



The Reunion of Science and Religion

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Table of Contents

Editor's Preface

Introduction

The Physics of Consciousness

The Biology of Consciousness

The Sexuality of Consciousness

The Cosmogony of Consciousness

Bibliography

Editor's Preface

Do what thou wilt shall be the whole of the Law.

The universe, as it turns out is a hologram generated in the mind of God that is Not, emanating as infinite points of light, each projecting the entire universe from it's own particular point of view as determined by it's vibrational wavelength. This point of view along with all others is projected onto the screen of infinite possibility as Brahmin or Nuit so to speak.

It seems that this is a natural and unconscious occurrence in which one's perception is intimately entwined with the primordial matter, partially determining it's behavior as seen in the Heisenberg principle found in modern physics. Briefly and superficially: this principle states that observation determines the behavior of the subtle matter that we call sub atomic particles. The problem is that every other perceiving being also has an influence on how matter manifests, which makes the universe a collective creation of the Elohim, the infinite points of light, or stars that are US. (CF: refer to Crowley's Star Sponge vision)

The modification, or movements within the limitless ether as infinite space is according to Tesla, an electrical phenomenon identical to the cosmology described in both Yoga and Samkhya schools of Hindu philosophy. Both schools postulate a black etheric egg called Akasha as the primal matter which interacts with the cosmic Prana as energy and force. This energy is equated with electrical force in Swami Vivikenanda's discussion of pranayama in his book: Raja Yoga.

This creation seems to be wholly spontaneous as the potential of infinite space has no limit in the forms it inspires from the heart of light which extends itself through this infinite web of mind, appearing both material and ephemeral, and at other times beyond any category of apprehension expressible in conventional language. The investigation of the material world as well as the mystical journey of the sage must ultimately lead into this heart which is the quintessence of our being. It is this level of apprehension which constitutes prophecy, which is needed in order to maintain balance and harmony between the various planes and worlds which are a condition of our existence.

True prophecy involves a mystical journey into the heart of the universal mind via the manipulation of the microcosmic mind as found in a fully conscious human being. Such processes allow the individual to penetrate the mysteries of the universe through the use of symbols and images that are communicated through the various levels of the psyche allowing the center of ontological being to be accessed through a concentrated and prolonged self introversion as found in most shamanic practices. The famous dictum: 'Tat vam asi' or 'Thou art That' taken from the Upanisads (and found in the Gnostic Mass) comes to mind in this regard. This also reminds one of the alchemical axiom: 'as a above, so below' and should remind most Thelemites of Crowley's qabalistic rendering of ABRAHADABRA in which the letter 'A' being a glyph for the pentagram and microcosm is shown to contain the whole of the ontological universe as the macrocosm. Readers of Liber 777 will recall that this occurs by the six letters of the hexagram as macrocosm being contained within the five letters of the pentagram as microcosm. This key is a motif which came up again and again in the Enlightenment philosophy that was the legacy of

our 'modern world'. Such concepts were put forward in a novel manner such as in the works of the early German philosopher Gottfried Wilhelm Leibniz with his concept of *monadology*, in which each person and thing is a perfect mirror of the entire universe limited to a particular perspective. Such a work paved the way for a whole German school of thought culminating in the will to power of Nietzsche, as well as the phenomenology of Husserl and Heidegger which would create a fertile ground in western culture upon which the gnosis of the crowned and conquering child could take root. This exploration is taken up further in my own upcoming and complimentary work: Thelemic Philosophy in Context.

This same view of the interconnection of the microcosm and the macrocosm is now being expressed again in physics with many other occult truths being revealed in the fields of Biology, Cosmology, and sexual studies as will be seen in this present work. The most relevant of these truths are the reality of ideas and archetypes as real and potent, yet abstract entities capable of transforming both the matter of the physical world in addition to the molecular structure of our DNA.

The connection between our biology and our mental and emotional makeup in relation to the use of language, stimulation of the senses, and physical actions not only validates the teachings of ceremonial and sexual Magick: the subtleties being discovered in each field of study are opening doors to endless new possibilities in Magick waiting for those who are willing to tread the unbeaten path of experimentation. The key factor here for us Scientific Illuminists is the vital importance of language and emotion (Hod and Netzach) as factors which influence action, and action as an expression of will as a vital means by which the tendencies of our being as physical DNA can be transformed. If the world truly is a mirror image of the soul as now suggested by physics, then we are now getting a grasp on the occult keys necessary for producing subtle, yet potentially radical transformations in the 'world' as we know it. Now, thanks to the developments of mundane science we are now able to grab onto these potent occult truths in a language that inspires certainty and confidence. It is through genuine confidence based on certainty that the energized enthusiasm of today's thaumaturge must rest in order to make a sustainable manifestation in this world of contending forces.

This practice of prophecy: exploiting our mirror image of the macrocosm for transformational insight has been the practice of shamans, prophets, and seers from time immemorial. However, it is also manifests in any exceptional expression of genius, whether it be artistic, philosophical, scientific, or the work of a revolutionary inventor. In all cases, true prophecy shakes up the culture, challenges it and leaves a wake of new social and/or technological patterns in the upcoming generations.

Today's discoveries in physics and the exceptional revolutionary insights of scientific visionaries such as Nicola Tesla have blurred the boundaries of science, prophecy, and Magick as they are usually understood, bringing the manifestation of all such phenomenon under the banner of 'individual genius': the mandate and goal of the A.'. A.'.

This is a goal that is all too often forgotten as many A.'. A.'. Aspirants become more concerned with the outward appearance, of being in a 'magickal order' getting lost in petty games of power politics. Such folly is usually triggered by a vain 'Sorcerer and Stone' motif in which the tools of

ritual Magick and meditation become more of a personal fetish: a means of maintaining vain and seductive self-image. The production of new gnosis in the form creative and provocative personal work made available to the public is the true test of spiritual attainment which cannot be replaced with the 'lineal proofs and dodgy paper work' that are so often relied upon.

It is this manifestation of genius that moves the soul of the individual and the collective soul of society, shaking up the world and transforming it in various ways on all planes. This work: The Reunion of Science and Religion, demonstrates the unity behind the various disciplines as a common means to attain that one end which occurs when our human endeavors are pushed to their uttermost limits via the application of a trained mind and a fortified will. "Strive ever to more!" we are told in AL:II.72.

It is through such endeavors and these endeavors alone that we can see that all paths lead to the summit of that sacred and holy mountain. This following work does just that: it presents us with the union of science and religion, a union which occurs when human abilities are pushed to the level of genius: the essence of all true prophecy.

To this effect I will conclude this preface with a quote from one of my favorite Holy Books:

- 10. Only they who know IT may be known.**
- 11. For they have the genius of the mighty sword 418.**
- 12. And they are not deceived by any of these things; for by their subtlety do they expand them all into the twelve rays of the Crown.**
- 13. And these twelve rays are One.**

Love is the law, love under will.

Introduction

Do what thou wilt shall be the whole of the Law.

The physics of consciousness has taken science full circle back to the antediluvian Gnosis; and with what may be a more sophisticated science and technology than even the ancients knew. The ancient and Universal religion was openly inculcated into the myths of the several Western sub-cultures throughout the antient world. It is with the rise of monotheism that not only have the various traditions and practices of this universal philosophy been eclipsed and until now, almost forgotten, but we find them also having been replaced with a superstitious structure without any rational science to confirm its apprehension of the world. At least what science they practiced suffered from the erroneous paradigm that even conceived of the world as being flat. This having been transformed with the advancing work of Copernicus & Galileo and the Renaissance freed European minds from the ignorant superstition of the Roman church.

From the time of Constantine forward, the new state religion of Rome had turned entirely from the Pagan tradition. The once living gods, the planets and stars of the Pagan era, came to be deemed as dead, inanimate objects and the one ineffable God that is NOT was distilled into an anthropomorphosized image of a super-natural human being with unlimited power. Contemporary psychology has already found these antient symbols to be at least quite useful in describing human drives and defense mechanisms, et al. With physicists speaking more and more like Hindu mystics, the first link in unification has been made, with scientists reaching out to the community psychologists once eschewed as being neurotic (in their recognition of spirituality).

With the demise of Paganism came and end to the intimate connection between spiritual or elemental forces and the material world. The spiritual world was ultimately denied as even being real by materialists; considering it to be little more than the fabric of superstition and the source of childhood fairy tales. The spiritualists formed their own camp by denying the material world as a *Maya* or illusion, and the fracture between the two became instilled into the psyche, here in the West. Yet the spiritualists themselves can be accused for the most part, of promoting a nihilistic philosophy that lent credulity to the materialists. This has forged the ancient truths of the White School of Magick (cf. my article: [Schools of Magick](#)) into now, dead dogmas while science and technology have hastened its progress and development even faster than our moral doctrines can comprehend. What is vitally needed in our modern world is a new mythology that helps us to come to terms with ourselves, as the Roman myth no longer suffices (nor do its descendants).

We begin by returning to the source of the ancient wisdom as has been found and with certain antediluvian sources; well researched by Madame Helena Petrovna Blavatsky; in her Buddhist Gnosis. And as well, the origin of the Hindu Vedas also belongs to these pre-historic times; both relying on the same Egyptian/Mesopotamian Gnosis the would come to inform ancient Greece and as a back-drop to the Roman culture that would ultimately spawn Constantine. This field of investigation reaches deep our historical past to remember what we have now forgotten

in our spirituality; though it will be some time yet, even in this rapidly advancing age before this reaches the collective consciousness of human society; belonging today to really but a few among us.

Modern physics has though, returned science to the door where the ancient, universal and pre-dogmatic knowledge once informed our myths and morals. With electron microscopes and sophisticated mathematics, its permeation of the microcosm has also inspired major breakthroughs in our understanding of macrocosmic systems as well. With the the Hubble telescope, we can look deeper and deeper into the workings of the macrocosm; even through time. Together, these tools are causing physicists to begin speaking the language of mysticism and they are now beginning to offer answers to some of the deeper questions about the nature and reason for life and consciousness. It being noted that physicists have come to learn the language of the mystics, it would behoove those of us that are mystics to reciprocate and learn the language of science. It was this that made the antient Mage. The great inventors and renaissance men of history are examples of the ideal mage. Even Crowley with his emphasis on poetry and literature was making a few inventions and producing alchemical elixers as per his Confessions.

What follows is a collection of essay fragments from various scientists and intellectuals, assembled with my commentary to show how religion and science are already becoming reunited. I cannot pretend to have the technical knowledge of the various disciplines presented here as I've not been educated in any of the several natural and biological sciences that directly observe the human condition. But the weave of these several ideas into one stream of thought works intrinsically and unifies various documents. This adds even greater credence to the documents I've written for the GCL and the A.'A.'. My comments will be interspersed throughout, so that what I bring to you is my comprehension of Magick and mystical experience. This bibliography will show those sources from which this amateur scientific theorist has drawn in his attempt to bring science back to the Gnosis or the Gnosis back to the science.

For the first time in two thousand years, we're actually moving towards wholeness in this regard; an ancient world fractured and burned to ashes with the Library at Alexandria looming iconically as a dark omen for what ultimately followed. Now, as a phoenix rising from the ashes, there is hope. Yet the forces of tyranny and superstition are not going to give up their ground without a fight. And the sword we must carry is our intellect; that our bodies be cups filled with the influx of that spiritual force that cries out for Light, Life, Love and Liberty. Even there are Thelemic groups that have sided with the forces of tyranny and superstition. So it seems that by the time the battle ultimately rages, brother will fight brother and it will be hard to tell who is on what side.

At least Liber AL vel Legis prepares us for this obscurant situation.

AL II.59: "**Beware therefore! Love all, lest perchance is a King concealed! Say you so? Fool! If he be a King, thou canst not hurt him.**"

AL II.60: "**Therefore strike hard & low, and to hell with them, master!**"

We have found light seeping in through the cracks throughout the darkness of this Piscean Age: a Gnostic movement in France (though brutally crushed by the Inquisition); the Italian Renaissance and even the Deist movement inside the Anglican Church that would ultimately formulate the driving ideology behind the American Revolution and the reintroduction of natural law in what some call the forerunner of our holiest book, the Declaration of Independence. But the Yellow Press has struck hard in this 'land of liberty' and Crowley and Blavatsky have become demonized in the popular reckoning as Christianity has fought hard against the natural law of our American forefathers. Yet to answer them, we have built an American English Qabalah that we might put forth our own LOGOS and build upon the mythology that must be in place before the inauguration of the Aquarian Age. Indeed it is we who must sew it ourselves, into the world that is to become.

Love is the law, love under will.

The Physics of Consciousness

It is no matter that we were born into this world to a certain mystical consciousness that is then conditioned out of our immediate awareness. We are then conditioned into a certain common awareness or *consensus reality* that is our collective racial experience. It forms the fabric upon which human endeavor is woven. From there, some are led to the mystical or spiritual part of our psyche as others are moved to more materialistic areas. But in all human endeavor, philosophy is the impetus, the means and the end of the effort. Dr. Anil Mitra in Being, Mind and the Absolute writes:

The question arises as to the relations between esoteric/academic disciplines such as the fields of science, academic philosophy, revealed religion and common experience. What do I mean by common experience? Is it not related to the esoteric? Are the esoterica not extensions of common experience? Is it what remains if the esoteric disciplines are lost? Is it related to our evolutionary situation? These are some considerations. What is not accessible to common experience is not basic truth.

If esoterica is an extension of common experience, science is simply creating new experience by looking more deeply into the objects of experience. This becomes an entirely materialistic endeavor that in contrast with the various, established religions in human society, admits to nothing beyond that which it can measure and comprehend. Common religious experience becomes more a legal and moral or philosophical concern with no practical application in the world. Indeed, it negates this world with a philosophical nihilism that asserts another, more perfect world.

Seceding from this world, religion moved from its mythological/archetypal orientation in its quest to comprehend the human soul into the creation of a superstitious model of this other, more perfect world in order for various clerics to obtain social and political control over a group of people. This not only earned a strong distrust from the scientific community, but even its disdain as our society as a whole, struggles with the paradox of incorporating both disciplines into its academic circles.

Considering the existential crisis as a developmental mechanism in the maturity of the human psyche, this contemplation of death that occurs at several points in one's life, seems to produce emotional responses that do not necessarily become entirely conscious for a lot of people. This certainly explains why very educated people, in their unconscious fear of death have built up a sense of immortality that connects with the better world promised by the authority of these socially accepted religions. And it gives us the origins of this dysfunctional paradox that is at the center of our society's philosophy. Dr. Mitra goes on to say:

The [sentient] form of Being in which human being participates: Despite metaphysics, human beings - and this includes animal beings with and without "language" - is the form of being that most clearly exists. It exists by observation so direct that one may question whether it is observed to exist or whether its being specifies, defines, models, prototypes, or generates existence and the conditions of existence. Also as a matter of direct observation the quality of this form equals or exceeds that of both matter and idea - since matter and idea are part of the form. Since the form includes idea, matter, indeed the elements of any metaphysics or cosmology, it pervades all being and time. This form satisfies the criteria whereas the other candidates do not.

The Platonic model of forms, idealized in perfection and then materialized as an imperfection fits the Qabalistic model of involution and manifestation. As we find in Liber Trigrammaton: "**Now cometh the glory of the Single One, as an imperfection and stain.**" Further, the science of holography in contemporary physics shows us at least a mathematical realization of these idealized forms (cf. [Liber Vox Viva Voce vel Video](#)). Metaphysics at least on a psychological level orders these hierarchically into archetypes with as much a

strong hold on the psyche as it is the source that helps us to realize ourselves. These are wholly contained in the universal myths of the ancient apocalyptic tradition that emerges from the mythological construct of the [Starry Gnosis](#). But ultimately, everything and everyone is possessed of consciousness, though we might not recognize it in some forms, i.e. rocks.

Remember all ye that existence is pure joy; that all the sorrows are but as shadows; they pass & are done; but there is that which remains.—AL:II.9

Inherent in the comprehension of the [Starry Gnosis](#) is a formula of transformation; a resurrection theme that predates Christianity for tens of thousands of years. With the fracturing of our culture, in this age of specialization, we might simply view these symbols as a metaphor for an existential coping with the nature of life in our process of individuation. But it seems a more interdisciplinary approach is required. Adding in the scientific perspective, there are many tools that modern physics affords us to better corroborate and understand this process. Yet, it is death that preoccupies our experience of life; being the cause of great mystery and horrific fear.

This process of death is viewed in terms of major levels of complexity with the context of massive dissipative structures. We hypothesize that within a level of major complexity there are three regimes: chaotic, ordered, and the edge-of-chaos. The role of "death" is a form of information feedback from order to chaos via the edge-of-chaos between levels of major complexity. Death can release stored information that is key to the further evolution of complexity of a surrounding dissipative structure. It is further hypothesized that in the increasing complexity of our existence, there are successive levels of selection processes.

The role of "death" as a type of process is essential in the creation of complexity. The "process of death" is a generic process that is inherent in massive dissipative structures. Thermodynamic death of complex structures will occur in dissipative structures. However, "death" is not as complete as it implies. Even in "death", there is something remaining of the original entity. Some of the parts of the entity still remain and those released parts will interact with the surrounding environment at a lower level of complexity. The potential diversity of the lower level of complexity is increased with the death. Thus, death is a form of information feedback between levels of complexity. The original entity loses weight upon death. It is this mass that returns to chaos.¹

Everything that has a beginning must also have an ending. So our mortality drives us instinctively to understand our origin. A thorough study of pre-Socratic philosophy is incorporated into the Alchemical theory of creation as found in the [Golden Chain of Homer](#). It's as if the physical sciences are returning to their origins, which shouldn't be surprising as such analyses are validated by the way our psyche is constructed. And of course this ordered arrangement for comprehension is that which also gives us our consensus reality. Any differences that each of us individually has to our response to stimuli must include our experiences outside the consensus reality; those more surreal or apocalyptic. These then become appended ultimately, to our collective experience in our prophetic tradition. Our psyche is intimately connected with if not indeed, directly born of our physical bodies. And certainly, we can recognize an informing source of intelligence that animates the material body. Integrating the knowledge gleaned from contemporary physics contributes a lot to our overall comprehension to the nature of life and human consciousness.

