony Nader, M.D. PhD or some Jagadguru who can show the

path of truth—Light. One has to start the journey in the Jungle and find the wisdom - Devine light.

**Author:** I agree with you. My source of information for *Brahman* is from Jagadguru Rāmbhadrāchārya ji and (Radhakrishnan, 1960), as I detailed above and the main texts of this book. I do not have email id of Dr. Nadar, but discussing with him in seminar at *Dwārkāmayī* seems that he would agree with me because Transcendental Meditation (TM)-group tries to relate unified field (the unmanifested state of *Brahman*) with String Theory and he seemed to imply that various views reflect different aspects of the unified field.

<sup>91</sup> See also <http://en.wikipedia.org/wiki/Viśiṣṭādvaita>, and <http://en.wikipedia.org/wiki/Ramanuja> .

<sup>92</sup> Fundamental Truth: relationship between 4 states of brain-mind system and religion: *Vedānta* gives an example of two birds sitting very close to each other all the time in each of us. One is *jīvātman* that is explicit in three states of mind-brain system (such as sleep, dream, and wakefulness). The other bird is *Parmātman* (*sat-chit-ānanda*: *sat*=physical aspect such as brain; *chit*=mental aspect such as consciousness; *ānanda*=bliss when *pleasure center* is activated) in *Dvi-Pakṣa-Advaita*. If we attain *samādhi* state, we will be on equal status to God (*kārya Brahman* or *Ishvara*) because that is the definition of *Parmātman* as per *Vedānta* such as *cit-acit Viśiṣṭādvaita*. Once we reach to the fourth (*samādhi*) state *jīvātman* meets to *Parmātman*, this is *mukti* (liberation) from all sufferings because our pleasure center gets activated and we feel happy (*ānanda*) all the time; that is why yogis/yoginis don't care about marriage/*sansārik* life that always involves sufferings. *Buddha*'s *four noble truths* and *eight noble paths* designed to reduce sufferings are based on this *Fundamental Truth*.

In Advaita and Sāṃkhya metaphysics, Saccidānanda is “Eternal (that never changes) Bliss Consciousness”. *Satcitānanda*, *Satchidānanda*, or *Sat-cit-ānanda* (सच्चिदानन्द) <sup>[note 1]</sup> “being, consciousness, bliss”, <sup>[1]</sup> is a description of the subjective experience of *Brahman*. <sup>[note 2]</sup> This sublimely blissful experience of the boundless, pure consciousness is a glimpse of ultimate reality. <sup>[5]</sup> Etymology: The description comprises

the three [Sanskrit](#) words *sat-chit-ananda*: [sat](#) सत् ([present participle](#)); [Sanskrit root *as*, "to be"]: "Truth",[\[note 3\]](#) "Absolute Being",[\[web 2\]](#) "a palpable force of virtue and truth".[\[6\]](#) *Sat* describes an essence that is pure and timeless, that never changes.[\[web 2\]](#) [cit](#) चित् ([noun](#)): "consciousness",[\[web 2\]](#) "true consciousness",[\[citation needed\]](#) "to be consciousness of",[\[7\]](#) "to understand",[\[7\]](#) "to comprehend".[\[7\]](#) [ānanda](#) आनन्द (noun): "bliss",[\[web 2\]](#) "true bliss",[\[citation needed\]](#) "happiness",[\[web 3\]](#) "joy",[\[web 3\]](#) "delight",[\[web 3\]](#) "pleasure"[\[web 3\]](#) "Sat-Chit-Ananda" or "Saccidānanda" is the Sanskrit compound form of the word,[\[note 4\]](#) which can be translated in various ways:[\[note 5\]](#) "Eternal Bliss Consciousness"[\[8\]](#) "Absolute Bliss Consciousness"[\[web 2\]](#) ([adj.](#)) "Consisting of existence and thought and joy" [\[web 4\]](#)

**Question (Vivek Dubey):** Can we enhance the potentials of our mind by adopting certain practices and change our destiny or things are predetermined in life?

**Author:** There two views: (1) Classical Mechanics (CM)'s view is deterministic; (2) Quantum mechanics (QM)'s view is stochastic. QM is considered more fundamental and more accurate. Thus, if QM is correct, then 'life is like a game of chance' (Donald, 1999). This means we can change our destiny by sankalpas (solemn vows) and rigorously following it because we have at the least semi-Free-Will if our Free Will not completely free. We all need moksha/mukti (liberation from our daily suffering) and we must try our best by sankalpa, hath-yoga, pranayama, and meditation to reach samadhi state, which activates our pleasure center and gives us liberation from our daily suffering and irritations. This can change our destiny and we can achieve whatever we want.

---XXX---

<sup>93</sup> As per <<http://en.wikipedia.org/wiki/Ramanuja>>, "In contrast to Śankara, Ramanuja holds that there is no knowledge source in support of the claim that there is a distinctionless (homogeneous) *Brahman*. All knowledge sources reveal objects as distinct from other objects. All experience reveals an object known in some way or other beyond mere existence. Testimony depends on the operation of

distinct sentence parts (words with distinct meanings). Thus the claim that testimony makes known that reality is distinctionless is contradicted by the very nature of testimony as a knowledge means. [...] Inference depends on perception and makes the same distinct things known as does perception. He also holds that the Advaitin argument about prior absences and no prior absence of consciousness is wrong. Similarly the Advaitin understanding of *avidya* (not-Knowledge), which is the absence of spiritual knowledge, is incorrect. 'If the distinction between spiritual knowledge and spiritual ignorance is unreal, then spiritual ignorance and the self are one'."

"Adi Shankara says in his Introduction to his commentary on the Brahma Sutras, "Owing to an absence of discrimination, there continues a natural human behaviour in the form of 'I am this' or 'This is mine'; this is *avidya* [*māyā*, *ignorance*, *delusion*, *jagat?*]." <<http://en.wikipedia.org/wiki/Avidy%C4%81>>

*The Seven objections to Śankarāchārya's Advaita*: As per <<http://en.wikipedia.org/wiki/Ramanuja>> (with minor modification), "Ramānujāchārya picks out what he sees as seven fundamental flaws in the *Advaita* philosophy to revise them. He argues:

I. The nature of *Avidyā*. *Avidyā* must be either real or unreal; there is no other possibility. But neither of these is possible. If *Avidyā* is real, non-dualism collapses into dualism. If it is unreal, we are driven to self-contradiction or infinite regress.

II. The incomprehensibility of *Avidyā*. *Advaitins* claim that *Avidyā* is neither real nor unreal but incomprehensible, [*anirvachaniya*]. All cognition is either of the real or the unreal: the *Advaitin* claim flies in the face of experience, and accepting it would call into question all cognition and render it unsafe.

