

Connection, Confrontation and Unity of Two Titans 'Local' and 'Nonlocal' Science

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Abstract

The physical science in its present phase focuses on *five* fundamental areas namely, time, space, energy, matter and conveyed information. This form of science could be categorized as 'local' science. On the other hand, there supposedly exists another science of *five* distinguished members of nonlocal family. Namely they are consciousness, mind, life-principle, self and information. Each member of nonlocal family supposedly follows a standard operative procedure (SOP) of action and interaction. Local science is a creation of mind. Nonlocal science is creation of consciousness. The observation which points towards a *connection* between them is the fact that nonlocal 'identities' in different phases, although, work beyond Planck's scale of measurement their effects are seen in the local domain. The *confrontation* of two sciences occur in the domain reigned by phenomenon of death. The *unity* of two domains, therefore, could be found out in the *science of transcendence* of death which could unwind the proposed intertwining triple helix formed by *life-principle, information* and *mind*. It is, however, yet to be known how the members of the nonlocal family can behave as if in a confined state.

1. The Physical Science in its Present Phase

The science as we know today could be categorized as 'local' science. It focuses on five areas namely space, time, matter, energy and information conveyed within the domain bound by space time. Albert Einstein illustrated the connection between space time and gravity in the theory of relativity. Relativity is an extension of classical physics. The physical science works not only with classical physics but also with quantum physics and thermodynamics. Einstein also presented us with an equation connecting matter and energy; $e=mc^2$. The present science is engaged with four

forces of nature; electromagnetic force, weak force, strong force and gravity. The electroweak unity has been acknowledged and rewarded in science but not the unity of all four forces. Three great theories of this science are relativity, quantum mechanics and quantum field theory. Each of the theories has a great unsolved problem; relativity has the problem of singularity, quantum theory has the problem of measurement and quantum field theory has the problem of infinity. The physical science in its present form does not acknowledge existence of measurable nature beyond Planck's scale.

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2. The Spiritual Science as Practiced by Accomplished Mystics

On the other side, almost beyond the ken of present phase of science there exists a 'science' which regularly deals with members of nonlocal family. Spirituality transcends cultural and ritualistic aspects of all major religions and has a universal appeal and commonality based on first person's experience which could be verified by inter-subjective concurrence. Since it also works with stated mechanics, and has invariants, laws and principles, this is also considered as science.

The playing members in this science are primarily five in number and are namely consciousness, mind, self, life-principle and information, none of which is bound by matter or energy. None of them could be permanently localized either in space or in time. They, although, can remain 'localized' transiently, temporarily within a given space time confine, their behavior in their very nature is nonlocal. As an identity in phase all of them are supposed to have an independent existence, (except 'mind'), possibly beyond Planck's scale of measurement.

It is possible to categorize these members according to their leaning towards either consciousness or matter. Information is more 'palpable' towards local domain whereas life-principle is most close to consciousness. Consciousness appears farthest from the local domain. Members could also be categorized according to their display of masculine or feminine characteristics. Two of the members display more 'feminine' property like the act of conceiving, delivery and generation (e.g. mind, life-principle) whereas other two (self, information) have

more masculine property (like 'active' participation and 'donor'-like activity) in display. Consciousness is beyond the masculine-feminine description.

There exists a well structured relationship between these nonlocal identities. As claimed, each of the nonlocal members supposedly has an operational mechanics. The members respect the domain-invariant(s) and follow laid down rules and principles. Also, they have stated SOPs, standard operative procedures of action and interaction. This knowledge has been pursued in spirituality (which deals with nature of consciousness) and mysticism (which is an engagement with consciousness).

In a highly evolved system like human brain, one can distinguish the operation of life-principle from operation of self, and operation of mind from operation of consciousness. One can observe the primacy of some members over others in course of their action and interaction. What is popularly known as psyche could be thus a composite working room for the nonlocal members.

