



# Kundalini Awareness



## Kundalini, Prana and *The Field*: Linking Science with Religious and Esoteric Thought\*

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Over time many eminent scientists have had an interest in and an appreciation for religious and esoteric thought and experience – as opposed to the dogma of institutionalized religion. Most of us are familiar to some degree with the statement of Albert Einstein: “I maintain that cosmic religious feeling is the strongest and noblest incitement to scientific research”. He goes on to say that “You will hardly find one among the profounder sort of scientific minds without a peculiar religious feeling of his own” and ends his comments on ‘the religiousness of science’ with these thoughts:

*“His [the scientist] religious feeling takes the form of a rapturous amazement at the harmony of natural law, which reveals an intelligence of such superiority that, compared with it, all the systematic thinking and acting of human beings is an utterly insignificant reflection. This feeling is the guiding principle of his life and work, in so far as he succeeds in keeping himself from the shackles of selfish desire. It is beyond question closely akin to that which has possessed the religious geniuses of all ages.” (Einstein, 28)*

It is known of Issac Newton that he studied and wrote extensively on the subject of alchemy. During the early 1690's, Newton apparently devoted more time to alchemy than to all his other pursuits. In fact his alchemical writings were interrupted by his work on the *Principia*. This said, we should keep in mind that in those days chemistry and alchemy were studied together. In any case Newton's religious and esoteric interests are well established. (Westfall, 524)

Some of the same sentiments hold true for many of the scientists of today. In a way this is ‘old news’. The ‘new news’ is that, together with modern technological advances, current scientific theory suggests that there may be more to religious/esoteric principles than just blind faith.

During the last five decades the interest in exploring the relationship between scientific theory and religious/esoteric doctrine has continued to increase. In the West, this was due in part to experimental results coupled with the theory of quantum mechanics, along with a growing appreciation for Eastern religious/esoteric concepts and practices including meditation and Yoga. For example, books have been published that focus on the conceptual similarities of some of these Eastern doctrines and the modern quantum based physics (Capra; Zukav). Other recent works include *The Field - The Quest for the Secret Force of the Universe* by Lynne McTaggart and *The God Theory* by Bernard Haisch. Effort has been also made along experimental lines where researchers have been working with the Dalai Lama to study how the practice of Buddhist contemplation impacts the brain. (Lutz et. al., 2004) In addition to these experimental and theoretical considerations, work has been done to explore the possible synthesis of science and religion. (Singh; Haisch)

As you may know one of the cornerstones of empirical science is the idea that the results of an experiment are only valid if they can be repeated under the same conditions. This concept, known as repeatability has worked well when dealing with everyday phenomena. However strict objectivity has run into trouble in the quantum realm. A brief review of the scientific approach from Newton's time until the present will help to understand the current situation.

Prior to Galileo and Newton it was not considered necessary to compare ideas to observation, i.e. it was believed that the laws of nature could be deduced by pure thought. Galileo's observation concerning the rate at which objects of different weight fell and the success of Newton's laws of motion changed this belief. Science has been matching theory to experiment ever since. Newton's world, that which corresponds to everyday experience, is the perfect venue for the empirical approach.

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\* I have purposely avoided using the word ‘spiritual’ throughout this work to emphasize the point that mystical and expanded states of consciousness experiences are also biological processes.

In the early nineteenth century, the Marquis de Laplace was led to suggest that the universe was completely deterministic. That is, there should be a set of scientific laws that would allow us to predict the state of the universe at any moment given a known set of initial conditions. So if we knew the positions of the planets at one time we could use Newton's laws to determine their positions at a different time. This seemed reasonable for inanimate objects, but Laplace went further and assumed that there were similar laws governing everything in the universe including human behavior. (Hawking, 53)

This view was generally accepted scientifically until the end of the first quarter of the twentieth century, when Heisenberg formulated the uncertainty principle. Using Planck's quantum hypothesis, Heisenberg was able to show that the uncertainty in the position of a particle multiplied by the uncertainty in its momentum (its velocity times its mass) can never be smaller than a fixed quantity known as Planck's constant. This principle was valid independent of the type of particle and the way in which the position and velocity are measured. The uncertainty principle is a fundamental property of the physical universe.