III. The grounds of knowledge of *Avidyā*. No *pramana* can establish *Avidyā* in the sense the *Advaitin* requires. *Advaita* philosophy presents *Avidyā* not as a mere lack of knowledge, as something purely negative, but as an obscuring layer which covers *Brahman* and is removed by true *Brahma-vidya*. *Avidyā* is positive nescience [lack of knowledge or awareness: ignorance] not mere ignorance. Ramānujāchārya argues that positive nescience is established neither by perception, nor by inference, nor by scriptural testimony. On the contrary, Ramānujāchārya argues, all cognition is of the real.



IV. The locus of *Avidyā*. Where is the *Avidyā* that gives rise to the (false) impression of the reality of the perceived world? There are two possibilities; it could be *Brahman's Avidyā* or the individual soul's [*jīva*]. Neither is possible. *Brahman* is knowledge; *Avidyā* cannot co-exist as an attribute with a nature utterly incompatible with it. Nor can the individual soul be the locus of *Avidyā*: the existence of the individual soul is due to *Avidyā*; this would lead to a vicious circle.

V. *Avidyā's* obscuration of the nature of *Brahman*. Śankara would have us believe that the true nature of *Brahman* is somehow covered-over or obscured by *Avidyā*. Ramānujāchārya regards this as an absurdity: given that *Advaita* claims that *Brahman* is pure self-luminous consciousness, obscuration must mean either preventing the origination of this (impossible since *Brahman* is eternal) or the destruction of it - equally absurd.

VI. The removal of *Avidyā* by *Brahma-vidya*. *Advaita* claims that *Avidyā* has no beginning, but it is terminated and removed by *Brahma-vidya*, the intuition of the reality of *Brahman* as pure, undifferentiated consciousness. But Ramānujāchārya denies the existence of undifferentiated [*nirguna*] *Brahman*, arguing that whatever exists has attributes: *Brahman* has infinite auspicious attributes. Liberation is a matter of Divine Grace: no amount of learning or wisdom will deliver us.

VII. The removal of *Avidyā*. For the *Advaitin*, the bondage in which we dwell before the attainment of *Moksa* is caused by *Māyā* and *Avidyā*; knowledge of reality (*Brahma-vidya*) releases us. Ramānujāchārya, however, asserts that bondage is real. No kind of knowledge can remove what is real. On the contrary, knowledge discloses the real; it does not destroy it. And what exactly is the saving knowledge that delivers us from bondage to *Māyā*? If it is real then non-duality collapses into duality; if it is unreal, then we face an utter absurdity.”

<sup>94</sup> The doctrine of ‘*neti neti*’ (not this, not that: expressing the inexplicable Ultimate, the Absolute, the transcendental, the Divine, God) has limitations; for example, it cannot and do not tell us the real nature of *Brahman* or ultimate reality (Balasubramanian, 2011) .

<sup>95</sup> Adapted with some modification from <http://en.wikipedia.org/wiki/Viśiṣṭādvaita>

<sup>96</sup> See [http://en.wikipedia.org/wiki/Jagadguru Rāmabhadraṁcārīya](http://en.wikipedia.org/wiki/Jagadguru_Rāmabhadraṁcārīya) and <http://www.jagadguruRāmabhadraṁcārīya.org/>

<sup>97</sup> See <http://en.wikipedia.org/wiki/Ramananda> and [http://en.wikipedia.org/wiki/Ramanandi sect](http://en.wikipedia.org/wiki/Ramanandi_sect)

<sup>98</sup> As per Śāṅkarācārīya's *Nirviśeṣādvaita*, "The world does not exist of itself. It is derived from and dependent on *Brahman*" (Radhakrishnan, 1960). The major problem is: precisely how is the world (the *mithyā jagat*) derived from the aspectless attributeless *Brahman*? How is the 'thing-itself' (the mind-independent reality (MIR)) derived? If we remove the cup, its appearance also disappears, which means there exists a 'cup-in-cup-itself'.

In the DAMv framework, thing-in-self (MIR) is derived from the physical aspect of the unmanifested state of *Brahman*. The appearance of thing-in-itself is derived from the mental aspect of the unmanifested state of *Brahman*. This is in the conventional mind-dependent reality (cMDR), which is *māyā* (illusion, transitory nature, not eternal) because if we remove the cup, its appearance will also disappear.

<sup>99</sup>As per *Chāndogyopaniṣadi* (Jagadguru Rāmabhadraṁcārīya, 2000b).(commentary in Hindi part), "hamāre yanhā [*cit-acit Viśiṣṭādvaita* men] *Jīvātman cit* aur *Parmātman acit* hae aur yahee dono bhanvān ke shrīra haen [...] es darshan men *Prakṛti, jīva, Brahman* ye teen tatva haen ... parinām bhagavān ke sharīrabhūta *Prakṛti* men hotā hae [p.8 ...] *jīva* aur *Brahman* nitya sattāye haen- 'nityo nityānām'| apanī sattā ko chhor *jīva Brahman* kaise ban saktā hae aur nitya sattā ka kabhī vināsh hotā nhī [p.69...] janhā jākar *jīva* laotkar nhee ātā vah merā paramadhāma hae [p.96...] sabhī charāchar prāṇiyon men *Brahman* vyāpta hae jīvon ko Aupashilaṣṭa [औपश्लिष्ट] karke antaryāmīrūpa se *Brahman* virājmāna hae ....vah til men tel kī bhānti, dahī men ghī kī bhānti vyāpaka hone ke kārān sabmen vyāpta hae [p.106 ...] *Parmātman* ke ... bārah *viśeṣaṇa* ... **Monomayah Prāṇasharīro Bhārūpah SatyaSankalpa**