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3. Contrasting Features of Two Sciences

Local Science	Nonlocal Science
1. Domain of Material Science. Works within Planck's scale. Observable, Measurable entitites.	1. Domain of Spirituality and Mysticism. Works outside Planck's scale. Experiential, Identities in phases.
2. Players: Time, Space, Energy, Matter, Information. Begins with: Time	2. Players: Consciousness, Mind, Life-principle, Self, Information. Begins with: Consciousness
3. Local science is a construction of Mind	3. Nonlocal science is a construction of Consciousness
4. Emphasis is on Sensory perception	4. Emphasis is on Non-sensory perception
5. Feeds 'Ego' & 'Sex'	5. Feeds 'Life' & 'Love'

4. Brief Description of Five Nonlocal Members

Consciousness

Consciousness is like a spider. It weaves the net but does not itself get snared into the net. The net is what we know as nature. Consciousness is also the ground Reality. It is the ground without any background and is independent of

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any and all foregrounds. All activities happen on the screen of consciousness. However, unlike all other grounds, consciousness uniquely is a participating and 'active' ground. Its activities are designed to self-sustain its absolute independence and are meant to make everything else dependent on it.

Mind

In monism, materialistic or idealistic, or in monism of consciousness, there is no room for mind. Mind originates with duality of consciousness. This duality of consciousness may be between two states, two planes or two levels of consciousness. Also it may be between subjective and objective consciousness. Mind acts as an organ of communication between two conscious systems.

Mind differs from consciousness in many respects. Mind divides, while consciousness unites. Mind works with its past. Consciousness starts afresh. Mind processes information. Consciousness does not. Mind could never be information-independent. Consciousness *unconditional* is completely independent of information. Consciousness is immutable. Mind is disintegrable.

Mind is also different from 'self in its nature of category. Self belongs to category of consciousness. Mind is categorically different. Mind does not have the ability to experience while self has. Self retains the memory of experiences. Mind retains the memory of information. Mind has more 'feminine' property on display whereas self displays more 'masculine' property.

Life

Life means differently to different persons and to different disciplines of knowledge. For a biologist, it is the *life-form*. Materialists from a self-organizing paradigm mean life by the *living state of matter*. To an accomplished spiritualist,

life means *life-principle* or *prana*. It is the life-principle which in this paper is considered as nonlocal.

Life-principle working within the *living state of matter* in a *specifically informed situation* of space time *created by* live-information could be that what we commonly recognize as *life-form*. In other words, life-form could be created by 'enclosure' of matter which has evolved to a critical threshold of 'living state' that can be the play-ground of life-principle. Life as we commonly know is, therefore, an *integral* of (i) life-principle which is made to work (ii) within a specific form (space and time) (iii) of evolved state of matter, called 'living state of matter'. (iv) The boundary is shaped by splitting of a special category of information by mind-like structure and process in nature.

Self

Self is the unobserved observer, existential experiencer and manipulator within the system. However, self has potentially enormous freedom. It could be system (brain)-bound and at times, in specific situations could also be system (brain)-independent. On the origin of 'self', there are two views. The 'self' is often considered as an emergent element churned out of the intimate relationship between the processes within the system and consciousness. Another view that merits further examination is that the 'self', as system-independent entity, could be an indivisible but individualized and informed involute of unconditional, nondual consciousness. It is (i) informed that it is an involute of unconditional *consciousness-as-such*, (ii) informed that it is to behave in a specified way within the constraints of the given (system)brain, (iii) informed that although it can behave in the bound-form or independent of the system (brain), it is actually the bridge between (system)brain-bound and (system)brain-independent consciousness.

Self is individualized and informed involute of consciousness- as-such.

Information

Information is the unit of message in communication between two existences. In this paper we put forward Seven Postulates on Nature and Science of Information.

1. Information is one of the five members of non-local family constituted by Consciousness, Mind, Life-principle, Information and Self. However, like other members, information could be made localized in space and in time.
2. The fact that information can pass through black hole raises the possibility that information itself is an independent identity and exhibits an independent

mechanics outside the Planck's scale. This mechanics could be connected with quantum mechanics in superficial nest and mechanics of information manifold and life-principle in the deeper nests of nature.

- Information can not be generated from inanimate object. Information generation requires *life-principle* in action. In the 'local' domain information is that which reduces uncertainty. In nonlocal domain, uncertainty is the cause of generation of information. Information is suggested to be generated following the principle of *simila similibus* out of uncertainty in the conjugal relationship between masculine and feminine members of the nonlocal family in the nature's nests IV and V.
- Information has a 'form' inside. It is brought out by an inside-out phenomenon (Fig. 1) executed by a conscious mind or its equivalent structure and process in nature.

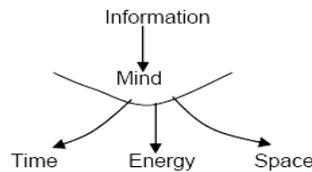


Figure 1: Mind conceives information and delivers Time, Space, and Energy

Information mechanics connects cosmology with psychology. The mechanics of information and the psychic mechanics are inextricably connected. This information splitting by mind might have implications in psychosomatic connection. The form (space time) is processed as 'idea' and the energy goes to neuron (Fig.2).