The uncertainty principle brought an end to the completely deterministic view of scientific theory of Laplace. This in turn led to a reformulation of mechanics by Heisenberg, Dirac and Schroedinger into quantum mechanics. In this theory particles have a quantum state, a combination of position and velocity, and not well-defined positions and velocities. Quantum mechanics predicts the likelihood of a number of different possible outcomes, but does not predict a single definite result for an observation. So although the predictions and descriptions of quantum mechanics agree with experiment, this theory brings along with it an element of unpredictability or randomness. In a way then we have a science that cannot measure events as accurately as it pleases and can only predict the probable occurrence of an event. A far cry from a completely deterministic theory of science.

In 1964 J. S. Bell published a mathematical proof one of the implications of which is that at a fundamental level the separate parts of the universe are connected in an intimate way. Bell's theorem, as it is now known, reveals an unexplained *connectedness* of quantum phenomena. (Zukav, 282) Put another way, this theorem shows that if the statistical predictions of quantum theory are correct, and they have been up to now, then our commonsense ideas about the world are inadequate. One such idea is the so-called "principle of local causes" - that what takes place in one area is independent of what an experimenter does in a place distant and space-like (cannot be connected by a signal) from the other area.

Scientists have been busy trying to reduce the number of "commonsense ideas" that are inadequate as a consequence of Bell's theorem. Given the success of quantum mechanics and the theory of relativity (that the speed of light is a finite constant), we are left to conclude that the principle of local causes is false and thus that there is a *connectedness*, an all pervading something that relates events that may appear separate in our everyday experience. Science itself has limited the conclusions we can draw by observing everyday events. This suggests that to understand macroscopic events we must observe phenomena at more subtle, quantum levels.

To summarize, empirical science has led to an understanding of energies and phenomena that are ever more subtle - from the macroscopic to the microscopic to the subatomic. In the process of examining these more subtle levels, science has found that the phenomena involved often behave in amazing ways; ways that could not necessarily be deduced from everyday experience. Further the "quantized" behaviour of physical phenomena along with Bell's theorem has led to the conclusion that there is a subtle connectedness underlying the structure of the universe. What this underlying connectedness - or field - is, no one can say for sure. Is it a type of electromagnetic phenomena, an organic field, a super-material force, something akin to what we call consciousness or intelligence, or something totally unknown to us at present? It is here that the work encapsulated in McTaggart's book along with the subtle energy concepts of the Eastern religious/esoteric traditions may provide direction for future investigation.

*The Field* that McTaggart refers to is the so-called Zero Point Field (ZPF). She writes that "what quantum calculations show is that we and our universe live and breathe in what amounts to a sea of motion - a quantum sea of light". Haisch refers to this field metaphorically as "an invisible, uniform sea of light underlying the Universe". ZPF is a term used to mean the vacuum state - the quantum state with the lowest possible energy - of an individual quantized field. In the case of electromagnetism, for example, the energy value of the ZPF is greater than zero. In other words, there is always energy even in the lowest possible state - the ground state.

There is currently great interest, and some controversy, in the applications and interpretations of *The Field*. It is not within the scope of this paper to examine all these ideas. More information can be obtained at

[www.thefieldonline.com](http://www.thefieldonline.com) and its associated links. We would however like to focus on the area of interest that involves religious/esoteric doctrine in the sense that the “idea of *The Field* might just offer an explanation for many metaphysical notions...”. (McTaggart, 24) This interest is generated in part by the view that *The Field* is an ever-present field of light that has the capacity to hold information without regard to time and that two of the hallmarks of illuminated experience have long been held to be light and new knowledge. (Bucke, 79)

In order to explore this interest, we need to make a short review of the concept of ‘connectedness’ in religious/esoteric traditions and relate it back to the current scientific view. For religion this connectedness has been expressed in terms of different ideas. In the Judeo-Christian tradition, for example, this connectedness has been described as a God, an intelligence or consciousness that has influence over the workings of the universe. In this view God has the attributes of being omniscient, omnipresent and omnipotent.