**Ākāshātmā Sarvakarma Sarvakāmah Sarvagandhah Sarvarasah Sarvamidamabhyāttowākyanādarah** [1]  
**Monomayah-** bhagavān mana ke samāna sūkshma haen ...  
 bhagavān ke pāsa prakṛta mana aur prāna nhee hote ... [2]  
**Prā' aśharīrah-** prāṇo ke prāṇa *jīvātman* hee bhagavān kā shrīra hae ... [3] **Bhārūpah-** prakāsha [bhakti-rūpa] hee bhagavān kā rūpa hae ...  
 ...jīva mujhe bhakti-rūpa se hee jān saktā hae ... [4]  
**SatyaSankalpah-** bhagavān kā Sankalpa satya hotā hae ... bhagavān  
 kā Sankalpa santo ke liye hitaiṣee hotā hae ... [5] **Ākāshātmā-**  
 bhagavān [kā swarūp (neela) aur svabhāva (nirmal) Ākāsha ke  
 samāna hotā hae] ... [6] **Sarvakarma-** sabhee shrutivihita karma  
 bhagvān ke liye kiye jaate haen aur bhagvān ke dwarā kiye jāte haen  
 ... [7] **Sarvakāmah** [jisame saba ka prema ho] – sabhī loga bhagavān  
 kī hee kāmanā karte haen aur sabhee kāmanāyen bhagavān men hī  
 nihita hotī hae ... [8] **Sarvagandhāh-** Parmātman me hī sāre  
 sambandha [sugandha padārtha] nihita hote haen ... [9]  
**Sarvarasahāh-** sabhee ras [6 svāda-rasa: madhura, amla, lavaṇa,  
 katu, kaṣāya, tikta; 12 kāvya-rasa: sringār, hāsyā, vīra, bībhṛtsa,  
 karuṇ, shānta, raudra, bhayānaka, adbhuta, sakhya, vātsalya,  
 bhakti] bhagavān men hī hae [10] **Sarvamabhyātah-** bhagavān apanī  
 mahimā se sabako vyāpta kiye haen [apne men sameta kar virāja  
 rahe haen] ... [11] **Āwāki-** apne bala par vāṇī bhagavān kā nirvachana  
 nahī kar sakatī [prabhu vāṇī ke vishaya nahī haen ... [12] **Anādarah-**  
 bhagavān kisi ke Ādara[-samān] se santustha nahī hote ... kise se  
 thorā bhī bhaya nahī hae [p.109-113 ...] vasatu-vasatu men  
 bhagavān kā darshan Viśiṣṭādvaita hae| usame cit-acit ye dono  
 bhavān ke *viśeṣaṇa* haen|cit arthāt jīva bhagavān ke samāna nitya  
 hae| acit arthāt māyā jaḍa [जड़] hae|En dono kā bhagavān ke sātha  
 sharīrasharīribhāva sambandh hae | bhagavān sharīri haen aur jīva  
 tathā māyā sharīra [माया शरीर] । ... jagat Brahman ka parinām hae |  
 jaise ki mittī ke dhele kā gharā parinām hae [p.203 ...] [bhagavān  
 jagat ke parināmī banakar avikṛta [unchanged] bane rahate haen] यदि  
 वह जगत् मिथ्या है तब ब्रम्ह को ढक नहीं सकती । [p.205 ...] jīva kā pralaya  
 nahī kahā gayā kyoki jīvatmā nitya hae esliye uskā parātmā men  
 pralaya ho hī nahī sakatā| Antara etnā hī padtā hae ki sṛsti ke  
 parmātmā jīvatmā ke sātha hote haen aur pralaya ke samaya jīvatmā

parmātmā ke sātha [p220 ... ] pralaykāla men sabhī jīvātām  
 parmātmā men hī vishrama karte haen [p.224] parmātmā aur  
 jīvātām ke bīch bheda siddha ho jātā hae | Vastava men jīva aneka  
 hee haen ve pralaykāla men ek jaise ho jāte haen [p.227]  
 pralaykāla men bhee jīva नष्ट nahī hotā vaha kewal parmātmā se  
 chipaka jātā hae [p.228] ab parmātmā kī sattā men jīva kī sattā hae  
 aur jīva kī sattā men hī jagat kī sattā hae [p.229] jīvātām se alag  
 hone par sharīra mar jātā hae [jīva (cit) gets separated from sharīra  
 (acit)] aur jīvātām ke rahne par jīvita rahatā hae [p.230]  
 Jagadvismaraṇpūrvaka bhagavdvishayaka pardevatābuddhi hī  
 vigyāna hae authavā Viśiṣṭadvaita paddhati se sewaksevyabhāv  
 sambandhamūlaka bhavattatvabuddhi hī vigyāna hae [p.249] chetan  
 hī chetan ke pāsa se jā saktā hae [ M-M, P-P, no M-P or P-M p.272...] jiske  
 guṇa nirupama haen use nirguṇa kahate haen | ‘nirupamāh  
 guṇāh yasya tat nirguṇam’ [p.273 ...] BrahmaSutra men bhī  
 ‘karmakatṛvyadeshāt’ kahakar bhagvān VedVyāsa ne bhī Jīvātman  
 aur Parmātman ke bīch swarūptah bhed siddha kiyā [p.299...] ‘Sah  
 uttamah Puruṣah’ Chāndogyopaniṣad (8/12/3) kā tātparya yah hae  
 ki Jīvātām kabhī Pramātām nhee banatā parantu mukta hokar vah  
 Paramātām ke samāna bhoga avashya bhogatā hae | Bhagvān  
 VedaVyās bhī BrahmaSutra men kahate haen- ‘bhogamatra  
 sāmyalingāchcha’ (BrahmaSutra 4/4/21) | Jīvātām bhogon men  
 Paramātām kī samānatā karake bhī Paramātām ke samāna sṛṣṭi kī  
 rachanā nahī kar sakatā [p.315]”.

*Jīva* and *Brahman* are eternal, but NOT the same. It is unclear:  
 how *Parmātman* can be *acit* when it is ‘*kārya Brahman*’ as per  
*Ishāvāsyopaniṣada* (*Jagadguru Rāmabhadraṇchārya*, 2000c)? One  
 could argue that *acit* and *cit* are adjectives of *Parmātman*.

<sup>100</sup> **Critique1:** *Sāṃkhya* has no *Parmātman*.

**Author:** So you reject the 26<sup>th</sup> tatva: the unmanifested Brahman:  
 many names; some investigators call it *Parmātman* to make it as a  
 part of theistic philosophy. Some claim that *Gītā* was before 3000 BC  
 and *Sāṃkhya* (1000–600 BC?, *Kapila*: 550 BC?) came later. Krishna  
 declared himself as *Parmātman* with *Puruṣa* and *Prakṛti* as part of  
 him. *Kapila* seems atheist but some sub-school of Vedānta coined  
 26<sup>th</sup> *tatva* and made *Sāṃkhya* also part of theist Vedānta. It is  
 unclear how this happened.

**NM:** On the two versions of *Sāṅkhya*, I can confirm that two traditions do exist in the *Sāṅkhya* lineage. In the atheistic version there are 25 elements, and in the theistic one 25 elements + *Paramātmān* as 26<sup>th</sup>. The original aphorisms (*Sūtras*) of *Sāṅkhya* by Kapila are almost entirely lost and only some of them are available today. What we see as *Sāṅkhyasūtras* today are widely believed to be composed by *Vijñānabhikṣu* in 15th century.

An introduction to the two traditions can be found in (Raju, 1985). (p.304-335). You can see this on Google Books under [http://books.google.com.hk/books?id=wZ\\_iahRQomwC&pg=PA304](http://books.google.com.hk/books?id=wZ_iahRQomwC&pg=PA304)

Raju also discusses the two possibilities, whether *Sāṅkhya* was originally atheistic, and later turned theistic, or if it was originally theistic, turned atheistic in the middle, and later returned to its theistic roots. The last part of (Tīrtha, 2007) presents many arguments in favour of Kapila being theistic. However, no doubt that the *Sāṅkhya* system as expounded in later commentaries is theistic, and it is counted as one of the *Āstika* systems today.

