CONSCIOUSNESS OF UNIFICATION: THE MIND-MATTER PHALLACY BITES THE DUST

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A complete theoretical model of how consciousness arises in neural nets can be developed based on a mixed quantum/classical basis. Both mind and consciousness are multi-leveled scalar and vector electromagnetic complexity patterns, respectively, which emerge within all living organisms through the process of evolution. Like life, the mind and consciousness patterns extend throughout living organisms (bodies), but the neural nets and higher level groupings that distinguish higher levels of consciousness only exist in the brain so mind and consciousness have been traditionally associated with the brain alone. A close study of neurons and neural nets in the brain shows that the microtubules within axons are classical bio-magnetic inductors that emit and absorb electromagnetic pulses from each other. These pulses establish interference patterns that influence the quantized vector potential patterns of interstitial water molecules within the neurons as well as create the coherence within neurons and neural nets that scientists normally associate with more complex memories, thought processes and streams of thought. Memory storage and recall are guided by the microtubules and the actual memory patterns are stored as magnetic vector potential complexity patterns in the points of space at the quantum level occupied by the water molecules. This model also accounts for the plasticity of the brain and implies that mind and consciousness, like life itself, are the result of evolutionary processes. However, consciousness can evolve independent of an organism's birth genetics once it has evolved by normal bottom-up genetic processes and thus force a new type of top-down evolution on living organisms and species as a whole that can be explained by expanding the laws of thermodynamics to include orderly systems.

Keywords: Consciousness, microtubules, neural correlates, neural nets, magnetic vector potential, quantum, space-time, emergence, magnetic domains, coherence, plasticity, evolution, thermodynamics

1. Introduction

Science never advances in a philosophical or conceptual vacuum. Even the unification of relativity and the quantum is not enough to yield a new physics for the future because it fails to deal directly with a far more fundamental duality that needs further clarification – the difference between reality and the mind perceiving reality in which consciousness plays a central role. So consciousness can no longer be ignored, even in objective physics. In modern physics the encroachment of physics (Matter) into the Cartesian realm of Mind is clearly evident in the quantum mechanical dictum that consciousness collapses the wave packet to create material reality. Since the collapsed wave packet represents an ever renewing reality, it should be evident that the concept of mind has found a new and significant role in physics that necessitates explanation before physics can truly advance beyond the present quantum paradigm toward unification with relativity theory.

Too many scientists believe that 'classical' or non-quantum physics is incapable and unnecessary for explaining mind and consciousness, which is another of the great modern 'phallacies of fysics'. Even the classical Mind-Matter duality has now become a 'phallacy' since modern physics deals with everything in the physical world in which both Mind and Matter are equal participants. Since the human brain and the neural correlates of consciousness have only been studied in the greatest of detail within the past few decades while the only serious attempts to explain mind with classical physics occurred a century ago, the commonly held conclusion that 'classical' physics has no place in explaining consciousness has no real basis. Once such prejudices have been identified and dealt with, explaining consciousness is not that difficult and a new model based on recent findings regarding the neural correlates of consciousness rather than philosophical ideologies and priorities has emerged.

A living body is just a complex pattern of energetic particle exchanges to physicists as compared to the biochemical processes studied by chemists and biologists, so this new model is based on the simple fact that life is an emergent complex matter/energy field pattern as described by quantized space-time curvature. Mind can then be modeled as a multi-leveled emergent complexity pattern (scalar potential) of the electric field associated with a living organism and consciousness becomes a multi-leveled emergent complexity pattern (vector potential domains) of the magnetic field corresponding to the mind.

All living organisms display evidence of mind and consciousness at varying levels of complexity, not just humans. Mind and consciousness have mistakenly become associated with the human brain and no other part of the body because of the dense concentration of neurons in the brain. In other words, electrical activity is more intense and highly regulated, better ordered and more coherent within the brain than it is elsewhere in the body or organism. A strict study of the magnetic vector potential field patterns associated with neural microtubules, neurons

and neural nets indicates how individual and streams of thought originate in the brain and are stored magnetically as memories. Microtubules, which are in fact classical bio-magnetic induction coils, are the primary structural bio-units that guide the storage and retrieval of memories in the mind (the electric field pattern) to create consciousness (the multi-leveled magnetic field pattern) through the quantum spin states of water molecules in the neurons.

Once each complexity pattern emerges it reinforces and modifies the next lower complexity pattern for greater efficiency and survival of the living organism as a whole. Since neural nets are not fixed and indeed alter themselves internally as new learning and experience influence the brain in a process called brain plasticity, this model implies that evolution can also proceed according to a top-down model whereby consciousness evolves mind and mind evolves the body to alter DNA. Yet this concept flies directly in the face of accepted physics because the increasing order that results from continuing evolution would be impossible under the current laws of thermodynamics, which simply state that entropy (disorder or chaos) always increases with time. So modern thermodynamics must be inadequate to describe our understanding of nature and is thus incomplete. Four additional laws are easily found to complete the physics of thermodynamics and solve the duality problems between increasing disorder (entropy) and increasing order (evolution). When completed, the new thermodynamics includes the evolution of all physical systems, in which life is just one form of specialized system, and evolution becomes the true physical 'arrow of time'.

2. Life, mind and consciousness

According to the science of biology, cells are the basic building blocks of life. Those particular cells that are normally associated with thinking as well as mind and consciousness are called neurons. Although the brain and heart contain the greatest concentration of neurons within the body, neurons actually extend throughout the whole body to form our nervous systems. Thus we only assume that mind and consciousness reside in the brain. Networks of neurons process information in the brain while individual neurons carry sensations and information to the brain as well as commands to muscles and organs throughout the body. All information about the external world supposedly passes along these information highways to the brain where it is transmitted across synaptic gaps between neurons by neurotransmitters and somehow stored in mind as memories. Yet we are able to gain some small amount of direct knowledge of the external world that does not pass thorough the nervous system to the brain.

Given this systematic process, mind and consciousness supposedly arise as either epiphenomena (a secondary effect) or as a primary function of the brain. In either case, the present model of the nervous system and brain cannot explain much of anything about mind and consciousness and definitely not anything about the subconscious intuitions that we all seem to have even if we are not aware of them. In any case, the mere fact that neurons extend throughout the body supports the conclusion that mind and consciousness are whole organism physical structures that correspond to life. Within this context, life can be considered a 'life force' or something extra that goes beyond the ordinary physiological (biochemical processes) and anatomical (bio-structural) aspects of organisms that normal science commonly associates with Life.

Under these circumstances, Life, or rather the proverbial 'life force', is the complex matter/energy field pattern that corresponds to a living organism, essentially a pattern of quantized space-time curvature. Mind then becomes the complex electrical scalar potential field pattern associated with the electrical exchanges and variations throughout any living organism. Consciousness is the complex multi-level magnetic vector potential field pattern associated with mind and the electrical potential variations throughout living organism. [1] So Life is not matter and energy, Mind is not electricity and Consciousness is not magnetism. Life, Mind and Consciousness are the complex multi-leveled field patterns, and nothing less, that have emerged over the course of history after which they began to reorganize matter/energy interactions by modifying electrical and magnetic interactions in living biochemical organisms more efficiently to enhance further development and evolution.

