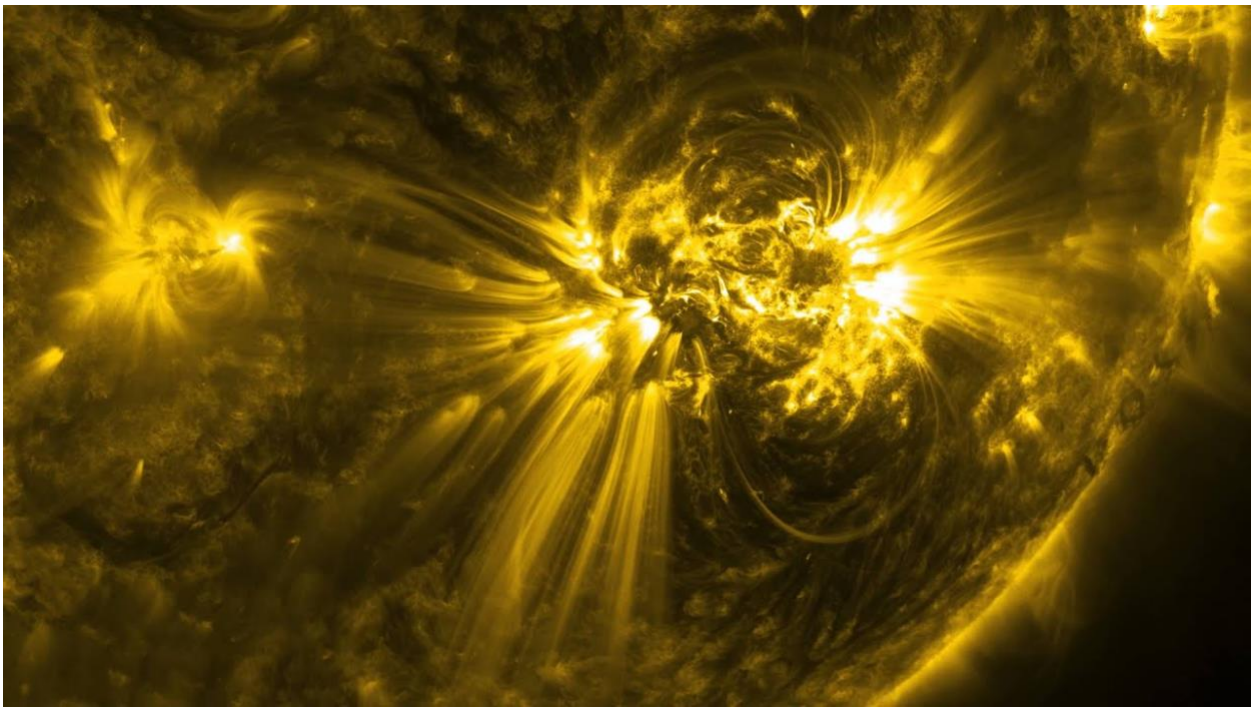

CONSCIOUSNESS, SPACE, AND THE FOUNDATION OF NEW SCIENCE

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ABSTRACT: A new set of axiomatic assumptions for science is proposed on the basis of the ontological Primacy of Consciousness. The author looks at science and its foundations from the viewpoints of language and philosophy, both Western and Eastern, and examines the validity of the Primacy of Consciousness as a possible premise for science. The author concludes that a scientific theory is possible on the basis of the primacy-of-consciousness-based axiomatic assumptions. The distinction between the physical and the metaphysical is no longer valid. Consciousness and space, and thought/information and wave/energy, are considered ontologically equivalent, though epistemologically distinct. Science returns to a Natural Philosophy of the 21st century without losing the logical rigor and observational precision that is a hallmark of modern western science. The continuum of Consciousness – cosmic consciousness to human consciousness is the integral wellspring of human culture out of which not only the sciences emerge but also the arts, ushering in a new technological age wherein the True, the Beautiful, and the Good find a new dynamic unity.

ORIENTATING QUOTATIONS

So many people today—and even professional scientists—seem to me like somebody who has seen thousands of trees but has never seen a forest. Knowledge of the historical and philosophical background gives that kind of independence from prejudices of his generation from which most scientists are suffering. This independence created by philosophical insight is—in my opinion—the mark of distinction between a mere artisan or specialist and a real seeker after truth.

--Albert Einstein, from a letter to Robert A. Thornton, December 7, 1944 [22]

Model building is a continuously ongoing process. It becomes a dangerous trap if we take the stilts it offers to be reality itself and allow ourselves to be caught in the inevitably static mode, which turns in no time into a stronghold of resistance against change. We need models for an orientation that ultimately coincides with evolution, but any model that blocks life's flow acts as a pollutant. In other words, we need a vision through which we can reach beyond our own limitations as individuals, not pseudovisions, which because of their autistic nature are merely variations of a single idée fixe.

--Herbert Guenther, *From Reductionism to Creativity* [1]

The ultimate aim of the individual can never be only the cultivation of a single faculty but the development of all the capacities that slumber within us. Knowledge has value only in so far as it contributes to the all-round development of human nature as a whole. . . . All true philosophers have been artists in the realm of concepts. For them, human ideas were their artists' materials and scientific method their artistic technique. Abstract thinking thus takes on concrete individual life. The ideas become powerful life-forces. Then, we do not merely have knowledge about things, but have made knowledge itself into a real self-governing organism; our actual working consciousness has risen beyond a mere passive recipient of truths.

--Rudolf Steiner, *The Philosophy of Freedom* [2]

SCIENCE AND LANGUAGE

Sebastian Shaumyan, the noted linguist and creator of Semiotic Linguistics, defines language as "the folk model of the world mediating between man's thought and the world."[3] He further elaborates: "Language as the folk model of the world is a bond of thought and sound that serves as an interpretation of the world imposed on all the members of a speech community. As the folk model of the world, language is a variable positioned between two constants – man's thought and the world. Man's thought does not get knowledge of the world directly but through the intermediacy of various folk models of the world, each model refracting the world in its own particular way."

The concept of language as the folk model of the world relates to the Buddhist notion of *samsāra* in a very curious way. *Samsāra* is commonly translated as the "circle of existence—of birth and rebirth in the world of *dūhkha*—of "existential suffocation" or, more commonly, human suffering. *Samsāra* is the antithesis of *nirvāna*, the total liberation from *samsāra*. *Samsāra* is aptly called "that which has been constructed (Skt. *samskrta*)." According to the renowned Buddhist scholar Herbert Guenther, *samsāra* is "the descriptive term for humanity's ongoing activity of constructing a rough draft of reality out of the varied elements of experience, which structures his attitudes and valuations."[1]

This rough draft of reality, when it functions as a shared "interpretation of the world imposed on all the members of a speech community," is language. At the same time this ongoing activity of constructing a rough draft is itself normally framed by the language that is used to construct it. Language being the intermediacy between our thought and the world, this circularity of language framing, shaping, and molding the process of language-construction produces a closed, self-reinforcing, feedback-feedforward system, which as a *vicious circle* characterizes the world of samsaric existence and as a *paradigm paralysis* describes the obstinate pertinacity of deficient or defective models and paradigms.

In science this circularity of language has been even written into an unspoken but widely accepted code: A scientific theory shall be congruent with already established or accepted scientific points of view. This code serves as convenience or even prejudice rather than logic: "So long as it is not *necessary* to change, it is necessary *not* to change." This same code is indeed written into all languages and cultures and serves the important purpose of language or cultural conservation until it becomes an impediment for further evolvement. Healthy conservation of language builds traditions, while unhealthy pertinacity of language can cause cultural devolution or even extinction.