**Author:** Thanks for the precise and interesting information with references. As per (Tīrtha, 2007).p.305, “The Yoga philosophy of Pantañjali ... is also called by the name theistic *Sāṅkhya* (*śeśvarasāṅkhya*), for Pantañjali explicitly accepts the reality of God and the only main difference between the two schools is the rejection or acceptance of God. [...] So far as the general practice goes, it is customary to present mostly the views of the atheistic *Sāṅkhya* of Īśvarkṛṣṇa as the main *Sāṅkhya*; for his work is the main authoritative one now available. [...] The *Sāṅkhya* accepts three valid means of knowledge—perception, inference, and verbal testimony. [...] indeterminate (*nirvikalpaka*) and determinate (*savikalpaka*) perception ... There is ... the contact between sense and object, and then between sense and the inner sense (*antahkaraṇa*), and then some kind of relation between inner sense and the *ātman*, which the *Sāṅkhya* calls generally by the word *Puruṣa*, before knowledge of the object becomes a full cognition.”

Krishna declared himself *Paramātmān* with *Puruṣa* and *Prakṛti* as part of him. Did *Sāṅkhya* come later than *Gītā*? If this is correct, then ṛṣi Kapila and other *Sāṅkhya* followers might be aware of *Gītā*’s theist view of *Puruṣa* and *Prakṛti* metaphysics. What caused them to reject it and delete *Paramātmān*? The metaphysics of *Puruṣa* and



*Prakṛti* as derived entities from *Parmātman* has explanatory gap problem of neutral monism: how *Puruṣa* and *Prakṛti* can be derived from the third neutral entity *Parmātman*? Is this a reason for rejecting *Parmātman*?

**NM:** I might be wrong, but I believe Sāṅkhya predates Vedānta and Gītā. Here is my reasons: In the Bhāgavatam, Kapila is listed as the fifth Avatāra (SB 1.3.10) and Vyāsa as the seventeenth (SB 1.3.10). So as per the Bhāgavatam, Sāṅkhya propounded by Kapila came before Vedānta propounded by Vyāsa. In the Gītā the Lord says, *siddhānām kapilo muniḥ* (BG 10.26) - I am Kapila amongst the Siddhas. Also see BG 3.3 *loke'simandvididhā niṣṭhā purā proktā mayānagha jñānayogena sāṅkhyānām karmayogena yoginām* ||

**Author:** Your reference seems authentic. If you are correct, then Kapila might be before *Gītā* (*Mahābhārata* war: 3067 BC, 5561 BC, *Vyas*). Further research is needed, such as astronomical analysis as done by Vartak and Achar on *Mahābhārata*.

**Critique1:** Since I don't have an understanding why universe must exist I would like to hear any closure theory (could be erroneous in language but might have a physical meaning!).

**Author:** 'Why universe must exist the way it is' is an interesting question. There is no satisfactory answer. For some, God-theory says that God was very lonely before universe was created, so He created universe the way it is. So that people can interact with Him by worshipping Him and by always begging Him to fulfill their wish-lists. Scientific hypothesis is multiverse theory.

**Critique1:** The multiverse theory doesn't explain life. Big Bang itself is artificial.

**Author:** The Big Bang is strongly supported by astronomical observations. A hypothesis for life in our universe is the anthropic principle.

<sup>101</sup> <http://en.wikipedia.org/wiki/Nimbarka>

<sup>102</sup> <http://en.wikipedia.org/wiki/Dvaitadvaita> with my italics and some corrections.

<sup>103</sup> In my view, the term, '*Brahman*' has multiple meanings:

(1a) One interpretation of *Brahman* for some is *Sat-cit-ānanda*, where *Sat* = creation or manifested universe, *Cit* = creator, and *ānanda* = pure joy (personal communication with Critique1 in January-March 2011). However, the doctrine of ‘*neti-neti*’ suggests that *Brahman* has no attribute!

(1b) Alternative meaning for some investigators is *Sat* = truth, *Cit* = consciousness-as-such, and *ānanda* = bliss, which are the subjective experiences at *samādhi* state for ultimate reality, (<http://en.wikipedia.org/wiki/Sat-cit-ananda>).

(2) For some, ‘*Brahman*’ is not ‘monism’ as some in the west and some Indian scholars characterize; the only statement is ‘*Brahman* is’, there is no qualifier or equivalence. The term *Brahman* is a concept; it is singular; it is neuter; it is all-pervasive; it has no origin and no manifestation; it just exists (personal communication with Critique1 in January-March 2011).

(3) Therefore, in my view, the conceptual entity ‘*Brahman*’ can be used by both theists (as God) and atheists (as a fundamental dual-aspect entity from which universes including us with mind and matter arise via co-evolution).

(3a) For theists, *Brahman* is the eternal, unchanging, infinite, immanent, and transcendent reality which is the Divine Ground of all matter, energy, time, space, being, and everything beyond in this Universe; the nature of *Brahman* is described as transpersonal, personal, and impersonal by different philosophical schools (<http://en.wikipedia.org/wiki/Brahman>).

(3b) For the *Dvi-Pakṣa Advaita* framework, the term *Brahman* is a dual-aspect monistic entity with varying degrees of dominance of aspects depending on the levels of entities. At its unmanifested state, *Brahman* is the fundamental primal dual-aspect entity, which is also called *kāran* (causal) *Brahman* from which universe(s) arises. There are innumerable manifested state of *Brahman*, which are called *kārya* (active, effects) *Brahman*.

*Advaita* is a monistic system of thought and refers to the identity of the Self (*Ātman*) and the Whole (*Brahman*) (<http://en.wikipedia.org/wiki/Advaita>). *Viśiṣṭādvaita* is a non-dualism of the qualified whole, in which *Brahman* alone exists; *Brahman* is both the cause and the effect (<http://en.wikipedia.org/wiki/Viśiṣṭādvaita>), which implies the

doctrine of ‘All (mental and material entities) in One (*Brahman*) and One in All’. Thus, for me, the mental aspect of unmanifested state of *Brahman* can cause all mental entities and its *physical* aspect can cause material entities without category mistake. Since aspects are *inseparable*, a physical manifestation automatically, faithfully and rigorously entails the related mental manifestation and vice-versa. Since *Brahman* is both cause and effect, every entity including us, fermions, and bosons are *Brahman* and vice-versa.