All material objects, not just living organisms, are constructed from the same set of three different fields – matter/energy, electric and magnetic – imprinted upon one another. Yet living organisms are essentially different from inanimate or non-living matter. The animate matter of living organisms is distinguished by the high-level complexity of the field components that renders these particular field patterns different from their inanimate material counterparts. All of these patterns interact with each other at various levels to create a living organism, which means that all living organisms have the same complex mix of patterns, but different living organisms have evolved both higher level patterns (paramecia versus humans) and different types of complexities (plants versus animals) than others. In other words, all life is conscious to one degree or

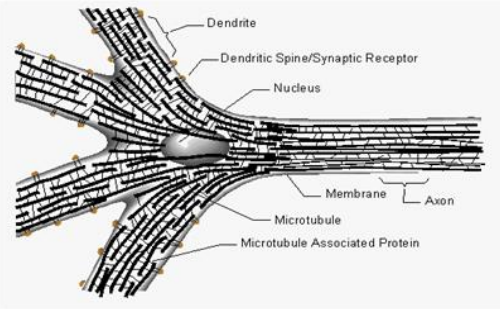
another, but only in more highly evolved organisms has awareness of consciousness emerged as a new chaotic complexity of memories within mind.

3. From neural correlates to consciousness

The main challenge from the scientific perspective is to explain how consciousness, what we are aware of or sense inside the brain, emerges from and interacts with the neural correlates of consciousness, *i.e*. what science can measure in the brain. Some scientists, scholars and philosophers even argue that consciousness is not a fair or proper subject for physical speculation or hypothesis, but as long as consciousness interacts with the physical/material world it must be at least physical (although non-material) in nature. Science has only developed the tools, methods and procedures to measure and test the neural correlates of consciousness within the past few decades, so this is where the search for consciousness must start. Science has nothing else to go on and since the neural correlates were only discovered recently there is no need to discount or ignore the possibility of a classical or non-quantum physical model of consciousness.

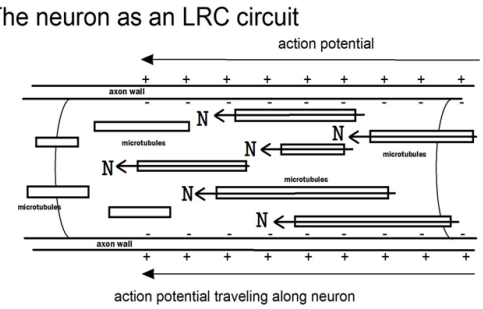
Science has determined that the characteristics we normally associate with consciousness first appear at the level of neural nets, which are smaller groups of interconnected neurons in the brain that act as logic circuits. Noting this, the real problem of how consciousness emerges from the brain can be reduced to two simple questions: (1) How do we get from the atomic/molecular structure and the functioning of independently acting neurons to conscious actions in neural nets; and (2) Where does quantum physics give over to classical physics within the neural structure? The key to answering these questions can be found in the microtubule system that makes up the cytoskeleton of the neuron. Microtubules are actually bio-magnetic induction coils.

A closer look at the neuron shows the internal structure of the cytoskeleton more clearly as well as the vast number of microtubules with vastly different lengths that make up the cytoskeletal system. [2]



The microtubules themselves are uniform except for their lengths, They consist of sheets of (peanut shaped) tubulin proteins that wrap around into cylinders. The individual tubulin proteins measure 8 by 4 by 4 nanometers while the microtubules that they form have an outside diameter of 25 nanometers with an inside diameter of 17 nanometers. The cytoskeleton microtubules can be anywhere from 100 nanometers to 1 centimeter in length. The individual tubulin proteins that make up the microtubule cylinder can exist in either an alpha or beta electronic state, which is important to understanding the role of microtubules in the emergence of consciousness.

Action potentials (small voltage differences) travel up and down the outside of the neural axons carrying signals to and from the brain. Beyond this simple structure it is important to know the simple physical principle that all moving electrical charges generate magnetic fields around them, so the electric action potentials that travel along neural axons also create a weak magnetic field around the axon and neuron after the fashion of a current carrying wire.



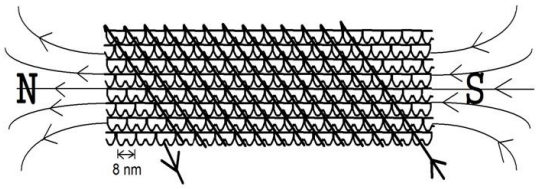
The advancing action potential induces the microtubules to 'charge' magnetically in a sequential pattern

Furthermore, the action potentials moving along the outer surface of the neural axons turn the axon wall into a capacitor while they induce the microtubules to act as small magnetic inductor coils.

The Hameroff-Penrose Orch/OR model was the first to point out the special role of microtubules in the development of consciousness. [3] It is presently the most popular as well as controversial physical model of consciousness, but suffers from several problems. Roger Penrose's Objective Reduction (OR) portion of the model reduces the infinite number of possible quantum electronic states of the tubulin proteins to just two, alpha and beta. When the quantum wave form representing tubulin collapses, it does so in such a manner to Orchestrate a spiral shaped sequential firing of the proteins around the microtubule cylinder. This was Stuart Hameroff's contribution to the model. According to Hameroff, who is an anesthesiologist and not a physicist, all else, including the necessary quantum coherence necessary for thought, is entanglement which neither he nor anyone else can explain.

The Hameroff-Penrose model is thus purely a quantum model and does not allow for any non-quantum effects or influences in the emergence of consciousness. In fact, Hameroff believes that all of consciousness can be found in a single microtubule. Yet he cannot account for either the coherence necessary for the streams of thought that characterize consciousness or the strong magnetic fields associated with microtubules in the neuron, although both problems can be easily explained if classical non-quantum physics is applied.

As the action potential moves up or down the axon, it is trailed by an interior axon electric field change that induces the tubulin proteins to fire in the prescribed sequential pattern around the microtubule. The individual tubulin proteins in the microtubules thus become the primary elements of a current carrying wire-like structure wrapped around a cylinder in a spiral to produce a classical magnetic induction coil.



The sequential 'firing' order of the tubulin molecule electronic states mimics the electron flow of an electric current in an inducting coil

Since the length of the microtubules is much greater than their diameter, the magnetic field is strictly limited to the inside of the microtubules and the magnetic field strength between neighboring microtubules is negligible. However, the magnetic vector potential outside of the microtubules is not zero even though the magnetic field strength is zero. This fact is an extremely important factor in developing a model of memory storage, thought and memory recall.