Science is a species of language. Science is the specialized language constructed to achieve that which is unachieved or unachievable by ordinary language. Whereas ordinary language is only the *rough draft* of reality or the *folk model* of the world, the linguistic act of constructing this specialized language, science, adheres to a significantly higher standard of articulation, precision, systematization, and systemization to develop a whole, complete, internally coherent, and self-consistent narrative of reality. Whereas ordinary language is imposed only upon a particular speech community, the overall scheme of science is to evolve into a universal narrative that serves as the interpretation of reality imposable upon and communicable amongst all members of all speech communities in the world.

Science is an attempt within language at transcending the limitations of language. Science as a language strives to create and develop an accurate and precise one-to-one correspondence between man's thought-*qua*-knowledge and reality. This one-to-one correspondence between thought and reality is the time-honored standard definition of truth. Science thus has been developed in various languages as humanity, not satisfied with merely constructing a rough draft or folk model of reality, has earnestly sought after universal truth.

Therefore, science can be seen as humanity's intellectual attempt at emancipating itself from the world of *samsāra* to attain the world of *nirvāna*—from the world of stepped-down cognitive intensity to achieve the world of ecstatic cognitive intensity—from the world of ignorance and falsehood to achieve the world of knowledge and truth. The common English term used to translate *nirvāna*, this liberation from the world of *samsāra*, is "enlightenment," but this term is also used, with good reason, to designate the period of a remarkable philosophic, scientific, and societal awakening and advancement in history—the Age of Enlightenment. The former designates *spiritual* (holistic/existential) enlightenment and the latter *intellectual* enlightenment.

Shaumyan states, "As the folk model of the world, language is a *variable positioned between two constants*—man's thought and the world. *Man's thought does not get knowledge of the world directly but through the intermediacy of various folk models of the world, each model refracting the world in its own particular way* (italics mine)." This fact of "each model refracting the world in its own particular way" is brilliantly depicted by Carlos Castaneda's statement on two different syntaxes:

Syntax

A man staring at his equations said that the universe had a beginning. There had been an explosion, he said. A bang of bangs, and the universe was born. And it is expanding, he said. He had even calculated the length of its life: ten billion revolutions of the earth around the sun.

The entire globe cheered; they found his calculations to be science. None thought that by proposing that the universe began, the man had merely mirrored the syntax of his mother tongue; a syntax which demands beginnings, like birth, and developments, like maturation, and ends, like death, as statements of facts.

The universe began, and it is getting old, the man assured us, and it will die, like all things die, like he himself died after confirming mathematically the syntax of his mother tongue.

The Other Syntax

Did the universe really begin? Is the theory of the big bang true? These are not questions, though they sound like they are. Is the syntax that requires beginnings, developments and ends as statements of fact the only syntax that exists? That's the real question.

There are other syntaxes. There is one, for example, which demands that varieties of intensity be taken as facts. In that syntax nothing begins and nothing ends; thus birth is not a clean, clear-cut event, but a specific type of intensity, and so is maturation, and so is death.

A man of that syntax, looking over his equations, finds that he has calculated enough varieties of intensity to say with authority that the universe never began and will never end, but that it has gone, and is going now, and will go through endless fluctuations of intensity.

That man could very well conclude that the universe itself is the chariot of intensity and that one can board it to journey through changes without end. He will conclude all that, and much more, perhaps without ever realizing that he is merely confirming the syntax of his mother tongue.

--Carlos Castaneda, *The Active Side of Infinity* [4]

Castaneda asserts: the real question is not whether or not the universe had a beginning or the theory of the big bang is true but whether or not the syntax that requires beginnings, developments, and ends as statements of fact is the only syntax that exists. Even if we accept that language is a variable positioned between two constants and that man's thought and the world are indeed constants, as Shaumyan states, the world is presented to and represented in man's thought only through the *interpretive intermediacy* of language in various syntaxes. Therefore, it follows that language actually frames, shapes, and molds the world in its appearance in man's thought.

Though science adheres to the highest possible standard of rigor, articulation, and precision, as a species of language it inevitably inherits the essential limitations of language as such. Science, even as ordinary language, refracts the world in its own particular way, while scientists, just as ordinary folks, are usually unaware that scientific language refracts the world or how it may refract it. Thus, while science is the attempt within language to transcend the limitations that inhere in language, it nevertheless remains within the confines of what language can be and can do.

Buddhism teaches us that we begin to break away and liberate ourselves from the world of *samsāra* when we become aware of the contours of our fundamental philosophical assumptions, hitherto concealed but self-unconsciously presumed to be self-evident, on the basis of which we have constructed our version of a rough draft of reality. Similarly, the scientists begin to deconstruct a model, paradigm, or theory when they become cognizant that the fundamental assumptions they hold are inadequate or unworkable for the

construction of a valid model or theory of the universe and begin to unconceal their hidden presumptions and reconstruct new foundational assumptions. For instance, Einstein, in his revolutionary formulation of the Special Theory of Relativity, deconstructed the classical Newtonian presumption of absolute space and time and successfully reconstructed the relativity of both space and time.

"Unconcealment" is the term the philosopher Martin Heidegger used for the Greek word *aletheia*, [5] which is traditionally translated as "truth" in the sense of "correctness" as in the one-to-one correspondence of the two constants—man's thought and reality. Yet, *aletheia* literally means a "negation of forgetfulness and concealment." Here the two essential meanings of truth meet. The "mark of distinction between a mere artisan or specialist and a real seeker after truth" about which Einstein wrote lies in whether or not these two currents of *aletheia* complementarily flow together in the consciousness of a scientist.

Language is an open system despite its circularity. As the intermediacy between man's thought and the world, it is open to both man's thought and the world which are each a living and evolving system. The world confronts the language and from time to time reveals its inadequacy or insufficiency, while man's thought has the potential to illumine the language with new light and to inform (*in*-form) and transform it. The unconcealment of hidden fundamental assumptions is possible because (1) language is a world in itself of which it can self-reflexively construct a new model and (2) man's thought has a dimension that is supra-conceptual and thus extra-linguistic.

SCIENCE, THOUGHT, AND REALITY

FOUR LEVELS OF THOUGHT

When we examine the inner world of thought, we can discern four distinct levels, modes, or phases of thought: (1) the sensory-perceptual; (2) the conceptual; (3) the supraconceptual-transcendental; and (4) the synthesis of the supraconceptual and the conceptual.

The Tendai (Chin. T'ien-t'ai) school of Buddhism asserts that there are three levels of cognition-cogitation (*san* = three, *gan/kan* = cognitiveness): (1) *Ke* - the continuum of sensory-perceptual-conceptual cognition-cogitation which is translated as "intellectual-analytical-discriminative-representational-objectifying acumen"; (2) *Ku* – the supraconceptual-transcendental cognition-cogitation which is translated as "holistic-spiritual-nonrepresentational-nonobjectifying-supraconceptual acumen; (3) *Chu* – the synthesis of supraconceptual and conceptual cognition-cogitation which is translated as "the (transcendental) middle." [A]

Buddhism views existence as nonphysical or metaphysical and as a complex confluent process of thought/mentation, and thus does not make any fundamental distinction between perception and conception but views them as constituting a single continuum or movement. Therefore, *ke* corresponds to sensory-perceptual-conceptual thought/mentation, while *ku* to supraconceptual-transcendental thought and *chu* to integral supraconceptual and sensory-perceptual-conceptual thought.