**Critique1:** Consciousness is not a Vedic term, *vijnāna* is. In the attempt to find a God mapping through the *vedānta*, the road has been distorted. Some of the late Indians accept things passively with little thinking (hence the phrase “mechanical brain”). *Vedas* (specially *vedānta*) were done and are meant for “active” analysis. Each word is formed with contemplation and carries its meaning. *jñāna* is always unknown and not perceptual. Hence, the difficulty of discovering rules through the known rules, and the application of meditation for discovering unknown. “*Sat*” is physical, but *satyam* is a concept. We “use” our senses to perceive *sat*, we “block” our senses to realize *satyam*, so the phrase *satyam brahma(n)*.

Possibly I should added that *sat*, *cit* and *ānanda* are not attributes and [hence *Brahman* is consistent with the doctrine of ‘*neti neti*’ (not this, not that)]. Attributes are what we can conceive, and these “objects” we can only realize and can't express. We are writing limited by our words, that's the essence of the theory. There is no “Creator” in this, but an extrapolation that a “creation” happened, because we exist. From “here”, we go “there”, and “there” is inconceivable and we describe what we think! It's thrilling if you examine, it's open-ended and hence powerful! Sound is important, no word exists, it's all sound (*nāda* and *dhvani*!)

**Author:** Yes, we are “here” and we want to find out our origin. But, do we need God for that? The reproductive process is enough. If we want, we can call God as a Big Bag of all the processes related to **Generation**, **Operation** (maintenance), and **Destruction** (annihilation). Yes, *Gītā* (before 3000 BC) is very informative and tell us how to live, but it can be made better if we implement over 5000 years of researches in it. Since mind is evolving, so today's minds are more evolved compared to our ancestors; our children are smarter than we are. We do not have to be rigid on old stuff. We need to move on with

time; otherwise, time will leave us behind. New knowledge needs to update old knowledge.

**Critique1:** You are always free to find new things and that's *vedānta*. It's a metaphysical concept, not a physical one. Questions like: does mind exist and where we go after death or where genes come from are the inquiries and not how our eyes see objects. Once we have a theory of mind and a theory for life and death, *vedānta* may die. It just gives a bridge between the known and unknown. When we make effort to map *vedānta* to a theistic or atheistic world we get into trouble. If anyone has a full cosmology of his/her “being”, the person does not need a theory. I do see most people think partially and that's where I get fascinated with the *Vedas*. Any closed theory is not knowledge and most live there. Ask yourself what's the cause of gravitation, and why not the reverse, or in phases? One should meditate hard and then develop a theory. *Jñāna* is internal and not external. Knowledge gives you happiness, *jñāna* gives you thrill!

**Author:** I agree. In addition, if the dual-aspect monism is implemented in *Vedānta*, as the *Dvi-Pakṣa-Advaita*, it will be significant accomplishment because it will address the problems of the built-in interactive substance dualism of *Gītā*, *Sāṃkhya*, *Advaita*, *Viśiṣṭādvaita* and *Dvaita*, and it will be closer to science.

<sup>104</sup> See also <http://en.wikipedia.org/wiki/Dvaita>, and [http://en.wikipedia.org/wiki/Shri\\_Madhvacharya](http://en.wikipedia.org/wiki/Shri_Madhvacharya).

<sup>105</sup> <http://en.wikipedia.org/wiki/Shuddhadvaita> and (Sharma, 1968)

<sup>106</sup> [http://en.wikipedia.org/wiki/Achintya\\_Bheda\\_Abheda](http://en.wikipedia.org/wiki/Achintya_Bheda_Abheda),

<sup>107</sup> [http://en.wikipedia.org/wiki/Chaitanya\\_Mahaprabhu](http://en.wikipedia.org/wiki/Chaitanya_Mahaprabhu)

<sup>108</sup> *Sankhya* philosophy (Long, 2009; Radhakrishnan & Moore, 1957; Rao, 1998; Sen Gupta, 1986), atheist religions, such as Jainism (Long, 2009) and Dalai Lama's dualistic interpretation of Buddhism ((Luisi, 2008).pp.102-3: consciousness vs. matter) also have built-in interactive substance dualism, but see (Wallace, 1989, 1999, 2007; Wallace, 2009) and his personal communication in (Vimal, 2009j). As

per (Long, 2009), “In Buddhism, karma is more of a psychological reality. Instead of a self, it is karmic energy that is reborn and that must be resolved for *nirvana* to occur.” See also <http://en.wikipedia.org/wiki/Samkhya>, and <http://en.wikipedia.org/wiki/Kapila>. One could argue that theory of rebirth in all religions is simply for encouraging us to do good *karmas* and for being a moral and ethical person.

<sup>109</sup> As per (Balasubramanian, 2011), “The Vedānta tradition holds that the mind, the senses and the body are essentially different from the Self or Consciousness. [...] the mind, though material, is able to reveal things, borrowing the light from consciousness.” This implies ‘built-in’ interactive substance dualism in *Vedānta* tradition.

<sup>110</sup> **Author:** Metaphysics is the ROOT or the foundation on which everything is built. If the foundation is strong (i.e., problem free), building will be strong. The information related to three living Jagadgurus are as follows:

(i). Jagadguru Rāmānandācharya-Swami-Rāmabhadraāchārya: <http://www.jagadguruRāmabhadraāchārya.org>; [namoraghavay@gmail.com](mailto:namoraghavay@gmail.com)

(ii). Jagadguru Shree Kripāluji Maharāj: <http://www.jkp.org/home.html>; [brajrani@radhaMadhavDham.org](mailto:brajrani@radhaMadhavDham.org); [shailee@jkyog.org](mailto:shailee@jkyog.org)

(iii). Jagadguru H. H. Sri Bhārathi Thīrtha Mahāswamiga: <http://www.jagadgurus.org/>; [H. H. Sri Bharathi Theertha Mahaswamigal](mailto:H.H.SriBharathiTheerthaMahaswamigal); [acharyal@vedas.com](mailto:acharyal@vedas.com)

We are fortunate that they have excellent websites where we can learn and get some guidance. However, if we, very carefully, listen their discourses and study their write-ups with critical analysis and open-minded, all 3 Jagadgurus seem to be extremely faithful to some of our 6 sub-schools of *Vedānta* and our theist Vedic system. Unfortunately, this means, in terms of metaphysics, that they seem to make category mistake and have problems of interactive substance dualism and idealism. Thus, our religion (and also other religions) is open to criticism in west and from scientists. However, if we implement *Dvi-Pakṣa Advaita*, these problems will be resolved and our religions will be closest to science. I hope that all Jagadgurus seriously consider the *Dvi-Pakṣa Advaita* framework with open-mindedness to take care of above problems. In my view, this is the demand of modern scientific age from all religions.