With the "parts" left over from death, they can be used in new functional ways that could not occurred in the original creating context. Without reproduction in the living sense, novel molecules created by novel chemical processes must survive many different environments after the chemical environment that created it had long ago died. Novelty must be stored in stable dynamic structures that can survive death. Eventually enough novel molecules will form the basis for the creation of a new level of complexity.

This process is generic to other levels of complexity. For example, we, as human organisms, are made of atoms formed as nuclei in a red-giant star that has long been dead. We could not exist without the death of those types of stars. The red-giants and supernovae serve as far-from-

¹ David M. Kiersey in [Toward the Physics of Death](#)

equilibrium dissipative structures creating stable micro-entities within a galaxy (itself a dissipative structure) that are necessary for further evolution of complexity.

Massive death can provide a great deal of dynamic material for the further evolution. Human civilization depends on oil, which is the result of the massive accumulation complex organic molecules of the Carboniferous period, when plants dominated the land. Other examples of this process may include the formation of galaxies by the death of antimatter, accumulation of organic molecules in soil for development of land plants, and the biogenesis origin of key metal deposits for the use by man.

The process and structure of the universe has evolved via multiple levels of dissipative structures and our very existence is built upon multiple levels of complexity arising from this situation. The prediction is that massive "deaths" in the evolution of complexity are necessary. However, we include in our notion of complexity a surrounding context, namely a dissipative structure. We define loosely a *major level of complexity* as demarcated by a massive, self-organized dissipative structure, hereby called a *macrosystem*.

The macrosystem consists of self-organized "parts" that are hereby called *microsystems*. Microsystems are the natural occurring building blocks that compose things. They are self-organized, dissipative structures at the microscale relative to its surrounding macrosystem. Leptons, baryons, atoms, molecules, prokaryotic cells, multi-cellular organisms, human families, and corporations are some of the primary examples of microsystems at different levels of complexity.

Since a microsystem is within a macrosystem, the death of the microsystem usually releases its components back to a lower level of complexity, so the information contained in the components will be reincorporated in the lower level. But in addition those components have a chance to be reincorporated into a different microsystem, possibly at the higher level again. What the structure of this process of reincorporation is the key question. We hypothesize this process of reincorporation is intimately related to the notions of chaos and order.

The route from order to chaos has been explored by chaos theory. Non-equilibrium chemical thermodynamics have shown the beginning of a route from chaos to order. In the area of artificial life, Langton has hypothesized that between chaos and order there is an "edge of chaos." This edge-of-chaos is where physical systems can exhibit a high degree of physical computation. Langton has asserted that at the edge-of-chaos is where complexity arises and is akin to a phase transition.

In other words, there is no distinct boundary, in the conventional sense, encompassing or demarcating an edge-of-chaos. The death of a "complex" of physical systems must also play a part in transfer of information between the levels of complexity.

There is "chaos within order". Because of this ultimate instability of its component microsystems, no order regime is completely ordered. In addition, an order regime is physically next to a chaotic regime, which subjects the order region to the energy fluctuations of the chaotic region. Between chaos and order, within an edge-of-chaos there can be multiple levels of complexity. Growth is the generic word for indicating the process of going from chaos to order. Whereas, death is the generic word for indicating the process of going from order to chaos. The feedback of the chaos and the order regions into the edge-of-chaos drive an edge-of-chaos to higher complexity.²

The Universe itself is alive and has its own biological processes that ultimately results in an evolutionary transformation. This process includes that which we call death for the sentient being; that is identical to the process for non-sentient objects. Liber AL teaching us that "Every man and woman is a star" refers to the same Gnosis that Shakespeare speaks of when he writes: "We are the stuff that stars are made of." Moving to a higher level of complexity then does not really involve organisms developing or refining internal or external organs, but moving to a greater aggregate of consciousness. As Blavatsky points out in her own writings on evolution, the organ appears first before its use is exploited. Indeed, with consciousness or sentience apparent in both the macrocosm and the microcosm, we are moving in both involutory and evolutionary directions; simultaneously. The process of becoming is engendered by the process of decay and reorganization. And we must go through these processes on all planes in both body and soul. David M. Kiersey continues:

When a macrosystem (e.g., the earth) contains higher-level complexity, not only will it exhibit the processes of lower complexity, most notably, thermodynamic dissipation, but the macrosystem also will exhibit higher forms of process order, such as non-equilibrium chemical thermodynamics.

...the standard use of the concept of "evolution" has been overused and includes two significantly different processes. The first process is adaptation. Algae are said to evolve or "adapt" as time progresses, even though they do not change in significant complexity. It is generally accepted that some common ancestors of prokaryotes had evolved into multi-celled eukaryotes by the processes involving parasites, symbioses, and epigenetic programs of the genomes.³

God, as 'one' (per the Qabalah) then is a simplicity and we are not necessarily, simply "returning to godhead." Rather a scientific picture is being shown where complexity moves to simplicity and vice-versa. This dualistic expression of that which we can call the life-force is consistent with everything both material science and the common zeitgeist of the human psyche can observe.

² David M. Kiersey in Toward the Physics of Death

³ Ibid

The word "involution" will be used to signify the "evolution of complexity," and exclude the concept of evolution as adaptation within one level of major complexity. We assert the basic difference between evolution and involution is that involution requires multiple levels of major selection processes whereas evolution as adaptation does not.

... the Darwinian theory has centered on the study of eukaryotic multi-cellular evolution. On the other hand, the evolution of prokaryotes and the epigenetic inter-cellular mechanisms in the development of animals has been mostly shrouded in mystery.

Besides the evolution of bacteria and the transition to multi-cellular organisms, there is also the cultural evolution of the human race, which may involve a more complex selection process, such as the Baldwin effect.⁴

From Wikipedia, the free encyclopedia

The **Baldwin effect**, also known as **Baldwinian evolution** or **ontogenic evolution**, is an early evolutionary theory put forward in 1896 in a paper "A New Factor in Evolution" by American psychologist James Mark Baldwin which proposes a mechanism for specific selection for general learning ability. Selected offspring would tend to have an increased capacity for learning new skills rather than being confined to genetically coded, relatively fixed abilities. In effect, it places emphasis on the fact that the sustained behavior of a species or group can shape the evolution of that species. The "Baldwin effect" is better understood in evo-devo literature as a scenario in which a character or trait change occurring in an organism as a result of its interaction with its environment becomes gradually assimilated into its developmental genetic/epigenetic repertoire (Simpson, 1953; Newman, 2002).

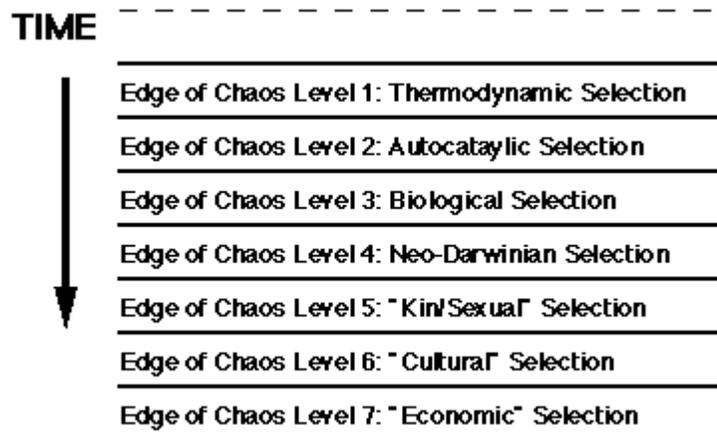
As an example, suppose a species is threatened by a new predator and there is a behavior that makes it more difficult for the predator to kill individuals of the species. Individuals who learn the behavior more quickly will obviously be at an advantage. As time goes on the ability to learn the behavior will improve (by genetic selection), and at some point it will seem to be an instinct.

The appearance of lactose tolerance in human populations with a long tradition of raising domesticated animals for milk production has been suggested as another example. This argument holds that a feedback loop operates whereby a dairy culture increases the selective advantage from this genetic trait, while the average population genotype increases the collective rewards of a dairy culture.

The opposite of the Baldwin effect is 'shielding'. Modern medicine for example could artificially control a pathogen preventing any genetic immunity against the pathogen from being selected for. Here learned behaviour that improves fitness prevents genetic adaptation.

The Baldwin effect theory has always been controversial, with scholars being split in "Baldwin boosters" and "Baldwin sceptics". There have been a number of arguments against the effect. For example, it has been argued that the change from learning to instinct might not constitute an improvement, because only very stable environments where change is extremely slow would favour innate traits as opposed to the plasticity of learning (especially social learning, which doesn't have such high costs as individual learning by trial-and-error). The very mechanism of the transition has also been questioned, as genetic variations which "tend to decouple [...] behaviour from environmental signals" might be "distant from those genotypes that mediate plastic, learned response".

**David M. Kiersey's diagram:
Involution of selection processes in a macrosystem**



Spiritual development as a combined process of intellect and emotions is overlooked here; as well as the fifth dimension (cf. [Testing the Night of Pan](#)), which may be said to be the source of that spiritual infusion that brings sentience to material objects. What follows is an interpretation of the above chart in terms of the individual and social awareness of humanity.

- Level 1: Pure sentience
- Level 2: Existential circumstance

⁴ David M. Kiersey in [Toward the Physics of Death](#)

- Level 3: Hormonal attraction
- Level 4: Intelligence wins out over brute strength.
- Level 5: Intuition takes over
- Level 6: Aesthetics and observational condensation
- Level 7: Eugenics

If all of the macrosystems are thermodynamic entities, then even the most complex proposed macrosystem, MetaMan, should exhibit properties of this process. Indeed, it has been noted that mankind has dissipated the earth's energy to a larger extent than simpler organisms. Moreover, modern civilized man has shown even more predilection for consuming energy than less technological humans. Given that MetaMan, Hypersea, Gaia, and Earth are first thermodynamic systems as they involute, then it should follow that the higher-level microsystems, such as organisms, which initially behave as simple dissipative elements in a thermodynamic process. Indeed, when studying the history of both physical systems and living systems the recurring themes of chaos, order, and the edge-of-chaos appear in broad patterns.⁵

At the heart of all this is consciousness itself; this we find self-evident in terms of natural law, which means it is based on our observational experience. Science has attempted to prove an objective quality that can be appended by the faculty of observation. But modern physics has entirely laid this issue to rest, as science has also lain to rest the incorrect spiritual idea that this world is illusory. But modern science has barely begun to comprehend and quantify consciousness.

Knowledge of consciousness starts by our experience of it and this leads to the common sense definition of consciousness as the state of mind in which one has subjective experience of the world since there is a qualitative or subjective feeling to such states, they have been labeled qualia. We tend to assume that our form of consciousness – stark (Words relating to the stark aspect: central, multiple, recollection, reference, comparison, symbol, language, social, cultural) and reflexive - must define consciousness. There is no necessity to the requirement of starkness. But all consciousness must involve consciousness of consciousness. This follows from consideration of what it must be like to have a single qualia in isolation. The having of qualia must involve memory and comparison. When my feet are cold as I write, I feel it; to know that I am cold I must hold the idea of coldness from memory in consciousness. Thus consciousness is necessarily reflexive. Our prejudice against the slug is due to equation of qualia with starkness. But there are also diffuse modes. And it is in these modes that the awareness of a *lower* creature is reflexive - involves conscious of consciousness. Thus consciousness of consciousness is intrinsic to consciousness (it is not necessary to say *consciousness of consciousness* for that is contained in consciousness) and there is no distinction between consciousness and awareness. Both consciousness and consciousness of consciousness or self-consciousness, though they have integral aspects, include the vague and diffuse (seen and not recognized) re-cognized by some other and or central agency of consciousness. It is in the same sense and with the same meaning that it can be said that consciousness necessarily includes knowledge of consciousness. The objections and arguments are the same including the generalization of the concept of knowledge. It is only in certain discrete, stark forms that this self-consciousness deserves to be mentioned. And it is only in these forms that there appears to be a distinction between consciousness and consciousness of consciousness.

There is a meaning of consciousness that is identical to awareness, and another in which consciousness is a kind of awareness. There is no awareness that is not consciousness in its general sense. What defines the special meaning of consciousness? Some considerations are given here: reflexive awareness, heightened awareness, awareness informed and cultivated by a sense of self, by social groups through language and culture, which are in turn nurtured through the sense of being that includes awareness.⁶

Consciousness is but our awareness of ourselves. And indeed, God is the penultimate self-conscious being. Self consciousness being the nadir of the Godhead's involution is simultaneously the nadir of evolutionary development at this time. It is this that makes us fully human; reaching the summit of our development as a microcosm. From such a point forward, the evolutionary development begins that will merge the microcosm with the macrocosmic process, which on the physicial plane involves the thermodynamic transformation described above; being matter, motion and energy. Indeed, there should also be a corresponding process on the psychic level of the human soul.

Similarities between mind and quantum theory undoubtedly abound. The unity of consciousness is a favorite example. A conscious state is the whole of the conscious state and cannot be divided into components (I can't separate the feeling of red from the feeling of apple when I think of a red apple). Newton's Physics is less suitable than Quantum Theory for dealing with such a system, especially since Bell's Theorem proved that

⁵David M. Kiersey in Toward the Physics of Death

⁶ Dr. Anil Mitra in Being, Mind and the Absolute

everything is always interacting. Indeterminate behavior (for example, free will) is another favorite, since Heisenberg's principle allows for some unpredictability in nature that Newton's Physics ruled out. And, of course, the mind/body duality reminds Physicists of the wave/particle duality.⁷

Dr. Harold Aspen's theoretical work on the Aethyr would support the idea that Newton's theory is also important. (Cf. [Scientific Proof of Levi's Aethyr](#)) From this, I can see mind interacting on a sub-atomic level with the Aethyr; the chaotic field of sub-atomic particles from which all that exists, organizes into various arrangements that become the form of incarnation. This then quantifies consciousness as actually existing in the physical dimension. The aethyric particles that Dr. Aspen clearly demonstrates to compose this meta-physical entity are identical with the particles released by the processes of the human brain. Together they make the human soul as a physical, thermodynamic system; subject to all the transformational conditions outlined above. But the ideal state that is the Platonic model of the subtle realms seems to falter as any sort of completion to model of reality as a false conception of perfection. The Qabalist may note that this depends on the plane that is taken as one's reference point. From Assiah the forms are in matter, from Atziluth the matter is in the forms, from Yetzirah, the forms may appear to be in yet another dimension. Indeed, the Aristotelian plausibly argues against its efficacy in terms of material existentialism by insisting that the ideal form must be inherent in the material object. In Aristotle's Metaphysics (Book I, Cap. 9), he argues that:

"[T]he Forms ...are not the causes of motion or of any other change ...And they do not in any way help either towards the knowledge of the other things..or towards their existence ...Moreover, all other things do not come to be from the Forms in any of the usual senses of 'from.' And to say that the Forms are patterns and that the other things participate in them is to use empty words and poetic metaphors."

In other words both form and substance create each other as each is inherent in the other and one does not necessarily descend from the other. We can then parse from both philosophers that the dualistic nature of involution and evolution in one whole thermodynamic system is a reasonable model upon which to build our theoretical model of consciousness.

But idealism, even with reconceptualization, universalization and gradation of the idea says nothing - it is almost tautological - the concept of the idea is merely redefined to include matter. Materialism at least shows something - that, for example, ideas are manifestations or aspects of matter.

Response: Materialism - scientific or other- does not show that ideas "reduce" to matter although that demonstration may be part of a materialist program. I have discussed the issues of idealism and materialism at length elsewhere. The simplest refutation of strict materialism is that it does not and cannot explain experience. The form of idealism considered here is not an exclusive idealism; it does not exclude matter; it does not claim that matter is an illusion or a fiction; it does not require or force a choice. It asserts that matter is a form of idea

Idealism is most definitely saying something. One thing it is saying is that a materialist system - based, for example, in physics and biology - will not and cannot explain experience i.e., it will not explain the subjective aspect of awareness and consciousness. The system of idealism that I am considering shows why such materialist explanations cannot be given but it may also show that the explanatory gap, though it is infinite in one sense, is transparent and easily bridged in another. As more and more is known about matter - physics and biology - more and more mental phenomena will be explained and understood and consciousness - the fact but not the subjectivity of it - may well be explained. That will be impressive and scientifically significant with further implications and consequences in general and for physics and biology in particular - but the materialist mode of description will not and need not explain the subjective side of consciousness: the explanation will be in an 'as if' mode.

The gap between the "as if" and the subjective modes of awareness or consciousness - sometimes called the third and first person modes - may be paper thin. I expect, however, that this will require reworking and broadening of the concept of consciousness and the idea so that in the subjective limit the concepts will reduce to the normal stark and very present form of consciousness that we know well - and in the objective limit the concepts will reduce to matter. In this view, then, the scientific explanation of consciousness itself - the subjective part, "the hard problem" may well be a non-problem - an artifact of our cultural paradigms and institutions. Thus idealism is not without content. The idea is not redefined - rather it is re-conceptualized. Materialist explanation does indeed have power but this is neither a refutation of idealism nor a proof of materialism.

Idealism does not refute the existence of material being. There should not be any need or desire to do this from an idealist perspective. Idealism gives meaning to matter. Idealism conflates subject and object but also gives special meaning to the object. Materialism denies the subject as a category but may seek to explain it as an aspect of matter. There is a framework within which, practically, there is no

⁷ Piero Scaruffi in The Physics of Consciousness

reason to choose between idealism and materialism because in a specific practical sense there are no consequences to that choice. Even though idealism is simpler, more inclusive and more direct it is only when broader frameworks are considered that the choice is significant.⁸

Idealism as a solipsistic paradigm must be tautological when considered separate from matter. Henry P. Stapp observes more that there is an intimate relation between the two; stating that idealism and materialism work together to explain the universe and our experience of the universe in one grand unifying theory. The materialism is obvious and the idealism is rendered through myth and thaumaturgy.

