**COMPARIITIVE STUDY OF BUDDHISM AND ADVAITA VEDANTA IN RELATION TO CONSCIOUNESS STUDIES AND COGNITIVE SCIENCE**

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**Abstract**

*Sankaraachaarya* popularized the *advaita* thought among students of philosophy and seekers of knowledge of the Self or *Brahman* or *Atman*. But he is criticized by Indian theistic schools like *Visistaadvaita* and *dvaita* philosophies as “*prachchnna bouddha* – follower of the Buddha in disguise”. This comment of theistic schools makes it worthy of comparing the *advaitic* and Buddhist schools of thought in relation to consciousness, world, *Soonya,* and other expressions between the two thought systems. This paper does such a comparison from cognitive science point of view and how the elements of Buddhism and *Advaita* thought enrich the modern scientific field of cognitive science. Also, a brief analysis is presented how the supplementary and complementary nature of the Upanishads, the Buddhism, the Jainism and the *Shaddarsanas* of Indian philosophic systems can be used to further the understanding of form, structure and function of human consciousness, mind and their functions.

**Key-words**: *Advaita* thought, *nirguna* state, *Jagrat Sushupti*, *sushupti*,Buddhist thought; *Soonya*, *nirvana,* theistic schools of Indian philosophy*, moksha*, *mukti*, peace, bliss, *shaddarsanas*, Jainism, *parinaama*, *jagat*, *mithya, sat, vivartanam*, cognitive science, consciousness, mind, complementary and supplementary nature of Indian spiritual and philosophical systems

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**Introduction:**

Cognitive sciences often rediscover philosophical analyses painstakingly. A better policy to understand and model human consciousness and mental functions would be first to learn what philosophy (Eastern or Western) teaches us about human consciousness and mind in this regard, and then move on to experimentation and model–building within the scope of positive sciences. The information available in Indian philosophical systems is correlated from cognitive science point of view and this Indian spiritual wisdom is used to model and understand the form, structure and functions of human consciousness and mind, Cognitive science is the interdisciplinary study of how information is represented and transformed in the brain. It consists of multiple research disciplines, including psychology, artificial intelligence, philosophy, neuroscience, learning sciences, linguistics, anthropology, sociology and education. It spans many levels of analysis, from low-level learning and decision mechanisms to high-level logic and planning; from neural circuitry to modular brain organization and to provide as well necessary hints to software which would model the tasks of mind.

The *Upanishads*, The *Brahmajnaana,* The *Sabdabrahma Siddhanta*, The *Bhagavadgita*, The *Shat Darhasnas* and the like are replete with many expressions which deal with human faculties and mental processes which can be used to understand and model human cognitive processes Indian spiritual wisdom contained in the Upanishads, *Advaita siddhanta, Shtd Darshanas* and similar texts is not necessarily theological but is also psychological and scientific The *Upanishads* and other spiritual and philosophical texts are traditionally commented on as theological texts. But *Upanishads* and the rest of thought systems are also texts of science of mind. The concepts and definitions of *Padaartha,* *Advaita* and *Dvaita* can be successfully used to understand the theory of human mental processes. .*Atmajnana*, the *Upanishadic* wisdom and other philosophical content available is *Shaddarshanas* and *Vyakarana*, when interpreted from psychology and modern science point of view, yield a mine of information about phases of mind, states of mind and functions of mind . The physical structure of mind and a model and possible theory of human cognition and language learning and communication processes can be presented when the ideas from all these systems, though they apparently “differ” in vocabulary and paths. *Advaita* thought, *Shat Darsanas* and *Sabdabrahma* theory are clubbed in this article.

*Sphota Vaada of Sabdabrahma Siddhanta, Saddarsanas* [(*Nyaya, Vaiseshika, Samkhya, Yoga, Poorva Meemamsa,* and *Uttara Meemaamsa* or (Vedanta)) are **distilled expressions** of the Upanishads, the texts of Buddhism, the texts of Jainism and related ancient Indian spiritual and philosophical texts. And are evolutionary products in nature, in advancing, and improving, substantiating, opposing, inducting, deducting contemplating over earlier texts and are codifiers of Indian philosophical essence having implications and applications to cognitive science.

This paper lists and correlates from cognitive science point of view such apparently ‘different’ usages of the same technical terms *padaartha, guna, jaagrat sushupti, sushupti, nirguna, soonyam, nirvana, parinama, moksha and mukti*; and a comprehensive outlook of various Indian spiritual (the Upanishads, *Atmajnaana/Brahmajnaana*, *advaita* philosophy, etc.,) the Buddhist and Jainism ideas and concepts and philosophical (*shaddarshanas, sabdabrahma siddhanta – vyakarana*) perceptions, insight, will be presented from cognitive science point of view.