In Christian tradition, St. Bonaventure (c. 1217-1274) expounded that there are three modes of attaining knowledge—or "three eyes": (1) the *eye of sense*, by which we attain knowledge of external reality; (2) the *eye of reason*, by which we attain knowledge of philosophical and logical truths; (3) the *eye of contemplation*,

by which we attain knowledge of transcendent reality—the "revealed" truth.[6] The eye of sense corresponds to the sensory-perceptual thought, the eye of reason to the conceptual thought, and the eye of contemplation to the supraconceptual-transcendent thought including the synthetic supraconceptual-conceptual thought.

The sensory-perceptual thought is intimately and inexplicably entangled with our physical existence and serves our transient physical-organic need, desire, and relation. The language (vocabulary and syntax) it uses is the simplest and the most primitive, including physical gestures and sounds. For this reason our language contains numerous physical metaphors. This is the commonest thought-form that occupies the humans and it is not entirely beyond the comprehension of animals.

The conceptual thought is the thought that engenders philosophy, science, mathematics, and much of literature and art. That which is called "(pure) reason" is the faculty for (the purest form of) conceptual thought. The pure conceptual thought requires a high degree of mental concentration and deliberation. When such mental concentration and deliberation are present, the conceptual thought attains a very high order of purity and precision.

The supraconceptual-transcendent thought is the purest and the most primordial thought that constitutes the ground of being of all thought processes. This form of thought is extra-linguistic and trans-linguistic. The philosopher-mathematician Franklin Merrell-Wolff states: At the deepest level of discernible thought there is a thinking that flows of itself. In its purity it employs none of the concepts that could be captured in definable words. It is fluidic rather than granular. . . Every thought includes the whole of Eternity . . . The unbroken Eternal flows before the mind, yet is endlessly colored anew with unlimited possibility. . . [This thought] is unrelated to all desiring, all images, and all symbols."[7]

The Zen Master Dogen called this supraconceptual thought *hishiryo*, which hermeneutically means "the purely self-generative thought that has no thought-object other than itself." In Tibetan Buddhism this is designated as *sems-nyid*, "purely causative thinking/mentation," distinct from *sems*, thematic/conceptual thinking/mentation. This supraconceptual thought is the extra-linguistic dimension of thought wherein the silence is the music, the syntax, and the lexicon. This is thinking bringing thinking itself into being. This is "thinking's thinking."

Between the supraconceptual thought and conceptual thought there is a fourth kind of thought. This is the concurrent of thought where the currents of conceptual and supraconceptual thoughts meet to form a single and singular creative flow. This is the kind of thought that has produced the greatest masterpieces of poetry and art, paradigm-breaking new insights in science and mathematics, and revolutionary new inventions in technology.

Both the Zen Buddhist term *hishiryo* and the Tibetan Buddhist term *sems-nyid*, although they primarily designate the supraconceptual thought, also cover this fourth phase of thought. In fact, the profound writings that came out of these traditions such as Dogen's *Shobogenzo* [8] or Klong-chen rab-'byams-pa's *Ngal-gso skor-gsum* were produced by the minds endowed with this level of thought.[9]

Through tapping into and developing a degree of mastery on the third and fourth phases of thought, it is possible that we can intentionally engender breakthrough insights and paradigm-breaking ideas that will open up new vistas in our eternal search for ever greater knowledge and truth. The method for that is

traditionally known as meditation in which we learn to turn the light of awareness inward toward the source of awareness. The light of awareness normally moves outward and the source of awareness, just as the source of light, is normally hidden from awareness. Meditation is the method and the experience of opening the eye of contemplation through which the light of awareness shines upon itself.

There are many scientists today who regularly practice various forms of meditation. When the scientific method of observation and thinking becomes integrated with the meditative method of observation and thinking in the consciousness of the scientist to form a continuum, a continuous flow, of observation and thought, a transformational advance becomes possible in the evolution of both human consciousness and science.

EPISTEMOLOGICAL REFLECTIONS

The great German philosopher Immanuel Kant (1724-1804) in *The Critique of Pure Reason* (1781) cogently argued that (in my words): [10]

1. The pure reason with its conceptual faculty, acting by itself, cannot establish judgments of the actuality but only of the possibility of existence.

2. The predication of actual existence becomes possible by means of the empirical material given through the senses.

3. With respect to metaphysical reality (*noumenon*) as opposed to physical reality (*phenomenon*), no predication of actual existence is possible because human consciousness has no known faculty through which noumenal material is directly given—unlike in the case of physical reality where it has the faculty of sensory perception through which phenomenal material is given.

4. This means, for instance, that our pure reason can establish the possibility of the existence of God but that we can never know the actual existence of God, because we have no cognitive faculty by way of which we can directly access a pure metaphysical being such as God.

According to Kant, the combination of the principles of pure reason and the materials given through the senses makes possible the unity of experience by which the raw immediacy of sensory perception can be incorporated into a totality that is organized under logically and conceptually formulated generalized laws. This establishes a basis for confidence and validity of the theoretical determinations of physical science. Yet, Kant concluded that the same could not be said about the theoretical determinations of metaphysics.

Long before Kant and German Idealist philosophers who followed him, however, Germany had had a luminous tradition of Christian mystics from Hildegard of Binden (1098-1179) to Meister Eckhart (1260 -1327) and to Jacob Boehme (1575 -1624). [11] These spiritual luminaries could have taught Kant that there exists a faculty within human consciousness that provides direct access to metaphysical reality through suprasensory perception. To his great credit, Kant never denied the possibility of the existence of such a faculty, which he termed "transcendental apperception."

Throughout history and as shown above, in various esoteric philosophical traditions of both the East and the West, it has been claimed that within the entire organization of human consciousness there is a mode that is neither conceptual nor perceptual but supraconceptual. The character of this mode is of the nature of immediate awareness of an ontological content, the immediacy of which is of a much higher order than that which is given through the senses. This mode is what Kant termed transcendental apperception and corresponds to the third and fourth levels of thought of which we discussed above.

This mode of consciousness, transcendental apperception and supraconceptual mentation, immediately bestows a transcendental value and consequently renders possible the predication of its actual existence in an ontological judgment without violating the fundamental epistemological principles that Kant laid out. This is a momentous insight pregnant with new possibilities for philosophy and science.

Now the physicist James Jeans defined science as the "attempt at setting in order the facts of experience."[12] The experience to which Jeans refers or that which physical science considers as "experience" is sensory-perceptual experience and the facts of experience are limited to that which is given through the senses. However, experience *in its totality* is not limited to sensory-perceptual experience alone and the facts of experience can include the material given through transcendental apperception. If we take the totality of experience into the purview of science, the significance of the "facts of experience" take on a much more expansive and inclusive meaning. If we include the facts of experience gained through transcendental apperception in addition to the facts gained through sensory-perception, the *order* achieved through the attempt at setting in order will include much more of the universe and therefore will be higher than the order achievable through the physical science of today.

It is true that the "Founding Fathers" of modern science—Francis Bacon, Galileo Galilei, Johannes Kepler, René Descartes, Isaac Newton, *et al.*—exclusively focused the purview of their scientific investigation on the physical province of reality, but, unlike their lineage holders in later centuries, they never denied the existence of the other realms of reality, i.e., the metaphysical dimension. Today we have the opportunity to expand the purview of science to include the metaphysical dimension without negating the knowledge gained and the method developed in the last three centuries.