The exclusion of consciousness from the material universe was a hallmark of science for over two centuries. However, the shift, in the 1920's, from classical mechanics to quantum mechanics marked a break with that long tradition: it appeared that the only coherent way to incorporate quantum phenomena into the existing science was to admit also the human observer (Stapp, 1972). Although the orthodox approach of Bohr and the Copenhagen school was epistemological rather than ontological, focusing upon "our knowledge" rather than on any effort to introduce consciousness directly into the dynamics, other thinkers such as John von Neumann (1955), Norbert Wiener (1932), and J.B.S. Haldane (1934) were quick to point out that the quantum mechanical aspects of nature seemed tailor-made for bringing consciousness back into our conception of matter.⁹

By introducing consciousness directly into the dynamics of the particle/wave phenomena in observational physics, we essentially solve the riddle of the paradox. It then follows that volition or intent; Will is the connecting or Magickal Link.

I have also related Einstein's principle to Wigner's action-reaction principle. What do I actually mean by this? Wigner wrote the following definition of what I call "post-quantum back-action" = "Wigner self-reaction of matter on mind"

"The physico-chemical conditions and properties of the substrate not only create the consciousness, they also influence its sensations most profoundly." – Wigner

What Wigner did not know when he wrote those lines in about 1960 is that, in terms of Bohm's theory, with the mind in the implicate order, there is no quantum non-mechanism for the substrate to create the consciousness without violating the normal statistical predictions of orthodox quantum theory. Wigner then completes the "loop" by adding what I call the "Wigner action of mind on matter".

"Does, conversely, the consciousness influence the physico-chemical conditions?" - Wigner

So here we have the basic "Wigner action - reaction principle". What is its relation, if any beyond superficial metaphor, to Newton's third law of mechanics of equal and opposite reaction to an action? Wigner also did not know that later on Bohm would come up with a natural quantum non-mechanical organic way for the consciousness to influence the physico-chemical conditions as the gradient flow of those conditions on the quantum information landscape in the configuration space of those physico-chemical conditions that form the material "system point" or "Level 1 beable".

"The traditional answer to this question is, "No": the body influences the mind but the mind does not influence the body." – Wigner

So here, we have the "one-way" property of Aristotle's "unmoved mover" characteristic of Einstein's notion of the "absolute ether" that violates his principle of relativity. Thus, Einstein wrote:

"If Newton called the space of physics 'absolute', he was thinking of yet another property of that which we call 'ether'. Each physical object influences and in general is influenced in turn by others. The latter, however is not true of the ether of Newtonian mechanics. The inertia-producing property of this ether, in accordance with classical mechanics, is precisely not to be influenced, either by the configuration of matter, or by anything else. For this reason, one may call it 'absolute'." - Einstein

So here Einstein defines "absolute" as the one-way influence i.e., as an action without a reaction (AKA "back-action"). Einstein continues that his theory of gravitation is a "back-action" theory in exactly the sense that I mean it for explaining experiential qualities in the mind. That is, post-quantum theory "removes a defect" of quantum theory found by David Bohm. This "defect" is that the quantum information field guiding the motion of matter in its higher dimensional non-metrical configuration space beyond ordinary metrical space is another "absolute ether". It is this "defect" that is the deep cause of uncontrollable random quantum chance in actual individual events. Therefore, I argue that this quantum randomness is not fundamental, but is an approximation to a deeper self-organizing spontaneously-sentient intelligent order. In accord with Einstein's Vision, God does not play dice with the universe. The Lord is subtle, but not malicious.

"The ether of the general theory of relativity therefore differs from that of classical mechanics or the special theory of relativity respectively, in so far as it is not 'absolute', but is determined in its locally variable properties by ponderable matter." – Einstein¹⁰

Using the adjective 'ponderable' to describe a quality in matter essentially posits an intimate connection between matter and consciousness. But then what of the materiality of the brain and the mind that is consciousness and its link to it?

⁸ Dr. Anil Mitra in [Being, Mind and the Absolute](#)

⁹ Henry P. Stapp in [Why Classical Mechanics Cannot Naturally Accommodate Consciousness but Quantum Mechanics Can](#)

¹⁰ Jack Sarfatti in [The End of Quantum Theory](#)

...certain logical deficiencies in classical mechanics, as a foundation for a coherent theory of the mind/brain, are overcome in a natural and satisfactory way by replacing the classical conception of matter by a quantum conception. It seems enough to replace classical (folk) mechanics, which is known to be unable to account for the basic physical and chemical processes that underlie brain processes, by quantum mechanics, which does adequately describe these processes.¹¹

What stands out for us is that matter and consciousness then fulfill the dictum that every action has an equal and opposite reaction. Matter creates the field of vision that the mind then interprets, which has its counter-affect on the alteration and organization of matter.

Wigner thinks that orthodox quantum theory's "weakness" is in not having a clear way for thought to influence matter. Wigner accepts that matter influences consciousness although he never shows how quantum theory explains that. In fact, the reality is reversed from the way Wigner understood it when we look at this problem in Bohm's ontology where matter is in the explicate order and mind is in the implicate orders beyond space-time. It is easy, within orthodox quantum theory to see how the implicate influences the explicate, i.e. how mind influences matter. However, this influence is "one-way". Thus, Bohm and Hiley show that the quantum field is an absolute ether in Einstein's sense: "unlike what happens with Maxwell's equations, the Schrodinger equation for the quantum field does not have sources, nor does it have any other way by which the field could be directly affected by the conditions of the particles. This of course constitutes an important difference between quantum fields and other fields, the quantum theory can be understood completely in terms of the assumption that the quantum field has no sources, or other forms of dependence on the particles."

How do we modulate an electromagnetic field to send a signal? Clearly, we do it by controlling the electrons that are sources of the field. Well we cannot do that ordinarily in inanimate quantum matter with quantum waves in configuration space. When it does happen in animate post-quantum matter, the fifth phase of matter, it generates experiential qualities.¹²

We can posit light itself, coming from the fifth dimension as I've related in previous writings on physics (cf. [Testing the Night of Pan](#)). Consciousness is that dark energy/matter complex; dark only in that we are only beginning to recognize and validate consciousness as having a empirical connection with matter (a scientific rendering of the Thelemic formula of N.O.X.).

"One of the pillars of physics is Newton's third law. A common way to state it is that for every action there is an equal and opposite reaction. Another way to say it is that forces come in balanced pairs. In its modern, general form, Newton's third law applies to all interactions of one thing to another. It tells us that anything that affects something else must, in turn, be affected by that something else. Paul Hewitt has expressed the idea in engaging human terms: 'You can't touch without being touched.'" p.p.234-5

All that remains to be done is to recognize that in Bohm's ontology there is an explicate order and a whole sequence of implicate orders. Newton and Einstein were only working in the explicate order, but their principle is universal and applies also to the implicate orders of quantum information and beyond. What you do not get from Henry Stapp's "pragmatism" based on Bohr's Copenhagen Interpretation is that the field of quantum information is a bona-fide physical object in its own right. This is quite divorced from statistical consequences based on "ensembles". It applies to unique complex objects like living mind-brain systems that span both the implicate and the explicate orders. Returning to Wigner "The second argument to support the existence of an influence of consciousness on the physical world is based on the observation that we do not know of any phenomenon in which one subject is influenced by another without exerting an influence thereupon."¹³

This is fully supported by the concept of duality taught in the White School of Magick (cf. [Schools of Magick](#)). Antagonistic forces such as Good and Evil cannot enter into a state where one 'wins' over the other. So also do reality and illusion complement each other; each on a par with the other without any representation absolute ends in disjunction.

One possibility is that the intrinsic-level components of a thought are bound together by some integrative process in the mind of a spirit being, i.e., in the mind of a "ghost behind the machine", of an homunculus. This approach shifts the question to an entirely new realm: in place of the physical brain, about which we know a great deal, and our thoughts, about which we have some direct information, one has a new "spirit realm" about which science has little to say. This approach takes us immediately outside the realm of science, as we know it today.¹⁴

If ever there's a theoretical approach to the practice of evocation, we have it here in the "ghost" or daemon being a form of consciousness 'behind the curtain' or veil of matter. Israel Regardie writes a brilliant tome on the realistic efficacy of evocation in his book: [The Tree-of-Life](#).

This problem with 'beliefs', and other thoughts, arises from the attempt to understand the connection of thoughts to brains within the framework of classical physics. This problem becomes radically transformed, however, once one accepts that the brain is a physical system. For then,

¹¹ Henry P. Stapp in [Why Classical Mechanics Cannot Naturally Accommodate Consciousness but Quantum Mechanics Can](#)

¹² Jack Sarfatti in [The End of Quantum Theory](#)

¹³ Ibid

¹⁴ Henry P. Stapp in [Why Classical Mechanics Cannot Naturally Accommodate Consciousness but Quantum Mechanics Can](#)

according to the precepts of modern physics, the brain must in principle be treated as a quantum system. The classical concepts are known to be grossly inadequate at the fundamental level, and this fundamental inadequacy of the classical concepts is not confined to the molecular level: it certainly extends to large (e.g., brain-sized) systems. Moreover, quantum theory cannot be coherently understood without dealing in some detail with the problem of the relationship between thoughtlike things and brainlike things: some sort of non-trivial considerations involving our thoughts seems essential to a coherent understanding of quantum theory.

In this respect quantum theory is wholly unlike classical physics, in which a human consciousness is necessarily idealized as a non-participatory observer --- as an entity that can know aspects of the brain without influencing it in any way. This restriction arises because classical physics is dynamically complete in itself: it has no capacity to accommodate any efficacious entities not already completely fixed and specified within its own structure. In quantum theory the situation is more subtle because our perceptions of physical systems are described in a classical language that is unable to express, even in a gross or approximate way, the structural complexity of physical systems, as they are represented within the theory: there is a fundamental structural mismatch between the quantum mechanical description of a physical system and our description of our perceptions of that system. The existence of this structural mismatch is a basic feature of quantum theory, and it opens up the interesting possibility of representing the mind/brain, within *contemporary* physical theory, as a combination of the thoughtlike and matterlike aspects of a neutral reality.

One could imagine modifying classical mechanics by appending to it the concept of another kind of reality; a reality that would be thought like, in the sense of being an eventlike grasping of functional entities as wholes. In order to preserve the laws of classical mechanics this added reality could have no effect on the evolution of any physical system, and hence would not be (publicly) observable. Because this new kind of reality could have no physical consequences it could confer no evolutionary advantage, and hence would have, within the scientific framework, no reason to exist. This sort of addition to classical mechanics would convert it from a mechanics with a monistic ontology to a mechanics with a dualistic ontology. Yet this profound shift would have no roots at all in the classical mechanics onto which it is grafted: it would be a completely *ad hoc* move from a monistic mechanics to a dualistic one.¹⁵

The dualistic argument then feeds the idea for the efficacy of proposing a biune god; one that involves itself into matter and in another aspect evolves from matter; each representing the extreme points between two poles; positively and negatively charged, respectively.

In view of this apparent logical need to move from monistic classical mechanics to a dualistic generalization, in order to accommodate mind, it is a striking fact that physicists have already established that classical mechanics cannot adequately describe the physical and chemical processes that underlie brain action: quantum mechanics is needed, and this newer theory, interpreted realistically, in line with the ideas of Heisenberg, *already is dualistic*. Moreover, the two aspects of this quantum mechanical reality accord in a perfectly natural way with the matterlike and thoughtlike aspects of the mind/brain. This realistic interpretation of quantum mechanics was introduced by Heisenberg not to accommodate mind, but rather to *keep mind out of physics*; i.e., to provide a thoroughly objective account of what is happening in nature, outside human beings, without referring to human observers and their thoughts. Yet when this dualistic mechanics is applied to a human brain it can account naturally for the thoughtlike and matterlike aspects of the mind/brain system. The quantum mechanical description of the state of the brain is automatically an extrinsic-level description, which is the appropriate level for describing brain correlates of thoughts. Moreover, thoughts can be identified with events that constitute *efficacious choices*. They are integral parts of the quantum mechanical process, rather than appendages introduced *ad hoc* to accommodate the empirical fact that thoughts exist.

The essential point, here, is that the quantum description is automatically holistic, in the sense that its individual registers refer to states of the *entire brain*, whereas the individual registers in the classically conceived computer/brain represent only local entities. Moreover, the quantum jump associated with the thought is also a holistic entity: it actualizes as a unit *the state of the entire brain* that is associated with the thought.¹⁶

Dualism as represented by the White School of Magick is entirely 'holistic' and a uniquely Western approach to a qualitative understanding of the Universe; reflected both philosophically and scientifically in our empirical paradigm. This is the observational interplay between mind and matter.

The first detailed quantum model of consciousness was probably the American physicist Evan Walker's synaptic tunneling model (1970), in which electrons can "tunnel" between adjacent neurons, thereby creating a virtual neural network overlapping the real one. It is this virtual nervous system that produces consciousness and that can direct the behavior of the real nervous system. The real nervous system operates by means of synaptic messages. The virtual one operates by means of the quantum effect of tunneling (particles passing through an energy barrier that classically they should not be able to climb). The real one is driven by classical laws, the virtual one by quantum laws. Consciousness is therefore driven by quantum laws, even if the brain's behavior can be described by classical laws.¹⁷

Mind being a product of the Aethyr connecting to the brain, it is then also the electro-magnetic matrix that connects directly with the Fifth Dimension; the aethyr being the fifth state of matter, discussed above.

¹⁵ Henry P. Stapp in [Why Classical Mechanics Cannot Naturally Accommodate Consciousness but Quantum Mechanics Can](#)

¹⁶ Ibid

¹⁷ Piero Scaruffi in [The Physics of Consciousness](#)

In 1986 John Eccles, the British neurophysiologist who discovered neurotransmitters, has speculated that synapses in the cortex respond in a probabilistic manner to neural excitation, a probability that could well be governed by quantum uncertainty given the extremely small size of the synapsis "microsite" that emits the neurotransmitter. If this is true, Eccles speculates that an immaterial mind (in the form of "psychons") controls the quantum "jumps" and turns them into voluntary excitations of the neurons that account for body motion.¹⁸

Therein was this virtue, that the One became the all.—LXV:II.6

Or as discussed later in this work, rather than responding in a probabilistic manner, synapses respond by way of an algorithmic code. It seems then that these 'psychons' would be considered 'bosons'; a force particle that carries an electromagnetic force, as explained in [Testing the Night of Pan](#).

Possibly the most popular candidate to yield quantum consciousness has been Bose-Einstein condensation (theoretically predicted in 1925 and first achieved in a gas in 1995). The most popular example of Bose-Einstein condensation is superconductivity.

The fascination with Bose-Einstein condensates is that they are the most highly ordered structures in nature (before their discovery by Albert Einstein and Satyendranath Bose, that record was owned by crystals). The order is such that each of their constituents appears to occupy all their space and all their time: for all purposes the constituents of a Bose-Einstein condensate share the same identity. In other words, the constituents behave just like one constituent (the photons of a laser beam behave just like one photon) and the Bose-Einstein condensate behaves like one single particle. Another odd feature of Bose-Einstein condensates is that they seem to possess a primitive form of free will.

A Bose-Einstein condensate is the equivalent of a laser, except that it is the atoms, rather than the photons, that behave identically, as if they were a single atom. Technically speaking, as temperature drops each atom's wave grows, until the waves of all the atoms begin to overlap and eventually merge. After they merged, the atoms are located within the same region in space, they travel at the same speed, they vibrate at the same frequency, etc.: they become indistinguishable. The atoms have reached the lowest possible energy, but Heisenberg's principle makes it impossible for this to be zero energy: it is called "zero-point" energy, the minimum energy an atom can have.¹⁹

The above is literally a scientific rendering that shows the ALL becoming ONE in Qabalistic terms. We might then infer that the ONE becomes the ALL by volition of the Will. That there is the added force of will; the "primitive form of free will" being an essential component of the condensate shows the *bestial* nature of the Will in Thelemic terms, as will is intrinsically derived as much from matter and in the most subtle particle-waves; an undulation of life. Crowley's commentary to the above-captioned verse from [Liber LXV](#) is also quite poignant here:

The object of this act is to realize the possibilities of one's unity by representing its wholeness as an infinite number of particular cases, just as one might try to get an idea of the meaning of "poetry" by studying all available poems. None of these can be more than one imperfect illustration of the abstract idea; yet only through these concrete images can one get any understanding of what it means.

Additionally, the merging of waves shows how the brain merges with the Aethyr; a bioholography. That this supercedes the ancient knowledge of crystals shows a real evolution in our understanding of the Universe. Further, that this condensate possesses a "primitive form of free will," which means sentience is connected with these holograms; especially as discussed in [Liber Vox Viva Voce vel Video](#). As the mind itself emits wave/particle events in the process of thought, these must necessarily be also the same sub-atomic particles the comprise the Aethyr.

The intriguing feature of a Bose-Einstein condensate is that the many parts of a system not only behave as a whole, they become whole. Their identities merge in such a way that they lose their individuality.

Precisely, electrical charged molecules of living tissues behave like electric dipoles. When digestion of food generates enough energy, all molecular dipoles line up and oscillate in a perfectly coordinate manner, which results in a Bose-Einstein condensate. Biological oscillators of this kind are pervasive in nature: living matter is made of water and other biomolecules equipped with electrical dipoles, which react to external stimuli with a spontaneous breakdown of their rotational symmetry. The biological usefulness of such biological oscillators is that, like laser light, they can amplify signals and encode information (e.g., they can "remember" an external stimulus).

Most importantly, coherent oscillations are crucial to many processes of integration of information in the brain.²⁰

¹⁸ Ibid

¹⁹ Piero Scaruffi in [The Physics of Consciousness](#)

²⁰ Ibid

This can support the theory of the Eucharist in that food can be manipulated to absorb this condensate; and then when digested, the energy may be released into the body. The consumption of the sexual fluids, especially semen, but also ova, becomes yet that much more certain to be the true eucharist as we have an electrically charged, living organism.