**NM:** If you could explain the “category mistake” in some detail it would be good. My view is that scriptures and *Gurus* are beyond analysis and criticism. To me, the *Vedas* and *Upaniṣhads* contain all knowledge of *Self*, *Brahman* and metaphysics - which the *Āchāryas* have explained in different ways. It is like same painting being described by different aesthetes in different words and expressions. Surely our *Vedas* and *Upaniṣhads* are open to ever new interpretations for which your study is commendable, but it is currently beyond me to comment on which interpretation is right and which has problems (if any), as I am still learning.

**Author:** All entities can be categorized in two categories: mental (M) and physical (P) entities, where (a) mind is western term (not equal to eastern term *manas*) and comprises non-physical entities that also include self/soul, God, cognition, etc., and (b) physical entities include both fermions (material particles) and bosons (force carrier). Category mistake is made if we assume that physical entities arise from mental entities (different category) and *vice versa*. Thus, all 3 metaphysics (i) the materialism (mind from matter), (ii) the idealism (matter from mind) and (iii) interactive substance dualism (mind and matter are two independent entities/substances but they can interact) make category-mistake. The *Dvi-Pakṣa Advaita* does not make such mistake because only same-same interactions (M-M or P-P) are allowed and cross-interactions (M-P or P-M) are prohibited. In addition, the *Dvi-Pakṣa Advaita* addresses problems of other views.

In my view, everybody and everything should be open to criticism if we want to progress further. My metaphysical framework is ‘Dual-aspect Monism with dual-mode and varying degrees of the dominance of aspects depending on the levels of entities (DAMv)’. The DAMv framework has two versions: (a) theist *Dvi-Pakṣa Advaita* and (b) atheist *Dvi-Pakṣa Advaita*.

Truth must be independent of beliefs such as theism (*Āstika*) and/or atheism (*Nāstika*, e.g.: Buddhism) as these are genetic and/or acquired phenomenon. Everything is subject to criticism; one should not take anything for granted in search of Truth; otherwise, we cannot improve our religion and cannot bring it close to science. Blind faith is very risky and is a roadblock for progress.

It should be noted that *Vedānta* seems to imply that *Brahman* (God), *Jīva* (soul), and *Māyā* (world) contain each other (i.e., *Jīva* and

*Brahman* are present in *Māyā*, *Brahman* and *Māyā* are present in *Jīva*, and *Māyā* and *Jīva* are present in *Brahman*). They seem to be inseparable, which is close to *Dvi-Pakṣa Advaita*. *Vedas/Vedānta* also seem to hypothesize that (i) if we turn our ‘*manas/mana*’ towards *samsāra*/world then we will NEVER get eternal happiness because *samsāra* inherently lacks happiness, but (ii) if we turn our ‘*manas/mana*’ towards *Brahman/God* then we will surely get eternal happiness because He is/has eternal happiness. *Viśiṣṭādvaita* is also close to the theist *Dvi-Pakṣa Advaita*; however, none satisfies atheist’s requirements (no eternal self: such as Buddhism). It should be noted there are already 6 sub-schools in *Vedānta*, and we cannot ignore Buddhism and other systems. Truth must encompass all.

<sup>111</sup> Critique2 is a theist layperson (neither philosopher nor scientist), as majority of us are, so his comments are useful. He believes in Advaita in different sense. On the one hand, he accepts that *Brahman* is an aspectless primal entity; on the other hand, he believes that *Brahman* has infinite (not just two) aspects and provides critique on the definition of the dual-aspect-monism based *Brahman*.

**Critique2:** One may confine one's discussion on a limited scope by just looking at two aspects of an infinite system. But to imply that the infinite has only those two is totally erroneous. That is because the *Advaita* has infinite aspects. It is the infinite aspects of that singularity [the single fundamental entity] that makes the world so interesting. In the same singularity, mind and matter are not two different and separate items. They are both the same in that system. But when mind and matter, are standing side by side, and looking at that singularity that surrounds them, then the two looking at each other and the system, will have a hell of a time to accept that the two can be the same in that singularity, when the two look at each other and the singularity surrounding them. By only separating the I "aham" from the equation of mind and matter, by understanding how and why they are the same, an evolution within the "one" and only "one", then it would be possible to ride over the error of perception. However, if one does want to insist on aspects, then it is not dual, but it will have to be triple aspect Singularity, or monistic start. The three aspects being Shakti, Prakṛti and Akash (Energy, Laws of nature, and Space). You may add a fourth aspect, though it is a derivative of the

first three, the "Lila", or the "Writ" of the drama, which we all are looking at. That drama is the transformation by interaction of Shakti and Prakṛti, energy and nature. We all, matter and non-matter, are that transformation within the ball of singularity. We did not come from anywhere nor are we going anywhere, but are doing our part in accordance with the writ, or the laws of nature. Kindly note, that this description is not mine but it is well explained in various parts of *Gītā*, and more particularly in the 18<sup>th</sup> chapter summary.

**Author:** The meaning attributed to the term 'aspect' by Critique2 is equivalent to my (author) term entity (energy, *Ākāśh*), laws of nature (*Prakṛti*), and/or action (*Līlā*). My meaning attributed to the term 'aspect' is different. In the DAMv framework, all (infinite in number or innumerable) entities are arbitrarily categorized in two categories: mind and matter. Thus, for DAMv framework, an entity has two *inseparable* aspects with *varying degrees of the dominance of aspects* depending on the levels of the entities. In other words, entities, *Shakti* or the energy Ball, *Prakṛti* (if it means matter), *Ākāśh*, and so on, each has two aspects: mental and physical with varying degrees of the dominance of aspects. For example, *Shakti* (energy) has two inseparable aspects: mental *Shakti* and physical *Shakti* with varying degrees of dominance depending of the *Shakti* in question. Inert matter component of *Prakṛti* (inert matter) has dominant physical aspect and latent mental aspect. Similarly one can describe for other entities. Our Brain has innumerable states, which can be categorized as deep sleep, dream, wakeful, and meditative states. When we are awake, conscious, and active, then our brain has a specific state depending on what we are doing (thus, brain has innumerable states). Each brain-state, in wakefulness, has two equally dominant aspects: its mental aspect is our *personal first person* specific subjective experience and the physical aspect of this brain-state is *public/objective third person* perspective related neural-network of brain, related chemicals, and related activities that we can be experimentally measured using functional MRI.

The singularity (single entity) can be called the unmanifested state of *Brahman* that has two aspects: latent mental and latent physical (in that sense the unmanifested state of *Brahman* is aspectless. However, one could argue that *Brahman* is in all entities and all entities are in *Brahman*.

The DAMv framework has 3 essential components: (1) the dual-aspect monism (each entity has two *inseparable aspects*: mental and physical), (2) two modes, and (3) *varying degrees of the dominance of aspects depending on the levels of the entities*.