THOUGHT AND REALITY

R. Buckminster Fuller's states in his *Synergetics*:[13]

Synergetic Integrity would require the scientists to announce that in reality what had been identified heretofore as physical is entirely metaphysical—because [it is] synergetically weightless. Metaphysical has been science's designation for all weightless phenomena such as thought. But science has made no experimental finding of any phenomena that can be described as a solid, or as continuous, or as a straight surface plane, or as a straight line, or as infinite anything. We are now synergetically forced to conclude that all phenomena are metaphysical; wherefore, as many have long suspected—like it or not—life is but a dream… Mind can see that reality is evolving into weightless metaphysics. The wellspring of reality is the family of weightless generalized principles.

The last sentence—"the wellspring of reality is the family of weightless generalized principles"—implies that the reality as captured by science is a set of abstractions formally conceptualized and generalized by pure reason out of the totality of concurrent thoughts that constitute experience-*qua*-existence. Thus the

distinction between the physical and the metaphysical is essentially broken even from the point of view of contemporary western science.

In the East the distinction between the physical and the metaphysical is never considered ontologically significant or categorical. For instance, the Yogāchāra (or Vijñānavāda) School of Buddhism of Indic origin asserts that (the world of) experience or the universe is "mentation/cognition-only" and exists entirely as a cosmic mentative and cognitive processes. Using a more contemporary signification, the universe was seen as a mind-matter continuum wherein matter is the grosser vibrational aspect of mind while mind is the finer vibrational aspect of matter. There exists no qualitative or substantial difference between mind and matter or the metaphysical and the physical because all that exist are variations and gradations of thought or thought-waves.

All the fundamental teachings embedded in the esoteric teachings of the world are said to be traced back to Hermes Trismegistus (a contemporary of Abraham), the legendary Master of Masters in ancient Egypt. Even the most ancient teachings of India are known to have their roots in the original Hermetic teachings. Hermes was later deified by the Egyptians as *Thoth*, and by the Greeks as *Hermes, the god of Wisdom*. The Hermetic tradition is an oral tradition. The only written compilation of basic Hermetic Principles, which was passed on from teacher to student, is known as *The Kybalion*. The Kybalion lays out seven Hermetic Principles which it claims to be the fundamental principles of and universal criteria for valid knowledge of the universe. The first of the seven principles is called the Principle of Mentalism, which states: *The All is Mind. The Universe is Mental*.[14]

Mentalism (or idealism) is the antithesis of the materialism, and this dichotomy and antinomy between mentalism/idealism and materialism/physicalism is as old as the history of philosophy. My purpose here is not to argue for mentalism against materialism but to see if a valid system of science can be developed on the basis of mentalism/idealism in which the identity of thought (mentation/consciousness) and reality is recognized.

In fact there exist a significant number of religious-philosophical literatures from the East and the West that supports the syntax of mentalism, to use Castaneda's terminology. The question is whether or not we can build, using that syntax, a system of knowledge that meets the rigorous standard of science as a language. The assumptions of mentalism or of the primacy of consciousness are radically different from the prevailing materialist/physicalist assumptions at the basis of western science. Therefore, it behooves us to first examine the fundamental assumptions of today's science.

FUNDAMENTAL ASSUMPTIONS OF MODERN WESTERN SCIENCE

Normal science . . . is predicated on the assumption that the scientific community knows what the world is like—scientists take great pains to defend that assumption.

--Thomas Kuhn [15]

A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.

--Max Planck [16]

In *Apology* [17] Plato has Socrates famously states: An unexamined life is not worth living. When we engage in a philosophical thought and reflection, we rigorously examine the basic assumptions that have given rise to our systems of beliefs and paradigms concerning self, life, and the world. One of the most salient features of philosophy is this examination—rigorous and uncompromising self-examination and self-investigation into what matters the most in life in its perennial search for meaning.

When we philosophically examine the fundamental assumptions of western science as practiced today, we can uncover many. The following are prominent examples of axiomatic assumptions, meaning that these assumptions are usually considered self-evident and true without requiring any logical or scientific proof.

- Physical reality as such *is* reality; there is no reality other than physical reality.
- No phenomenon is a phenomenon in reality, unless it is observed, or in theory observable, through the senses and its mechanical extensions (such as telescopes).
- Reality exists independent of consciousness.
- Reality exists in objective (i.e., objectively measurable) space-time.
- Reality consists of fundamental (or subatomic) particles in motion in space.
- Reality in its base-state is a non-living and non-conscious (or unconscious) process.
- Life emerged from and through non-living processes not by necessity but by chance.
- Consciousness is an epiphenomenon of the unconscious brain activities and processes.
- The scientific method is the only valid method for achieving objective knowledge.
- All valid scientific knowledge is reducible to mathematical equations or other logical formulations such that the sequential train of inferences therefrom shall at some stage suggest an empirically possible experiment or observation that can verify or falsify the inference.
- Objective scientific knowledge thus achieved is the only valid knowledge of reality.

THE PRIMACY OF CONSCIOUSNESS

Materialism assumes that physical reality as such *is* reality; there is no reality other than physical reality and that reality exists independent of or outside of consciousness. Because of this assumption, a question arises: How did consciousness emerge from non-conscious matter in the non-conscious universe? This is the most baffling puzzle and mystery for materialist philosophers and cognitive scientists. This question has remained and will remain a mystery because the set of assumptions upon which it is based makes it impossible to solve it. Every question contains a set of assumptions that dictates it. This question arises from an inadequate, if not false, set of assumptions.

The assumption of the primacy of matter is inadequate because "matter" is a construct in language and is never an originally given material. What is originally given is experience and therefore it has been said that experience is the raw material of science. For this reason, Buckminster Fuller defines (the) Universe as "the aggregate of all humanity's consciously apprehended and communicated nonsimultaneous and only partially overlapping experiences." [13]

Experience-as-such is whole and undivided and therefore what Jeans calls "facts of experience" in his definition of science are already interpretive distinctions expressed in language. "Matter" is one of such "facts" of experience which is an interpreted distinction in language. Different languages have different

sets or distinctions of facts and therefore they have different sets of vocabulary. For this reason, Ludwig Wittgenstein in his *Tractatus Logico-Philosophicus* states, [18] "The world is the totality of facts, not of things," although "thing" is also a construct in language with a different definition or signification from "fact."

That which is primary and original in experience is consciousness. Consciousness is synonymous with experience but if we limit the meaning of experience to sensory-perceptual ("empirical") experience only, then "consciousness" is a larger category than "experience." Consciousness is. Consciousness is present in every instance of experience, recognition, thinking, or interpretation. Consciousness is presupposed in the very power to recognize and formulate a problem. Even the assumption that reality exists outside of or independent of consciousness cannot be made outside of or independent of consciousness.

The assumption that (physical) reality exists outside of consciousness is far from being self-evident, and can never be proven logically or empirically simply because for an existent, fact, or assertion to be proven logically or empirically it must first become an object of consciousness. The notion of "existent outside of consciousness" is meaningless or at least sterile because it is in essence tantamount to nothingness.

Many would argue that the earth had existed or the world had existed for eons before they were born and they became conscious of it. They would further argue that there were things in the world that exit but of which they were not conscious at all. However, their very common and seemingly reasonable arguments are based on the assumption that the identity of consciousness is limited only to their own eye of sense or sensory-perceptual awareness and the eye of reason or conceptual awareness and thought.

Those who have experienced or 'imperienced' the supraconceptual-transcendental level of consciousness (there have been many) know that consciousness at this level is not temporal, biterminal, or personal but atemporal, eternal, transpersonal, and cosmic. Supraconceptual-transcendental consciousness is without subject and without object. The thought that arises therein has no thought content or thought object save itself. Supraconceptual-transcendental consciousness is the Primordial Consciousness and the Ground of Being of which the sensory-perceptual or the conceptual phase of consciousness is its limited derivative.