Eastern religious/esoteric lore suggests the existence of a subtle “life” energy such as Chi (or qi) in the Chinese tradition or Prana, also known as Prana-Shakti in the Indian tradition. For example, Prana is held to be an extremely subtle immaterial substance which forms the basis of all matter and organic phenomena. “Prana is present in atoms and their constituents. It is behind the energy fields into which matter is resolved at the end. It is the agent responsible for the ungraspable complex chemical reactions in living bodies and also in the incredibly intricate mechanisms at the back of all the complex movements of the organs and the activity of the brain.” (Kieffer, 217) The life energies like Chi or Prana are also associated with light. (Avalon; Kieffer, 143)

Present day scientists have also recognized the workings of an intelligence in Nature. George Wald has presented a convincing argument that our universe is one that is permeated with life based upon the fact that “ice floats”. (Wald, 12) Fred Hoyle builds a case for an “intelligent information rich universe”. (Hoyle, 158) Some physicists like E. H. Walker have suggested that “Consciousness may be associated with all quantum mechanical processes...”. (Zukav, 63) Haisch favors the concept of an “infinite conscious intelligence...who has infinite potential, whose ideas become the laws of physics...”. Others, like Carl von Weizsaecker, have postulated “that the concept of Prana is not necessarily incompatible” with modern physics and links it to the probability amplitude of quantum theory. (Krishna 1971, 42)

The point here is not to convince you of the existence of a subtle energy like Prana or equate it with any scientifically accepted concept. Nor are we suggesting that *The Field* represents Prana or Chi. Rather the point is to underscore that through their own methods of investigation, both science and the religious/esoteric traditions have lead to the idea that a subtle essence (or stuff) pervades the universe and that this “stuff” has a component of or is interwoven with intelligence or consciousness and light. Whether or not each side is able to agree on the concept of what this “stuff” entails will no doubt depend on the advances made in both technology and in the understanding of consciousness. However by examining the extant religious lore, particularly that of the Eastern traditions, we may discover how the concept of a universally connected intelligent “stuff” was modeled and what insights were gained into its characteristics. It may well be that the mystics of the ancient esoteric traditions through introspection and using only the tool of their own consciousness perhaps have arrived at a description of our universe that science – with the full weight of modern technology behind it – is only now beginning to discover.

To this point we have discussed the contention that empirical science and the traditional religious/esoteric teachings - through their own methodologies – have lead to the idea that a subtle essence (or stuff) pervades the universe and that this “stuff” has a component of intelligence and light. This was not meant to suggest that the scientific and esoteric concepts are one and the same. Nor does it imply that one methodology would have to yield totally to the other. We only wished to illustrate that these often seemingly antagonistic approaches are – generally speaking – coming to similar conclusions about previously empirically undetected energy fields.

The scientific approach has been discussed in the context of “The Field” as a quantum sea of light underlying the universe. (McTaggart/Haisch) This is mirrored in the religious/esoteric traditions by the concept of a universal connectedness or a subtle life-energy (Prana, Chi). We have also given some brief examples of the compatibility of quantum concepts with the life-energy concepts such as those of Prana or Chi.

We will now discuss some ideas that have recently been proposed as a consequence of research done with the co-operation of neuroscientists and experienced meditators. We will also further discuss subtle energy concepts. For the sake of clarity and simplicity we will use Prana and the Kundalini mechanism as examples of these concepts.

A recent article in the Wall Street Journal, “How Thinking Can Change the Brain”, by Sharon Begley outlines research done by Professor Richard Davidson at the University of Wisconsin, Madison and the role played by the Dalai Lama. The article focuses on the area of science known as neuroplasticity – the ability of the brain to change its structure and function in response to experience. Remember that until the final decade of last century, scientists had maintained that the adult brain can’t change.