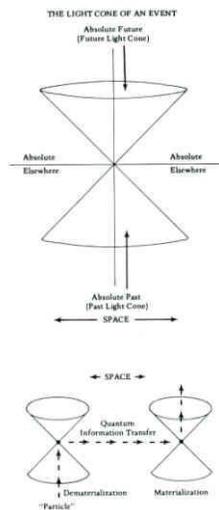
Zohar [Ed. Note: a scientist...interesting synchronicity!] is fascinated by the behavior of bosons. Particles divide into fermions (such as electrons, protons, neutrons) and bosons (photons, gravitons, gluons). Bosons are particles of "relationship", as they are used to interact. When two systems interact (electricity, gravitation or whatever), they exchange bosons. Fermions are well-defined individual entities, just like large-scale matter is. But bosons can completely merge and become one entity, more like conscious states do. Zohar claims that bosons are the basis for the conscious life, and fermions for the material life.²¹

The photon is a boson of light; Fifth Dimension. Bosons may then be the particles of the Aethyr. But certainly both work together is a dualistic relationship; materiality/spirituality. This is presented symbolically in the Qabalah as the marriage between God (Kether) and his Shekinah (the manifested human being).

"Biophoton emission is a general phenomenon of living systems. It concerns low luminescence from a few up to some hundred photons per second, per square centimeter surface area, at least within the spectral region from 200 to 800nm. The experimental results indicate that biophotons originate from a coherent (or/and squeezed) photon field within the living organism, its function being intra and intercellular regulation and communication." ~ Popp, 1999

All living cells from plants to human beings emit biophotons, ultraweak photon emission of electromagnetic wave in the optical range of the spectrum. Biophotons can't be seen with the naked eye, but can be detected. In 1974, German physicist Fritz Albert-Popp proved the existence of biophotons, their origin from DNA and later their coherence (laser-like nature). Russian biophysicist Peter Gariaev has confirmed and built on this foundation with his own DNA hologram research. The decay character of a biophoton signal is non-exponential and the nature of its photons is coherent. It is suspected that many properties of the living systems, hitherto considered bizarre, emanate from non-locality. A coherent photon signal provides an efficient and fast channel of communication. The quantum detection has a potential to generate the arrow of time and the identity of biological time with cosmological time. Similarly, we demonstrated the ability of the living organisms to distinguish (detect) quanta flows according to their coherency degree (Budagovsky, 1994). In these experiments, a cell's diameter fits the discrimination threshold. One may suggest that the chromophore-membrane ensemble of a cell plays a role of a phase detector. Unexpectedly, this has been confirmed by a comparison with Hertwig's nuclei-cytoplasmic ratio (Budagovsky, 1990). Therefore, the correspondence between a coherent radiation and a living organism is perfect enough for providing a field regulation of biosynthetic processes.

Physicists use a simple geometric picture of the flat spacetime of special relativity called a "Minkowski diagram." Relativity unites space and time into a unified "four dimensional space-time continuum" in which time appears in the distance formula with a sign different from the sign of space. Events are conceived of as points on the Minkowski diagram. The history of a sequence of events is described by a curve or path on the Minkowski diagram called a world line. Each event is the origin of a future light cone and a past light cone. World lines that are everywhere inside the light cones are called time-like and describe the history of particles moving at velocities less than the velocity of light. World lines that are everywhere on the light cones are called light-like and describe the histories of real photons, neutrinos and gravitons that move at exactly the velocity of light. World lines that are everywhere outside the light cones are called space-like and would correspond to tachyonic processes happening faster than the velocity of light.



²¹ Ibid

Space-like processes, if they exist, could be in two or more widely separated places at the same time. Furthermore, these space-like processes allow the effect to precede the cause for some observers and not for others. They are not allowed in classical physics but are acceptable in quantum physics according to some interpretations. Quantum transitions or "quantum jumps" may be thought of as space-like processes.²²

Beyond the speed of light, we might at least contemplate a 5th Dimension where light resides. And it might be that mechanical control in our four-dimensional Universe might somehow emanate from this plane of being. That light reaches out from this plane to ours; and that it carries consciousness that are then even felt by the cell walls of our bodies, provides a strong parallel with the mystical axiom: As above, so below.

These light forms that are holograms shows us how inherent human life is in our planetary makeup as we can't really separate the formation of our planet and its consciousness from human consciousness. However, the planet is not sentient, which then seems to have some essentially lower level of intelligence that moves in the dualistic teleology of invocation and evocation. Overall, the connection with this idea of consciousness with [Liber Vox Viva Voce vel Video](#), shows consciousness to be the intimate connection between all levels and planes of being. It's effective purpose is to constantly 'become.' And at each manifestation; whether of the planetary level or that of a human, human cell, star, even all and any beings, an intelligence consistent with its physical point in the evolutionary/evolutionary matrix is exhibited.

One of the mostly vivid manifestations of a coherent field is a holographic induction of morphogenesis. A projection of a hologram of a differentiated tissue upon non-organized proliferated callus cells initiates the growth of the normal organs (Budagovsky, Yevseyeva, 1995). Given this background we understand that two completely opposite interpretations of this phenomenon come up, i.e. the biochemical theory (BCT) and the coherence theory (CT). It is amazing that both the BCT and the opposite "biophysical theory" CT take the rather low intensity as an essential point in their arguments. According to the BCT, biophoton emission is some kind of "waste" of the metabolic events taking place permanently within the cells. The BCT indicates some imperfections in chemical reactions which by returning to thermal equilibrium emit overshoot energy of chemically induced optical transitions, mainly linked to radical reactivity of oxidation processes.

The CT, on the other hand, points to the low intensity as an indication of nonclassical light which may display even sub-Poissonian photocount statistics and may provide thus an optimized optical communication channel in biological systems within living matter of "optimized" high optical density.²³

We can infer that holograms are of "high optical density" and are themselves possessed of the characteristics of consciousness that can then communicate with "biological systems." Light or Spirit and Matter are shown intimately entwined from another theoretical scientific model. At the core of this are the biological systems that begin for the human being, with Eukaryotes and Prokaryotes.

It is now widely agreed that Archaeobacteria are more closely related to Eukaryota than to Eubacteria (Iwabe et al., 1989). Thus, the endosymbiotic event that gave rise to the primordial mitochondriate cell was an engulfment of a eubacterium by something like an archaeobacterium. It is often overlooked, however, that the endosymbiotic event was not the moment at which cells of archaeobacterial origin acquired the ability to transduce energy by chemiosmotic mechanisms. As has been reviewed in detail recently (Schäfer et al., 1999), archaeobacteria possess a proton-pumping electron transport chain whose richness compares with that of eubacteria (which is to say, exceeds that of mitochondria). They also possess an ATP synthase with close structural and sequence similarity to that of mitochondria. Thus, chemiosmosis arose before the divergence of the two bacterial domains of life.

Accordingly, it is less heterodox than one might initially suppose to suggest that vestiges of chemiosmotic machinery may be present in mammalian plasma membranes. Indeed, it has been known for over 25 years that the plasma membrane possesses an electron transport chain, whereby oxidation of cytosolic NADH is coupled to reduction of extracellular electron acceptors such as ferricyanide (Crane and Löw, 1976). Remarkably little attention has been paid by the majority of biologists to this system, which is present in all eukaryotic cell types yet examined so must presumably play a critical role in cell biology; as a result, the question of just what that role is remains unanswered.

The NAD⁺/NADH ratios of the cytosol and the mitochondrial matrix are linked, principally by the activity of the malate/aspartate shuttle. The major role of this shuttle is to transfer electrons from cytosolic NADH (generated mainly by glycolysis) to matrix NAD⁺, which is recycled at Complex I. However, the shuttle is sufficiently close to thermodynamic equilibrium (Cf. [Liber Immortalitas vel Luciform](#)) that a rather small change in the redox states of the two compartments (or alternatively in the mitochondrial membrane potential, since the glutamate/aspartate carrier is electrogenic), could reverse the flow of electrons and oxidise matrix NADH at the expense of cytosolic NAD⁺ (Burat et al., 1984).

22 Iona Miller in [Biophotons: We Are Temples of Living Light](#)

23 Iona Miller in [Biophotons: We Are Temples of Living Light](#)

A feature that the proposed cytosolic NADH-oxidation system must have, in order to reconcile the findings of Desai et al. (1996) with those of McCarter et al. (1985) regarding oxygen utilisation, is that the terminal acceptor for the electrons liberated from cytosolic NADH must be oxygen.

This is that the cell must somehow compensate for the reduced rate of ATP synthesis at the mitochondrion which, perforce, accompanies reduced proton pumping there.

Any alternative (i.e. non-plasma membrane) candidate for NADH recycling would involve reduction within the cytosol (or within an organelle other than the mitochondrion) of a substrate that can diffuse into the cell in its oxidised form and out again in its reduced form. That substrate could be oxygen, satisfying the metabolic rate requirement, but it is hard to see how such a system could conserve ATP to the required extent. The essence of chemiosmotic mechanisms of energy transduction is that the free energy of a chemical reaction is coupled to electrochemical potential energy across a membrane. In oxidative phosphorylation, two chemiosmotic processes occur in tandem: the oxidation of NADH and FADH₂ drives the creation of a proton gradient, and that gradient in turn drives the synthesis of ATP.

The free energy released by NADH oxidation is coupled to proton export into the extracellular space, causing a rise in the trans-plasma membrane potential (positive outside). This results in a reduced concentration gradient of Na⁺ across the membrane; conversely, there is an increased gradient of K⁺ (which is in approximate electrochemical equilibrium across the plasma membrane, due to the presence of K⁺ leak channels). Additionally, if no other transport processes changed, there would be acidification of the extracellular space and alkalisation of the cytosol.²⁴

The process of phosphorylation is the direct induction of light (L.V.X.) into matter (N.O.X.). It is this central strand of the DNA that then interacts with the extra-nuclear DNA; the Mitochondria (regulator or metabolic activities), as discussed again, in [Liber Immortalitas vel Luciform](#).

The unsolved problem of biophoton emission forces us to look for experimental evidence of either the coherent or the chaotic nature of the biophoton field. If it is possible to show evidence of an extraordinary high degree of coherence of biophotons then the conclusion follows that this universal phenomenon of biological systems is responsible for the information transfer within and between cells, answering then the crucial question of intra- and extracellular biocommunication, including the regulation of the metabolic activities of cells as well as of growth and differentiation and even of evolutionary development.

Some steps in revealing important properties of biophotons are (1) careful measurements of the spectrum, (2) the analysis of the photocount statistics, (3) connecting the spontaneous and delayed "luminescence", (4) investigations of the temperature dependence of biophotons and (5) correlating physical properties of biophoton emission and biological parameters such as growth, differentiation, DNA -content, and anomalies.

- It is evident that at least a significant part of biophoton emission originates from DNA.
- There are manifold non-linear dependencies of biophoton emission on cell densities.²⁵

The biophoton emission again, originates in the core of the DNA; its central strand, with its "non-linear dependencies" possibly being connected to the other two strands as well as the mitochondria.

First he noted that Special Relativity implies that mental states must be physical states (mental states must be in space given that they are in time). The substance of the brain and the substance of consciousness are the same. Brain processes and thoughts arise from different properties of the same matter, just like a piece of matter exhibits both gravitational and electric features. The feature that gives rise to consciousness is therefore present in every particle of the universe, just like the features that give rise to electricity and gravity.²⁶

Themes running hand-in-hand are consistent with the ancient proposition of Universal Mind and the more modern notion of the Supramental Mind in the Yoga of Sri Aurobindo and Mother (where even the cells of our bodies come to consciousness). The science is compelling and removes even the possibility for considering any nihilistic doctrine. Further, any real or authentic religion must be in abeyance with this understanding.

With the walls of superstition torn down, God is not dead at all; but is the teleological force that is apparent in our observation of the Universe and its evolutionary and involutory, thermodynamic functioning. The deeper we probe, the further we validate the ancient scientific model that Madame Blavatsky reveals in her [Secret Doctrine](#). (Cf. [Theosophical Discussion](#)).

According to [Sri Aurobindo], all reality resides in and issues from the Absolute. By a process of Self-conception, the Absolute manifests Being/Existence (Sat) and all that issues from it. The principle of time emerges when Being extends itself subjectively to become Consciousness-

²⁴ Aubrey D.N.J. de Grey from a variety of papers (cf. Bibliography)

²⁵ Iona Miller in [We Are Temples of Living Light](#)

²⁶ Piero Scaruffi in [The Physics of Consciousness](#)

Force (Chit). The principle of space emerges when Being extends itself objectively to become an object to its own Self-Conscious experience. Space and time are different expressions of the same reality.

All Space and Time are the product of Chit, of a relationship between the Self-Consciousness that perceives (subjectively) and the Force that formulates itself as forms and movements of those forms (objectively).

“Subjectivity and objectivity are only two sides of one consciousness any given time or Space or any given Time-Space as a whole is a status of being in which there is a movement of the consciousness and force of the being, a movement that creates or manifests events and happenings; it is the relation of the consciousness that sees and the force that formulates the happening, a relation inherent in the status, which determines the sense of Time.” *Life Divine*, p.362

Space is the self-extension of Being in the form of constant or persistent movements that give the appearance of stable forms in contrast to Time, which is the same self-extension of Being in the form of changing movements. The same Being moves in two ways, as stable pattern of movement (space) and changing pattern of movement (time). The stable pattern appears as the backdrop for that which is changing.

“The two would be then a dual aspect of one and the same self-extension of the cosmic Eternal-Time could be a dimension of Space necessary for the complete action of the Energy, but not understood by us as such.” *Life Divine*, p.360

“Substance is inherent in Existence (Sat). Consciousness-Force (Chit) is an extension of Existence. Energy is an expression of Consciousness-Force. Therefore, Substance is inherent in Energy.” *Life Divine*, p.304

On the material plane, this means that matter, material substance, is an inherent property of material energy.

The appearance of material energy and form presupposes an act of conscious Self-conception which goes hand in hand with the manifestation of space-time.

In the chapter on Conscious Force in *Life Divine*, he described the condition of Chit prior to manifestation in form as a sea of energy or force at rest, ether. (It was interesting to read that Einstein did not reject or disprove the existence of ether, he only concluded that it was unnecessary to explain his theory.) The creation of vibrations (waves) in the sea by the self-conception (will) of Sat, which the Sankhya represent as the principle of ether, sets in motion the process by which forms are created in the universe. These primordial vibrations have something in common with the strings of Superstring theory.

Kaku says that the ‘magic numbers’ 8 and 24 appear over and over again miraculously in superstring theory as well as in Ramanajam’s work. From these are derived the 8 + 2 and 24 + 2 dimensions. Interestingly, the Mother says that in all ancient occult traditions, 8 is the number signifying the Infinite and 10 is the number of manifestation (something established in manifestation).²⁷

Eight also represents the Veil of Qesheth, which may be thought of as the infinite expanse of the manifested Universe, as much as it might also be said to represent the animal Soul. Sri Aurobindo and Mother also refer to the subtle physical as a plane which can be directly experienced. It is a subliminal plane which is closely related to the physical plane. All physical events occur first there. All physical beings and objects exist there.

Energy seems to create substance, but, in reality, as existence is inherent in Consciousness-Force, so also substance would be inherent in Energy; the Energy a manifestation of the Force, substance a manifestation of the secret Existence. But as it is a spiritual substance, it would not be apprehended by the material sense until it is given by Energy the forms of Matter seizable by that sense. One begins to understand also how arrangement of design, quantity and number can be a base for the manifestation of quality and property; for design, quantity and number are powers of existence-substance, quality and property are powers of the consciousness and its force that reside in the existence; they can then be made manifest and operative by a rhythm and process of substance.²⁸

All substance (physical as well as spiritual) is derived from Existence (Sat). Substance, including material substance, is form given to Existence. Existence extends itself as Consciousness Force (Chit). All energy is an expression of Consciousness Force. Therefore, Substance is a latent property of Energy and is inherent in it ($E=MC^2$).

The nonlocal nature of the state vector collapse, [...] suggests that particles of matter are not accurately describable as separate, localized entities. Rather seemingly isolated or separate particles may be intimately connected with one another and must be seen as parts of a higher unity.²⁹

The interconnectedness of all things (all things possessing consciousness) clearly isolates between localization (HADIT) and universalization (NUIT).

It is certain forms of consciousness that are localized. This analogy [is] to the form of matter. Matter is localized in particles. But particles are not points. And the fields of interaction among “particles” also partake of the form of matter. Some of the confusion in modern quantum mechanics - though certainly not all - is due to applying old distinctions and models.³⁰

²⁷ Garry Jacobs in *Sri Aurobindo & Hyperspace*

²⁸ Sri Aurobindo in *Life Divine*

²⁹ William James in *Consciousness and the New Physics*

³⁰ Dr. Anil Mitra in *Being, Mind and the Absolute*

So then the atom remains the smallest unit of matter. It's parts, not being "points" have no locality. Therefore these parts don't directly participate in matter. This helps validate the Fifth Dimension. As much as there is no straight line in the universe; the line being a theoretical and/or philosophical construct, so the points that comprise the line are more theoretical than actual. Particles become their actuality in oscillation; merely having a point of view, which is the nature of experience.

If I say "everything, each particle, is awareness" that immediately raises the question "What is a particle?" This is considered in the essay *Being and the Absolute*.³¹

If particles are consciousness, matter is a condensation of consciousness. Then the slower the particles of consciousness move, the heavier, more crystallized or fixed the matter becomes; a very Alchemical supposition.

Physicist David Bohm has referred to the universe as a "holomovement," invoking an analogy to a hologram (a three-dimensional photograph in which the entire picture is contained in each part). Bohm has termed the world of manifest appearances the "explicate order" and the hidden (nonlocal) reality underlying it the "implicate order." He also proposes a new mode of speaking, which he calls the rheomode, in which "thing" expressions would be replaced by "event" expressions.

In contrast with theories such as Evan Harris Walker's and Saul-Paul Sirag's, the implicate order theory lacks a specific mathematical formulation from which testable predictions may be derived. On the other hand, the implicate order theory is consistent with and provides a good philosophical underpinning for the testable observational theories, such as those of Mattuck and Walker.³²

The idea of "event expressions" becoming predominant in our epistemological paradigm shows each moment as an expression of consciousness; and hence for US, the formula of *love under will*. The objects of consciousness loses its predominance and hence, their objectification as all "things" are then considered living and vital. That doesn't mean to imply that Platonic forms are dismissed; these forms still maintain their objective value; it is simply their functionality that is observed.