The Primacy of Consciousness is the *innerstanding* (in contradistinction to *understanding*) or the *imperience* (in contradistinction to *experience*) that Primary Reality or Being or Substance of the Universe is of the nature of Consciousness (*con* = together + *science* =knowing + *ness* = quality). Here "con" signifies the "togetherness" of sensory-perceptual, conceptual, and supraconceptual cognitions-cogitations.

The Primacy of Consciousness can be known by consciousness but cannot be proven logically because logical proof presupposes the existence of consciousness—that is, consciousness is ontologically more prior to thinking. We need to be conscious to be able to think (conceptual experience) and experience (sensory perceptual experience). Because we human beings identify "consciousness" with our symbolic, linguistic, or conceptual mode of consciousness, that is, with a particular kind or a specialized mode of consciousness, the notion that the whole of existence and its underlying reality is conscious does not at first strike as true or credible.

Consciousness *is*. Consciousness is a multifaceted reality and a multimodal function that is present in all kinds and phases of our inner and outer experiences. Even the state of "unconsciousness," including the "collective unconscious," does not mean that consciousness as such is absent but only that self-awareness,

the state of consciousness conscious of its existence, is absent. Consciousness is always fully present, for instance, even in deep dreamless sleep but we are not self-conscious of the consciousness that is present.

The term "consciousness" is highly polysemic as a notion, containing a multitude of communicable meanings, yet it does not submit to any clear and comprehensive conceptual definition. For, in order for a concept to be properly defined, it must belong to a larger conceptual category, a "genus," in which it is a differentiable "species," but the concept of consciousness is a singular and primary category and has no larger category to which it belongs. For instance, in the definition "Man is a rational animal," "man" is a *species* belonging to the *genus* "animal," and the term "rational," the *differentia*, differentiates "man" from all of the other species in that genus. But, consciousness as a concept has no genus of which it is a species and therefore remains fundamentally indefinable.

Further, with every other subject we study, including the mind or the psyche, the subject of our study is always an object of our consciousness. We study an object, conceptual or perceptual, of which we are conscious, but the consciousness itself that is conscious of the object remains outside the range of our study. In contrast, when we begin to study consciousness, the very subject of awareness becomes the subject of our study. However, when we bring consciousness out into the sphere of awareness in order to study it, we inevitably objectify it and make it another object of awareness. Yet by so doing, we lose sight of consciousness in its pristine immediacy, in its primary reality, and in its primordial presence. In the name of studying consciousness, we objectify or "thingify" consciousness, which is in reality never an object or a thing. Thus, our knowledge of consciousness is usually limited only to the objectified aspect of consciousness.

Many scientifically-oriented consciousness researchers conveniently ignore this unique and challenging feature of consciousness study and reduce consciousness into an epiphenomenon of the brain activities. They assume that consciousness arises out of the brain activities, and thus the study of consciousness by consciousness becomes the study of the brain by the brain. The study of the brain is unquestionably very important and yields many scientific discoveries that benefit humanity and contribute to the progress of knowledge, but as behaviorism, the "scientific" psychology, has failed to explain the human psyche, the scientific, brain-research-based study of consciousness will not reveal the whole nature of consciousness. For, looking at objects upon which light shines does not reveal much about the nature of light itself save through indirect inference.

While those researchers—cognitive scientists—reject naïve realism in terms of the construction of reality because of their knowledge of the brain processes but they do not question their own naïve realism when it comes to their viewing of the brain. They assume that the brain exist as they appear in objective reality (naïve realism) but forget that even as every other phenomenon the "brain-*qua*-consciousness" observes, so is how the brain process itself shows up to their observation also a processed and constructed reality through the intricate workings of "the human brain-*qua*-consciousness." Those scientists are not aware that they are always and inevitably inside (their) consciousness. [B]

EXPANDING THE PURVIEW OF SCIENCE

The universe appears to us in two opposite parts, the "I" and the "world." We erect this barrier between ourselves and the world as soon as consciousness first dawns on us. But we never cease to feel that, in spite of all, we belong to

the world. We are beings within and not without the universe. This feeling makes us strive to bridge this antithesis, and in this bridging lives ultimately the whole spiritual striving of mankind. Only when we have made world-content into our thought-content do we begin again to find the unity out of which we have separated ourselves.

--Rudolf Steiner, *The Philosophy of Freedom* [2]

Over the last three centuries since the publication of Newton's *Philosophiae Naturalis Principia Mathematica* (1687), [19] Western science has evolved in its theoretic precision and comprehension. Within the purview of the whole evolution of science, a set of two conditions emerge concerning what qualifies a formulation in language to be a valid and legitimate theory in science.

1. A scientific theory must comprise an organized set of generalized principles that is a coherent and self-consistent whole from which deductive inferences can be drawn as to the nature of (physical) reality and the workings of the universe.

2. A scientific theory must be so formulated that the sequential train of inferences drawn therefrom will suggest an empirically possible experiment or observation that can verify or falsify the inference.

The first is the necessary condition for any system of language to be considered a valid scientific system. The second is the sufficient condition for modern Western science. What distinguishes modern Western science from other extant or existing forms of science, such as the Greek science, is the scientific method which includes as its essential feature the objective (i.e., universally communicable) and empirical way of verifying or falsifying its various truth-claims.

The scientific method demands that if we want to know the verity of a theory, then devise and execute experiments *inside* physical reality. For instance, before Galileo people used to believe that the heavier object would fall faster than the lighter one based on a set of certain assumptions, which belief no one questioned. Then, along came Galileo who declared, in effect, that the only way to know the validity of that claim is to do an experiment: drop two objects varying in weight from a roof of a building and see! They did not have precise enough experimental apparatus to verify or falsify claims with precision, but the idea that Galileo propounded transformed the thinking of the Western mind—the mind which had been inculcated with dogmatic scholastic thinking during the preceding centuries.

However, with the advent of special and general relativity theories, quantum physics, superstring theory, and several other supermathematical or hypermathematical theories, science has entered the world of the ultramacroscopic and ultramicroscopic conceptions in both space and time—the world that is beyond the reach of sense observation and 3D mental construction in space and time—that is, not only invisible but also unvisualizable. This means that science (viz., physics) has become virtual mathematics. That which is supposed to be the mental ordering of the facts of physical experience has become the mental ordering of the facts of *virtual physical experience* within the human mind. Here again, things are looking more and more like thoughts.

Some scientists, troubled by such philosophical issues besetting science, have started to reexamine the basic assumptions that underlie science. My esteemed colleagues and coauthors of this book are fine examples of such scientists and philosophers. This reexamination, if carried to its ultimate conclusions, may disclose that the primary problem of science lies in the ontological-epistemological assumption that

no phenomenon is a phenomenon and nothing really exists unless it is observed or in theory observable by the eye of sense—by sensory awareness and its mechanical extensions.

As we have discussed above, the evidence abounds that there is a realm or dimension of reality that is not accessible by the eye of sense or the sensory-perceptual thought-awareness, but by the eye of reason or the conceptual thought-awareness, and by the eye of contemplation, the supraconceptual-transcendental thought-awareness.

Notably the contemporary physicist David Bohm, who had studied in-depth Eastern Thought, developed a triune model of the universe upon which he based his ontological formulation of (quantum) physics. [20][21][22] He termed the physical/phenomenal realm of reality the "explicate order," the metaphysical/noumenal realm of reality the "implicate order." Toward the end of his life he further intimated existence of the realm deeper than the implicate order and called it the "superimplicate order." He called the creative unfolding process of the Universe from the superimplicate order to the implicate order to the explicate order the "holomovement."