Generally speaking, the currently accepted idea of how mental states arise is that they result from electrochemical activity in the brain. That is, physical brain states give rise to mental states. Ms. Begley relates how the Dalai Lama wondered if the reverse might also hold true – that possibly pure thought could change the brain’s activity or circuitry. The Dalai Lama has stated that “I am interested in the extent to which the mind itself, and specific subtle thoughts, may have an influence upon the brain.” Later on he explained how “I thought then and still think that there is yet no scientific basis for such a categorical claim” [that causation from the mental to the physical is not possible]. The original works on neuroplasticity involved brain changes that were the result of external input - such as intense movement therapy altering the motor cortex of stroke victims allowing them to regain movement of previously paralyzed limbs. The Dalai Lama was suggesting an internal – “downward” - causation from the mental to the physical. In other words, could thought change the brain at some level? The work of Professor Davidson and others has shown that indeed thought in the form of focused attention or meditation could change “the function of the brain in an enduring way”. Davidson has worked with experienced Buddhist meditators while conducting these experiments. More specifically, Davidson found that mental training made it easier for the brain to activate circuits that underlie compassion and empathy implying that these positive states are skills that can be trained.

Researchers at the University of Toronto were coming to a similar conclusion that focused attention could cause a “rewiring” of brain circuitry. While working with depressed adults, Dr. Helen Mayberg and her colleagues found, using cognitive behavioral therapy, that the brain can be rewired “to adopt different thinking circuits”. This, along with the work of Davidson, showed that neuroplasticity effects were possible without the external physical input that took place in the original finding.

Another article of interest to our topic appeared in a current issue of Time Magazine – “The Mystery of Consciousness” by Steven Pinker. Among the ideas discussed in this article are what philosopher David Chalmers calls the “Easy” and “Hard” problems in relation to consciousness. The Easy problem relates to the distinguishing of conscious from unconscious thought processes. As professor Pinker explains, the use of the word easy is an “in joke”. The Easy problem isn’t trivial to solve. It is that scientists believe they know what to look for and given enough brain power and funding the problem will be solved. The Hard problem is another matter, however. It relates to first person subjective experiences and explaining how subjective experience arises from neural computation. Pinker points out that the Hard problem is difficult because no one seems to know what the solution might look like or if it is a genuine scientific problem at all.

Along with the Easy and Hard problems, the so-called ‘astonishing hypothesis’ is brought out in the article. It is the idea/belief that our thoughts, sensations, joys etc. consist entirely of physiological activity in brain tissue – i.e., consciousness is the activity of the brain. Not everyone necessarily agrees with this ‘hypothesis’. Though clearly in the minority, some scientists view the brain as a detector or an organ of liaison between mind and the physical world rather than a generator of consciousness.

We have summarized a few of the ideas in the above articles to illustrate some of the current thinking about the activity of the brain; how it, supposedly, gives rise to consciousness and how recent research has lead neuroscientists to change their thinking on how the brain functions. If neuroplasticity can occur through focused attention/meditation as the Davidson and Mayberg results suggest, this implies that there must be a medium, force or an energy field of some kind that acts to bring about these changes in the brain. In what follows we will illustrate how the concept of a non-local subtle energy field such as prana along with the mechanism of kundalini may offer an explanation as to the way in which meditation or focused attention can alter brain functioning. Further the time tested prana/ kundalini (PK) concepts could provide some insight into solving the Easy and Hard problems.

In order to have some understanding of the PK concepts and how investigating them may provide a model to help further understand brain functioning, special states of consciousness such as genius, mystical experience and offer plausible explanation for newly found characteristics of the brain - like neuroplasticity, a brief overview of the concepts of prana and kundalini taken from the writings of Gopi Krishna is presented below.