In order for Substance to become perceptible to us as Matter, the Energy must give that substance Forms which can be apprehended by our senses. That is the role of Mind (the universal principle of mind). Consciousness Force uses the instrumentation of Mind to divide the indivisible existence into individual Forms. Consciousness Force or Energy manifests forms out of the formless One by a process of division (Consciousness Force is divided and parceled into small pieces, not Existence).³³

Sir Arthur Eddington advanced a solution to the problem of the long sought after Unified Field Theory based on a four element group, akin to the four worlds of the Qabalah. These are specifically, identify, negation, collaterality and reciprocity. He reduced it to a simple statement: "Insofar as the mind can know matter, it has a group structure isomorphic to that of matter." Eddington used purely epistemological principles in his search for unifying gravity with electromagnetism. This led him to account for the pure numbers in physics by the same epistemological reasoning. The Qabalist and especially one who practices Gematria is also concerned with pure number.

*Kaku describes the on-going war in physics between those who want to focus on the cosmology of the big picture and those who search for truth in the smallest indivisible parts. In the current search for a unified theory, the Relativists are the holistic cosmologists and the quantum theorists are the reductionists. Neither by itself is able to unify all four forces of Nature. Superstring Theory combines and integrates Relativity and Quantum theory within a larger framework that encompasses all four forces.*³⁴

The Qabalah maps the dimensions of consciousness, suggesting a possible relationship with Superstring Theory.

31 Ibid

32 William James writes in Consciousness and the New Physics

33 Garry Jacobs in Sri Aurobindo & Hyperspace

34 Ibid

...[Saul-Paul] Sirag showed that the physical constants determine the large-scale structure of the universe in such a way that the present-day scale factor -- the "radius" can be calculated, as well as the age and the density, and various other cosmological properties. Sirag hypothesized the age of the universe to be 32 billion years.³⁵

This is intriguing. If mind and matter are one, the 32 paths of the Qabalah reflect this. And every billion years a new path would be added as the mind and universe take on greater complexity. This suggests the Platonic Year as discussed in [Gnostic Cycles](#). There is always a constant in the relationship between number (conceived in interior consciousness) and exterior or objective reality.

Sirag's model of consciousness could be called a Pythagorean approach to consciousness, since Sirag's strategy is to look to mathematics for an appropriate structure to describe the relationship between consciousness and the physical world. He finds that unified field theories of the physical forces depend fundamentally on mathematical structures called reflection spaces, which are hierarchically organized in such a way that an infinite spectrum of realities is naturally suggested.

This situation is natural because mathematicians have discovered that the hierarchical organization of reflection spaces also corresponds to the organization of many other mathematical objects -- e.g. catastrophes, singularities, wave fronts, and contact structures, error correcting codes, sphere packing lattices, and, perhaps most surprisingly, certain regular geometric figures including the Platonic solids.

It is generally believed by physicists working on unified field theory that space-time is hyper-dimensional, with all but four of the dimensions being invisible. The reason for this invisibility is a major subject of research. Beside space-time dimensions, there are also other internal (or invisible) dimensions called gauge dimensions. The reality of these gauge dimensions is also a topic of controversy and research. In Sirag's view both the extra space-time dimensions and the gauge dimensions are real. This provides scope for considering ordinary reality a substructure within a hyper-dimensional reality. This idea has, of course, been suggested before -- e.g. it is implicit in the Cave Parable of Plato. The difference in Sirag's approach is that the structure of the hyperspace is defined directly by the properties of physical forces.

A further innovation in Sirag's approach is that his version of unified field theory embeds both space-time and gauge space in an algebra whose basis is a finite group. This group, which directly models certain symmetries of particle physics, is a symmetry group of one of the Platonic solids -- the octahedron. Thus it is a mathematical entity contained in the reflection space hierarchy. In fact the reflection space corresponding to the octahedron is seven-dimensional and is also a superstring-type reflection space, so that a link with the most popular version of unified field theory is provided.

The central postulate of Sirag's paper is that this seven-dimensional reflection space is a universal consciousness, and that individual consciousnesses tap into this universal consciousness. This implies that the high level of consciousness enjoyed by humans is due to the complex network of connections to the underlying reflection space afforded by a highly evolved brain.³⁶

The octahedron is then a recurrence of the number eight; discussed above. The seven dimensions correlate with the seven macrocosmic intelligences or Dhyān Cohans generated by the Fohat; being planetary gods, as Blavatsky would have called them, and attributed to the seven sacred planets and the seven parts of the Ruach (Soul) in the Qabalah.

Moreover, the hierarchy of reflection spaces suggests a hierarchy of realms (or states) of consciousness. Each realm would correspond to a different unified field theory with different sets of forces. In fact, the seven-dimensional reflection space is contained in an eight-dimensional reflection space, and contains a six-dimensional reflection space, so that there would be a realm of consciousness directly "above" ordinary reality, and a realm of consciousness directly "below" ordinary reality. In principle the relationship between the different forces in these different realms could be worked out in detail, so that precise predictions could be made.³⁷

With the eight being infinite space and holding the seven planetary intelligences, so the six represents the involutory and evolutionary forces meeting at a central point before continuing forward. This is the HADIT point in Thelemic philosophy; Tiphareth and the Holy Guardian Angel that has the larger Universal viewpoint (in his uniting with NUIT). It is this then from which the Holy Guardian Angel emanates. And yet, there is also the idea of that which is "above reality" (the L.V.X.), spiritual reality, and that which is "below reality" (the N.O.X.); primordial reality.

Sirag believes that this hierarchy of realms of consciousness is analogous to the spectrum of light discovered in 1864 by James Clerk Maxwell in his electromagnetic theory of light, which unified the forces of electricity and magnetism. Maxwell had no way of directly testing his theory,

³⁵ William James in [Consciousness and the New Physics](#)

³⁶ Ibid.

³⁷ Ibid

which proposed the reality of frequencies of light both higher and lower than that of ordinary light. He boldly proposed the existence of invisible light, simply because his equations contained the higher and lower frequencies. Similarly, in the unification of all the forces, we can expect something new to be described, which could be the analog of light. Sirag proposes that this new thing be consciousness, and that since the mathematics of the unification gives reflection space a central role, the hierarchy of reflection spaces suggests a hierarchy of realms of consciousness.³⁸

Nature herself is a hierarchy structured by the complexity of organisms and the sophistication of consciousness. There is that which is sub-conscious; the constituent parts of a more complex organism, and that which is hyper-conscious; the amalgamated consciousness.

How does Sri Aurobindo define the appropriate relationship between holism and reductionism? Does he provide a methodology for their integration? According to Sri Aurobindo, the whole is the indivisible One (Self-Conscious Being, Sat), the parts are the Many. Both are partial truths. The Absolute is the infinite potential which is greater than either the whole or the parts but contains and exceeds both, since it also includes that which is beyond manifestation.³⁹

Also reason is a lie; for there is a factor infinite & unknown; & all their words are skew-wise.—AL:II.32
Events, though, cannot be pre-determined, but function spontaneously in what we have called acts of *love under will*. Interaction creates experience with each interaction becoming an “event expression.” These create the pastimes of the ONE through the subjectivity of each, the ALL (or the ‘many’).

Physicist Evan Harris Walker has put forth an observational theory that equates the conscious mind with the "hidden variables" of quantum theory. Walker notes that, due to the necessarily nonlocal nature of such hidden variables, quantum state collapse by the observer should be independent of space and time; hence, psi phenomena such as telepathy should be independent of space-time separation. Noting that the conventional view in physics is to deny that the paradoxes of quantum mechanics have implications beyond the mathematical formalisms, Walker defines his theory:

The measurement problem in Quantum Mechanics has existed virtually from the inception of quantum theory. It has engendered a thousand scientific papers in fruitless efforts to resolve the problem. One of the central features of the controversy has been the argument that characteristics of QM imply that an observer's thoughts can affect an objective apparatus directly, which in turn implies the reality not only of consciousness but of psi phenomena. I have written several papers saying that such a feature of QM is not a fault, but rather represents a solution to problems that go beyond the usual pervue of physics. Thus, I have developed a theory of consciousness and psi phenomena that arises directly from these bizarre findings in QM, findings now supported by specific tests of the principles of objective reality and/or Einstein locality.

Walker specifies channel capacities for various "regions" of mental activity. He calculates the rate for "dataprocessing of the brain as a whole at a subconscious level" (S) to be equal to 2.4×10^{12} bits/sec. The data rate for conscious activity (C) is equal to 7.5×10^8 bits/sec, and the channel capacity of the "will" (W) is equal to 6×10^4 bits/sec.

Walker's derivation of the above rates is based on the assumption that electron tunneling across synapses is the basis for the transmission of impulses across synapses and that the large-scale integration of brain activity is also mediated by electron tunneling.⁴⁰

Of the “hidden variables,” Motta comments on the above verse from Liber AL:

The “factor infinite & unknown” is the subconscious Will, in a sense; but in another sense, it is a factor in any equation in Nature. Modern Physics no longer postulates absolute laws for phenomena; it enunciates its judgments under the form of high probabilities. For instance, there is a very high probability that the sun will rise in the east tomorrow. But there is no a priori denial of the possibility that it may rise in the west, except that in all recorded history it has never been known to do so. This argument is obviously not sufficient to overrule the possibility, and we must keep an open mind on the subject. If we do, we will be prepared for the possibility of the sun rising in the west tomorrow, and will be quicker to adapt ourselves to the phenomenon than many so-called scientists. Men whose minds are fixed have been known to go insane when facts run contrary to their ideas.

Both the perspectives of the ALL (or the ‘many’) and the ONE are mutually exclusive as the observation of particles and waves. We cannot view an ‘event expression’ in particle physics that presents both the particle and the wave simultaneously.

³⁸ Ibid

³⁹ Garry Jacobs in Sri Aurobindo & Hyperspace

⁴⁰ William James in Consciousness and the New Physics

Mind can know the One or the Many, but not both simultaneously or in relationship to each other. It can know by division or by aggregation, but neither of these generates integral knowledge. That is why the materialist and the spiritualist have mutually exclusive perspectives. One knows the physical world (the manifest infinite), the other spiritual truth (the unmanifest infinite), but neither can reconcile the one with the other and see the process of the One becoming the Many and evolving back to Oneness. Supermind can know the Absolute and therefore it can simultaneously know the One and the Many in relation to each other. That knowledge which integrates the whole and the parts has the character of supermind.⁴¹

In other words, we cannot simultaneously experience the internal and the external; but only one at a time. And that timespan may be the duration on one's life, with the direction of consciousness being one of the attributes of an individual star in a company of stars.

The yogi can feel the consciousness of the organs and the saint can feel the consciousness of the other.

Objection: consciousness is either on or off. Response: consciousness is either present or not present. On off means there is a threshold below which there is awareness but not consciousness. If consciousness is present at all levels of intensity of awareness-then it is not on off but merely present or not present. The many consciousnesses in the world constitute a single consciousness.⁴²

Crowley's Star Sponge vision orchestrates in far more human language, the relationship of the ONE to the ALL and what follows presents that much that is the fabric of NUIT.

How can we show that the distribution is one? First, they are one in the same way but to different degree that the many of the individual though in fact many are effectively one. Just as the distribution in the individual partake of the individual but are only occasionally in communication or in unity, similarly the agents of consciousness the individuals of the universe are also often in qualitative isolation but may also on occasion and in phases partake of the unity - of the one. Second, through the mutation of being[s] over the history of the universe. This is the integration over being and process which is the absolute that is nothing. Nothing? The combination of indeterminism [required by the process of creation] and determinism [the stable phase of indeterminism required or implied by being in the world that is not mere virtual being] show that the universe and the absolute have a phase of and are equivalent to non-being We now see the unity of consciousness.⁴³

We have then, the oscillation between the AIN (or more fully, the AIN SOPH AUR-Limitless Light) or nothingness (nothingness with twinkles!) and manifestation of the ALL; a rendering of the formula $2=0$. And from that non-locality (nothingness) any 'one' of the ALL may project to create an 'event expression' in any locality, suggesting a state of consciousness that works outside the laws of motion.

Some psi researchers have attempted to use the concept of curved spacetime to eliminate some of the apparent paradoxes involved in psi phenomena. Psychologist Gertrude Schmeidler has suggested that the universe may contain an extra dimension that permits "topological folding" to occur so that two regions which are widely separated in an Einsteinian universe might be in immediate contact, much as two points on a towel which are normally quite a distance apart may be adjacent when the towel is folded. Thus, apparent instances of ESP across great distances might be explained by postulating that the persons involved are somehow in close proximity in the "folded" space.⁴⁴

The 5th Dimension does hold at least one other quality in addition to light, as discussed above, consciousness itself seems to move from this dimension to ours. Both consciousness and light are attributed to Tiphareth in the Qabalah and may even be co-equivalent states of being. In other words, light may be the essence of life itself, with consciousness being but one of its forms for expression.

Physicist John Archibald Wheeler (a man with pronounced antipathy toward psi research) has theorized that, at a microscopic level, quantum effects might tear the fabric of spacetime, producing a structure involving wormholes. He speculated that such wormholes could connect pairs of oppositely charged particles such as electrons and positrons. Wheeler's hypothetical structure is sometimes called the "quantum foam." Such wormholes may exist on a macroscopic scale and, in some cases, rotating black holes may give rise to a "tunnel" or shortcut to another region of spacetime. Physicist Fred Alan Wolf has implicitly suggested (in a cartooned text called *Space, Time and Beyond*) that such wormholes may provide the connections needed to explain psi phenomena over long distances or temporal intervals.⁴⁵

⁴¹ Garry Jacobs in [Sri Aurobindo & Hyperspace](#)

⁴² Dr. Anil Mitra in [Being, Mind and the Absolute](#)

⁴³ Dr. Anil Mitra in [Being, Mind and the Absolute](#)

⁴⁴ William James writes in [Consciousness and the New Physics](#)

⁴⁵ Ibid

Such wormholes don't demonstrate that matter is illusory as the Yellow and Black Schools of Magick would like to promote. But they do point out to us that there are physical laws in matter that we haven't yet comprehended and/or discovered.

It is usual to think, in the standard material paradigm of the modern world, of consciousness as consciousness of an object. The content of consciousness is the idea. On this view, the world has matter and ideas. This is not necessarily a dualism for the idea may be a manifestation or reduction of matter without having been explained or even being explainable in material terms. However if everything is a form or manifestation of idea - if ideas are real and the original substance - then we have a clear and simple monism. This is the form of idealism. It is simpler than materialism in that since, by our existence, we have ideas and thus idealism does not require any further substance or hypothesis with ontological content, and even if the having of ideas is said to be delusion or illusion then what are delusions or illusions if not ideas? It is an error to think that idealism is in opposition or in contrast to materialism. If materialism is symbolized by the mountain, then idealism is symbolized by the mountain, the wind, the clouds and mist that surround the peak, and the valleys below, and the ground of the mountain: the earth. Idealism requires no hypothesis. It need not be a philosophy or a metaphysics or an ontology. It is or can be seen as the name for experience; or one really wants it to be something more than the intrinsic state of our existence then we could call idealism the acknowledgement of our existence.⁴⁶

NUIT would be this same monistic consciousness; representative of light itself, which is the all-pervading fabric of the Universe. The 'milky' stars in Crowley's Star-Sponge vision point out to us the fabric of light that is the *Universal Mind*. This then is the macrocosmic singularity, a hologram, upon which all microcosmic singularities intimately relate.

Instead of starting with either the parts or the whole, scientists would start with the theory of creation that is valid at all levels in the universe. That theory shows the Whole and the Parts in proper relationship to each other and describes the process by which the formless One becomes the Many forms of energy and matter in the universe. It would trace the origin of space, time, substance and energy from Self-Conscious Being as Sri Aurobindo does in the chapter in *Life Divine* on Cosmic Determinants. It would consider what physicist Ivo Slaus called "a third hypothesis of conscious Volition" (Self-Conception) that reconciles the Chance of quantum theory and the Necessity of Relativity within a wider framework. It would seek for the source of energy not in its smallest manifest quanta but in the formless sea from which all manifest energy emerges and it would seek to understand the process by which that energy at rest gives rise to forms as [I've] described. Physics is considered the first of the sciences because it is the foundation of physical matter and energy. Thus, physics has become the model which all other sciences seek to emulate because matter is assumed to be the origin of all in the universe. But if Sri Aurobindo's view is accepted that Consciousness is the origin of all in the universe, perhaps physics should be considered the last science and the least suitable model for others to follow, because it deals with the most deeply involved processes of the inconscient, where the action of consciousness is the most difficult to detect. Since the process of creation is the same at all levels of manifestation, the more conscious sciences and arts of mind (psychology, artistic creation, business creation, social development) may be models from which physics can benefit enormously. For in these cases the process of creation is at least partially conscious. We can see mental intention generate and release energy and energy manifest as forms. A physics modeled after the more conscious sciences (not as they exist today but as they would develop based on Sri Aurobindo's process of creation) would focus on the interactions between matter and energy and consciousness, rather than trying to remove consciousness from the equation. It would seek to understand the nature of matter and energy in terms of consciousness force, rather than consciousness as a by-product of matter and energy.⁴⁷

Again, this points to the dispelling of objectivation and the perceptual paradigm being changed to recognize 'event expression' that recognizes the integration of objects into the matrix of consciousness; the idealization of objects.