A magnetic induction coil (the microtubule) firing in time with a charging or discharging capacitor (the cell wall) forms the basic tuning circuit of all radios and electronic devices, an LRC circuit. So each microtubule, and there are millions of them in each neuron, is an individual radio (electromagnetic wave or pulse) transceiver. The microtubules emit electromagnetic (light) pulses that are absorbed by like-sized microtubules in nearby neurons establishing secondary resonance (thought) patterns between neurons. However different-sized microtubules within each neuron also establish primary interference patterns in the water medium between and surrounding them. These interference patterns establish magnetic vector potential patterns corresponding to quantized nuclear magnetic spin resonances of water molecules that reinforce and intensify the primary thought and memory pattern for storage and retrieval. This process imprints and thus stores memory and thought patterns in the very points of space occupied by the brain and body as residual traces of point-by-point magnetic vector potential in a manner reminiscent of David Bohm and Karl Pribram's holographic memory model. [4]

New levels of consciousness emerge from the interaction and mixing between these patterns as they are stored at points in the space-time continuum as higher level complexities of memories and thought. Microtubules are thus the key components in the emergence of higher levels of mind and consciousness by the fact that they play such an important role as pattern guides in the storage and retrieval of memories as well as recognition. The vast multi-leveled complexity of memory patterns that emerge from the storage and retrieval of simple memories at the microtubule/water molecule level are essential to the evolutionary path that develops higher levels of consciousness in living organisms.

The water medium inside the neurons and between neurons in the brain is also an important and necessary ingredient in this physical model. The structure and properties of the water medium have become something of a controversy within the neuroscientific community. The water could exist in the form of a liquid crystal, a superconducting fluid or just normal water with molecules randomly oriented and jostled about by random quantum fluctuations and temperature variations. In one sense, the water structure has little effect on memory and mental processes because both internal and external energy changes are recorded the same way in the fourth direction of space no matter what the direction of variations in the normal three dimensions of space. Yet an ordered structure of some type would greatly enhance the probability of a stored memory being successfully recalled to mind as well as the recognition of newly sensed objects in the external world.

Huping Hu and Maoxin Wu have recently developed a model of "Consciousness-mediated spin theory" that also emphasizes the role of interstitial water molecules in memory storage. In their model, consciousness "is connected to quantum mechanical spin since said spin is embedded in the microscopic structure of spacetime and may be more fundamental than spacetime itself. Thus, we theorize that consciousness is connected with the fabric of spacetime through spin. That is, spin is the "pixel" and "antenna" of mind." [5] They have rejected the Hameroff-Penrose model since the microtubules are too far removed from major neural activities such as neurotransmitter action and the action potential

propagation. Given the success of recent fMRI techniques to duplicate thoughts outside of the brain, [6,7] it is clearly evident that the quantum spin states of water molecules in the neurons play an important role in memory production and recall, but that is not enough to say that consciousness itself is limited to the water molecules alone. They form only part of the overall consciousness pattern.

According to the present model, once memory is stored four-dimensionally as a three-dimensional magnetic vector potential pattern, it can be recalled or used by the mind and brain through the process of pattern matching. With pattern matching, a stored memory pattern is automatically compared to a new incoming electrical signal and the corresponding intervention of the microtubule resonance patterns that generate a new pattern to match with it. The memory pattern can only be matched in the brain if the water medium in which the magnetic pattern originally occurred is in or nearly in the same condition as the original pattern. If the original pattern of internal quantized magnetic moments of the water molecules occurred in randomly oriented groups of water molecules, it would be difficult to reconstruct those same structural conditions to initiate the recall and recognition pattern matching processes.

However, if the water molecules had an ordered structure, as is the case with a liquid crystal, the recall and recognition processes would be greatly enhanced and even statistically favored. Under these circumstances, it would be far easier to reach a minimum energy level to initiate reconstruction of the memory pattern for magnetic stimulations of the initiating microtubules and resonance with other microtubules to gear up the neural net to form or initiate a successful stream of thought. So the best guess for the condition of water in the neurons and between neurons would be that they form a liquid crystal structure. Luckily, this seems to be the case.

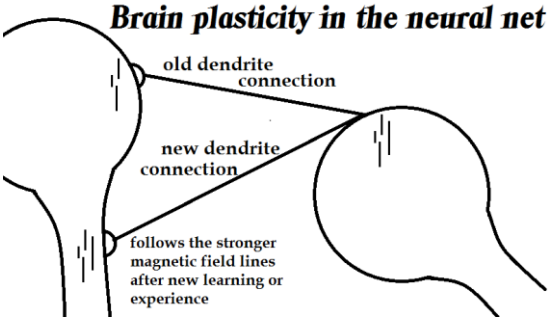
Recent experimental work conducted by Gerald A. Pollack [8] has experimentally determined that water surrounding a gel (any hydrophilic surface) forms a negatively charged exclusion zone (EZ) of pure water (solute free), even in pools of non-pure (solute-containing) water. Other scientists have confirmed his research. They are presently testing EZ water to determine its chemical and physical properties. [9] Pollack believes that the water in the EZ forms a liquid crystal structure that extends hundreds of nanometers beyond the surface of the gel, the extent of which depends on other physical factors. He has also concluded that the water in all living molecules, which are known to be negatively charged, act in this same way. Chen and his colleagues agree.

> Our results suggest that the water clusters could transduce mechanical signals on the micrometer range within the exclusion zone. This unexpected inhomogeneous force field near the hydrophilic surface would provide a new insight into cellular activities, leading to a potential new physical chemistry mechanism for cell biology. [10]

In other words, the water in neurons has an overall liquid crystal structure with special mechanical properties that greatly enhances the probability of memory formation and recall.

The same would be true for water between neurons within neural nets. So the overall water structure within which the magnetic vector potential pattern is guided by the electromagnetic interference patterns between resonating microtubules and imprinted by the quantum spin states of the water molecules would greatly enhance the formation, recall and recognition of memories as three-dimensional magnetic vector potential patterns extended along the fourth dimension of space. It would seem that the water bath in which the microtubules rest is nearly if not perfectly ideal for the storage and retrieval of memories. Calculations based on this model can begin as soon as more details regarding the physical properties of EZ water become available.

Under these conditions, the more comprehensive and larger scale (next level) magnetic resonance pattern that emerges between microtubules in different nearby neurons also 'guides' the placement of dendrite bulbs to form new synaptic gaps or junctions and thus new logic circuits within the neural nets.



Dendrites are always changing position within neural nets as new learning and experience are absorbed from the external world. However, the mechanism of these changes has been a mystery that can now be solved. Magnetic fields surround the axons, neurons and dendrites due to the motion of the action potential while stronger magnetic field lines (lines of

force) are established between neurons due to the interneuron microtubule resonances that accompanies new learning and experience.

It is highly likely that magnetic forces actually hold the synaptic bulbs at their prescribed positions where they are attached to neighboring neurons. Only the magnetic properties of the neurotransmitters moving across synaptic gaps could hold them at any position on different neurons, so synaptic bulbs could detach from their original synaptic receptor location (of lower magnetic potential) at one point along neurons and follow stronger magnetic field lines to new positions (of higher magnetic potential) on neighboring neurons that result from new learning and experiences. The neurotransmitters complete the electrical circuit between neurons to form the most efficient and thought effective neural nets by reinforcing the strongest magnetic potential variations established by the mutual resonance of microtubules in different neurons.