**Cognition insight from *Brahmajnaana* and other philosophical systems:**

***Paadaartha*:**

***Dignaaga of the Buddhism says:***

***Naama roopa vinirmuktam yasmin samtisthate jagat***

***Tam aahuhu prakrutim kechin maayaam anye paretva cha anoon***

Human cognition takes place sequentially in three stages and human communication takes place sequentially in the reverse order under the observation of human consciousness (2-18). Consciousness acts as non-transforming awareness - untouched, uninvolved seer, witness or observer - being present through the series and sequence of cognition and communication, playing the dual role of material (*upaadaana kaarana*) and instrumental cause (*nimittakaarana*). This is technically called *padaartha* by Upanishads, meaning that consciousness – the result of breathing process – is the source of energy / matter by / with which the cognition is made up of and carried through. Upanishads use the terms *Brahma padaartha* to signify, quantitatively and qualitatively*, aatma sakti* generated to create various phases of mind or conscious states of mind, which provide consciousness and in which mental functions are conducted and also mind ceases to function mentally. *Vaisheshika*, nyaya, *saamkhya*, yoga and *vyaakarana* also proposed cognition elements as *padaarthas.*

***Brahmajnaana*:**

*Naama bhaava vaasanaa rahita vastu*  *padaarthaha* *iti*, ***Brahmapadaartha*** [Upanishads/*Brahmajnaana*].

*Padaartha* is also used by *Vaisheshika* School of *Shaddarshana*s, and says:

***Vaishesheka*:**

*Dravya-guna-karma-saamaanya-visesha-samavaayaaha -* ***padaarthaas*** [*Vaisesika* – **argues for the existence of the self from bodily functions/activities]**. *Abhaava* is added later.

+ Sakti (potentiality)-asakti (non-potentiality)-saamaanya visesha (commonness) – abhaava (non-existence / non-cognition). [Substance has quality and action].

*Prithivi-appaha-tejaha-vaayu-aakaasa-dik-kaala-mana-aatmaa* – iti ***dravyaani.***

***Nyaaya*:**

***Pramaanaihi artha pareekshanam nyayaha.***

*Pramaana* (means of knowledge)-*prameya* (the objects of knowledge)-*samsaya* (doubt)-*prayojana* (purpose/use)-*dristaanta* (syllogism/examples)- *siddhaanta* (accepted truth)-*avyaya* (members of syllogism)- *tarka* (indirect proof)- *nirnaya* (determination of the truth)-*vaada* (discussion)-*jalpa*- (wrangling)-*vitanda* (cavil or destructive criticism)-*heetvaabhaasaa* (fallacious reasons)-*chala* (quibbling)-*jaati* (futile objections)-*nigraha sthaana* (occasions for reproof) – The first nine are more strictly logical than last seven (which have the negative function of preventing erroneous knowledge). The last seven are more weapons for destroying of error than the building of truth.

*Nyaaya* and Buddhism got benefitted from each other and other philosophical systems also among one other in developing cognitive science principles; both the hardware and software as is being discussed here

**Four Kinds of valid knowledge**: *Patyaksha* (Perception)-*lyingika* (inference)-smriti (remembrance/ memory)-aarsha jnaana (intuitive knowledge/confirmed by earlier scholars) - [*Nyaaya* - says **Self is the basis of mental phenomenon.**]

***Samkhya* and Yoga:**

*Saamkhya – 24 – taanmaatraas –objective energy forms – 5; sense organs (jnaanendriyas) – 5; communication / action / reaction organs – 5; kinds of action by action organs- 5; antahakaranas – inner mental tools – 4 = 24*

*Pratyaksha, anumaana, aagamaaha pramaanaaha (Yoga Sutras)*

***Uttara meemaamsa or Vedanta:***

*Vedaanta – 25; the above 24 proposed by Vaisheshaka and Consciousness/awareness = 25;*

***Vyaakarana – Sabdabrahma Siddhanta:***

*jaati, guna, kriya, yadruchcha* – 4

In all these systems, *padaartha* thus is defined and used as raw “material” / energy constituting the consciousness/awareness, mind, cognition/communication, the instruments of cognition/communication, objects of cognition/communication, phases of mind in which cognition/communication takes place or not, functional / cognitive/communication states of mind, the tie-ups of mind with object-energy forms, storing and retrieving inner mental world through instruments of cognition/communication, [moods/senses/experiences/meanings/senses/ - feelings/thoughts/logic/sentence- utterance in expresser/teacher and in reverse order in the listener and vice versa.

The construction, structure, storing/retrieval of cognition/communication are modelled from *Brahmajnaana* point of view using *advaita* and *dvaita* concepts of mind and its functions correlating with brain wave modulation/demodulation of mental energy waves. The current of awareness is also proposed using these concepts which underlies all cognitions/communications and its reversible being creates, sustains and dissolves cognitions/communications.

***Parinaama*:**

*Vivartanam* is the type of change that *maya* undergoes while *sristi* (creation of mental impressions) takes place,when *sristi* is in the awareness we are mentally functioning. When *sristi* is in the awareness a veil is formed on *dristi* and creates *adhyasa*. According to *Advaita* thought only two mental situations are available for humans in the awareness of the *Atman*. The situations are *nidra* or *sristi. Nidra (deep sleep)* corresponds to the *sushupti* state of consciousness. During this phase of mind, all mental functions cease to be in the awareness and *maya,* whose transformations these mental functions are, becomes *nirvishaya suddha vasana pravaham*. During this phase of mind *maya* does not bifurcate as *divyam (jnana sakti)* and *swaram (prana sakti*) as in *jagrat* and *swapna* conscious states and both sense and actions organs remain dormant and functionless.