*Gītā* has been re-interpreted using Jagadguru Rāmānandārcharya's *Viśiṣṭādvaita* (about 1300 AD) by the living Jagadguru Rāmabhadraṛchārya, who has provided very nice critique of previous interpretations of *Gītā* using Śankarāchārya's Advaita. In this *Viśiṣṭādvaita*, *Brahman* has two adjectives (*viśeṣaṇa*): *acit* (matter) and *cit* (mind). This is somewhat close to the first component of DAMv framework.

**Critique2:** If you have created two arbitrary concepts and apply them to various issues for your personal fun, then God bless you as long as you are happy. But that, I hope you realize, cannot be passed on as universal truth, when it is only an arbitrary designation for author's personal convenience. Thus, I hope you do realize, that unless you first define the scope of the two aspects in details and explain how according to your definitions everything in the universe can be fitted into one or the other, it will stay as an irrational concept. Onus of clarification and proof lies with the one who asserts the hypothesis. The only surprise I had was why your imagination only picked two aspects, when the same entity can be defined in infinite aspects, and you could as easily have reached for the stars. Thanks for the clarification.

**Author:** Again, your term 'aspect' also equivalent to my term 'entity', so your infinite number (innumerable) of aspects = my infinite number (innumerable) of entities. Each entity has two aspects (my term): mind and matter. Arbitrarily categorization is not mine; it is whole western philosophy's categorization and now accepted by our living Jagadguru Rāmabhadraṛchārya (PhD, D Litt). It is useful to categorize all kinds of metaphysics based on above categorization of entities into 4 categories: (1) materialism: mind from matter (as in science), (2) idealism: matter from mind (as in *Advaita* and *Gītā*), (3) interactive substance dualism (as in *Gītā*), and (4) dual-aspect monism (as in the DAMv framework and *Viśiṣṭādvaita*).

**Critique2:** Thank you very much for clarifying the personal and arbitrary scope of the meanings of mind and matter. It is a stretch of imagination and logic to conclude that these arbitrary concepts

suffice to delimit *Advaita* to two aspects, and definitely they cannot within the classical meaning of "mind" and "matter". Just as a side issue, could it be that this attempt at labeling "dual aspect" to a well defined singularity of "monistic" concept, Advaita, by hook or crook, by matter and mind, is to accommodate or appease the irrational duality of two dominant western religions, humans on earth and God in heaven.

**Author:** Please note that we are no way limiting *Advaita* by categorizing innumerable entities in two categories: mind and matter. It is neither personal and nor has arbitrary scope. If you can come up with 3<sup>rd</sup> category, I will investigate further if that is redundant or non-redundant category. It should be noted again that your-aspects has different meaning as elaborated before and mostly equivalent to my-entities. My term entity has dual-aspect. Dr. Alfredo Pereira Jr. has introduced Three-Aspect Monism (TAM): physical, non-conscious mental and conscious mental. The latter two can be categorized in to mental aspect in my view. For summary see (Vimal, 2012a). To sum up, Critique2 who is neither a philosopher or a scientist, is confused with term metaphysical term 'aspect'; to emphasize again, his aspect is mine entity; when he says infinite number of aspects, it means innumerable entities; each entity has two aspects: mental and physical. Once this is understood, there is no contradiction.

<sup>112</sup> See also (Ādi Śankarāchārya, 788-820a, 788-820b; Anthony, 2009; Baker, 2011; Chethimattam, 1971; Dasti, 2011; Deutsch, 1980; Grange, 2009; Haque & Banaei, 2011; Hari, 2010a; Kazim, Tauqir, Tariq, & Matt, 2007; Kohut, 2011a, 2011b, 2011c; Mishra, 2003; Muslim, 2011; Pal, 2011c; Rāmānujāchārya, 1904; Rao, 1998; Rosen, 2007; Sarasvati, 1974-89; Sharma, 2000; Smith, 2011; Sri Madhvacharya, 2011; Swami Chinmayananda, 2000; Vimal, 2009c; Whitehead, 1929).

As per (Pal, 2011c), "Even if it is claimed by the scientists that the universe has actually started from nothing, and not from something as claimed by the believers, the inevitable conclusion is that in both the cases there must have to be some sort of consciousness at the beginning". In my view, this may be *cosmic* consciousness, which is different from our individual consciousness that is the latest co-



evolution and co-development from the unmanifested state of *Brahman*, rather than the primal consciousness at the beginning.

Pal argues further: “I will also argue that the conclusive or decisive proof for God’s non-existence can only be a natural explanation for the origin of the universe and nothing else. [...] When scientists say that they do not need any God-hypothesis, they are actually saying that God is not the explanation for the things we find in nature, and that God is not the explanation for the origin of the universe as well. [...] Darwin’s theory of evolution has proved that God does not exist, or that Crick-Watson’s discovery of double helix has proved that God does not exist, or that some other scientific discovery has proved beyond doubt that God does not exist, then I will only say that these are all nonsensical arguments that have been put forward so far as genuine proof for God’s non-existence. But if we find that scientists have been able to give a NEFOU [natural explanation for the origin of the universe], then we will have to reckon it as a genuine and conclusive proof for God’s non-existence. So here we are getting another strong reason as to why we cannot, and should not, accept the scientific theory that states that the universe has originated from nothing due to a vacuum fluctuation as a genuine scientific theory, because here what is intended to be proved has been proved based on the assumption that it has already been proved.”

It seems that both scientific theory and God theory may be correct in their own way in the *Dvi-Pakṣa Advaita* if we accept that science starts from the physical aspect of the unmanifested state of the fundamental primal entity ends to our physical aspect of brain-state; whereas, religions starts from its mental aspect (cosmic consciousness) and ends to our mental aspect of brain-state (i.e., our individual consciousness); thus, no category mistake is made. In other words, cosmic consciousness (God) is the mental aspect and physical universe is the physical aspect of the unmanifested and manifested states of universe. Problems occurs when science tries to explains consciousness and religions tries to explain physical universe; this is because both make category mistake (mind from matter and matter-in-itself from mind, respectively).

<sup>113</sup> As per *Bṛihadāraṇyaka*, “The physical body, having been cast off, the soul assumes a new body of an ethereal character. A subtle body

is there no doubt, but it is not the physical body. The Sukshma Śarīra, or the body that is characterised by mere mind, Prāṇa and senses, remains even after the physical body is cast off. As there is a gradual ascent from the lower to the higher; there is also a gradual effectuation of the transparency of this body. The soul's body becomes more and more pellucid, more and more transparent, more and more capable of reflecting Reality in itself, which it was most incapable of doing while in the physical plane." ((Swami Krishnananda, 1983).V.10.1.p323). This implies that soul has also physical aspect, which is very subtle (close to latent), whereas the soul's mental aspect is dominant.