Altogether this physical model hypothesizes four fundamental interacting levels of magnetic domains, each of which has a unique magnetic vector pattern that contributes to the emergence of different levels and thus types of conscious thought in the neural nets: (1) Water molecules in the neuron and brain are quantized nuclear magnetic resonators; (2) Microtubules act as classical magnetic inductors to establish and guide the memory and thought processes; (3) Axon and neural walls are classical electric capacitors and act as current carrying wires; And (4) neural nets whose formation are guided by electromagnetic resonance between various microtubules form basic logic circuits. The complex interactions of different levels of magnetic pattern domains within the brain and body form consciousness. So consciousness is not the overall magnetic field corresponding to a living body or organism, but instead the highly complex multi-leveled pattern of interacting magnetic domains that guide electrical signals, which form mind, along the material pathways that form the material energy processes and structures of life.

Calculations for the predicted values of simple bio-electrical elements in the brain, such as axon wall capacitors [11], magnetic fields surrounding the axons [12], magnetic fields inside the microtubules and resonant frequencies of the microtubules [13] are quite simple and straightforward using common electrical theory. However, developing a precise mathematical model for the memory patterns themselves that would garner predictable results quickly becomes overwhelming since anywhere from a few to dozens and possibly hundreds of microtubules contribute to each memory interference pattern in each axon. Yet recent fMRI experiments in mind-reading that depend on the quantum spin states of water molecules in the brain imply that water molecules are deeply involved in memory and thought processes. In other words, although specific memory patterns cannot be predicted beforehand, they have been indirectly detected through fMRI experiments with reconstructing thoughts (pictures and movie clips) on a computer screen. [14]

4. The body conscious

The multi-leveled complex pattern of consciousness is stored as varying magnetic vector potential patterns in the very points of quantized relative space occupied by the brain and body over the course of time, but these vector points of potential in three-dimensional space are extended into the fourth dimension of space. So even though there are four basic interdependent levels of magnetic domains that establish the simple emergence of conscious awareness in the neural nets and brain, similar simple domains dedicated to different functional purposes exist throughout the body of any living organism. Each level of domains reinforces and stabilizes the domains both above and below its own level of function. So consciousness is neither a unique characteristic of neural nets in the brain nor is it limited to the brain alone.

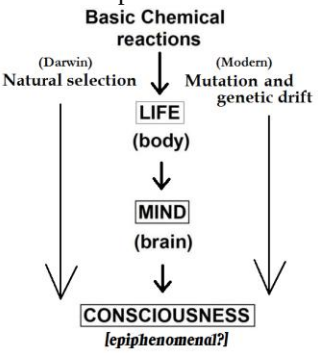
This multiple level domain structure continues right up through the whole body. Magnetic domains are a common feature of ordinary magnetized objects yet nothing like the domain system exists for the electrical field structure that constitutes mind, so the electrical field could never reach the same level of complexity as the magnetic field. The heart has the strongest overall magnetic field of any organ in the human body followed by the brain. [15] However, the magnetic domain structure of the brain is far more complex than that of even the heart. We only seem to exist within our brains because the most intense, coordinated and densest concentration of electrical activity occurs along the bundles of neurons in the brain. Yet other organs and structures in the body each have their own characteristic magnetic field domains which add together to give the total magnetic field of the body as a whole. The overall magnetic field of the body is toroidal shaped and extends for several feet past the surface of the body. The axis of the toroid runs along the central vertical axis of the body and exits through the center top of the skull.

Some scientists argue that individual cells throughout the body have their own ‘cell memories’ and it has been shown that all cells emit and absorb light pulses for communicating with neighboring cells. [16] This model lends a good deal of support to

these suggestions and experimental findings. All cells have similar cell walls (that act as capacitors) and microtubules can be found in all cells, so very simple and non-complex memory patterns can exist at the cellular level throughout the body, although they do not form 'nets' of any type that could cause the emergence of complex memories, simple thought or streams of thought as in the brain. So mind and consciousness cannot be limited to the brain alone, although self-awareness or awareness of consciousness only occurs in the portion of the overall mind pattern that coincides with the brain.

This overall magnetic multi-leveled complexity is self-perpetuating and self-organizing as well as extremely stable in a manner that becomes increasingly less dependent on the material body and the primary life pattern over time. The more complex the living organism becomes, the greater the stability of the overall mind and consciousness patterns and vice versa. Under these physical conditions, the higher complexity level domain structures that constitute higher levels of consciousness can actually guide evolution since each domain level is an organizing agent for lower levels, as is consciousness for mind and mind for the matter/energy pattern. So, radical evolutionary leaps can occur when new beneficial magnetic field complexities emerge in consciousness and magnetically influence human genomes in the host body so that new beneficial traits are inherited by future generations.

This process constitutes a new top-down form of evolution based on the independent evolution of mind and consciousness and how they influence and organize life and the material organism. Since living organisms become more complex over long periods of time, their electric and magnetic potential patterns grow more stable over time and bottom-up (Darwinian and normal genetic) evolution becomes more difficult and less likely. Therefore, top-down evolution becomes more dominant over long periods of time in the life of a species.



The last major emergent quality in the long run of human conscious evolution was the awareness of 'self', but the concept of 'self' is equivalent to the realization of a personal localization in four-dimensional space and time (later space-time). So the next logical leap in the evolution of human consciousness would come with the emergence of a sixth sense and the accompanying realization of the fifth dimension of space-time whereby knowledge of the higher dimension and connections in the higher dimension become commonly known and utilized.

Those who are familiar with modern physics may recognize the three-dimensional structure of consciousness as a type of Einstein-Rosen Bridge pattern bundle extending in the fifth direction of a five-dimensional space-time continuum. A person of higher consciousness (enlightenment), a near death experiencer (NDEr) or a person more practiced in mystically sensing the internal intuitions of consciousness directly without the intervention of normal material logic would have a higher conscious presence (extension of consciousness) in the higher dimension and would therefore be better at pattern matching. This higher conscious presence in the higher dimension is the direct result of neural net rewiring resulting from a direct experience of the five-dimensional space-time during enlightenment events or NDEs, although it could be inherited once it is established in the neural nets and associated DNA strands.

This model's higher-dimensional structure of consciousness also explains the mysterious phenomenon of conscious-time as opposed to universal time. The electrical interactions in the brain that constitute the brain's internal time-keeping mechanism or clock are subject to the same physical restraints, such as the speed of light, that the three-dimensional universe as a whole must follow. However, consciousness keeps time in a completely different manner due to its four-dimensional spatial presence. Since the speed of light and other physical restrictions that generate the sense of time in the three-dimensional brain do not apply to the four-dimensionality of consciousness, consciousness can experience a whole lifetime in a few seconds. In other words, the concept of a 'specious present' that consciousness alone can experience is physically different from the duration of astronomical or material time that the brain constructs from events in the external material world. This feature of consciousness, which people commonly experience during specific states of altered consciousness, can be simply explained as a by-product of the four-dimensionality of consciousness with respect to the material three-dimensionality of the brain.