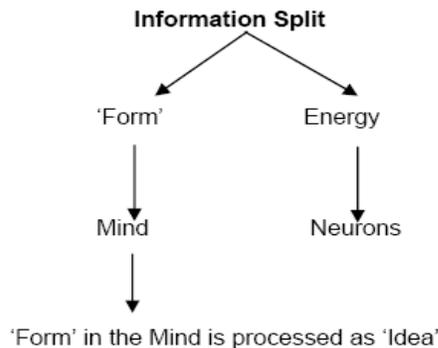


Figure 2: Information-Split forms the basis of psychosomatic connection

Cosmological implication of this release of information-based energy seems far-reaching. A possible connection between information based and matter-based energy is depicted in the Figure 3. If in science, we ever become successful in tapping this source of information-based energy by any instrument we are at the fountainhead of a new energy revolution which will have enormous impact on world economy.

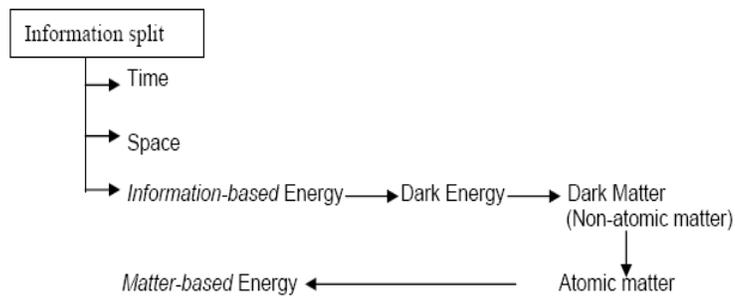


Figure 3: Two kinds of energy: Information based and matter based

5. Most important composition of 'memes' is information. The term and concept of memes are coined by Richard Dawkins as the 'unit of thought and indoctrination'. Nature and character of memes could be altered by changing its information content. This indicates that information could be more primal than memes. The power of memes is because of its contained information.
6. Information can interact with self and thereby conditions it as well. Information content of self influences its behavior. This raises the issue of primacy of information over self. Self could be overpowered by information although self has the ability to drive information to its end.
7. The relationship between genes and information is similarly complex. There are occasions indicative of primacy of information over genes. There are situations when genes exchange information from outside. Also, information can use genes as means to achieve its purpose.

5. The Hint of Connection

Local science is a creation of mind. Nonlocal science is creation of consciousness. Mind is also the meeting ground of two domains. The player common to both

domains is information. The observation which points towards existence of a *connection* is the fact that nonlocal science, although, works beyond Planck's scale of measurement the effects of minutest change in the dynamics of any of the nonlocal members are observable in the local domain. We are all aware of influence of human mind on the human body and of human consciousness on human mind and brain chemistry. We are also familiar with how our material body responds to emotion, displacement of self, and threat to life. The players may be invisible but their effects are observable in materialistic world and in human behavior. This offers us the hint of connection.

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How nonlocal entity behaves as local entity is yet to be known

However, it is yet to be known how the members of the nonlocal family can behave as if localized within a space time confined state. We have examples like, unconditional consciousness behaving as brain-bound consciousness, nonlocal mind working as brain-confined mind, *life principle* working in the confined state as life-form, self working as self of self-organizing system and originally location-non-addressable, content-non-addressable and context-non-addressable information behaving as if 'bound' to classical or quantum state of matter in location-addressable, content-addressable and context-addressable format. The changing *dynamics of information geometry* is predicted to be the cause of embodiment and disembodiment of nonlocal members within the system.

6. Confrontation of the Titans

The first *confrontation* of two titans, local science and the science of nonlocality is heralded by symptoms and signs which point towards phenomenon of death. The terrain of death is sandwiched between 'local' and 'nonlocal' domains. This is the terrain of opacity and darkness, of dark-matter and dark-energy. It is because of this dreaded phenomenon, thinking prevails that the twain will never meet!