 All human learning, knowing, communication, perception, reasoning, experience, understanding and a state transcending these mental functions are the combined and simultaneous operation of *Atman, maya, antahkaranas* (inner mental tools), *pancha pranas,* sense organs and action organs3-5. Mental functions take place as the inter-play of *advaita (vishranta dristi*-unoccupied awareness-pure consciousness) and *dvaita* (simultaneous presence of *antarmukha dristi*-awareness of within of the body and *bahirmukha dristi*- awareness of the without of the body). Sense organs are activated by the *antahkarana manas* and this forms the *baharmukha dristi*- awareness of the without of the body. During this awareness of mind *tanmatras* (object-energy forms) are sensed by sense organs by tuned *manas.* ***Perception is a construct from the inputs through sense organs and manas. Manas*** gives ***dristi*** or awareness of without and within of the body, concerning the sensing and sensed and created object-energy forms.

 *Advaita Siddhanta* and *Sabdabrahma* *Siddhanta* of Indian grammarians are cases in point. Like *Vedanta Darsana,* *Sabdabrahma* Theory has *advaita* philosophy as its basis3-19. *Advaita* philosophy is an integrated psychology, which professes the sameness of the knower in both the self-conscious *(jivatma)* state and the **Witness** in the transcendent pure-conscious *(paramatma*) state with Being and Becoming in forward and reverse directions during the processes of Expression/Teaching and Knowing /Learning14. *Brahma sat jagat mithya jivo brahmaiva na aparah*- means **What is present always is *Brahman* and *jagat* (which is moving or transient) is *adhyasa* and *mithya* (unreal); *jiva* is *Brahman* Itself, not different or distinct or separate.**

**Process of Cognition and Communication: *Brahmajnaana / aatmajnaana:***

The cognition- knowing, perception, storing, re-cognition, retrieval and communication are facilitated by the psychic energy released by breathing process and its transformation and transductions in forward and reverse directions.

The transformation in forward and reverse direction of reflected psychic or mental energy gives rise to *dvaita* state of mind when consciousness becomes seer + awareness and splits into triad as knower – knowing – known; subject – verb – object; cognizer – cognizing – cognized; communicator – communicating – communicated during cognition and communication of humans.

When this transformation and reverse transformation cease to take place then the state of mind is known as *advaita* state, when knower and known merges into knowing; subject and object merges into verb, cognizing agent and cognized into cognizing, communicator and communicated starts as communication.

Sense organs: receiving information

Inner mental tools: registering and reproduction of information

Action organs: reaction and responding to information/communication.

Cognition is a series of cognition, re-cognition and communication and de-cognition and de-communication.

Cognition and communication – Listener and Expresser:

Cognition consists of cognizing elements, cognizing tools, cognizing agent, cognizing process, cognized elements: Knowing – perceiving – experiencing / Understanding/ Becoming the Sense and being the essence / fruit / purport / import / rasa / culminating as peace / bliss / silence (No – cognition state but is the result of experience of the essence of the cognition) – in the listener and just the reverse process in the expresser forming and resulting in the communication.

Thus, cognition has three stages of knowing, perceiving and experiencing and all these three under the observation of the Consciousness as acts as Seer / Witness untouched by these mental happenings during the whole process of cognition, re-cognition and communication.

There is also a state or stage of no-cognition taking place, then the consciousness is pure known as pure consciousness, signifying content-free contented state, cognition and related experiences-free unoccupied awareness – experienced as bliss, peace silence, mental quietude, anxiety-, fear-, worry-, doubt-free mental state. Action organs communicate and express the already mentally stored, recollected, re-cognized experience, perception.

***Poorva meemamsa:*** It is not the question of whether an object is there or not in physical world around. It is whether the object is cognized or not. When *chit* energy lights the object, the object is cognized. If the light is off object is not cognized.

When not cognized for the lack or absence of *chit* energy it is as good as the object is not present for the cognizing agent. Lighting of object world (outside the body or perceived within the body from earlier already created mental impressions) is cognition by *chit* energy. The object is present as stimuli-causing in the outside physical world and as potential energy form inside the body as perceived world or between chit energy or object-energy form (live, dynamic, current). Lighting by *chit* energy means presence of mind to be able to do all forms mental functions. Absence of mind is deep sleep or wakeful sleep conscious state.

Cognition of objects is temporary. *Atman* is the constituent cause (*samavaayikaarana*). And contact of *atman* with *manas* is the auxiliary cause (*asamavayeikarana*).

The Self brings about cognitions when it is contact with *manas.*

**The Formation and Structure of cognition and communication: Concept and idea of Triad (*Triputi*):**

**The Triad**:

The cognition- knowing, perception, storing, re-cognition, retrieval and communication are facilitated by the psychic energy released by breathing process and its transformation and transductions in forward and reverse directions.

The transformation in forward and reverse direction of reflected psychic or mental energy gives rise to *dvaita* state of mind when consciousness becomes seer + awareness and splits into triad as knower – knowing – known; subject – verb – object; cognizer – cognizing – cognized; communicator – communicating – communicated during cognition and communication of humans.

When this transformation and reverse transformation cease to take place then the state of mind is known as *advaita* state, when knower and known merges into knowing; subject and object merges into verb, cognizing agent and cognized into cognizing, communicator and communicated starts as communication. Thus, the cognition consists of**:**

**Structure and instruments of Cognition:**

Cognizing element/agent/subject Instruments of cognition object of cognition

(impersonal)

*Dvaita* phase of mind:

Conscious states of phases of mind when mind alternates between *dvaita* and *advaita* states during wakeful and dream conscious state of mind

Mental states of cognition: *Advaita, dvaita* and their simultaneous existence and working

Types of cognition: Knowing, perception, experience / mood/sense/ meaning/ understanding/ insight/intuition/ urge, craving:

Stages and instruments of cognition:

States of cognition:

Functional – form – construction – structure – plane – level of cognition

Elements of cognition: Object energy forms (sense organs / knowing), electro-chemical (inner mental tools / perception / logic / intellectual operations /) and biochemical [experience / sense / mood etc., (inner mental tool *chittam*)] under the observation of infrasonic oscillator – the consciousness.