In fact, the problem that enlightened individuals and NDErs have in communicating their experiences to ordinary people is the result of directly experiencing the geometry of the fourth spatial

dimension, which would seem aethereal and paradoxical by comparison to the geometry of our common three-dimensional space upon which our logical systems, language structures, normal experiences and common learning are based. Otherwise, since consciousness alone is extended in the fourth direction of space as a complexity of varying three-dimensional magnetic vector potential patterns within the very points of three-dimensional space, consciousness is always 'touching' or in contact with this four-dimensional common point to all points (the single pole of the closed Riemannian spherical fourth dimension of space) in the three-dimensional universe, which is the source of common intuition as opposed to logic which originates in the neural nets and larger brain structures.

Becoming fully aware of touching (or experiencing) the single polar point in the higher fourth dimension of space would be the most powerful of all possible experiences of the higher dimension of space Doing so happens during mystical enlightenment and NDEs, to one degree or another. The more intense the experience, the better it is remembered in a waking state and the greater the probability of rewiring neural nets and forming new neural connections in the brain that will enhance the ability to 'retouch' and utilize learning from the higher-dimensional geometrical connections of all points in space. This rewiring explains the personality changes undergone by NDErs and people who have experienced mystical enlightenment. In fact this physical model of consciousness can account for nearly all of the reported properties associated with enlightenment and NDEs, including the seeming increase in the overall number of reported NDEs [17] over the past few decades.

Quite simply, the human species is nearing if not already standing upon the threshold of a new top-down evolutionary leap forward. It will be based on the increasing complexity of consciousness rather than the cellular mutations (modern evolutionary biology) or natural selection (Darwinian evolution) that are common to modern evolution theory. While this may seem a rather radical notion, it is even more radical that this whole process of evolution can be better explained by physics than biology or psychology. To understand how the next step in human evolution will emerge, it is therefore necessary to understand a few new concepts in science: The physics of systems evolution, the physics of consciousness and the role of consciousness in living systems.

The physics of system evolution actually goes by another name in academia – thermodynamics – but not exactly the same thermodynamics that most physicists and scientists now study. The post modern version of this branch of physics will be a bit different from its well understood modern version. After all, science evolves in lockstep with human consciousness. While the human species stands at the threshold of a new evolutionary leap forward, science stands at the threshold of a new scientific revolution. They are both part and parcel to the same developments in physical mind and consciousness.

5. The new thermodynamics

Thermo in the name thermodynamics stands for heat or rather internal kinetic energy while dynamics refers to changes that occur when mechanical work is done, either on a system or by a system. Although originally developed to explain machines with respect to the energy and power that they produce and exhaust as well as their efficiency, thermodynamics now has a much wider and more comprehensive role in science. It now refers to any system from the smallest conglomeration of atoms to the universe as a whole. Thermodynamics is now a much broader set of very general principles that differ extensively from our physical 'laws' of nature. In this sense, thermodynamics forms a contextual framework for the operation of our normally accepted 'laws' of nature. In other words, it places boundaries and limits on the other physical theories and 'laws' discovered by scientists. But thermodynamics is still beset by problems whose existence many scientists refuse to admit – such is its hold and influence over science and scientific thought.

Thermodynamics is presently based on four stated laws or principles. The first law merely states that any two objects which have the same internal temperature (internal energy) as a third object will have the same internal temperature as each other. This 'law' is so fundamental that it was taken for granted until after the other laws were developed and thus became known as the Zeroth law through hindsight. The first law was not so obvious. Heat and work are forms of energy transfer and when a system is conservative (closed so that no heat or work can escape to the outside) the amount of internal energy is constant. The second law deals with entropy or the internal disorder of a closed system or body. Heat is no more than the kinetic energy of atoms and molecules that make up a body. If the body is hotter (has higher internal energy) then the atoms or molecules in it are more disorderly. Entropy is the measure of disorder. So closed systems tend to move toward thermal equilibrium such that the energy spreads out equally to all portions of a closed system.

Thermal equilibrium represents the state of highest entropy or greatest possible disorder within a closed system. Since the universe itself is a closed

system, this means that the energy in the universe tends to spread out more evenly over longer periods of time. This idea is known as the 'heat death of the universe' and it bears a remarkable similarity to recent speculations on the death of the universe due to an ever increasing expansion. The second law is often stated in reference to machines such that it is impossible to get as much or more work and energy out of a machine than the work and/or energy originally put into the machine. This means that perpetual motion machines are impossible as is one-hundred percent efficiency or greater. And finally the third law states that the entropy of a system approaches a constant value as the system approaches the coldest (least amount of internal heat or energy) temperature possible. All internal kinetic energy of a system or body's ceases at absolute zero, which is a little more than negative 273 degrees Centigrade. A body's constituent atoms and molecules would just stop all external motion at this temperature. These laws are obviously simple and straightforward, but their implications and applications are not.

In essence, the laws of thermodynamics can be broken down to two basic principles: the conservation of energy and the simple observation that heat energy naturally flows from a warmer object to a colder object until they reach thermal equilibrium at the same constant temperature. At constant temperature their heat content would not necessarily be the same since different materials have different abilities to absorb and store heat energy. However, these two principles only apply to thermally closed systems (perfectly insulated or isolated) – little black boxes that are otherwise completely cut off from each other as well as the rest of the universe. But the universe is not made from little black boxes that have no intercourse or physical connection with anything else in the universe, so those boxes have to be opened up as far as thermodynamics is concerned and thermodynamics can suffer the consequences of redefining the size and limits of the system involved if they are not. This is exactly what Ilya Prigogine did in developing his concept of dissipative energy systems.

In other words, thermodynamics is not as complete and all encompassing as scientists believe it to be. To begin with, thermodynamics is based solely on the concept of entropy or disorder, which is inherent in the dissipation of energy, even though large parts of the universe form both vast and small islands of order within the broader expanse of space. For example, thermodynamics cannot explain or even cope with the simple fact that the universe was originally chaotic (in a much higher state of entropy than today), but somehow elementary particles came together to form orderly groups of atoms, molecules, bodies of matter, stars, planets, star systems and galaxies. Thermodynamics not only ignores or makes excuses for the development of naturally occurring orderly systems, but it ignores the contributions of the natural forces (gravity, electricity and magnetism) in the emergence of naturally orderly systems. This simple fact is well recognized in science.

> It is widely held that in the physical sciences the laws of thermodynamics have had a unifying effect similar to that of the theory of evolution in the biological sciences. What is intriguing is that the predictions of one seem to contradict the predictions of the other. The second law of thermodynamics suggests a progression from order to disorder, from complexity to simplicity, in the physical universe. Yet biological evolution involves a hierarchical progression to increasingly complex forms of living systems, seemingly in contradiction to the second law of thermodynamics. [18]

So life itself, like the evolution of stars and star systems, also seems to defy the laws of thermodynamics. Yet life also evolves. All physical systems in the universe as well as some non-physical systems (such as society and culture) are subject to evolution in spite of the thermodynamical dictum of increasing entropy and disorder in the universe.