Bohm's triune ontological model of reality corresponds with many models of a triune structure of reality advanced by the world's esoteric philosophical schools. For instance, Yogachara Buddhist ontology has holds the theory of *Trikāya* (three-fold wholeness-structure) in which the (mentative) universe is seen to comprise three realms of being, i.e., *Dharmakāya*, *Sambogakāya*, and *Nirmānakāya*. *Dharmakāya* corresponds to the superimplicate order, *Sambogakāya* to the implicate order, and *Nirmānakāya* to the explicate order. Thus a path is open to expand the purview of science and include the whole of reality or the universe into its model building and theoretic formulation without limiting it only to the phenomenal universe.

POSSIBLE NEW ASSUMPTIONS FOR NEW SCIENCE

The desire to know and understand the whole cosmos is universal. It is intrinsic in the consciousness of humanity and inextricably interconnected to our desire for self-knowledge. Some of those who attained the full-spectrum consciousness, actualizing and activating all four levels of consciousness and thought, also achieved knowledge and understanding of the self and the cosmos the depth and the originality of which is unsurpassed. Their cosmovision, though expressed in entirely different languages from that of science, shows a picture of the universe strikingly similar to that of the most advanced contemporary western science.

The rDzogs-chen Cosmology

Long before in time the advent of western physical science and far away in distance from the cradle of western civilization, ancient and modern, in Tibet a tradition in Buddhism called rDzogs-chen emerged in the eighth century. In a mythopoeic language, the rDzogs-chen thinkers from Padmasambhava (the eighth century) to Klong-chen rab-'byams-pa (the fourteenth century) developed and propounded a cosmology, or rather anthropocosmology, of the universe as experienced and known by the awakened full-spectrum consciousness.

For instance, in *gSang-snying* (the author unknown) we find the following passage (translation by Herbert Guenther): [23]

E-ma-ho:
This marvelous and wondrous fact
Is the mystery of all perfect Buddhas:
From that which has no origin, everything (that is) has taken its origin;
Yet in so having taken its origin, it remains that which has no origin.

E-ma-ho:
This marvelous and wondrous fact
Is the mystery of all perfect Buddhas:
From that which never ceases all that ceases (seems to come);
Yet in ceasing it remains that which never ceases.

E-ma-ho:
This marvelous and wondrous fact
Is the mystery of all perfect Buddhas:
From that which has no locus all that is located comes;
Yet in being so located it remains that which has no locus.

E-ma-ho:
This marvelous and wondrous fact
Is the mystery of all perfect Buddhas:
From that which is unobjectifiable all that is objectifiable comes;
Yet in being so objectifiable it remains that which is unobjectifiable.

E-ma-ho:
This marvelous and wondrous fact
Is the mystery of all perfect Buddhas:
From that which neither comes nor goes all that comes and goes proceeds;
Yet in so coming and going it remains that which neither comes nor goes.

E-ma-ho is an untranslatable Tibetan word, expressive of the sense of wonder and awe, which arises when one comes to know the universe in its wholeness as the Matrix of Mystery ceaselessly unfolding as the Matrix of Meaning. There is a way of knowing that does not diminish but only increases our sense of wonder and awe, even as when a sphere increases its volume, it touches more and more of the universe that surrounds it. We tend to lose and have in fact lost wonder with the reductive-empirical-objectified scientific knowledge, which is divorced from the world of meaning and quality, from the whole of the unobjectifiable universe. The emerging new science could restore a sense of wonder and awe, while it expands and deepens our knowledge of the universe. The universe once again can become sacred and luminous.

The first stanza intimates that the universe is self-originating, not dependent on an external principle or force for its origination—that this is not a created universe but a continuously self-creating universe.

The second stanza intimates that the reality of the universe is the complementarity of the atemporal and the temporal, of equilibrium and non-equilibrium, and that the multitudinous phenomena of the universe are the atemporal present as the temporal.

The third stanza suggests that the universe is non-local and indivisibly whole, and that the non-locality of the universe is ceaselessly present in all of its seemingly localized manifestations.

The fourth stanza suggests that the objectifiable world, coextensive with the dichotomization of subject-object, is but a tiny ripple in the vast ocean of creativity, which is thinking's thinking (*sems-nyid*) as the builder of the universe.

The fifth stanza intimates that the universe is alive, and that life is ceaselessly present in the comings and goings of birth and death.

Thus, *gSang-snying*, the rest of the rDzogs-chen, and some of the other esoteric literatures presaged a non-local and undivided universe of complementarity, such a one as is only inferred by the quantum physics of today. What is required is to develop a scientific language in place of a mythopoeic language to give expressions to the same majestic vision of the universe with the logical cogency, precision, coherence, and self-consistency which is the hallmark of western science.

The Wave Structure of Matter

If the stars in the heavens were not there, we could not exist. Nature is an interconnected Universe. [24]

--Milo Wolff

The theory of physics advanced in recent years that is very consistent with and complementary to the cosmology advanced by those awakened to the full-spectrum consciousness, ancient and modern, is the Wave Structure of Matter (WSM) theory developed by the physicist-astronomer Milo Wolff (1923-). [23][24]

Milo Wolff, with William Clifford (1845-1879), Albert Einstein (1879-1955), Erwin Schrödinger (1887-1961), Paul Dirac (1902-1984), and a few others before him, questioned the assumption that the primary constituent of the phenomenal universe is corpuscular and assumed instead the primacy of space with space resonance.

Wolf's WSM theory is based on the assumption that ontologically space with space resonance is substantial Reality (noumenon) while the elementary particle ("matter") is mere nonsubstantial appearance (phenomenon), and that it is the properties of space medium that determine how the phenomenal universe behaves. He posits that space is substantial while the particle is non-substantial. Therefore, space is not a vacuum but a plenum. Based on this fundamental assumption, Wolf developed a unified theory of physics which answers most of the hitherto unanswered puzzles and questions in physics.

Space is the medium of quantum waves while the quantum waves in space are resonant, paired, spherical inward-and-outward scaler wave patterns that form the basic structure of all matters. In this formulation, the particles are wave centers—the centering points or loci of converging-diverging in-and-out standing quantum particle waves that are the *apparent* locations of energy-transfers. Energy is the substance of space plenum that is perceptually observable only when "energy transfers" occur.

These three dimensional spherical in-and-out standing wave patterns follow a simple governing equation, giving them as a whole the quality of resonance locally as well as universally. Thus, Principle I of WSM states:

PRINCIPLE I: Quantum matter waves exist in space and are solutions of a scalar wave equation:

$$\nabla^2\Phi - (1/c^2)\partial^2\Phi/\partial t^2 = 0$$

Where Φ is the continuous scaler amplitude with values everywhere in space, and c is the constant speed of wave propagation.

Wolff calls these spherical standing scaler wave patterns "matter waves," because they are the underlying structure out of which primary matters, i.e., the subatomic particles, emerge at the wave centers at which the inward waves converge and from which the outward waves diverge.

Space becomes non-linear at the wave center of resonance because of the large wave amplitudes at the centering loci of binary standing wave patterns. This leads to Principle II of the WSM theory:

PRINCIPLE II: Waves from all particles in the universe combine their intensities to form the wave-medium density (space) at each point in space:

$$\text{Space density} \propto mc^2 = hf \propto \sum_{1}^{N}\left[\Phi_n/r_n\right]^2$$

This principle is a quantitative version of Mach's Principle and determines the density of the quantum space medium.