Forms of energies being sensed during knowing: light (eye); sound (ear); chemical (tongue - taste / nose – smell) mechanical (skin – touch) heat (skin - cold, cool, warm, hot).

Form of energy facilitating perception and other intellectual operations, sentence formations: electro-chemical.

Form of energy facilitating experience etc.: biochemical

The perception (electro-chemical) and experience (biochemical) are carried by and as the frequency modulations/demodulations of the infrasonic pulse series – the reflected mental energy pulses – the brain waves – generated by and are the result of rhythmic breathing process.

The *guna* concept of cognition: in the sense of mental tie up (guna means knot too)

The word *guna* extensively used in Indian spiritual texts, means mental tie-up.

If the mental tie-up is with object-energy form through the means of manas, it is *tamoguna; bahirmukhadristi; antarmukha dristi* too.

If the mental tie-up is with inner mental world –with stored collection of information about outer physical and / or impressions created by such information it is *rajoguna. Antarmukha dristi.*

If the mental tee-up is with experience, mood, meaning, sense, insight, understanding, intuition, urge, volition, through inner mental tool *chittam*, it is *sattvaguna. Antarmukha dristi.*

*Prapancham* is created as potential energy in the respect cortices and when this is retrieved, it is called *jagat*, the dynamical form of information as thought, feeling, perception preceded by experience, mood, sense etc., differentiated and split as knower-knowing-known or subject-verb-object, the triad, in the *dvaita* phase of mind i.e., the *jaagrat* (wakeful) and *swapna* (dream) conscious states of mind.

**Instruments of Communication:**

Inner mental tools: retrieval and reproduction of information through action organs Action organs: reaction and responding to information.

**Human Mind: Its phases, cognitive states, functional states and functioning:**

Human mind has four modes:

Three modes of awareness in continuous consciousness:

Mode of knowing/expression

Mode of perception, sentence, logic, reasoning etc.,

Mode of insight, understanding, experience, mood, meaning, sense, intuition, instinct, urge, commonsense etc.,

Mode of consciousness sets in when awareness has become one with consciousness:

Fullness, bliss, peace, silence, meaningful experience or experienced meaning etc.,

In the mode of consciousness all the remaining modes take place sequentially and reversibly to make one knowledgeable and communicate the acquired or inherent knowledge.

Mode of insight is the result of perception or intuition or instinct. State of insight is permanent once understanding sets in or experience takes place compared to state of perception.

Knowing is the result of direct sensing by sense organs. Perception is correlation of sensed information with already known and preserved information stored in inner mental world. So is understanding or experience. Insight is the fruit of understanding. Intuition is a flash arising from insight or experience. The intuition flashes as an action to be performed in the form of verb (sense). Understanding is also thus a correlation of perception with already available senses or experiences or insight within created by earlier perceptions or sense or instinct naturally possessed by the organism through genes inherited.

**Validity of Cognition:**

*Pramaana* = authority, reliability, means of cognition.

*Pratyaksha*= Direct – through sense organs- sensing- knowing- *vaikhari*.

*Anumaana =* Inference- through intellectual operations like logic, reasoning, induction, reduction, analysis, discrimination – perception- *madhyama*

*Sabda (aagama)* = recollection (creation) of meaning- understanding- experience, intuition, state of verb, state of action (*kriya*)-*pasyanti*.

All the three *pramanaas* are having equal primacy and functioning consequentially in reversible way together they create and complete the cognition in reception and transmission. The *pramaanas* require earlier *pramaanas* and are consequences of one another in forward and reverse directions in completing and transmitting cognitions. Consciousness provides the necessary mental awareness to cognize through these three means. Consciousness is observer and facilitator of cognition through three stages both instrumentally and materially.

For pure consciousness: the objects of cognition and communication are: experience etc., biochemical forms / perception, the electrochemical form /sensing through sense organs through the medium of manas and expression or communication through action organs as mechanical energy forms - which happen through the medium of infrasonic mental energy pulse series - modulation and demodulation- respectively for communication and cognition and are manifested and reflected by and of brain wave transformations.

***Advaita* thought and *Buddhistic* thought:**

*Soonya Vaada*, the prime and significant contribution to Indian philosophical thought from Buddhism will be scientifically developed and presented. How this scientific understanding helped to sow seeds of origin of rationalism and its development in Buddhist thought and life will be delineated. Its role in the shaping of Buddhist and other Indian philosophical systems will be discussed. Its relevance and use in the field of cognitive science and development of theories of human consciousness and mind will be put forward. The idea of absence as zero in number system, vacuum in physics and other natural sciences and state of absence of cognition in mind machine modeling will be presented. The use of significance of *Soonya Vaada* in philosophy, rational social life, natural sciences and technology, mathematics and cognitive science will be comprehensively discussed and a model for human cognition and communication will be arrived at.