Technically, thermodynamics does not need to account for the natural forces involved in these processes, they are accounted for and explained elsewhere, but thermodynamics does need to explicitly take them into account. Thermodynamics does not need to explain how these forces work, but it must incorporate the results of these forces into its own undertakings and applications. This discrepancy in reality leads to the second shortfall of modern thermodynamics. Thus science is faced with but fails to cope with thermodynamics' (1) lack of symmetry between order and disorder, and its (2) failure to account for the role of natural forces that affect its application.

Thermodynamics lacks any true physical symmetry even though the concept of symmetry is fundamental to physics and the workings of nature. All symmetries in nature are coupled with their anti-symmetries (opposites), which can take many different forms. For every up there is a down, for every left there is a right and for every particle there is an anti-particle. Symmetries and anti-symmetries keep nature and our world in balance. But the laws of modern thermodynamics ignore its symmetric partner – order. Thermodynamics is fundamentally non-

symmetric even though it poses itself as a system that keeps nature in balance through entropy. This fact begs the question, why is order not represented in the laws of thermodynamics to balance the science and render it more complete? The answer is that thermodynamics could be rendered complete by adding new principles based on the concept of order.

Furthermore, expanding the laws to incorporate order would automatically make thermodynamics accountable for the natural forces which produce order, thus solving thermodynamics' second problem. Expanding the laws of thermodynamics to include order would also bring the concept of evolution into physics because the universe begins in chaos (a state of higher entropy) and order emerges or evolves out of that chaos (a lower state of entropy). It would thus only 'seem' that entropy of the universe decreases over the length of time from the beginning of the universe. Entropy has actually increased in spite of orderly evolution within the early universe, but that is because the universe has expanded. Expansion of the universe tips the balance between order and entropy in the favor of entropy so that entropy only seems to dominate nature independent of its symmetric partner order. Normal thermodynamical arguments do not take into account the expansion of the universe as a cause for the dominance of entropy in common physics.

Although there have been no serious attempts to expand the laws of thermodynamics in this direction, there are still precedents for these new laws to be added. In fact, a *de facto* expansion of the theoretical principles of thermodynamics has already occurred without it being admitted as such. Ilya Prigogine won the Nobel Prize in Chemistry in 1977 for his contribution to the thermodynamics of chemical systems and his concepts are now considered a check on the second law. He discovered that "the importation and dissipation of energy into chemical systems could reverse the inexorable disintegration into disorder predicted by the second law." [19] Prigogine literally developed a whole new classification of "dissipative structures" which describe coherent space-time (ordered) structures that form in thermodynamically open systems when there is an exchange of matter and energy between a system and its environment. In simpler terms, if a stable chemical equilibrium reaction is thrown out of equilibrium by the dissipation of energy or by the material exchange of chemical reactants, the system will move to a state of maximum chaos before returning to a new equilibrium state at a higher level of stability (but lower energy).

This means that exchanging energy with an open chemical or physical system could reverse the maximization of entropy rule imposed by the second law of thermodynamics since the second law only applies to closed thermodynamic systems. However, Prigogine's "principle" is more than a check on the second law of thermodynamics and should be made the fourth law of thermodynamics because it deals with order rather than chaos and entropy. Prigogine's work also led to new scientific research on self-organizing systems such as life.

Once Prigogine's principle has taken its proper place within the overall structure of thermodynamics as a new law instead of a correcting condition for the old laws, the next law is very nearly self-evident. It would take into account the 'emergence' of an ordered state from a more chaotic physical system. Mathematicians have already developed this concept in a branch of mathematics called 'chaos theory'. In physics, the same subject is called 'non-linear dynamics'. Take for instance a simple meteorological situation. A seemingly infinite number of higher energy (warmer) air particles (O_2 and N_2 molecules) are bouncing around in the atmosphere in a completely chaotic fashion. This action guarantees a consistent mixing of atmospheric gasses even though they have different masses and weights. But external forces of gravity and the earth's spin are acting on them as well as energy (heat) exchange with the ocean below. This situation represents an open thermodynamical system. It also represents the development or emergence of a hurricane in the mid-Atlantic ocean above the equator.

Under the proper external and environmental conditions, the chaotic system of the atmosphere tends toward the 'emergence' of a whole new and unique phenomenon that has physical characteristics quite different from the chaotic situation that created it. In chaos theory this would be called a complexity, but in meteorology it is called a hurricane. In other words, under the influence of external environmental conditions (gravity and other forces) the prevalent chaotic conditions (high entropy) of an open thermodynamic system (the atmosphere) can tend toward the emergence of a complexity (and lower entropy) with physical characteristics wholly different from the system that gave rise to it. This statement defines a new fifth law of thermodynamics. It could be called the principle or law of emergence. It is all the more significant since it takes into account the physical forces and other laws of nature that are missing from standard thermodynamical considerations.

Given Prigogine's 'law' and the 'law' of emergence from chaotic systems, the concept of 'system evolution' is directly implied. Prigogine's law presents the possibility of higher level stabilities emerging from a chaotic state while the concept of emergence deals with the self-organizational property

of emergent systems due to the new physical properties of the emergent system. Together, these result in the natural development of progressively higher levels of self-organizing systems, *i.e.* 'system evolution'. So here we have a new sixth law of thermodynamics. Individual systems and groups of systems undergo a form of natural evolution as time flows forward. This last addition gives science three new laws of thermodynamics to deal with nature, the way things really are, in a more complete manner – (4) Prigogine's 'law', (5) 'law' of emergence, and (6) 'law' of systems evolution.

It may be presumptuous to call these additions 'laws' or principles of nature instead of hypotheses, but they have already been verified in other circumstances and they do have an extremely wide range of applications. Yet, still more might be necessary. We still have Murphy's Law – if anything can go wrong it will go wrong – which will always be the 'Next' Law of thermodynamics. Better yet it could be described as the 'hubris hypothesis' since it will always keep scientists in their place and honest, *i.e.* nature and the universe will always offer surprises and unknowns for scientists to ponder because nature will always trump human thought, overactive imagination and mental biases.

The beauty of these new laws of thermodynamics is that they equalize the process of thermodynamics and mitigate between the duality of disorder (entropy) and order (emergence from chaos). The Zeroth law is balanced by the 'hubris hypothesis' and the first three laws dealing with entropy (chaos) are balanced by the newly added three laws that deal with order emerging from the chaos inherent in entropy. Together they render thermodynamics perfectly symmetrical. They also increase the explanatory power of thermodynamics. Thermodynamics can now explain how stars, planets galaxies and other material bodies evolved out of chaos inherent in entropy in the early universe, while the concepts of life, mind and consciousness can also be explained.