Objects "have very much an ideal existence" that is fundamental, existential and experiential. Their existence also as material objects requires an additional hypothesis or position beyond that of the reality of experience: that of the external world. The external world is thought - whether practically and in effect or analytically and in fact - to be necessitated by the equation of idealism and solipsism. The equation of solipsism and idealism follows from the isolation of consciousness as discrete, monadic and isolated entities. Solipsism is in contradiction to the existence of a real world with distinct individuals and distinct ideas. However, a world of distributed and unitized - by occasional rather than continual communication - consciousness, idealism does not imply or equate to solipsism. The ideal world is one of individuals that are also a unity. Idealism is thus consistent with the existence of matter and the need to satisfy the requirements of practical or everyday materialism, and scientific and philosophical materialism; but is also simpler and requires fewer hypotheses.⁴⁸

Solipsism treats the world as non-existent; a maya where reality is perceived as being an entirely subjective experience. Ultimately, it denies consciousness the objectivity it intuitively feels and that is the summit of its experience. The NYU philosopher, Thomas Nagel, in his book, [The View from Nowhere](#), argues ostensibly and convincingly that there is a path where an object may be directly perceived. Solipsism as recognized by most philosophers, is an error that I think we

⁴⁶ Dr. Anil Mitra in [Being, Mind and the Absolute](#)

⁴⁷ Garry Jacobs in [Sri Aurobindo & Hyperspace](#)

⁴⁸ Dr. Anil Mitra in [Being, Mind and the Absolute](#)

can show is simply a poor didaction that confusedly separates mind from its object; whereas modern physics shows the intimate relationship between our subjective experience and its corresponding expression on the material and objective plane.

[T]here are too many posited categories that are and should be grades or shades in the continuum of a single category. This means that the world is actually simpler, but in no way loses its variety of forms and phenomena, in no way reduces the variety and richness of [human] experience; and further, to be explained below, eliminates or gives meaning to alienation—connects humankind and world. This latter result is similar to the action principle of the Gita. Alienation is the result of the stark aspect of reflexivity. A positive aspect is freedom and agency in transformation of self, culture and world.⁴⁹

Mind and matter have an intimate connection, though they are also differentiated in a dualism that lends subjectivity to the mind and objectivity to the various objects it experiences in the world that is apparently exterior to the mind. Though I daresay, this paradox can be resolved when we consider the connection of the mind to the material brain, with its intimate connection to our fleshly bodies.

⁴⁹ Ibid

The Biology of Consciousness

Human liberty establishes the conditions that make *Transformation* possible; alienation corrupting and distorting the field of action. Action is implicit in movement as is consciousness. The fifth Sefirah represents the concept of movement in the involutory scheme of the Tree-of-Life. It is followed by the sixth, which is consciousness itself in its incorporeal form.

The experiments of Clauser and Aspect contradict the rate of photon coincidences predicted on the basis of an objective and locally causal reality. The measured rate agrees with the prediction of ordinary quantum theory. This means that physical reality either is not subject to the principle of local causation or does not objectively exist independent of the observers who participate in its creation.

Bell's Theorem and the related experiments may have importance for the understanding of personal human experience. The human brain stores and processes its information at the level of single organic molecules and is a single macroscopic quantum system. Acts of consciousness may be viewed as incorporating quantum events.

The illusion of the classical scientific paradigm that is shattered by the quantum principle is the assumption that there is an immutable objective reality "out there" that is totally independent of what happens in consciousness "in here." Quantum theory forces a new kind of logic in science that is still mathematical and disciplined. The Nobel prize physicist Eugene Wigner of Princeton has repeatedly written that consciousness is at the root of the quantum measurement problem.⁵⁰

Our consciousness, individually and collectively shapes reality. The qualities of tendencies of consciousness being uniquely human attributes manifest the paradigm by which we comprehend. As religion has moved away from qualifying direct experience to adopting a philosophically nihilist perspective that alienates us from experience, we have moved away from an intimate connection with our bodies and the world around us.

Since Superstring theory cannot be verified, some scientists ask whether Beauty is a physical principle that can be substituted for experimental verification of a theory. If so, what could be more beautiful than universe as a self-conception and manifestation of Satchidananda? In practice, physics and all science today starts with an in-built bias, an unstated assumption that the nature of reality is *physical* and it must be verifiable by *physical* experimentation. There is no evidence or logical reason for presuming this to be true. It is only a prejudice derived from the historical emergence of science as a reaction to religion and superstition in Europe.⁵¹

In approaching the riddles in *Liber AL vel Legis*, Aleister Crowley noted that the solutions would be both beautiful and simple; a sublimity. The physical nature of the Universe is an evolving riddle that with every question we answer, new questions are presented. And like the riddles in *AL*, being mathematical in nature (on a Qabalistic level), physics uses its own unique math. The reaction by science to the superstition of religion has indeed, produced its own sophistry. As far as religion is concerned, modern fundamentalist religion has for its part, developed its own reactionary stance. Creationism not only refutes science, it seems to me that it has found itself threatened by it; especially as today's scientists sound more like Hindu mystics than as Christians, which is being met with an 'equal and opposite reaction.'

Putting this aside, it should then become clear to see that the Schumann's Resonance, as discussed in [Liber Vox Viva Voce vel Video](#), that holograms are extensions of consciousness. The key to a more precise recognition of the 'Intelligent Design' of the Universe is to alter the paradigm of creation from the linear idea of something that has a beginning and an end. And to replace this with a circular or cyclic parable that ultimately moves in what I have described above as a dualistic, thermodynamic equilibrium. Therefore, there is no chicken before the egg and no egg before the chicken, but that both exist in consciousness and are objects in their own time and with their own coordinates in the Universe.

⁵⁰ William James in *Consciousness and the New Physics*

⁵¹ Garry Jacobs in [Sri Aurobindo & Hyperspace](#)

Superstrings represent one example of a class of attempts, generically classified as superunification theory, to explain the four known forces of nature--gravitational, electromagnetic, weak, and strong--on a single unifying basis. Common to all such schemes are the postulates that quantum principles and special relativity underlie the theoretical framework. Another common feature is supersymmetry, the notion that particles with half-integer values of the spin angular momentum (fermions) can be transformed into particles with integer spins (bosons).⁵²

Mind and brain are not the same thing; though the mind (consciousness) induces the brain to thought and hence, the generation of particles and waves. But it seems that each exists because of the other. In other words, the greatness and potency of the Soul is intimately connected to the functional well-being of the brain. And a part of that well-being has to do with our ability to comprehend abstract thoughts in order to exercise the mind and bring it to a greater vitality. The more sophisticated these abstract thoughts; whether they be of science, the arts or even human intimacy, the more we find sublimity that in itself is a sublime form of beauty.

The main objection to the thesis that mind is matter --- as contrasted to the view that mind and matter are different aspects of a single neutral reality --- is based on the fact that each mind is known to only one brain, whereas each brain is knowable to many minds. These two aspects of the mind/brain are different in kind: a mind consists of a sequence of private happenings, whereas a brain consists of a persisting public structure. A mind/brain has both a private inner aspect, mind, and a public outer aspect, brain, and these two aspects have distinctive characteristics. In the quantum description of nature proposed by Heisenberg reality has, similarly, two different aspects. The first consists of a set of 'actual events': these events form a sequence of 'happenings', each of which actualizes one of the possibilities offered by the quantum dynamics. The second consists of a set of 'objective tendencies' for these events to occur: these tendencies are represented as persisting structures in space and time. If we correlate thoughts with high-level quantum events in brains, as suggested by von Neumann, Wigner, and others, then we can construct a theory that is a dual-aspect theory of the mind/brain, in the sense that it correlates the inner, or mental, aspects of the mind/brain system with 'actual events' in Heisenberg's picture of nature, and it identifies the outer, or material, aspects of the mind/brain with the 'objective tendencies' of Heisenberg's picture of nature.

For quantum mechanics at the small scale simply does not lead to classical mechanics at the large scale. That is exactly the problem that has perplexed quantum physicists from the very beginning. One can introduce, by hand, some arbitrary dividing line between small scale and large scale, and decree that, in our preferred theory, the quantum laws will hold for small things and the classical laws will hold for large things. But this partition is completely ad hoc: there is no natural way to make this division between small and large in the brain, which is a tight-knit physical system of interacting levels, and there is no empirical evidence that supports the notion that any such separation exists at any level below that at which consciousness appears: all phenomena so far investigated can be understood by assuming that quantum theory (and in particular the Schrödinger equation) holds universally below the level where consciousness enters.

Bohr resolved this problem of reconciling the quantum and classical aspect of nature by exploiting the fact that the only thing that is known to be classical is *our description of our perceptions of physical objects*. Von Neumann and Wigner cast this key insight into dynamical form by proposing that the quantum/classical divide be made not on the basis of size, but rather on the basis of the qualitative differences in those aspects of nature that we call mind and matter. The main thrust of Stapp (1993) is to show, in greater detail, how this idea can lead, on the basis of a completely quantum mechanical treatment of our brains, to a satisfactory understanding of why our *perceptions* of brains, and of all other physical objects, can be described in classical terms, even though the brains with which these perceptions are associated are described in completely quantum mechanical terms. Any alternative theoretical description of the mind/brain system that is consistent and coherent must likewise provide a resolution to the basic theoretical problem of reconciling the underlying quantum-mechanical character of our brains with the classical character of our perceptions of them.

According to classical mechanics, the world is to be conceived of as a simple aggregate of logically independent local entities, each of which interacts only with its very close neighbors.

No extra quality of beingness is appended to them by virtue of the fact that they have some special functional quality in some context, or by virtue of the fact that they define a spacetime region in which certain quantities such as 'energy density' are greater than in surrounding regions. All such 'functional entities' are, according to the principles of classical physics, to be regarded as simply consequences of particular configurations of the local entities: their functional properties are just 'consequences' of the local dynamics; functional properties do not generate, or cause to come into existence, any extra quality or kind of beingness not inherent in the concept of a simple aggregate of logically independent local entities. There is no extra quality of 'beingness as a whole', or 'coming into beingness as a whole' within the framework of classical physics.⁵³

Though it is interesting to note that classical Alchemy, a practice of classical physicists, such as Isaac Newton, intuited a consciousness in all that we yet consider inanimate. The Alchemist and his lab were and are still considered to be one single entity. In other words, consciousness affects the results in the experimentation that goes on in lab work. Even minerals are shown to have an evolutionary destiny.

Yet an experienced thought is experienced as a whole thing. From the point of view of classical physics this requires either some 'knower' that is not part of what is described within classical physics, but that can 'know' as one thing that which is represented within classical physics as a simple aggregation of simple local entities; or it requires some addition to the theory that would confer upon certain functional entities some new

⁵² Garry Jacobs in Sri Aurobindo & Hyperspace

⁵³ Henry P. Stapp in Why Classical Mechanics Cannot Naturally Accommodate Consciousness but Quantum Mechanics Can

quality not specified or represented within classical mechanics. This new quality would be a quality whereby an aggregate of simple independent local entities that *acts* as a whole (functional) entity, by virtue of the various local interactions described in the theory, *becomes* a whole (experiential) entity.

Yet this is exactly what is provided by quantum mechanics, which thereby provides a logical framework that is perfectly suited to describe the two intertwined aspects of the mind/brain system.

What we call "mind" is actually two things, which must be carefully kept separate: "cognition" (i.e., the faculties of remembering, learning, reasoning, etc.) and consciousness. Cognitive faculties do not require consciousness. Cognition and consciousness are related only because we have not explained them yet. Cognition is a feature of all matter, whether living or not: degrees of remembering, learning, etc. are ubiquitous in all natural systems. They can be explained without revolutionizing Science. The "emotions" associated with them belong instead to consciousness, just like the emotions of tasting or pleasure. The explanation of consciousness does require a conceptual revolution in Science, specifically the introduction of a new feature of matter, which must be present even in the most fundamental building blocks of the universe.⁵⁴

Emotions are the primary cognition, directly connected to our physical bodies and its perception of the environment about us. These are often translated into symbolic imagery in the mind, that then is reflected upon in our dreaming. Carl Jung could even make medical diagnoses by simply examining the contents of his patients dreams; quite like the ancient Shaman. The intellect is a secondary cognition that is more the result of our consciousness quantifying the emotional stimuli and thereby providing an indirect clue to its noncorporeal manifestation.

If consciousness is ubiquitous in nature, then it is not difficult to accept the idea that it was there, in some primitive form, since the very beginnings of life, and that it evolved with life. It became more and more complex as organisms became more and more complex. Early hominids were conscious and their consciousness, while much more sophisticated than the consciousness of bacteria, was still rather basic, probably limited to fear, pain, pleasure, etc. In mammals and birds consciousness was related to sounds (i.e., fear to screaming). Early hominids had a way to express through sounds their emotions of fear and pain and pleasure.

Greek thought evolved an intriguing division of mental life into two souls, the Thymos (pron: "theemos") and the Psyche. The Thymos pertains to the active soul, what we today refer to thought, consciousness, awareness, etc. It was associated with breath, heart and liver. Breath was identified with soul, as in most ancient systems of philosophy (the Hindu "atman" comes from the word for "breathing") and with language (breath is what you need to utter sounds). Liver was reputed to be the origin of emotions (there must have been painful liver diseases at the time :-). The heart was considered the seat of desires and intentions.

The Psyche is the immanent soul, independent from the body, a precursor of the eternal soul of Christianity that survives the body in the other world. In ancient Greece the Thymos became the active, rational and mortal part of the person (the part that has control over the body), while the Psyche became the quiescent and immortal part of the person.

The Thymos became a core concept of Socrates' philosophy. In Socrates' theology the doctrine of Thymos is a meditation on the history of philosophy from Homer to Socrates himself, by which Socrates hails the passage from unconscious philosophizing to rational self-consciousness. Interestingly, Socrates warned against the dangers of self-awareness. He warned that consciousness would cost us greatly, both in terms of desire to live and in terms of our harmony with nature. In Plato's late dialogues this contradiction has a happy ending, as Socrates finds in conscious thought the meaning of life itself.

Platonic philosophy elevated the Thymos above the Psyche. The Psyche is viewed as a sort of lower mind that can connect with either a higher mind (nous), that a Christian may perhaps interpret as God, or with the Thymos, that a Christian cannot interpret because it has no correspondent. Thymos is the cause of anger and passion. In a sense, it is opposite of meditation.

The Darwinian Mind

"Thought" is an entirely different game. "Mind" defined as the totality of thoughts is a far more elusive mystery. But it is my belief that this mind, just like the brain, obeys laws that are Darwinian in nature. Both the mind (the system of thoughts) and the brain (the system of neural connections) obey the same laws of selection and evolution that apply to species and to antibodies. Both neural structures and thoughts are selected by the environment and vary in a fundamentally random way. The same process that accounts for the origin of species is probably responsible for the origin of thoughts. Just like species spawn more species and generate a branch of the tree of life, so thoughts generate threads of thoughts. Threads of thoughts may get weaker and weaker until they disappear, or they may get stronger and stronger. It all depends on experience. But at any time, the mind is full of competing threads.

In this respect, "personality" may just be the result of natural selection of thought threads. Whatever threads are reinforced by the experience of an individual constitute the personality of the individual.

At the turn of the century, the influential American philosopher and psychologist William James had a number of powerful intuitions: that the brain is built to ensure survival in the world; that cognitive faculties cannot be abstracted from the environment that they deal with; that the brain is organized as an associative network; that associations are governed by a rule of reinforcement. The latter two laid the foundations for Connectionism; the former two laid the foundations for a cognition grounded in a Darwinian scenario of survival of the fittest, and, in a sense, provided a justification for the preeminence of Connectionism.

Other psychologists contributed, directly or indirectly, to the connectionist model of the brain. The scientists that subscribed to the school of Behaviorism, such as the Russian physiologist Ivan Pavlov and the American psychologist Burrhus Skinner, were influential in emphasizing the simple but pervasive law of learning through conditioning: if an unconditioned stimulus (e.g., a bowl of meat) that normally causes an unconditioned response (e.g., the dog salivates) is repeatedly associated with a conditioned stimulus (e.g., a bell), the conditioned stimulus (the bell) will eventually cause the unconditioned response (the dog salivates) without any need for the unconditioned stimulus (the bowl of meat). Behaviorists came to believe that all forms of learning could be reduced to conditioning phenomena.

To Skinner, all learned behavior is the result of selective reinforcement of random responses. Mental states (what goes on in our minds) have no effect on our actions. Skinner did not deny the existence of mental states, he simply denied that they explain behavior. A person does what she does because she has been "reinforced" for doing that, not because her mind decided so. Skinner noticed a similarity between reinforcement and

⁵⁴ Ibid

natural selection: random mutations are "selected" by the environment, random behavior is also selected by the environment. A random action can bring reward (from the environment) that will cause a reinforcement and therefore will increase the chances that the action is repeated in the future. An action that does not bring reward will not be repeated. The environment determines which behavior is learned, just like the environment determines which species are evolved.

Another behaviorist, the American psychologist Edward Thorndike, a student of William James, is the man credited with outlining the essence of the connectionist model of the mind. In a sense, he explained how Skinner's reinforcement occurs. Thorndike had been the first psychologist to propose that animals learn based on the outcome of their actions (the "law of effect") and Skinner had simply generalized his ideas.

Connectionism can be viewed at various levels of the organization of the mind. At the lowest level, it deals with the neural structure of the brain. The brain is reduced to a network of interacting neurons. Each neuron is a fairly simple structure, whose main function is simply to transmit impulses to other neurons. When anything happens to a neuron, it is likely to affect thousands of other neurons because its effects can propagate very quickly from one neuron to the other.

As a matter of fact, the functioning of the brain can be summarized as a continuous refining of the connections between neurons. Each connection can be strengthened or weakened by the messages that travel through it. In 1949 the Canadian physiologist Donald Hebb had a very simple, but very powerful, intuition: that strengthening and weakening of connections depend on how often they are used. If a connection is never used, it is likely to decay, just like any muscle that is not exercised. If it is used very often, it is likely to get reinforced. One more time, a Darwinian concept came to play a key role: competitive behavior. Connections "compete" to survive.

At a higher level, a connectionist organization can be found in the way our mind organizes concepts. Concepts are not independent of each other: a concept is very much defined by the other concepts it relates to. The best definition of a concept is probably in terms of other concepts and the way it relates to them. Concepts also rely on an associative network. Therefore, the four maxims by James also apply to concepts.

Most of the human brain is made of two hemispheres, linked by the "corpus callosum", and covered by the cortex.