*Sankaraachaarya* popularized the *advaita* thought among students of philosophy and seekers of knowledge of the Self or *Brahman* or *Atman*. But he is criticized by Indian theistic schools like *Visistaadvaita* and *dvaita* philosophies as “*prachchnna bouddha* – follower of the Buddha in disguise”. This comment of theistic schools makes it worthy of comparing the *advaitic* and Buddhist schools of thought in relation to consciousness, world, *Soonya,* and other expressions between the two thought systems. This paper does such a comparison from cognitive science point of view and how the elements of Buddhism and *Advaita* thought enrich the modern scientific field cognitive science. Also, a brief analysis is presented how the supplementary and complementary nature of the Upanishads, the Buddhism, the Jainism and the *Shaddarsanas* of Indian philosophic systems can be used to further the understanding of form, structure and function of human consciousness, mind and their functions.

**Scheme of human mental acquisitions, functions and communications according to Upanishads:**

While mind is functioning, there will be a differentiated perception of *knower-knowing-known* or *subject-verb-object*, which will be missing and absent when non-dual (*advaita*) awareness or pure consciousness becomes unoccupied awareness. Experiencing or understanding or getting insight of verb is state of experience and then *knower-known* or *subject-object* are not attached to the verb. Verb will be in a present continuous form or infinite form depending on it is absorption of information or understanding cognition or experiencing cognition or urge (to express or do) or intuition (result of perception or instinct took form or genetic knowledge expressed through hormones or like them) or sense or meanings of utterances received or to be expressed.

 We knowingly or unknowingly alternate between non-dual *(advaita*) and dual (*dvaita*) awareness while functioning mentally. Wakeful and dream conscious states of mind represent and account for the phase of mind when functioning and then we also are aware of and sense or perceive self-consciousness. Once mind ceases to function, we experience peace, bliss and silence within. If these are experienced our being aware them, the phase of mind then is known as wakeful sleep. If we are unaware, but are conscious of these, the phase of mind then is known as deep sleep. The phase of cessation of mental functions (also self-consciousness) is similar to zero in number system and vacuum in physical and biological sciences. Vacuum is inherent in matter and holds matter and is manifested when matter is missing or absent. Consciousness is awareness of mind when no mental functions are taking place. This idea is further elaborated below.

Simply put, according to *Upanishads*, human mental functions are the forward and backward transformations of *chidābhāsā* or *māyā or praṇavam* - the carrier (in the sense of carrier radio wave in broadcasting and reception process) cognitive-energy pulse series, *modulated*by energies sensed through sense organs or the stored information as potential energies retrieved (as *vasanas* - object-experiences, which include meanings of utterances, first and then *jagat* [inner world] as feelings/thoughts/perceptions) and *demodulated* to give humans knowledge, experiences etc.The transformation of *māya*, reverse transformation of *māya* and cessation of transformation of *māya* - the *dvaita* and *advaita* conscious states respectively- taking place simultaneously, consecutively and alternately is the structure, form, function, state and essence of human consciousness, mental functions and cognitive processes [8]Most of present attempts aim at modeling machine cognition as an isolated process which is the result of sensing19. But if human mental processes are observed, it becomes obvious that human perception is but an intermediary process which transfers sensing into sense (understanding/experience) and sense into expression. Human cognitive process can be stated sequentially as follows: (1) *sensing:* through sense organs (knowing), (2) *perception* (thinking, reasoning, decision making, etc.,), (3) *understanding/experience*, (4) *purport*- meaningful experience or experienced meaning. Human mental process is generally held to be a combination and quick successive transformations of four modes i.e.,

 **I Speaker/Teacher:** (a) Purport/ Awareness (Meaningful Experience or Experienced Meaning (b) Understanding/Experience (c) Perception/Thinking (d) Utterance /Expression

**II Knower/Listener/Learner:** (a) Knowing (through sense organs) (b) Perception/Thinking (c) Understanding/Experience (d) Purport (Meaningful Experience/Experienced Meaning)/Awareness.

Four conscious states of mind, which are phases, cognitive and functional states of mind and seven cognitive states of mind: (*Sapta Lokās*) and four modes of language acquisition and communication are available). These ideas are further advanced as follows.

**Cognitive scientific meaning of *Guna* and Cognition insight:**

The word *guṇa* extensively used in Indian spiritual texts, means mental tie-up. Th vaiseshika, samkhya, yoga and Vedanta extensively discuss the concept of *guna.*

If the mental tie-up is with object-energy form through the means of *manas*, it is ***tamo guṇa****; bahirmukha driṣti; antarmukha driṣti* too.

If the mental tie-up is with inner mental world –with stored collection of information about outer physical and/ or impressions created by such information it is ***rajo guṇa****. Antarmukha driṣti*

If the mental tie-up is with divine experience, mood, meaning, sense, insight, understanding, intuition, urge, volition, through inner mental tool *chittam,* it *is* ***sattva guṇa****. Antarmukha driṣti*

If no mental tie-up is there with objective-energy forms or objected-energy created experiences / insight / ideas / sense / meaning it is called ***nirguna*** state of mind.

It is not the question of whether an object is there or not in physical world around. It is whether the object is cognized or not. When *chit* energy lights the object, the object is cognized. If the light is off object is not cognized.

When not cognized for the lack or absence of *chit* energy it is as good as the object is not present for the cognizing agent. Lighting of object world (outside the body or perceived within the body from earlier already created mental impressions) is cognition by *chit* energy. The object is present as stimuli-causing in the outside physical world and as potential energy form inside the body as perceived world or between chit energy or object-energy form (live, dynamic, current). Lighting by *chit* energy means presence of mind to be able to do all forms mental functions. Absence of mind is deep sleep or wakeful sleep conscious state.