The Sandwiched Terrain

Exploration of death phenomenon, therefore, seems imperative to get into the connection between two domains. Near-death experience has been documented

in science. First person's description of Transcendental death experience, Transformational death experience and the Experience of getting reborn in the same corpus are available from the documented experience of accomplished mystics like Sri Aurobindo in *Savitri*. The unity of two domains is supposed to be found in the science of transcendence of death. The mechanism of survival of information in black hole may hold the key for this science of transcendence. To place the terrain of death in the ambit of nested hierarchical organization of nature, we are to reexamine the pentaune model, the indivisibly interconnected five nests of nature-consciousness, which has been described in my 2007 presentation in Science and Spirituality Quest in Tirupati.

Nested organization of Nature-Consciousness

Beyond the Newtonian classical scale of nature (nest I), exists the Planck's scale of nature (nest II). A new beginning could be made if we look beyond the traditional view which assumes that the nature is confined to Planck's scale only. Sandwiched (Fig. 4) between quantum scale of nature (nest II) and unconditional consciousness (nest V) are (i) a sub-quantum terrain (nest III) and (ii) a sub-sub-quantum terrain (nest IV) of nature. Nest IV (Mother Nature) and nest V (unconditional consciousness) constitute nonlocal domain and nest II (quantum nature) and nest I (classical nature), the local domain. In the sub-quantum nature (nest III), information is proposed to behave as a nonlocal 'identity in phase' with its own independent mechanics.

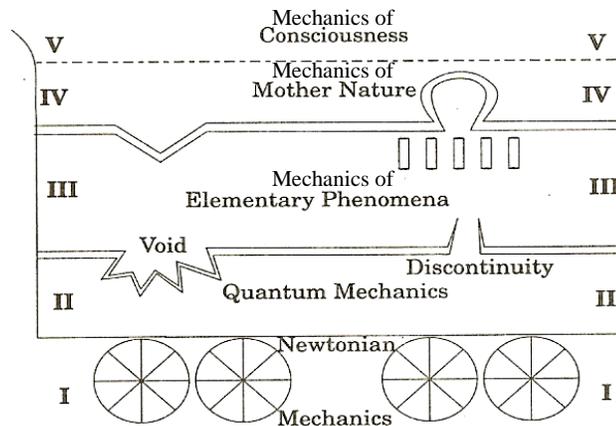


Figure 4: Lateral View: Pentaune model of Nature consciousness

In Upanishad there is a *Pancha-kosha* model of human body. If not identical, but similar in many ways, this is Penta-une (Indissoluble five in One) model of nature-consciousness. There is also a logical basis of this division of nature-consciousness into five strata. Uncertainty limits our cognitive ability and imposes epistemological constraints in observation. That nature observes a stratified nested hierarchy in organization could be logically constructed on the basis of an extended uncertainty principle. Perceived uncertainty in describing simultaneously the paired properties which are canonically conjugate to each other in Hamiltonian sense (e.g. position and velocity or angular momentum and angular position, energy of the particle and the time at which it is measured) is the

Extended Uncertainty Principle
*In description of
observer-dependent reality
uncertainty is perceived between:*
i. Two conjugal properties
ii. Properties and Existence
iii. Existence and Non-existence
iv. Non-existence and New existence

characteristic of description of quantum nature (nest II). In classical nature (nest I) no such uncertainty is encountered. The nature subtler than what is measured in Planck's scale could be reached by penetrating through 'quantum discontinuity' or 'quantum void'. This is sub-quantum nest of nature (nest III) that deals with existential phenomena that are most 'elementary' in character. Within this nest the perceived uncertainty in describing observer-dependent reality is between *properties* of the object and its very *existence!* The ability to distinguish properties from the existence reflects a sharper cognitive function. With further sharpening of cognitive faculty this principle of uncertainty could be extended into a sub-sub-quantum nature (nest IV) where in description of observer-dependent reality uncertainty is encountered between *existence* and *non-existence*. Properties are totally irrelevant here. In the deepest recess of nature (nest V) perceived uncertainty in observer-dependent reality is seen to play between *non-existence* and a *new existence!* Unconditional consciousness as a perceived reality *either* does not exist *or* it exists as a reality that is new, novel and hither-to-unknown. It appears in a new 'form', every time one tries to observe and describe it. Four levels of perceived uncertainty, therefore, determine four different depths of nature beyond the classical nature. Uncertainty is measurable and, therefore, could be an issue for science.