(**Mach's Principle** concerns our human frame of reference for observing motion of objects. He asserted (1883): *Every local inertial frame is determined by the composite matter of the universe.* His deduction arose from two different methods of measuring rotation. First, without looking at the sky one can measure the centrifugal force on a rotating mass m and use the inertia law $\mathbf{F} = m\mathbf{a} = mv^2/r$ to find circumferential speed v and position, as in a gyroscope. The second method is to compare the object's angular position with the fixed (distant) stars. Surprisingly, both methods give the identical result. Thus the inertia law must depend on the fixed stars.)

The enormously large number of particles (about 10^{80}) in the universe makes the density of the Universe nearly constant throughout except for the wave centers. Therefore, the speed of propagation c, the mass of the participle m, and the frequency of matter wave f are almost constant throughout the universe.

Principle I expresses the fundamental property of space, which is resonant self-propagating wave patterns, whereas Principle II expresses the general state of space, which is that the density or the wave-amplitude distribution of space is on the whole almost constant. Another principle is needed to describe the general pattern of interaction between and amongst particle waves for motion as well as energy exchange in the Universe. Wolff's third Principle (which is derived from Principle II) states:

PRINCIPLE III: The total amplitude of particle waves at every point always seeks a minimum.

$$\sum_{1}^{N} \Phi_n = \text{a minimur}$$

This Principle is called the Minimum Amplitude Principle (MAP). MAP is the disciplinarian of the universe. MAP is seen in situations like the leveling of water in a lake and the flow of heat that moves from a hot source to a cold sink. MAP is also the origin of the principle of entropy.

Energy or frequency changes take place, and simultaneously wave centers move in order to adjust the total wave amplitude to the minimum sought by the principle. This is the original principle of economy observed in Nature.

Now, the mathematical and logical deductions derived from these principles and equations disclose a fascinating picture of the universe:

Space resonance is the process-structure that underlies the formation of particles. The wave amplitude is always finite at the centers of the spherical standing waves, while the wave function displays properties associated with a charged particle such as an electron. As such, the finite amplitude satisfactorily represents electrical change-discharge.

Space resonance has anti-resonance (the yin-yang of space resonance). Two kinds of resonance, that is, "positive" and "negative," occur because of the three-dimensional geometry of space. In one solution of the equation, the inward wave is positive and the outward wave is negative at the center, while in the other solution, the inward wave is negative and the outward wave is positive. Therefore, if a resonant-pattern is superimposed upon its anti-resonant pattern, then their opposite amplitudes will annihilate each other, like in the case of the electron and the positron.

Space resonance underlies gravity. As shown in Principle II, the density of space is almost uniform in the Universe, but near a massive body such as the Sun, the additional waves of that boy slightly increase the space density around it. As a result, the inward spherical waves coming to another nearby body travel slightly faster, causing their wave-centers to move toward that massive body. This motion is interpreted as caused by the force of gravity

The behaviorally particulate ("subatomic particles") space resonance constitutes the fabric of space, literally filling up the space of the phenomenal universe. Every single-centered unit of space resonance intercommunicates with every other single-centered unit of space resonance in the universe. This intercommunication is the reality of information (*in*-formation) exchange, which is qualitatively understood and quantitatively measured as energy exchange. This intercommunication or *in*-formation dynamics is the mechanism for energy exchange. Thus, the conservation of energy is the same as the conservation of information.

Once a network of intercommunication is established between and amongst two or more units of space resonance, what appears to be instantaneous and non-local information exchange becomes possible between and amongst the units of resonance within the network, while the speed of scaler wave propagation remains finite and constant. Therefore, this universe is structured as an immensely colossal network of resonant intercommunications, which is, as rDzogs-chen discloses, the indivisible wholeness existing in and as the complementarity of locality and non-locality, temporality and non-temporality, and particularity and universality. This universe is the wholeness that is sublimely resonant integrity.

Thus, from the principles of the WSM theory, many of the Laws of Nature the origins of which have been hitherto unexplained are logically and mathematically deduced. Among them are Mach's Principle, Conservation of Energy (and Information), and the Einstein-Podolsky-Rosen effect and Bell's Theorem.

Further, the WSM theory shed bright light on the enigmas of the photon or the gluon. The fact of the matter is that neither the photon nor the gluon has ever been observed. They are mathematical entities used as explicatory devices to explain certain quantum phenomena, which would have remained unexplainable otherwise. According to the WSM theory, however, both the photon and gluon are modulations of the space waves traveling between (in the case of the photon) electrons and (in the case of the gluon) nucleons in a nucleus.

The Wave Structure of Matter theory, while presenting a picture of the universe echoing that of rDzogs-chen, provides real solutions to real problems in physics. The remaining mystery in the WSM theory is the origin of space—the wave medium—itself. In his "Science, Philosophy, and Human Consciousness" [(26)] Wolff indicates that the origin of consciousness may be found in space resonance, in the property of space. Yet, the foregoing philosophical expositions indicate that primordial and foundational CONSCIOUSNESS/SPACE is that self-generatively gives rise to the space plenum/medium and its space resonance. It is what the rDzogs-chen thinkers call *Gzhi*, the GROUND or BEING with a triadic dynamics of *stong-pa* (space or openness opening up), *gsal-ba* (light or radiance radiating), and *rig-pa* (excitatory intelligence exciting/thinking). [(21)]

Primordial Consciousness is this *Gzhi* and can be seen as Primordial Space—the superimplicate order—out of which arises the space plenum/medium-space resonance as fundamental reality—the implicate order/the triad of *stong-pa*, *gsal-ba*, and *rig-pa*/noumenon/thought-wave pattern)—which as the aggregate totality of cognitive experiences comprises the universe as appearance—the explicate order/phenomenon/quantum wave pattern. ("(The phenomenal) Universe is the aggregate of all humanity's consciously apprehended and communicated nonsimultaneous and only partially overlapping experiences.")

A new vast and magnificent yet intimate vision or cosmovision of the Universe emerges from the premise of the Primacy of Consciousness—a vision of the Universe that is the continuum of the inner (noumenal) and outer (phenomenal) worlds of Reality in its entirety and wholeness.

FUNDAMENTALASSUMPTIONS OF NEW SCIENCE

In accordance with the foregoing, we can construct an orderly set of fundamental assumptions for new Science or new Natural Philosophy that is based on the Primacy of Consciousness and encompasses the whole of Experience-*qua*-Reality/Universe, while incorporating all of the valid findings and formulations of western science. (A complete formulation of this new Natural Philosophy based on these assumptions requires a book or a series of books, which the author is in the process of writing.)

AXIOMATIC ASSUMPTIONS

1. Primordial CONSCIOUSNESS is.

1.1. Primordial Consciousness is the Ground of Being, i.e., the ontological foundation of all beings.

1.2. Primordial Consciousness is without object and without subject.

1.3. Primordial Consciousness is Primordial SPACE.

1.4. Primordial Consciousness/Primordial Space is neither of time nor of timeless, i.e., it transcends the temporal and the atemporal and the duality thereof.

1.5. Primordial Consciousness/Primordial Space can be known but cannot be proven.

2. Outside Primordial Consciousness/Primordial Space nothing is.

3. Within Primordial Consciousness/Primordial Space there is the creative power of awareness that projects objects and thereby becomes the subject.

3.1. Within Primordial Consciousness/Primordial Space with the creative power of awareness there arises noumenal space as subject which projects phenomenal space as the whole field of objects.