Under the corpus callosum is located one of the main areas of control of behavior, containing the "thalamus", the "hypothalamus" and the "amygdala". The thalamus is a mini-mirror of the cortex: it seems to replicate the same information, but on a smaller scale. The two amygdalae are widely believed to be in charge of emotions: affection, fear and attention originate or are amplified here. The function of the two thalami seems to be to convey signals from the senses to the cortex and from the cortex to the muscles. The amygdala has the power to take over this strategic highway.⁵⁵

The inclusion of certain emotions, such as would be utilized in a dramatic invocation is then implicit in [The Formula of ON](#), including the functional use of certain associated glands, particularly the hypothalamus and pituitary systems that connect to all the other glands of the body, as directly outlined in [Liber Laiad vel in Ocultus](#); documents related to the Gnostic Mass of the GCL. The main formula for this is the formula of 'Love under Will,' which is inculcated and cultivated very carefully in the Aspirant to the A.'A.'. The cerebellum is the dreaming mind, which in its connection to the body and its regulation of the metabolic function provides a profound confirmation to Carl Jung's dream interpretations.⁵⁶

The hypothalamus, located below the thalamus, is involved in many functions, but in particular seems to be responsible for controlling body temperature (pretty much like a thermostat).

Behind the hemispheres is the "cerebellum", one of the main areas of integration of stimuli and coordination of action. The cerebellum contains areas like the "pons" that communicate with the rest of the body. The cerebellum is a bit like a miniature brain: it is divided into hemispheres and has a cortex that surrounds these hemispheres.

Consciousness is like another dimension. One can be engaged in this or that cognitive task (first dimension) and then it can be aware of it with different levels of intensity (second dimension). It is, therefore, likely that cognitive faculties and consciousness are independent processes.⁵⁷

Consciousness is then, direct experience, which has an intimate connection with pathos; the emotional awareness. The cognitive faculties draw conclusions that are made 'rational' by the intellect. The cerebellum specifically is the dreaming center that creates the astral vision for the mind and our pre-intellectualized awareness. It is the most ancient part of humanity's evolving consciousness; appearing to the intellect as images that are then symbolized.⁵⁸ In order to better understand the significance of this, it is well worth a study of the anthropologist, Julian Jaynes' [The Origins of Consciousness in the Breakdown of the BiCameral Mind](#). And to better understand the developmental, evolutionary nature of consciousness, it is well worth a study of the Transcendentalist writer, Dr. Maurice Bucke's [Cosmic Consciousness](#).

55 Piero Scaruffi in [The Physics of Consciousness](#)

56 Cf. [Psyche & Symbol](#) by Carl Jung

57 Piero Scaruffi in [The Physics of Consciousness](#)

58 PJR Note: This results in the written texts called 'apocalypses' in the Merkabah Tradition.

This consciousness is as an aethyric cloud of quantum potential that then must be transformed into direct experience as potential becomes actualized.

Physicists agree that the macroscopic or classical world (which seems to have a single, 'objective' state) emerges from the quantum world of many possible states through a phenomenon called decoherence, according to which interactions between the quantum states of the system of interest and its environment serve to 'collapse' those states into a single outcome. But this process of decoherence still isn't fully understood. "Decoherence selects out of the quantum 'mush' states that are stable, that can withstand the scrutiny of the environment without getting perturbed," says Zurek. These special states are called 'pointer states', and although they are still quantum states, they turn out to look like classical ones. For example, objects in pointer states seem to occupy a well-defined position, rather than being smeared out in space. Now, Zurek and colleagues have proved a mathematical theorem that shows the pointer states do actually coincide with the states probed by indirect measurements of a system's environment. "The environment is modified so that it contains an imprint of the pointer state," he says.⁵⁹

The process of actualizing potential is as if moving from the quantum, microcosmic state to the mechanical, macrocosmic state.

John Searle (1992) has described his views on the mind-brain problem in a recent book "The Rediscovery of the Mind". He does not endorse the thesis that classical mechanics must be replaced by quantum mechanics in order to reconcile mind and matter, but his arguments lend strong support to that conclusion.

F.2 Searle's theme can be divided into three parts. The first is encapsulated in a sentence appearing in the first paragraph of chapter one: "Mental phenomena are caused by neurological processes in the brain and are themselves features of the brain." The same point is repeated many times: "... the *mental* state of consciousness is just an ordinary biological, that is, *physical*, feature of the brain." (p. 13); "The brain causes certain 'mental' phenomena, such as conscious mental states, and these are simply higher-level features of the brain." (p.14); "Consciousness is a mental, and therefore physical, property of the brain in the sense in which liquidity is a property of a system of molecules" (p.14); "...these [mental] properties are ordinary higher-level biological properties of neurophysiological systems such as human brains." (p.28); "... consciousness is just an ordinary biological feature of the world." (p.85); "...consciousness is a causally emergent property of systems. It is an emergent feature of certain systems of neurons in the same way that solidity and liquidity are emergent features of systems of molecules." (p. 112) F.3 The second sub-theme is this: "Conscious mental states and processes have a special feature not possessed by other natural phenomena, namely, subjectivity." (p.93); "the phenomena itself, the actual pain itself, has a subjective mode of existence, and it is in that sense which I am saying that consciousness is subjective." (p.94); "What more can we say about this subjective mode of existence? Well, first it is essential to see that in consequence of its subjectivity, the pain is not equally accessible to any observer. Its existence, we might say, is a first-person existence." (p.94); "...the ontology of the mental is an irreducibly first-person ontology." (p.95); "No description of third-person, objective, physiological facts would convey the subjective, first-person character of the pain simply because the first-person features are different from the third-person features." (p. 116) F.4 The third sub-theme is that the first two sub-themes are not contradictory: "The facts are that biological processes produce conscious mental phenomena, and these are irreducibly subjective." (p. 98); "What I want to insist upon, ceaselessly, is that one can accept the obvious facts of physics---for example that the world is made up entirely of physical particles in fields of force---without at the same time denying the obvious facts about our own existence---for example that we are all conscious and that our conscious states have quite specific *irreducible* phenomenological properties." (p.28); "According to atomic theory, the world is made up of particles. These particles are organized into systems. Some of these systems are living, and these types of living systems have evolved over long periods of times. Among these, some have evolved brains that are capable of causing and sustaining consciousness. Consciousness is, thus, a biological feature of certain organisms in exactly the same sense of 'biological' in which photosynthesis, mitosis, digestion, and reproduction are biological features of organisms." (p.93) F.5 Searle's main and central point is precisely that there are in nature *two modes of existence: two ontological types of beingness*. Although he rejects labels, he is an "ontological dualist". He chides the various kinds of "materialists" for not accepting the obvious idea that consciousness is essentially what it seems to be: a physical feature of brains that is not ontologically reducible to third-person features.⁶⁰

Per a surface reading, one with a philosophical bend may find in the above quote, an argument for solipsism. However, this is not necessarily the case. It may be postulated in terms of the holographic science, that we are each Monads; our omnipresence being centered in one coordinate in the Universal Mind, so that each of us is the center of a Universe with no circumference.

Craik's ideas predated the theory of knowledge-based systems, which were born after the economist and Nobel-prize winner Herbert Simon and the psychologist Alan Newell developed their theory of physical symbol systems. Both the computer and the mind belong to the category of physical symbol systems, systems that process symbols to achieve a goal. A physical symbol system is quite simple: the complexity of its behavior is due to the complexity of the environment it has to cope with.

It was Simon's belief that no complex system can survive unless it is organized as a hierarchy of subsystems. The entire universe must be hierarchical, otherwise it would not exist.⁶¹

The physical symbol system of the computers helped scientists solve the DNA sequencing equation. Thus, a computer system developed by the human mind/brain complex is formed in

⁵⁹ Philip Ball in [Natural Selection Acts upon the quantum World](#)

⁶⁰ Henry P. Stapp in [Why Classical Mechanics Cannot Naturally Accommodate Consciousness but Quantum Mechanics Can](#)

⁶¹ Piero Scaruffi in [The Physics of Consciousness](#)

the holographic image of human mentation. This machine then is most readily disposed to apprehend and comprehend the nature of human DNA.

Later editions of the architecture organize knowledge in three levels: a knowledge level (information acquired from the environment plus innate principles of inference), an algorithmic level (internal deductions, inductions and compilations) and an implementation level (setting parameters for the encoding of specific pieces of information).⁶²

This is as much a description of DNA sequencing, which directly mirrors this organizational paradigm. Indeed it may be surmised that the DNA, including and especially the mitochondrial DNA, of which the consciousness of the eukaryotes and prokaryotes are subliminally inclusive as an essential element of human consciousness.

It is well worth the effort to read the work of the Mother devotee, Sat Prem, particularly his book Life of the Cells. Indeed, the Supramental Yoga is the striving to bring the cells to full consciousness in and of themselves; and then to integrate that more fully into the mind/brain complex.

Overall, it is the retention of form that provides for us our sense of identity. Though each cell in the body may or may not be brought to complete consciousness, all cells develop to speciality and retain this form, as informed by the DNA. This is reflected in the nature and structure of the mind, which is itself an aggregate consciousness of all the cells of the body.

The mind contains this powerful algorithm that operates on cognitive structures. That algorithm has been refined by natural selection to be capable of responding in optimal time. This can be partly because that algorithm operates on structures that already reflect the nature of our experience. Our experience occurs in situations, each situation being a complex aggregate of factors. The actions we performed in a given situation are rather stereotyped. The main processing of the algorithm goes into recognizing the situation. Once the situation is recognized, somehow it is reduced to past experience and that helps figure out quite rapidly the appropriate action.

Logic is based on deduction, a method of exact inference. Its main advantage is that its conclusions are exact. That is the reason why we use it to build bridges or plane wings. But deduction is not the only type of inference we know. We are very familiar with "induction", which infers generalizations from a set of events, and with "abduction", which infers plausible causes of an effect. Induction has been used by any scientist who has developed a scientific theory from her experiments. Abduction is used by any doctor when she examines a patient. They are both far from being exact, so much so that many scientific theories have been proved wrong over the centuries and so much so that doctors make frequent and sometimes fatal mistakes.

The power of deduction is that no mistake is possible (if you follow the rules correctly). The power of induction and abduction is that they are useful: no scientific theory can be deducted, and no disease can be deducted. If we only employed deduction, we would have no scientific disciplines and no cures.

Alas, deduction works only in very favorable situations: when all relevant information is available, when there are no contradictions and no ambiguities. Information must be complete, precise and consistent. In practice, this is seldom the case. The information a doctor can count on, for example, is mostly incomplete and vague. The reason we can survive in a world that is mostly made of incomplete, inexact and inconsistent information is that our brain does not employ deduction.

Computational models of neural activity now abound.

Besides proving computationally that a neural network can learn, one has to build a plausible model of how the brain as a whole represents the world. In Teuvo Kohonen's "adaptive maps", nearby units responding similarly, thereby explaining how the brain represents the topography of a situation. His unsupervised architecture, inspired by Carl von der Malsburg's studies on self-organization of cells in the cerebral cortex, is capable of self-organizing in regions. Kohonen assumes that the overall synaptic resources of a cell are approximately constant (instead of changing in accordance with Hebb's law) and what changes is the relative efficacies of the synapses.

Formally: a neural net is a nonlinear directed graph in which each element of processing (each node) receives signals from other nodes and emits a signal towards other nodes, and each connection between nodes has a weight that can vary in time.

Computational models of neural networks have greatly helped in understanding how a structure like the brain can perform. Computational models of cognition have improved our understanding of how cognitive faculties work.

The task of a perceptual system can be viewed as the completion of the partial description of static states of an environment. Knowledge is encoded as constraints among a set of perceptual features. The constraints and features evolve gradually with experience. Schemata are collections of knowledge atoms that become active in order to maximize what he calls "harmony". The cognitive system is, de facto, an engine for activating coherent assemblies of atoms and drawing inferences that are consistent with the knowledge represented by the activated atoms. The matter of our bodies changes all the time. The only thing that is preserved is the pattern of matter.⁶³

⁶² Ibid.

⁶³ Piero Scaruffi in The Physics of Consciousness

As goes the mind, so goes the body and indeed, the aethyric form of the body. It may possibly be then that these “knowledge atoms” or particles form the Bose Condensate into the basic hologram of the human being. On an even larger scale, this is what formulates and egregore by which hierarchical beings are placed in the racial, collective consciousness and that then are invoked into the circle of the practicing Mage.

What remains, perhaps, is to examine the connection between mind and brain. The stream of thoughts that endlessly tarry through our minds suggest a source that they spring from. If we can end these thoughts in meditation, then they must have a beginning point. But what point might this be? Piero Scaruffi admits that for him this is a problem. But that hasn't kept other scientists from taking their own 'magickal mystery tour.' The online World Science magazine published the following on September 2, 2005ev:

One new study has found that although people show increased activity in several brain regions while taking IQ tests, gifted people show even greater activity in these regions. This difference was especially pronounced in a zone called the posterior parietal cortex, at the top-back of the head, the researchers found, suggesting further study of this area might give insights into how intelligence works.

The researchers—Kun Ho Lee at Seoul National University in Korea, and others at Yale University in New Haven, Conn., and other institutions—published the findings in the Aug. 22 early online edition of the research journal *Neuroimage*.

The posterior parietal cortex is considered important for “working memory”—the ability to hold items actively in mind, as when remembering a phone number for a few seconds, according to the researchers. Thus, high intelligence might partly be a fairly straightforward matter of more working memory capacity, they said.

This article points to activity in the top-back of the head, suggesting where thoughts are held and from where they emanate. My experience in working Liber Turrus led me to find this point. The first instruction in this working is as follows: “The student should first discover for himself the apparent position of the point in his brain where thoughts arise, if there be such a point. If not, he should seek the position of the point where thoughts are judged.” And I do see that this task was made easy by the visualization practices in the SSS portion of Liber HHH. It seems at least to some degree, that the mind can really see itself, though the same may not necessarily be said of the brain.

It was the psychologist Karl Lashley who first warned that... the mind is never conscious. The mind can never perceive the processing that goes on in the brain when the mind is thinking something. When I think about myself, I am not conscious of what my brain is doing. Whatever it is that I am feeling, it is not what the brain is doing. I am not aware of the billion of electrochemical processes switching neurons on and off. One can even suspect that it is plain impossible for a conscious being to understand what consciousness is. The American philosopher Thomas Nagel pointed out that one can only conceive of things as they appear to her and never as they are in themselves. We can only experience how it feels to be ourselves. We can never experience how it feels to be something else, for the simple reason that we are not something else. As Nagel wrote in a famous paper, we can learn all about the brain mechanisms of a bat's sonar system but we will never have the slightest idea of what it is like to have the sonar experiences of a bat. Understanding how the brain works may not be enough to understand consciousness.

[William] James is responsible for articulating the "classical" theory of consciousness, the analog of Newton's classical Physics. To James, consciousness is a sequence of conscious mental states, each state being the experience of some content. Just like Newton saw a unitary and continuous space, James saw a unitary and continuous consciousness.

James thought that the mind had an evolutionary purpose, just like Darwin thought that all features of the body had an evolutionary purpose. Thinking is useful for our survival, just like eating and mating. James treated consciousness like a function, not an entity.

James was, in part, reacting to the theory of perception that dated from Helmholtz, that sense data from the senses are turned by the mind into percepts which are conscious experiences of the environment. James thought, instead, that the output of the brain process is guidance of action in the environment, not a conscious experience of the environment.

Furthermore, a sensory act specifies not only the environment but also the self. Self (the "subjective") and environment (the "objective") are only two poles of attention. Each act of perception actually specifies both the self and the environment. For example, seeing something carries information about the layout of the environment, but also about our point of perspective, all perception is "perspectival" in character.

This view, of course, must be complemented with the rest of mental life, which is not all conscious.

Damasio breaks the problem of consciousness into two parts: the "movie in the brain" kind of experience (how a number of sensory inputs are transformed into the continuous flow of sensations of the mind) and the self (how the sense of "owning" that movie comes to be).

The "core" consciousness of the movie in the brain is essentially unchanged throughout a lifetime, and humans share it with other many species.

The "extended" consciousness of the self is refined over a lifetime: an "owner" and "observer" of the movie is created within the core consciousness, in such a way that it seems to be located outside the brain, while it is part of the brain's neural processes and part of the movie itself which those neural processes generate. The more developed the sense of the self, the stronger the impression that the movie in the mind is "my" experience of the world.

There is overwhelming evidence that distinct parts of the brain work in concert to represent sensory input. Brain cells represent events occurring somewhere else in the body. Brain cells are "intentional", if you will. They are not only "maps" of the body: besides the topography, they also represent what is taking place in that topography.

Indirectly, the brain also represents whatever the organism is interacting with, since that interaction is affecting one or more organs (e.g., retina, tips of the fingers, ears), whose events are represented in brain cells.

The "movie in the mind" is a purely non-verbal process: language is not a prerequisite for this first level of consciousness. The "I" is a verbal process that arises from a second-order narrative capacity.

The brain stem and hypothalamus are the organs that regulate "life", that control the balance of chemical activity required for living, the body's homeostasis. Consequently, they also represent the continuity of the same organism. Damasio believes that the self originates from these biological processes: the brain has a representation of the body and has a representation of the objects the body is interacting with, and therefore can discriminate self and non-self and then generate a "second order narrative" in which the self is interacting with the non-self (the external world). This second-order representation occurs mainly in the thalamus.

More precisely, the neural basis for the self resides with the continuous reactivation of 1. the individual's past experience (which provides the individual's sense of identity) and 2. a representation of the individual's body (which provides the individual's sense of a whole). An important corollary is that the self is continuously reconstructed

From an evolutionary perspective, we can presume that the sense of the self is useful to induce purposeful action based from the "movie in the mind". The self provides a survival advantage because the "movie in the mind" acquires a first-person character, i.e. it acquires a meaning for that first person, i.e. it highlights what is good and bad for that first person, a first person which happens to be the body of the organism, disguised as a self.

This second-order narrative derives from the first-order narrative constructed from the sensory mappings. In other words, all of this is happening while the "movie" is playing. The sense of the self is created while the movie is playing by the movie itself. The thinker is created by the thought. The spectator of the movie is part of the movie. .