Surprisingly, evolution is built into the very fabric of the physical universe and it is not just a biological process leading to humans and ending with the Homo sapiens branch of humans. The new laws also indicate that evolution is a continuous unending process that does not stop at any given point in time or plateau of development such as our normal human consciousness. Evolution is an integral part of all processes, whether material or non-material, and all facets of physical reality. Everything in physical reality undergoes evolution as long as time pushes forward. Life must be ubiquitous throughout the universe and forms of life might exist that differ completely from the life-forms found on earth. Yet all life-forms would still be characterized by mind and consciousness. Indeed, emergence and evolution are the true arrows of time rather than entropy. Now, given all of the external forces and stresses on mind and consciousness as well as the large chaotic population base that has grown in the past few decades, the next step in human evolution is all but required by the universe.

6. Revisiting human evolution

All material bodies undergo internal chemical and physical interactions at one time or another. Yet in the case of living bodies those interactions are continuous over time and energetically stable although something must be done with the excess energy created. In other words, living bodies are thermodynamically open systems that exchange matter (food, excretions, sweat and breath) and energy (expelled heat and mechanical motion) with their environment. For a living organism, the overall matter/energy field pattern is the very essence of life and is commonly referred to as the Biofield by many scientists. The matter/energy pattern (Biofield) is something extra that exists beyond the mere biochemical interactions (physiology) and mechanical structure (anatomy) that define the living processes normally associated with life in the academic sense. Centuries ago, this was called the 'life force' or 'vital force' and more recently the 'élan vital'. It was once thought to be a property of the very atoms of living organisms, but it was not.

Instead, we now have an answer to the ancient question 'what is life?' Life is the matter/energy pattern of a material body that is self-perpetuating, self-motivating, self-organizing and internally stable with respect to thermodynamical considerations over time.

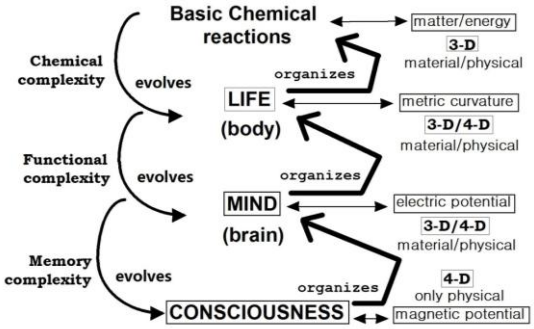
Inanimate Matter	Animate Matter
Spatial extension	All the properties of matter plus:
Inertia	Procreation
The seat of electromagnetic	Self-motivation (in extended bodies, not particles)
and gravitational fields	Need for food or other source of energy
Two particles cannot occupy the	Negentropy (order)
same point in space-time	Mind and consciousness?

Inanimate bodies also have similar matter/energy patterns, but theirs are only minimally self-organizing (crystals and etc.) and stable (all inanimate matter). Animate matter obviously has all of the same physical characteristics as inanimate matter, but it also has added characteristics that are due solely to its more complex orderly nature.

Life as a whole displays an extremely wide range of mind and consciousness levels while the present human levels are not necessarily the highest

levels possible. When an organism evolves to a high enough level of internal complexity to develop different internal functional organs, a new functional organ must emerge to control and coordinate the functions of the others. This new organ is called a brain. As the brain emerges, so does mind and consciousness at their lowest animal level of complexity. After this lowest animal level complexity of mind emerges memories are stored in mind. They continue to be stored, categorized and form new memory patterns that grow in complexity with the passing of time and experience as long as the species of any given organism lives.

The stored memories are more chaotic (less ordered within the overall memory pattern) in more primitive organisms, but the longer any species of organism survives the more ordered the memories become until they reach a high enough level of order to form a new complexity which emerges and alters the organisms in which they emerged.



Successive higher level complexities emerge over generations until human level mind and consciousness, which is characterized by the emergence of self-awareness. Memories and memory patterns are stored as magnetic potential or vector potential patterns in the higher four-dimensional extension of the three-dimensional material body and brain.

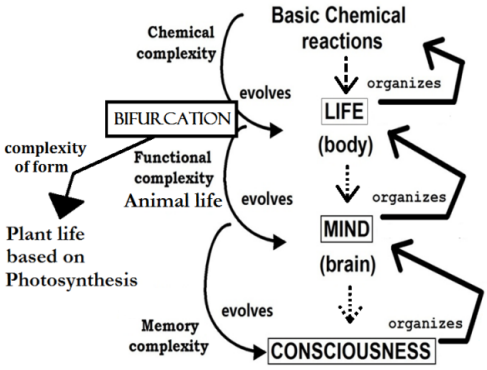
All levels of mind and consciousness complexities organize lower level patterns for efficiently, stability, maintenance and continuity of the life process once they have emerged, but higher level complexities are cumulative and actually induce evolutionary leaps in the form of anatomical and physiological changes in the species. Neurobiologists only discovered the plasticity of the brain and neural nets within the last decade or so. According to their observations, the synaptic connections between neurons actually changes with learning and experience. In terms of physics and this model (in its more complete and comprehensive form) the dendrites which end in synapses just follow magnetic field lines for placement on other neurons.

When a high enough complexity of memories emerges the mind becomes aware of its locality in space and time as opposed to the non-locality of the external environment. At this point, human-level consciousness emerges. The non-locality in space-time physics translates to the distinction between internal self and external reality, *i.e.* self-awareness in the mind as opposed to the world of material and energy. The brain and body are then rewired by consciousness and mind which affects DNA structure so that the next generation of the species, in this case human, is born with a hardwired human level consciousness framework in the brain.

As each succeeding generation in a species grows up over time, individual members of the species fill their inherited consciousness framework in the brain with new data and knowledge as new and more complex patterns develop within mind, evolving individual consciousness and slowly raising the level of the species' collective consciousness as inherited and passed on to succeeding generations through DNA. The progressive course of the species' evolution continues as each individual consciousness becomes more complex in itself. From here on out, beyond the emergence of human consciousness, mental evolution dominates physical evolution. In other words, evolution due to the emergence of complexities is a form of top-down evolution that can explain rapid evolutionary leaps among species that cannot be explained by the bottom-up evolution of Darwin (based on natural selection) or modern cell biology (based on beneficial mutations in DNA). This process continues until enough individual consciousnesses have advanced any species as a whole to a threshold point whereupon the species consciousness as a whole forms a new shared complexity which emerges as an evolutionary leap forward.

When various evolutionary leaps occur, whether bottom-up or top-down, a bifurcation or splitting can occur. One such bifurcation occurred hundreds of millions of years ago. All life was originally uni-cellular, but about 200 million years ago multi-cellular organisms mysteriously appeared almost overnight (on the geological time scale). This event, called the Cambrian explosion, was an early instance of top-down evolution overriding the imperative for bottom-up evolution, thus explaining the great magnitude of the leap and subsequent complexity of the resulting organisms. The Cambrian explosion occurred when mind reached a sufficiently strong new complexity that forced a change in the way that living organisms were structured.