3.2. The substance of noumenal space is thought, while the substance of phenomenal space is energy.

3.3. The prime movement of noumenal space is patterning thought wave, while the prime movement of phenomenal space is patterned wave or space undulation.

3.4. Human experience is a class of complex integrative patterns of interactions and interpenetrations of space undulations in phenomenal space.

4. The Consciousness of the phenomenal space/the whole field of objects is the Universe.

4.1. (The) Universe is the aggregate of all humanity's consciously apprehended and communicated nonsimultaneous and only partially overlapping experiences. (Buckminster Fuller, *Synergetics*)

5. The Consciousness of the noumenal space is the subject or the pure subjective awareness.

5.1. The Consciousness of the absence of objects is the subject or the pure subjective awareness.

5.2. The human ego is the projected/objectified subject in the phenomenal space/the Universe acting as the subject in the field of objects.

5.2.1. The human ego is the object self acting as the subject self in the whole field of objects.

6. Within Primordial Consciousness there lie both the Universe and the Subject, yet to Consciousness these two are self-same.

SECONDARY ASSUMPTIONS FOR THE SCIENCE OF THE PHENOMENAL UNIVERSE

FOR PHYSICS

7. Primordial Consciousness is Primordial Space from which the Universe comes into being.

7.1. The Universe is the Consciousness of the phenomenal space as the whole field of objects.

8. The phenomenal space consists of space medium and space resonance/undulation or quantum waves.

8.1. The substance of the Universe is the space medium that is suffused with quantum waves, while quantum particles are non-substantial appearances.

8.1.1. Quantum waves are the waves in phenomenal space that form the structure of all matter as resonant, spherical, and complementary inward-outward standing wave patterns.

8.1.2. Quantum particles are the wave centers of converging-diverging inward-outward spherical quantum waves.

8.1.3. The wave centers are apparent loci of energy transfers that appear as "particles."

8.1.4. Energy is the substance of phenomenal space or space medium, observable only when energy transfers occur.

8.2. The energy-density of the phenomenal space is the sum (squared) of wave amplitudes from all matter in the Universe.

8.2.1. Medium density of the phenomenal space of the Universe is proportional to the sum of wave intensities of all the matters or waves structures in the universe. (Mach's Principle)

8.2.2. The total amplitude of all particle waves in space always seeks a minimum at every point.

8.2.2.1. The centers of space resonance move, accompanied by frequency changes, to approach the minimum value.

FOR BIOLOGY

9. Consciousness being primary, Life is an inherent property of the Universe.

    9.1. Life being an inherent property of the Universe, syntropy (the higher-order-generating evolutionary vector) is an inherent property of the Universe.

    9.2. Syntropy and entropy are fundamental dual complementary forces of the Universe.

EPILOGUE

Through the Primacy of Consciousness, science returns to Natural Philosophy with the inner dimension of Nature (nous) regained while the outer dimension of Nature (physis) retained. The Universe becomes alive again. In this Living Universe, we fuse the Beauty of Nature and the Beauty of Mind in the Truth of Science and infuse with Meaning this Luminous Matrix of Mystery we call Life.

NOTES:

A. References to Buddhist terminologies, notions, and concepts are based on years of academic and experiential study on the subject of Buddhism. Much of the interpretations or insights shared is the author's own, while book references in Japanese, Chinese, and English are too numerous to list. However, the author is deeply indebted for his understanding and insight to his Zen Master Gien Inoue, his mentor Dr. Herbert Guenther, and the mystic-philosopher Franklyn Merrell-Wolff whose ideas confirm those of authors in a remarkably similar way.

B. Daniel Dennett (*Consciousness Explained*), David Chalmers (*The Consciousness Mind: In Search of a Fundamental Theory*), and Susan Blackmore (*Consciousness: An Introduction*) are examples of materialist approach to the study of consciousness.

REFERENCES:

1. Guenther, Herbert (1989) *From Reductionism to Creativity: rDzogs-chen and the New Sciences of Mind*, Shambhala Publications, Boston.
2. Steiner, Rudolf (1918) *Die Philosohpie der Freiheit*, the English translation by Rita Stebbing under the title *The Philosophy of Spiritual Activity: A Philosophy of Freedom* (1988/1992), Rudolf Steiner Press, Bristol.
3. Shaumyan, Sebastian (2006) *Signs, Mind, and Reality: A theory of language as the folk model of the world*, John Benjamins Publishing Company, Amsterdam/Philadelphia.
4. Castaneda, Carlos (1998) *The Active Side of Infinity*, HarperCollins Publishers, New York.
5. Heidegger, Martin (1985) *Early Greek Thinking*, HarperCollins Publishers, New York.
6. Wilber, Ken (1996) Eye to Eye, Shambhala, Boston.
7. Merrell-Wolff, Franklin (1994) *Experience and Philosophy*, State University of New York Press, Albany.
8. Dogen, Kigen (1200 – 1253) *Shobogenzo* (recommended English translation: *The Heart of Dogen's Shobogenzo* (2002) by Norman Waddell and Masao Abe, State University of New York Press.)
9. Klong-chen rab-'byams-pa (1308 – 1364) *Ngal-gso skor-gsum* (recommended English translation: *Kindly Bent to Ease Us* (1975) by Herbert Guenther, Dharma Publishing.)

10. Kant, Immanuel (1781) *Kritik der reinen Vernunft,* the English translation by Norman Kemp Smith under the title Critique of Pure Reason (2005), 2nd Revised Edition, Palgrave Macmillan.
11. Weeks, Andrew (1993) *German Mysticism from Hildegard of Bingen to Ludwig Wittgenstein: A Literary and Intellectual History*, State University of New York Press.
12. Jeans, Sir James H. (1981) *Physics and Philosophy*, Dover Publications.
13. Fuller, R. Buckminster (1975) *Synergetics: Exploring the Geometry of Thinking,* Macmillan.
14. Thee Initiate (1940), *The Kybalion, Hermetic Philosophy,* The Yogi Publication Society
15. Kuhn, Thomas S (1968) *The Structure of Scientific Revolutions*, The University of Chicago Press.
16. Planck, Max (1932) *Where Is Science Going?*, W.W. Norton & Company, Inc., New York.
17. Plato (1989) *The Dialogues of Plato* (translation by R.E. Allen), Yale University Press
18. Wittgenstein, Ludwig (1961) *Tractatus logico-philosophicus* (the German text of *Logisch -philosophische Abhandlung*, with a new translation by D. F. Pears and B. F. McGuinness), Routledge & Paul/Humanities Press.
19. Newton, Isaac (1999) *The Principia: Mathematical Principles of Natural Philosophy* (translation by I. Bernard Cohen and Ann Whitman), University of California Press
20. Bohm, David (1980) *Wholeness and the Implicate Order*, Routledge & Kegan Paul plc., London.
21. Bohm, David (1994) Thought as a System, Routledge, London.
22. Bohm, David (1995) *The Undivided Universe*, Routledge, London.
23. Guenther, Herbert (1984) *Matrix of Mystery: Scientific and humanistic Aspects of rDzogs-chen Thought*, Shambhala Publications, Boulder.
24. Wolff, Milo (2008) *Schrödinger's Universe: Einstein, Waves & the origin of the Natural Laws*, Outskirts Press.
25. Wolff, Milo (1994) *Exploring the Physics of the Unknown Universe: An Adventurers Guide*, Technotran Press.
26. Wolf, Milo (2002) "Science, Philosophy, and Human Consciousness," *The Cosmic Light* Vol.4 No. 3, The University of Science and Philosophy Press.