The Science of Transcendence reveals the chronological sequence of disembodiment of Consciousness, Mind, Self and Life-principle

During the process of dying, a strained relationship between consciousness, mind, self and life-principle is revealed. The methodology to explore this terrain varies. It may be objectively based on careful clinical observation of several patients dying a prolonged death in the intensive care unit of the hospital along with the help of recent technology like fMNR, PET and Magneto-encephalography. This may also be done by transformation of First Person's experience of an accomplished mystique into Third Person's perspective. Heterophenomenological approach, as suggested by Daniel Dennett, could also be adopted.

As one dilates the 'moment' of death one can distinguish four phases of dying. At first consciousness in the system ceases to function followed by cessation of function of mind. It is self which ceases to function next and the turn of life comes at last.

As one dilates the moment of death one can distinguish four phases of dying.

The observation may throw light on sequence of the process of disembodiment of consciousness, mind, self and life-principle from the system. The observation may help to build up hypothesis on chronology of embodiment of all four within a system to make the system live, self-organizing, mindful and conscious.

Let us describe the events in further details.

Consciousness ceases to function

Consciousness dismantles and stops its influences on mind, self and life-principle. Informational transaction between brain-confined consciousness and *consciousness-as-such* is irrevocably withdrawn. In the language of vitalism, consciousness leaves the body. Mind, Self, Life-principle continue to work in constrained circumstance.

Physical Sign: The subject becomes unconscious. Coma deepens into various grades which could be monitored by examination of different reflexes.

Possibilities: The subject may enter the second phase. If the subject survives, i.e. consciousness resumes its role within the system there will be significant change in his/her awareness function.

Experience: If survives, the person comes back with memory of near-death experience; the long dark tunnel, holistic review of life's past experience and a permanent change towards purpose of life.

Mind ceases to function

Mind dismantles and ceases to have any influence on self or life principle.

Informational transaction between brain-confined mind and the mind in transuniversal plane is irrevocably withdrawn. In the

language of vitalism, mind leaves the body. Self and Life-principle continue to work in severely constrained circumstance.

Consciousness ceases to function first. Mind stops next. Then self ceases to function and life-principle becomes functionless at the end.

Physical Sign: Unconscious movements of voluntary parts of the body like limbs (which even continue to happen in unconscious state) stop. Autonomic dysfunctions like, sluggish pupillary reaction and uncontrolled urination or passage of stool could be noted.

Possibilities: The subject may pass to phase three. If survives, i.e. mind resumes its role within the system, there is a change in functioning of mind. Possibility of 'transplantation' of a different mind within the system remains open.

Experience: If survives, the subject comes back with transcendental death experience.

Neurological Equivalence:

In absence of a functioning mind which processes information, there is informational chaos within the brain.

Self ceases to function

Self dismantles i.e. ceases to be associated with the material system and life-principle. Informational transaction between self and *consciousness-as-such* irrevocably breaks down. In the language of vitalism, self leaves the body. However, Life-principle continues to work in constrain of most severe degree.

Physical Sign: Endothelial leaking begins ($\text{Na}^+\text{-K}^+$ pump of endothelial cells possibly reflects the function of its self). Edema of limbs and face appears. Heart beats feebly. Respiration is slow and irregular.

Possibilities: The patient is brain-dead (no consciousness, no mind, no self) and may be kept 'alive' with complete 'life'-support system. The possibility of transplantation of a different 'self' within the system might unfold.

Experience: In most of the cases, the subject quietly transits to phase four. If the subject survives, he comes back with Transformational death experience.

Neurological Equivalence: There happens a horizontal shake-up of the left and right brain at the hemispherical level. Reversal of function of posterior superior parietal lobule (PSPL) of left cerebral hemisphere (which is normally concerned with *self/other* sense) and that of right cerebral hemisphere (which is normally concerned with *space time* sense) could be an explanation for the absolving *self-sense* in this phase.

Life-principle ceases to function

Life-principle dismantles from the system. Informational transaction between 'life' in the system and the pool of life-principle in the universe is irrevocably withdrawn. In the language of vitalism, 'life' leaves the body.

Physical Sign: Signs of physical death are (i) absence of heart beat (ii) absence of respiratory movement and (iii) presence of dilated non-reactive pupil.

Possibilities: Possibility of new life is far remote.

Neurological Equivalence: Vital supracortical influence on the cerebral cortex is under most severe tension. Supracortical consciousness is unlikely to take control of the occurrence of this vertical shake up of the neuraxis. Rarely it does so, and the life-principle resumes her work and the subject reverses back to phase three.