**Human Mind: Its phases, cognitive states, functional states and functioning as *gunas*:**

Human mind has four modes or ***gunas*** - mental ties-up - of functioning.

Three modes of awareness in continuous consciousness: ***tamo-, rajo-, and sattva gunas.***

Mode of knowing/expression – in this mode objective-energy form is received through sense organs and communicated through action organs. This is ***tamo guna*** state of mind.

Mode of perception, communication, sentence, logic, reasoning etc., This is ***rajo guna*** state of mind.

Mode of insight, understanding, experience, mood, meaning, sense, intuition, instinct, urge, common sense etc., This is ***sattva guna*** state of mind. All these states of mind constitute of ***dvaita*** phase.

Mode of consciousness sets in when awareness has become one with consciousness: This ***nirguna*** state of mind. This state of mind is actually the consciousness and no awareness of cognition or communication happens.

This is ***advaita*** phase of mind or the state of the **Self** / ***Atman / Brahman / Para.***

Fullness, bliss, peace, silence, meaningful experience or experienced meaning etc.

In the mode of consciousness all the remaining modes take place sequentially and reversibly to make one knowledgeable and communicate the acquired or inherent knowledge.

Mode of insight is the result of perception or intuition or instinct. State of insight is permanent once understanding sets in or experience takes place compared to state of perception.

Knowing is the result of direct sensing by sense organs. Perception is correlation of sensed information with already known and preserved information stored in inner mental world. So is understanding or experience. Insight is the fruit of understanding. Intuition is a flash arising from insight or experience. The intuition flashes as an action to be performed in the form of verb (sense). Understanding is also thus a correlation of perception with already available senses or experiences or insight within created by earlier perceptions or sense or instinct naturally possessed by the organism through genes inherited. This analysis and correlation of this knowledge with modern scientific attempts helps to model human mental functions which have implications to artificial intelligence, mind-machine modelling, physiological psychology and neurology.

Indian philosophical systems are termed as Vedic and non-Vedic grossly. As mentioned earlier, Vedic systems accept the authority of Vedas and the rest not. Even among Vedic systems, *saamkhya* and *vaisheshika* do not mention about the existence or otherwise of God.

The Buddhism and Jainism are the famous non-*vedic* systems of thoughts. Buddhism is special for the proposition of *Soonya Vaada*. The *Soonya Vaada* says the phenomenal world is non-existent. Because the Buddhism has not believed in God and said world is *soonya* (nothingness) it is termed as a rationalist religion. So, all Buddhist propositions follow this dictum*. Naagaarjuna, Dignaaga* and other great Buddhist thinkers are known for their rationalistic propositions.

And thus, Buddhism is free of dogmas. Also, Buddhist does not believe in caste divisions or divisions of any king among people. It also as known does not believe in sacrifices like yajnas or yaagaas. Everything must stand to the scrutiny of the logic and reason is its stand. Nyaya of *Shad* ***darshanas*** and the Buddhism have excelled in developing the rational view of life. Thus, Buddhism is individual specific and also tries to save individuals from blind faith and superstition.

Non-violence is a great contribution to Indian psyche from the Buddhism, Jainism and the compassion-full Upanishadic insight. Of these three Buddhism is first ism which comes to mind when the word non-violence is uttered. All Buddhist life is guided by non-violence by thought, word and deed. Hurting others is also considered as violence and Buddhism shuns it.

As hinted above, Indian philosophical systems are also source-books of theory of human cognition and communication. Before proceeding in this direction, the word soonya as understood in various disciplines and its use is narrated below.

**The significance and use of *Soonya*:**

The word *soonya* in Sanskrit has three meanings: **zero, vacuum and state of cessation of mental activities**. Thus zero, vacuum and state of cessation of mental activities are *soonyaani* (*soonyaas*).

We are aware of the significance and use ofpresence of a thing. Here significance and use of absence of a thing will be discussed. The examples are taken from the branches of mathematics, physics, technology and Buddhism and *Vedanta*.

**Mathematics and Computer Science:**

Number system is a part of Mathematics. Zero plays a significant role in number system. As we know, when zero is put on the right-hand side of a digit the value of the digit increases. The place values also owe their being and significance to zero. As, is known zero was proposed by Indian Mathematicians. Zero number has ‘no value’. The absence of value makes zero significant and highly useful. Zero is used both by scientists and lay men with equal felicity and benefit. Zero plays important role both in sciences and ordinary day to day activities.

The hardware of computers consists of circuits and networks. Zero plays very important role in this field also. Binary mathematics is the base for the design of computer functioning. Binary number system makes use of only two numbers, 0 and 1.

Number zero signifies non-transfer of electrical signal and number one signifies the transfer of electrical signal. In this way by making use of numbers, 0 and 1, signifying absence and presence of electrical signal transferred, computer computes and controls.

Thus zero (absence of value) is inseparable from arithmetic and computer functioning.

**Physics and Natural Science:**

Physics is one of the Natural Sciences. Matter, Energy, Space and Time play chief roles in this branch of knowledge. Space contains matter and energy and the actions and interactions concerning them. Space can exist without the presence of matter or energy. Space bereft of matter and energy is called vacuum.