<sup>114</sup> See theists' explanation: [http://www.huffingtonpost.com/rev-james-martin-sj/why-is-there-suffering\\_b\\_835427.html](http://www.huffingtonpost.com/rev-james-martin-sj/why-is-there-suffering_b_835427.html) .

<sup>115</sup> Theism vs. atheism is interesting topic. Materialistic philosopher Dennett in an interview (<http://www.youtube.com/watch?v=zgr3B0PxYbc&feature=related>) addresses some of this issue. One could argue that the theist-atheist phenomenon is because of the genetic disposition and/or acquired attributes as some scientist found 'God gene', which when expressed in some people entails him/her being a theist. It can be acquired as well, such as due to accidents, near death experience, space travel, and so on. A testable hypothesis: a possible neural mechanism may be that inhibiting circuits perhaps in frontal-temporal-parietal system get damaged and there is nothing to inhibit, and hence entailing being a theist (normal default seems to be for atheists); see also (McNamara, 2006b). However, further research is needed to test this hypothesis. In any case, the DAMv framework (*Dvi-Pakṣa Advaita*) is for both theists (who can consider *Brahman* as God) and atheists (who can consider *Brahman* as a dual-aspect entity) because theist-atheist phenomenon appears subject specific.

As per [http://en.wikipedia.org/wiki/God\\_gene](http://en.wikipedia.org/wiki/God_gene), "The **God gene** hypothesis proposes that human beings inherit a set of genes that predisposes them towards spiritual or mystic experiences. [...] The God gene hypothesis is based on a combination of behavioral genetic, neurobiological and psychological studies. The major arguments of the theory are: (1) spirituality can be quantified by psychometric

measurements; (2) the underlying tendency to spirituality is partially heritable; (3) part of this heritability can be attributed to the gene VMAT2 [vesicular monoamine transporter 2] [(Hamer, 2005)]; (4) this gene acts by altering monoamine levels; and (5) spirituality arises in a population because spiritual individuals are favored by natural selection. [...] According to this hypothesis, the God gene (VMAT2) is a physiological arrangement that produces the sensations associated, by some, with mystic experiences, including the presence of God or others, or more specifically spirituality as a state of mind (i.e. it does not encode or cause belief in God itself in spite of the 'God gene' moniker). [...] VMAT2 codes for a vesicular monoamine transporter that plays a key role in regulating the levels of the brain chemicals serotonin, dopamine and norepinephrine. These monoamine transmitters are in turn postulated to play an important role in regulating the brain activities associated with mystic beliefs. [...] Hamer has hypothesized that self-transcendence makes people more optimistic, which makes them healthier and likely to have more children. [...] Although it is always difficult to determine the many interacting functions of a gene, VMAT2 appears to be involved in the transport of monoamine neurotransmitters across the synapses of the brain.”

<sup>116</sup> A phenotype is the organism's observable characteristics or traits, such as, its biochemical or physiological properties, behavior, morphology, development, and products of behavior (such as a bird's nest). Phenotypes result from the expression of the genes of an organism's, the influence of environmental factors, and the interactions between the two. The genotype of an organism is the inherited instructions that it carries within its genetic code.

<sup>117</sup> (Haarsma, 1999) provide critique on (Ramachandran et al., 1997) further with respect to Christianity: “This experiment did not prove that God exists and communicates with us. Neither did it prove that God doesn't exist, and that religious experiences are reducible to nothing but brain chemistry. The scientists themselves cautioned against any such sweeping conclusions. [...] Questions of God's existence and human accountability have been debated for millennia. In the last centuries people have used and misused scientific results

to argue for their beliefs. Such arguments will intensify as neuroscientists study the biological basis for our memory, decision-making, and self-awareness.

Although neuroscience cannot answer those age-old questions, these sorts of experiments can and should prompt us to consider other potentially troubling questions. These patients, due to a brain abnormality, had strengthened involuntary responses to religious words and symbols. What does that imply for all of us, and our responses to God? It may be true that much of our initial, emotional response to any situation, religious or otherwise, is strongly influenced by factors outside our conscious control.

Our genes and childhood experiences have shaped our personalities. [...] During seizures, these patients had what they described as religious experiences. [...] If religious experiences have a neurological basis, where does the soul fit into the picture? This question points to another age-old debate: Is human nature fundamentally dualist (immaterial soul animating a material body) or monist (all of one united nature)? Some ancient Greek philosophers and some medieval scholars chose dualism, and hypothesized about which functions are performed by our immaterial souls. Modern neuroscience is finding that those same functions appear to be done by our brains, and so seems to favor monism.

God's revelation does not clearly spell out which is the best picture of human nature. God's revelation does clearly teach that our continued existence, both in this life now and in life after death, depends upon God's constant sustaining grace. That is surely true no matter how we define the 'soul' or imagine its relationship to the body. God's revelation also clearly teaches that our bodies and souls will continue after death. We will be resurrected into new forms. God's promise is certain, despite our limited understanding of how it might be accomplished. [...] No doubt more wonders await discovery as we study our astonishingly complex brains. Not only will what we learn enable us to help people suffering from mental illness, but also what we discover might challenge some of our presuppositions about human nature and the means God uses to interact with us. These challenges are also a gift, if used the right way, which will prompt us to greater understanding and mature faith."

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<sup>118</sup> According to (Wildman, 2006), “Pinker helpfully lists four adaptationist explanations for the pervasiveness of religious belief: religious beliefs are adaptive because (a) they truly describe the environment of human life, (b) they bring comfort, (c) they forge unified communities, or (d) they answer our need for moral values [see also (Pinker, 2006)]”(p.249).

<sup>119</sup> As per (Philippi et al., 2012), “It has been proposed that self-awareness (SA), a multifaceted phenomenon central to human consciousness, depends critically on specific brain regions, namely the insular cortex, the anterior cingulate cortex (ACC), and the medial prefrontal cortex (mPFC). Such a proposal predicts that damage to these regions should disrupt or even abolish SA. We tested this prediction in a rare neurological patient with extensive bilateral brain damage encompassing the insula, ACC, mPFC, and the medial temporal lobes. In spite of severe amnesia, which partially affected his “autobiographical self”, the patient's SA remained fundamentally intact. His Core SA, including basic self-recognition and sense of self-agency, was preserved. His Extended SA and Introspective SA were also largely intact, as he has a stable self-concept and intact higher-order metacognitive abilities. The results suggest that the insular cortex, ACC and mPFC are not required for most aspects of SA. Our findings are compatible with the hypothesis that SA is likely to emerge from more distributed interactions among brain networks including those in the brainstem, thalamus, and posteromedial cortices.”

<sup>120</sup> (Swami Krishnananda, 1983).I.2.1.p30.