Shortly afterward, a bifurcation (or splitting) occurred and the plant kingdom separated from the animal kingdom.



At this junction in the history of life on earth, the bifurcation proceeded along the lines of form and function. The animal kingdom developed according to a functional complexity that eventually produced the higher level of consciousness in Homo sapiens while the plant kingdom proceeded to evolve along the lines of form stressing their external structure. This is why plants take the form or shape of chaotic patterns such as the Mandelbrot or Julia sets.

Consciousness itself is completely four-dimensional, which distinguishes it from three-dimensional mind and body. It is not just spatially four-dimensional, but exists along the fourth direction of space as well as three-dimensionally. Mind and consciousness form the electromagnetic four-dimensional overlay and self-organizing control mechanism for the three-dimensional matter/energy body and Biofield. The human level of consciousness originally emerged when mind became aware of the four-dimensional space-time structure of reality, but nothing was as yet known about the fourth dimension of space. The concept of a four-dimensional physical space only became generally known to the level that it could begin to influence the development of consciousness in the 1870s. [20] Otherwise, it took until 1905 when Einstein developed special relativity for science to begin catching up with what everyone knew intuitively, that we live in a four-dimensional space-time continuum. That is why several scientists came up with nearly the same idea at the same time, as if the concept of relativity was 'in the air'. Such happenings are actually common in the history of science and human thought.

Einstein also set the stage for the next step in human conscious evolution by placing science and humanity in a position to discover, rediscover or become aware of the concept of four-dimensional space and five-dimensional space-time. The concept of a five-dimensional space-time was only realized in 1921, [21] initiating a whole new path for the further evolution of human consciousness. This rediscovery was in all probability a necessary precursor to the next step in consciousness evolution. Einstein's discovery and the work of others did not initiate an evolutionary leap, just a slow rewiring of the human brain, which did not have much of an effect until after the 1970s.

The next evolutionary step will be the complete realization and awareness of the four-dimensionality of space that comes from the common experience of that newly discovered higher dimension through a rewiring of the brain. Mystically enlightened people as well as ND experiencers and a few others who are in better touch with their intuitive selves have very nearly reached this plateau of consciousness, but those individual cases have not yet reached a high enough threshold (weight) to initiate a species wide evolutionary leap or a larger group event. This event would amount to an 'ascendance' or perhaps an 'apocalypse', as has been foreseen and predicted under many names. Unfortunately the concept carries with it many misconceptions and among them the concept of spirituality ranks the highest, especially since it is often associated with religion instead of the physical science of consciousness.

7. As real as it gets

At present, spirituality can be defined as an innate knowledge and acceptance of the higher-dimensional context of life and reality as well as the attempt of a person's consciousness to come to terms and live within this context. Spirituality is purely intuitive and thus a product of consciousness instead of mind. Spiritual or mystical enlightenment occur when a person becomes aware of their higher-dimensional existence and intimate connection with the universe as a whole through direct experience of the higher dimension of space. Advanced knowledge (either philosophical or scientific) of this existence does not really help in reaching enlightenment, although it doesn't hurt. However, it does help in the interpretation of the experience, *i.e.* placing the experience of a fourth dimension of space and existence within the logical context or construct of a three-dimensionally trained mind. NDEs are a very natural way of experiencing the higher dimension of space, but usually occur without any training, expectation or desire to undergo the experience. Therefore, they are not as intense as the mystical enlightenment experience and can sometimes go badly for the experiencer, but this will all change with the next leap in evolution.

At present, the modern theory of evolution cannot explain certain beneficial mutations or favorable variations that are inherited by succeeding generations of a species. Mutations are successful (beneficial) within the context of this physical model of consciousness, if and only if they enhance the

overall life pattern in some manner. As a living organism becomes more and more complex in its pattern structures, this type of bottom-up evolution becomes harder to accomplish. Yet scientists have now determined that the rate of human evolution has been increasing for the last century or so. Scientists claim that this increasing rate is due to the mixing of diverse populations as travel and movement between distant locations becomes easier, *i.e.* the melting pot effect of mixing of genetic pools.

However, the melting pot effect could not possibly account for new beneficial evolutionary trends, especially in light of the fact that other factors such as the vast increase in knowledge and expanding worldview during the past century or more favor top-down evolution instead. Mutations occur all the time as rapid changes of microscopic variation that are inheritable against the background of slow variations due to natural selection that occur over eons. Mutations are normally unfavorable and either die off after being inherited or are just not passed on to the next generation.

Yet giant evolutionary leaps in human progress such as the large brain capacity that characterizes Homo sapiens appeared suddenly in the recent geological past, rather mysteriously it would seem, according to the fossil record. No one has ever been able to explain how or why the last such leap occurred among humans, the development of a large brain. Until recently, most scientists thought that normal evolution had ceased in humans, but in fact it had only slowed down to nearly zero because the human animal had become so complex that small bottom-up changes have become insignificant by comparison. On the other hand, these leaps were due to top-down evolution and similar circumstances are repeating themselves today. Humans are still evolving and the rate of evolution is increasing within the melting pot of the world community, rather than because of the melting pot because top-down evolution is now running the show.

Rupert Sheldrake, an eminent biologist and critic of modern science, has also noted deep problems with modern evolution theory. [22] He has developed a model of biological evolution based on the concept of 'morphic fields' which are physical entities that he assumes will eventually be explained by physics. Various forms of information are passed on through 'morphic resonance' between morphic fields as time passes. Sheldrake has also pointed out that knowledge itself follows his morphic model. Sheldrake's morphic model also closely parallels this physical model of consciousness while his morphic resonance is quite similar to the notion of pattern matching that is central to this model. The main difference between these two models can be found in the biological language and the physics language used to represent the models.

In any case, Sheldrake's model implies that science in particular is evolving in pace with the human mind and consciousness in so far as it is a creation of mind and consciousness as well as by its own internal characteristics as a morphic unit. Science is at its most chaotic point in decades, just that point of maximum chaos in Prigogine's principle between lower and higher levels of stability. So now science, along with human consciousness, must evolve or continue to live with and suffer from its own mistakes. A new science must emerge, is about to emerge and will emerge because that is how the natural universe works.

The next evolutionary leap will more than likely coincide with or overlap a new scientific revolution which means that they will have similar characteristics. People who stand in the way of this change will be losers, just as scientists who hang on to prior 'phallacies of fysics' and the overthrown portions of older paradigms will lose as documented by Thomas Kuhn. [23] People (scientists) who actually fight the change will be bigger losers. People (scientists) who are passive to the possibility, who do not even believe in evolution, will lose but not quite so badly. Non-belief in evolution will not affect the outcome of the next evolutionary leap at all. People (scientists) do not have to believe in evolution and change to participate in the evolutionary leap because their non-belief is still part of their own personal journey. They will still evolve whether they believe in evolution or not. Ironically, some of those people who believe the strongest in predictions of an impending disaster and change are the same people who do not believe in evolution. Come it will, in its own time at its own pace, as sure as the sun will rise tomorrow.

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