*The whole science of Kundalini is based on the manipulation of pranavayu, the nerve junctions called chakras, and the brain. Vayu in Sanskrit means air, and the word is used with prana to denote its subtle nature. Prana and vayu are sometimes interchangeably used by the ancient authors to designate nerve energy or vital breath. Although prana is a self-existent substance, deathless and all-pervading, its manifestation in the bodies of terrestrial creatures is rigidly regulated by biological laws.*

*In fact, the whole animal kingdom is the product of the activity of prana and the atoms of matter combined. Prana is not something radically different from matter. Both are derivatives from the same basic substance, primordial energy.*

*Though it is easy to see that the achievements mentioned in the manuals on Kundalini are often highly exaggerated—a common tendency among ancient authors – Yoga can, when successful, lead to higher states of consciousness. This transformation occurs not by any unnatural methods, causing arrest of thought or respiration, as is sometimes supposed; rather, it is by a hitherto unthought-of remodeling of the brain.*

*The spinal cord, with the reproductive equipment at one end and the ventricular cavity in the brain at the other, is the largest repository of life force or prana in the body. This life force is a biochemical substance of a most complex formation, extremely subtle and volatile, having its roots probably in the subatomic levels of matter. Belief in the efficacy of Yoga as a time-honored method of self-realization ipso facto means belief in prana also, for the whole science of Kundalini-Yoga is built on the possibility of employing prana as an instrument for effecting a metamorphosis of the brain and raising it to higher levels of perception.*

*Yogis have differed among themselves about the utility of the various methods employed to gain transcendental knowledge or about the nature of the ultimate reality, but there is no dispute among them about the reality of prana. Prana is the sole agent responsible for success in any enterprise undertaken to gain higher states of consciousness. (Kieffer 1996, 267)*

More complete discussions of prana and the kundalini mechanism can be found in the articles “The Nature of Prana as a Basis for the Study of Kundalini” by Michael Bradford and “The Role of Prana as the Energy of Consciousness” by Gopi Krishna (ICR 2003, 17 & 25) as well as in a variety of books (Avalon 1974; Greenwell 1990; Harrigan 2002; Kieffer 1996; Krishna 1991)

In short, prana is held to have two forms. One is the prana of the individual. The second is the universal prana which fills the entire creation from the energy fields of matter to galaxies and is an integral part of every atom and molecule. The vehicle through which universal prana operates in a living body is the individual prana. In the human frame, kundalini is the mechanism of operation that brings about a change in the individual prana. Kundalini science has long held that meditation or focused concentration is the lever that activates the kundalini mechanism and accordingly brings about changes in the brain and consciousness. So from this view, the Davidson & Mayberg results are not surprising. In fact, if anything, their research lends credence to the claims of Kundalini science and other subtle energy based traditions.

Here we would like to make a note about what is known in India as prana-kosha or the pranic body. The pranic body is not considered to be entirely ethereal or unsubstantial. The position taken is that it is so subtle and fine that it has not yet been possible to detect it experimentally or fully determine its nature. It is thought that the vital elements which compose the pranic body are present in every cell of the body and that the nerve fibrils pick up these elements and carry them to the larger nerves. These in their turn, transport them to pranic reservoirs, such as the reproductive organs, the nerve plexuses, the spinal cord and the brain. There might be other storage plants for the pranic essence in the organism that may become known with further advance in research on the phenomenon of Kundalini.

No doubt many of the ideas expressed in this short article outlining the concepts of prana and kundalini may be new or seem strange to many. We are not asking that subtle energy theory be accepted out of hand, but rather that it is investigated from its traditional base and then fairly tested. The main point here is that the esoteric subtle energy traditions not only provide models whose contents are now being validated by empirical testing but also contain information that could aid in future research. For example, the kundalini mechanism describes a relationship (in psycho-physiological terms) between the reproductive system and the brain and nervous system. Rightly understood this implies that we need to investigate the possibility that, in addition to procreation, the reproductive system may play a role in changing consciousness through changing brain functioning in some way.

Therefore we respectfully suggest that further investigation into these traditions may yield helpful hints that could be used by empirical science as it improves technologically and continues to probe the workings of the brain and nervous system.

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