Thus, vacuum is absence of matter or energy. Because of the vacuum matter (energy) can exist, move and transform. If vacuum does not exist, physical, chemical or biological matter cannot exist and processes cannot take place. For the creation, being and cessation of matter vacuum is necessary. Evolution, Sustenance and Dissolution of material world and its being and non-being is based on the presence of vacuum. Vacuum holds matter and its transformations. Thus vacuum (absence of matter) is the stage on which natural scientific transformations are enacted.

**Technology:**

In electronics transistor plays an important role. In technical terms a transistor is called semiconductor. In a semiconductor electron and hole are current carriers. The vacated space by electron is defined as ‘hole’. Hole ‘moves’ in the opposite direction of electron movement. Hole is absence of electron. Hole is not a material particle. It is mere space.

Concept of hole-electron pair is responsible for understanding current flow in a semiconductor and is vastly responsible for the development of semiconductor and solid-state electronics. Thus semiconductor electronics is developed on the basis of the electron and absence of electron (hole) concept .

***Buddhism, advaita and Vedanta:***

Buddhism, *advaita* and *Vedanta* are philosophical systems of ancient Indian thought. Buddhism in its interpretation as contributing to cognitive science has profound applications in developing the theories of human cognition and communication. Thus, all Indian systems of thought are integrated psychology and are science on human mind. Thus, also the definition, origin, structure, function, cessation and control of mind and its activities constitute the subject matter of the Upanishads and *rest of the systems of thought*.

**Phases of mind:**

State of awakening, state of dream and state of deep sleep are the conscious states of mind (see Table I). Deep sleep state is a state of cessation of mind and its activities. During this phase of mind, cognition of objects or object – created experiences are not sensed. Mind remains absorbed in its source, the Self. State of Self is the natural and original state of mind. This is a serene state. This is a blissful state of mind. Energy from Self is responsible for the mental activities and enables us to observe them as a witness. Experiencing such a thought – free and object – experience free - state with awareness is wakeful sleep and without awareness it is deep sleep conscious state. This is the phase of ABSENCE of activities of mind. This is the fully conscious or thought and object – experience free phase. This is the state of Self and is the original or natural state of mind. This state is also called the state of timelessness or time-transcendence or state of cognition-free unoccupied awareness or state of liberation – *moksha* or *nirvana* or *turiya* state or thought, object –experience transcendent state or state of silence or bliss or peace.

The process of Knowing or (learning) is a combined activity of sense organs, mind and action organs. Knower, Knowing and the Known are the inherent divisions perceived during this phase. The awareness as these three divisions is known as *triputi (subject-verb-object or knower-knowing-known)*. Where and when the awareness of this differentiated perception, *triputi,* coalesces into awareness of knowing or consciousness, the consciousness of cessation of divisions as undivided pure consciousness is experienced. This is the state of unoccupied (by any cognitions or experiences) awareness. This is the continuously and eternally present blissful state of the Self.

The concepts of absence of value to a digit (zero), absence of matter/energy, unoccupied space (vacuum), absence of electron (hole), phase of absence of mental activities state are significant and useful in mathematics, physics (other natural sciences), technology and *Indian philosophical schools*. Thus, absence of a thing is equally significant and useful as the presence of a thing.

**Conclusions :**

***Soonyam, jagat mithya, nirguna, jaagrat sushupti, sushupti:***

This state of, lack of consciousness of *‘triputi*, is referred to absence of cognition- state or *Soonyam* by Buddhists. Here the Buddhists have coined the word ***soonyam*** to signify and point out the state of non-cognition or non-communication of human mind. The name in Vedanta for this state of mind is *sushupti* – state of cessation of mental functions. There is another state or phase of mind in Vedanta termed as *Jagrat Sushupti* – which is equivalent to Nirvana state as termed by the Buddhists. The same state is referred to as full and ego-transcendent *moksha* state by the *Vedantins*. This is also known as the state of Divine Consciousness, the phase of absence of self-consciousness as individual.

Thus, the *soonya* state of mind is the state of mind when no human cognitions or communications take place. The only difference between Buddhist and Vedanta thoughts here is Vedanta proposes the presence of a cognizing agent to know it is *soonya* state. Thus the proposition of *soonya* state of mind by the Buddhists has led to proposal of state of *sushupti* and *jaagrat sushupti* by *Vedantins* and has profound significance in the understanding of human mental functions in various state of consciousness or phases of mind and the role of *soonya* or *sushupti* state of mind in the development of theory of human cognition and communication. Also, the *soonya* state of the Buddhistic thought is same as *jagrat sushupti* state of *vedantins* and *nirguna* state of *Advaitins.*

The *soonya*, the nirvana and the *nirguna* and *jagrat shupti* states of mind are nothing but the *mukti or moksha* state of the *Bhakti* schools.

Bhakti is also defined as *svasvaroopa anusandhaanam bhakti iti abhidhyeeyate* in *nirguna* way.

*Soonyam* in a way corresponds to *mithya* in the sense of unreal or transient.

**References**

Radhakrishnan, S., (1993), *Indian Philosophy Vol.One and Vol. Two*, Centenary Edition, Oxford University Press, Bombay, Calcutta, Madras.

Radhakrishnan. S. (1994), *The Principal Upanishads*, Indus, An imprint of Harper Collins Publishers India.

Ramabrahmam, V. (1997), *Meditation on the Self through Physics*, Proceedings of the World Congress for the Synthesis of Science and Religion, Calcutta.