Experience: If the subject survives, and there is reversal from phase three to phase two and from phase two to phase one, the subject comes back finally with an experience of 'twice born', a permanent change in the sense of getting rebirth within the same corpus. In the process of death there is information loss and acquisition of new information.

It requires to be emphasized that mind's survival is necessary to describe near-death experience. Self's survival is essential to describe transcendental death experience. Life-principle is to work to experience the transformational death experience.

The chronology of embodiment of nonlocal members within the system

The chronology of embodiment of nonlocal members within a system supposedly follows a reverse sequence. Within the material system life-principle gets embodied first, and then observable becomes the `self'. Observably the mind begins functioning next and embodiment of consciousness could be seen at the end.

7. Towards the Unity

The *science of transcendence* of death could unwind the intertwining triple helix formed by *life-principle*, *information* and *mind*. The details of these three new disciplines of science, the sciences of *life-principle*, *information* and *mind* are likely to be unfolded together with appearance of more clarity in science of transcendence of death.

The science of transcendence of death is intertwined with science of information, science of life and, science of mind.

The Proposed Triple Helix

Non-living entities cannot generate information. Information can be generated from where life-principle is in operation. Life-principle (in an *uncertain* relationship with consciousness) delivers new information. Mind conceives this new information and delivers time, space and energy. The quality of life could be assessed by the quality of information it generates. The quality of information the mind conceives is determined by mind's evolutionary status and that in turn determines the quality of space and time which will encapsulate life-principle into a working form. Life-principle, information and mind interact thus in a complex way. However, in a simple unidirectional flow chart it looks as is shown below.

Consciousness → Life principle → Information → Mind/ mind-like structure and process in nature → Information split and delivery of space time and information-based energy → Live cell → Matter-based energy → Observable/measurable/sensory effects in cell physiology → change of spatiotemporal pattern in life-form.

The original purpose of creation of life-form in the cosmos, it seems, is transduction in a massive scale of information-based energy into matter-based energy. In this way, the helical functions roll on till the self intervenes requesting for a vertical ascent.

The purpose of origination of life-form, it seems, is to convert, in massive scale, information-based energy into matter-based energy.

Self-imposed surrender of self to *consciousness-as-such*

Transcendence takes a spiral course of ascent when the vertical force from 'self' calls for a modification of the horizontal ones working on the triple helix. This is the result of self-imposed surrender of self to *consciousness-as-such*. Self, an involute of *consciousness-as-such*, lives as if 'buried' and dormant within the triple helix. Self could free itself from 'ego' and 'sex', the conditioned existence based on sensual sensory inputs only following self becomes informationally polarized completely towards *consciousness-as-such*. The underlying mechanism is activation of information which anchors self with *consciousness-as-such*. The phenomenology is thereafter drawn according to the nature of consent and the degree of permissiveness from the axiology of consciousness, constituted by invariants and insurmountable constants. The process leads to dissolution of old mind and is invariably accompanied by concomitant construction of new mind. With the ascent of self, follows a transformation in the quality of life, the quality of information and the quality of mind. The triple helix continues to work on a different and new gear.

References

1. A. K., Mukhopadhyay, "A radical view of Information: On its Nature and Science," *Frontier Perspectives*, 16 (2), pp.19-29, 2008.
2. R. Dawkins, "Viruses of the Mind," <http://cscs.umich.edu/viruses-of-the-mind.html>, 1991.
3. D. Dennett, "Who's On First? Heterophenomenology Explained," *Journal of Consciousness Studies*, 10 (9-10), pp.19-30, 2003.

4. Sri Aurobindo, *Savitri*, vol. 27, 28 of Sri Aurobindo, Birth Centenary edition, Pondicherry Ashram, Pondicherry, 1970.

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He coined the term and concept of supracortical consciousness in 1985 and developed further this idea integrating Science, Humanity and Spirit. His keen desire to develop a Science for Consciousness has given birth to four worthy documents. (i) *Frontiers of Research for Human Biologists* (1985), (ii) *The Dynamic Web of Supracortical Consciousness* (1987), (iii) *Conquering the Brain* (1995) and (iv) *The Millennium Bridge* (2000).

A new Paradigm is, therefore, on the making, which the author calls the Akhanda Paradigm. The Akhanda is an individual indivisible from the Whole. The Akhanda Paradigm is a Paradigm which deals with the divisions of the Indivisible holding Consciousness-Mother Nature as irreducible and inviolable constant. Website: <http://www.akmukhopadhyayconsciousness.com>.