Ramabrahmam, V. (2003) *The Significance and Use of Absence,  Bharatiya Bauddhika Sampada* November 2003, 7.

Ramabrahmam, V. (2004), *A modern scientific awareness of Upanishadic Wisdom:  Implications to Physiological Psychology and Artificial Intelligence*, Proceedings of the World Congress on Vedic Sciences, VijnanaBharati, Bangalore, 562-68.

Ramabrahmam, V. (2005a), *Human cognitive process-An ancient Indian model,*Proceedings of the International Vedic Conference on Contribution of Vedas to the World, Haridwar.

Ramabrahmam, V. (2005b), *Being and Becoming: A Physics and Upanishadic Awareness of Time and Thought Process,*Ludus Vitalis, XIII Num. 24, 139-154.

Ramabrahmam, V. (2006), *Elements of cognitive sciences and artificial intelligence in Gayatri Mantra -* Proceedings of National seminar on Bharatiya Heritage in Engineering and Technology at Department of Metallurgy and Inorganic Chemistry, I.I.Sc., Bangalore, India, 249-254.

Ramabrahmam.V.  (2007a), *The Science of Human Consciousness*. LudusVitalis, XV. No. 27, 127-142.

Ramabrahmam, V. (2007b), *The physics and electronics meaning ofvivartanam, Paper presented at 2nd World Congress on Vedic Sciences, February 9-11, 2007 Banaras Hindu University, VARANASI, UP, India* 2007.

Ramabrahmam, V., (2009c) *A PHYSICS AND COMMUNICATION ENGINEERING INSIGHT OF BRAHMA JNAANA,*Presentation at Eighteenth International Congress of Vedanta at University of Massachusetts-Dartmouth, MA, July 16-19, 2009.

Ramabrahmam, V., (2009d), Presentation at Eighteenth National Symposium on Ultrasonics, at VIT University, Vellore,December, 21-23, 2009,Title:*THE ACOUSTO-MECHANOTRONICS OF HUMAN LANGUAGE ACQUISITION AND COMMUNICATION***,**pp. 87-103

Ramabrahmam, V*.,*Paper presentation at Fourth International Conference: Science and Scientist-2016: August 26, 2016\_August 27, 2016, Prof. K. V. Gowda Memorial Auditorium, Bangalore University. Title: The hardware and software of human cognition and communication: A Cognitive science perspective of orthodox Indian philosophical systems.

Ramabrahmam, V., Presentation at Quantum computation and the foundations of physics, Special session, Fom 5, University of Ireland, 2017, Quantum mechanics and Cognitive Science: The Probe and the Probed, Published in Cosmos and History, The Journal of Natural and Social Philosophy, Vol. 14, No. 1 (2018), pp: 123-141.

Ramabrahmam, V., Presentation at Tuscany event, Foundations of Mind/Gestalt residential Noceto (near Siena,) Italy April 20-22 2018. The Physics of Timelessness, Cosmos and History: The Journal of Natural and Social Philosophy, vol. 14, no. 2, 2018, pp. 74-115

Ramabrahmam, V, The Physics and Electronics of Human Consciousness, mind and their functions, Cosmos and History, Vol. 15, N0. 2, 2019, pp; 63-110.

Ramabrahmam, V., Presentation at Presentation at the scientific and Philosophical Conference, Ontological Distinction between mechanical, chemical and biological systems,31st January – 1st February, 2020, Indian Institute of Technology – Madras, Tamilnadu, India. Title: ONTOLOGY OF HUMAN CONSCIOUSNESS AND MIND - A CORRELATION OF PHILOSOPHICAL, MECHANICAL AND PHYSICOCHEMICALSYSTEMS

RamanujaTatacharya, N.S. (2005)*, Sabdabodhameemamsa-An Inquiry into Indian Theories of Verbal Cognition Part I - The Sentences and its Significance*InstitutFrancais De Pondichery, Pondicherry   - Rashtriya Sanskrit Sansthan, New Delhi.

RamanujaTatacharya, N.S. (2006), *, Sabdabodhameemamsa-An Inquiry into Indian Theories of Verbal Cognition Part II - Case Terminations and their Significance*InstitutFrancais De Pondichery, Pondicherry  - Rashtriya Sanskrit Sansthan, New Delhi.Subbarao, V. (1969), *The philosophy of a Sentence and its parts*, Munshiram Manoharlal, New Delhi

Adian, E.D, Matthews, B.H.C. (1934), *The Berger rhythm: potential changes from the occipital lobes in man,*Brain, 57, 355-85.

Partridge., Wilks., (1990), *The foundations of artificial intelligence*, Cambridge University Press.

Paul Gochet. (1997), private communication.

Penrose in Perlovsky, Leonid. I. (2001), *Neural Networks and Intellect*,   Oxford University Press, New York, Oxford., pp. 383.

Perlovsky, Leonid. I. (2001), *Neural Networks and Intellect*, Oxford University Press, New York, Oxford.

Penrose, R. (1990), *Emperor’s New Mind*, Vintage, Newyork .

Balasubrahmanian, S.N. (2008), *An ‘intelligent’ Machine?* private communication.

Luca Tommasi, Mary, A, Peterson and Lynn Nadel (Eds), (2009e), *Cognitive Biology: Evolutionary and Developmental Perspectives on Mind, Brain and Behavior,* The MIT Press, Cambridge, Massachusetts, London, England.