Consciousness is an internal narrative, due to those mappings. The "I" is not telling the story: the "I" is created by stories told in the mind ("You are the music while the music lasts").

In other words, the brain is always working independently of what is happening outside: during sleep, i.e. in the absence of sensorial data, that work is called "dreaming"; during the day, in the presence of sensorial data, it is called thought. The difference is that the brain's automatic dreaming is conditioned by the senses: when the senses are bombarded by external stimuli, the brain can generate only some types of thought, just like the body can generate only some types of movement. At every instant, the brain is dealing with both reality and phantasy. "A person's waking life is a dream modulated by the senses".⁶⁴

Both dreaming and astral travel are manifestations of this movie in the mind. It's connection to the cellular construction of our bodies and the connection of our bodies to the Earth and the Universe it dwells in is indeed profound. This must indeed tell us something of the nature of prophecy and what it truly reveals. The fact that prophecy is mistaken for divination is costly error as prophecy really has very little to do with predicting the future. The Merkaba Tradition preserves a shamanistic connection the true nature of prophecy and explains why medicine is the first Magick.

[C]onsciousness is a product of socialization among biological organisms. Language simply provides the medium for its emergence. The mind is socially constructed, society constitutes an individual as much as the individual constitutes society.⁶⁵

Of course we've ordered our world as a mirror of the body/mind/soul complex. The paradigm itself is created by our minds as a natural projection. A hint to a deeper understanding of this is found in the Giza pyramid; with its reflection of the sky, perfectly laid out upon the ground. And even more significantly, we find the Supramental Yoga deals directly with this aggregate consciousness that we are shown in the Egyptian mystery play, requires a congealing in order to ensure a certain 'immortal' state. (Cf. [Congealing the Soul](#)).

The mind emerges through a process of internalization of the social process of communication, for example by reflecting to oneself the reaction of other individuals to one's gestures. The minded organism is capable of being an object of communication to itself. Gestures, which signal the existence of a symbol (and a meaning) that is being communicated (i.e., recalled in the other individual), constitute the building blocks of language. "A symbol is the stimulus whose response is given in advance". Meaning is defined by the relation between the gesture and the subsequent behavior of an organism as indicated to another organism by that gesture. The mechanism of meaning is therefore present in the social act before the consciousness of it emerges.

Consciousness is not in the brain, but in the world. It refers to both the organism and the environment, and cannot be located simply in either. What is in the brain is the process by which the self gains and loses consciousness (analogous to pulling down and raising a window shade).⁶⁶

⁶⁴ Piero Scaruffi in [The Physics of Consciousness](#)

⁶⁵ Ibid.

⁶⁶ Ibid

In Liber AL vel Legis, NUIT (the fabric of existence) says: “...**And the sign shall be my ecstasy, the consciousness of the continuity of existence, the omnipresence of my body.**” Per the Brahman philosophy, pure consciousness has no locality; seemingly in the same way a particle has no locality, but a tendency to manifest in certain places at certain times. Individual consciousness then does manifest and like certain fermions, may even disappear as if having departed to another dimension. (Cf. [Testing the Night of Pan](#))

The philosopher Daniel Dennett offers an even more detailed route to consciousness: consciousness evolved from non-consciousness to reasoning and then to deal with memes. Again, memes represent culture.⁶⁷

The evolutionary direction of manifestation comes from the grossest density of matter that in Thelema is referred to as the N.O.X., suggesting clearly that it is a pre-form matter that is beyond our ability to apprehend in the same way that modern physicists are now becoming aware of what they call Dark Matter and Dark Energy. From this, form arises as represented in Thelemic Magick by the Signs of N.O.X.; being Puella, Puer, Vir, Mulier & Mater Triumphans—a perfect delineation of human forms.

The psychologist Nicholas Humphrey agrees that the function of consciousness is that of social interaction with other consciousnesses. Consciousness gives every human a privileged picture of her own self as a model for what it is like to be another human. Consciousness provides humans with an explanatory model of their own behavior, and this skill is useful for survival: in a sense, the best psychologists are the best survivors. .

Humphrey speculates that, by exploring their own selves, humans gained the ability to understand other humans; by understanding their own minds, they understood the minds of the individuals they shared their life with.

consciousness is unlikely to arise from classical properties of matter (the more we understand the structure and the fabric of the brain, the less we understand how consciousness can occur at all), which are well known and well testable. But Quantum Theory allows for a new concept of matter altogether, which may well leave cracks for consciousness, for something that is not purely material or purely extra-material. Of course, the danger in this way of thinking is to relate consciousness and Quantum only because they are both poorly understood: what they certainly have in common is a degree of "magic" that makes them both mysterious and unattainable.

On the other hand, it is certainly true that all current neurobiological descriptions of the brain are based on Newton's Physics, even if it is well known that Newton's Physics has its limitations. First of all, Newton's Physics is an offshoot of Descartes division of the universe in matter and spirit, and it deals only with matter. Secondly, neurobiologists assume that the brain and its parts behave like classical objects, and that quantum effects are negligible, even while the "objects" they are studying get smaller and smaller. What neurobiologists are doing when they study the microstructure of the brain from a Newtonian perspective is equivalent to organizing a trip to the Moon on the basis of Aristotle's Physics, neglecting Newton's theory of gravitation.

No wonder most neurobiologists reach the conclusion that Physics cannot explain consciousness, since they are using a Physics that 1. was designed to study matter and leave out consciousness and that 2. does not work in the microworld. Not surprisingly, it has been claimed that all current neurobiological models are computationally equivalent to a Turing machine.

The first detailed quantum model of consciousness was probably the American physicist Evan Walker's synaptic tunneling model (1970), in which electrons can "tunnel" between adjacent neurons, thereby creating a virtual neural network overlapping the real one. It is this virtual nervous system that produces consciousness and that can direct the behavior of the real nervous system. The real nervous system operates by means of synaptic messages. The virtual one operates by means of the quantum effect of tunneling (particles passing through an energy barrier that classically they should not be able to climb). The real one is driven by classical laws, the virtual one by quantum laws. Consciousness is therefore driven by quantum laws, even if the brain's behavior can be described by classical laws.

Later theories will share the view that the brain "instantiates" not one but two systems: a classical one and a quantum one. The second one could be responsible for the properties of mental life (such as consciousness) that are not easily reduced to the properties of the classical brain. The beauty of Quantum Theory is that it allows for "nonlocal" properties and provides a framework to explain how entities get "entangled", precisely the phenomena that brain processes are not enough to explain.

In 1986 John Eccles, the British neurophysiologist who discovered neurotransmitters, has speculated that synapses in the cortex respond in a probabilistic manner to neural excitation, a probability that could well be governed by quantum uncertainty given the extremely small size of the synapsis "microsite" that emits the neurotransmitter. If this is true, Eccles speculates that an immaterial mind (in the form of "psychons") controls the quantum "jumps" and turns them into voluntary excitations of the neurons that account for body motion.

There is also a physical model of consciousness that invokes other dimensions. The unification theories that attempt at unifying General Relativity (i.e. gravitation) and Quantum Theory (i.e., the weak, electrical and strong forces) typically add new dimensions to the four ones we experience. These dimensions differ from space in that they are bound (actually, rolled up in tiny tubes) and in that they only exist for changes to occur in particle properties. Saul-Paul Sirag's hyperspace, for example, contains many physical dimensions and many mental dimensions (time is one of the dimensions they have in common).

The intriguing feature of a Bose-Einstein condensate is that the many parts of a system not only behave as a whole, they become whole. Their identities merge in such a way that they lose their individuality.

Bose-Einstein condensation can normally be achieved only at very low temperatures. In the late 1960s, the British physicist Herbert Froehlich proved the feasibility and even the likelihood of Bose-Einstein condensation at body temperatures in living matter (precisely, in cell membranes). This opened the doors to the possibility that all living systems contain Bose-Einstein condensates.

⁶⁷ Piero Scaruffi in [The Physics of Consciousness](#)

Precisely, electrical charged molecules of living tissues behave like electric dipoles. When digestion of food generates enough energy, all molecular dipoles line up and oscillate in a perfectly coordinate manner, which results in a Bose-Einstein condensate. Biological oscillators of this kind are pervasive in nature: living matter is made of water and other biomolecules equipped with electrical dipoles, which react to external stimuli with a spontaneous breakdown of their rotational symmetry.

The biological usefulness of such biological oscillators is that, like laser light, they can amplify signals and encode information (e.g., they can "remember" an external stimulus).

Most importantly, coherent oscillations are crucial to many processes of integration of information in the brain.

In 1989 the British psychiatrist Ian Marshall showed similarities between the holistic properties of condensates and those of consciousness, and suggested that consciousness may arise from the "excitation" of such a Bose-Einstein condensate. In Marshall's hypothesis, the brain contains a Froehlich-style condensate, and, whenever the condensate is excited by an electrical field, conscious experience occurs. The brain would maintain dynamical coherence (i.e., be able to organize millions of neuronal processes into the coherent whole of thought) thanks to an underlying quantum coherent state (the Bose-Einstein condensate).

Furthermore, Marshall thinks that the collapse of a wave function is not completely random, as predicted by Quantum Theory, but exhibits a preference for "phase difference". Such "phase differences" are the sharpest in Bose-Einstein condensates. This implies that the wave function tends to collapse towards Bose-Einstein condensates, i.e. that there is a universal tendency towards creating the living and thinking structures that populate our planet. Marshall views this as an evolutionary principle built in our universe.

In other words, the universe has an innate tendency towards life and consciousness. They are ultimately due to the mathematical properties (to the behavior) of the quantum wave function, which favors the evolution of life and consciousness.

Marshall can then solve the paradox of "adaptive evolution", discovered in 1988 by John Cairns: some bacteria can mutate very quickly, way too quickly for Darwin's theory to be true. If all genes mutated at that pace, they would mostly produce mutations that cannot survive. What drives evolution is natural selection, which prunes each generation of mutations. But natural selection does not have the time to operate on the very rapid mutations of these bacteria. There must be another force at work that "selects" only the mutations that are useful for survival.

Marshall thinks that the other force is the wave function's tendency towards choosing states of life and consciousness. Each mutation is inherently biased towards success.

His wife, the American philosopher Danah Zohar, has expanded on this idea. Zohar views the theory of Bose-Einstein condensation as a means to reduce mind/body duality to wave/particle duality. The wave aspect of nature yields the mental, the particle aspect of nature yields the material. Zohar is fascinated by the behavior of bosons. Particles divide into fermions (such as electrons, protons, neutrons) and bosons (photons, gravitons, gluons). Bosons are particles of "relationship", as they are used to interact. When two systems interact (electricity, gravitation or whatever), they exchange bosons. Fermions are well-defined individual entities, just like large-scale matter is. But bosons can completely merge and become one entity, more like conscious states do. Zohar claims that bosons are the basis for the conscious life, and fermions for the material life.

The properties of matter would arise from the properties of fermions. Matter is solid because fermions cannot merge. On the other hand, the properties of mind would arise from the properties of bosons: they can share the same state and they are about relationships.

This would also explain how there can be a "self". The brain changes all the time and therefore the "self" is never the same. I am never myself again. How can there be a "self"? Zohar thinks that the self does change all the time, but quantum interference makes each new self sprout from the old selves. Wave functions of past selves overlap with the wave function of the current self. Through this "quantum memory" each new "quantum self" reincarnates past selves.

The self is not even a simple concept. The biologist Ulric Neisser, one of the father founders of Ecological Realism, identified five kinds of self-knowledge: the ecological self (situated in the environment), the "interpersonal self" (situated in the society of selves), both based on perception, the private self, the conceptual self and the narrative (or "remembered") self.

The American philosopher Thomas Nagel noted that consciousness cannot be "counted": schizophrenic patients have neither one nor two consciousnesses. It appears that brain hemispheres cannot compete, even when they have been separated: they have been programmed to work in tandem.

Daniel Dennett also has difficulties with the self. In his "multiple draft" theory, consciousness is simply the feeling of the overall brain activity. Whichever draft, whichever "narrative" dominates is my current "I". But the dominant draft could be changing every second. Dennett is opposed to the idea that there is an enduring mind because it would imply that there is a place in the brain where that mind resides. He thinks that such "cartesian theater" is absurd and that the mind is implemented by multiple parallel drafts.⁶⁸

Liber Turris as well as contemporary science is strongly suggesting that there is a place in the mind where thoughts arise, as discussed above. This may become so as the Soul begins to congeal with perhaps these parallel thoughts becoming integrated by perhaps a certain alchemical process into a singularity, as suggested by Carl Jung; himself a student of Alchemy.

The bottom line is that cognition is embodied and situated: it is always about our body and/or our environment. Symbols and the mental processes that operate on them are grounded in sensory-motor activity.⁶⁹

The solipsistic argument, when it is about mind alone is built on a false paradigm as the mind itself is connected to the aethyr, which means it is connected to the environment outside the brain. By including environment, we include objective reality, per Thomas Nagel as he writes in The View from Nowhere.

⁶⁸ Piero Scaruffi in The Physics of Consciousness

⁶⁹ Ibid

There is continuity between symbolic awareness and perceptual-enactive awareness because symbolic representation is performatory: it is useful precisely because it is about action; because symbols are grounded in action. Contrary to Dennett and Gazzaniga, Carlson reaches the conclusion that the continuity of consciousness is not only real, it is an ecological necessity, because the self is cospecified by perception, and perception is driven by changes in the world, and those changes are continuous. Cognition is grounded in one's point of view, and that point of view is grounded in an environment, and this two-fold grounding process is continuous.⁷⁰

The continuous quality is Nuit!...in her relationship with Hadit. The environment is the entirety of the Universe that we each contain within ourselves. This must be symbolically presented in order for us to become aware of its dynamic. And as Occultists have known for aeons, symbols make a deep impression on the mind and are superior to normal, intellectual modes of knowledge acquisition.

Symbols appear to us in dreams; being the primal mode of the human thought process. These represent how our consciousness reflects itself into our awareness. Its machinations are so subtle that we need to remove the awareness of activity outside our bodies in order to have the ability to apprehend them.

Jouvet was also a pioneer of the theory that dreams have a function: to derive crucial action patterns from the genetic program of the individual. REM sleep provides a means to combine genetic instructions with experience. Sleep and dreaming are a survival strategy. In particular, Jouvet showed that psychological differences across individuals are maintained by a sort of continuous reprogramming that takes place during REM sleep. This process wipes out "certain aspects of what we have learned", while reinforcing the "unconscious reactions that are the basis of personality". (Research seems to indicate that different individuals each have a different sleep pattern, but patterns of eye movements in identical twins are similar).⁷¹

Might we then be able to say that by influencing dreams, the genetic make-up can be altered? This has certainly been considered a serious possibility as suggested in the teaching of some Occult systems on the techniques for waking up in one's dreaming in; giving one the ability to direct the dream as one sees fit.

More than Freud's pathological theory of dreaming, this resembles the theory of the Swiss psychologist Carl Jung, that dreams reflect the "collective unconscious", a shared repertory of archaic experience represented by "archetypes" which spontaneously emerge in all minds. One only has to adapt Jung's thought to genetics. The universal archetypes envisioned by Jung could be predispositions by all human brains to create some myths rather than others, just like, according to Chomsky, all human brains inherit a predisposition towards acquiring language. The neocortex processes sensory input and sends it to the hippocampus, that acts as a gateway to the limbic system. The limbic system mediates between sensory input and motor output. Initially, the hippocampus is needed to retrieve information stored in long-term memory, but, after about three years, the brain somehow learns how to access directly such information.⁷²

The process of mediation between sensory input and motor output is an appropriate description of the Automatic Consciousness that is the work of the Zelator to develop. It is also what Carlos Castaneda refers to as acting *impeccably*. All actions resulting from brain activity, happen because of neurotransmitters. That these transmitters, that act on the surface of the cells then induce messenger molecules to transfer information to the nucleus. This means that ultimately, the DNA may be affected. This means the memories of our life's experiences may be the key to our evolution.

Dreams may explain how this happens. During REM sleep, the time when we dream, the neocortex is working normally, except that movement in the body is inhibited. Most mammals, except for primates, exhibit a theta rhythm in the hippocampus (about 6 times per second) only on two occasions: whenever they perform survival-critical behavior, and during REM sleep. From this evidence, Winson deduced that REM sleep must be involved in survival-critical behavior. Early mammals had to perform all their "reasoning" on the spot ("on-line"). In particular they had to integrate new information (sensory data) with old information (memories) immediately to work out their strategies. Winson speculates that at some point in evolution brains invented a way to "postpone" processing sensory information by taking advantage of the hippocampus: REM sleep. Theta rhythm is the pace at which that ("off-line") processing is carried

⁷⁰ Piero Scaruffi in [The Physics of Consciousness](#)

⁷¹ Ibid.

⁷² Ibid.

out. Instead of taking input from the sensory system, the brain takes input from memory. Instead of directing behavior, the brain inhibits movement. But the kind of processing during REM sleep is the same as during the waking state. Winson speculates that this off-line processing is merging new information with old memories to produce strategies for future behavior.

Theta rhythm disappeared in primates, but REM sleep remained as a fundamental process of brains. In humans, therefore, REM sleep, i.e., dreams corresponds to an off-line process of integration of old information with new information.

What is still missing is the physical link between dreams and genome. Neurotransmitters (such as amines and cholines) act on the surface (the membrane) of the cell, whereas genes lie in the center (the nucleus) of the cell. But the messenger molecules transfer information from the membrane to the nucleus and viceversa. Allan Hobson has hypothesized that neurotransmitters may interact with messenger molecules and therefore affect the work of genes.

What differs between wake and sleep is very little, but enough to alter dramatically the outcome: during sleep the brain is bombarded by erratic pulses from the brain stem and flooded with nervous system chemicals of a different sort.

Neurotransmitters make brain circuits more or less sensitive. Aminergic neurotransmitters originate in the brain stem and terminate in the amygdala. Cholinergic neurotransmitters originate in the forebrain and terminate in the cortex. During waking states, the brain is controlled by the aminergic neurotransmitters, made of molecules called "amines". During sleep, the brain is controlled by the cholinergic neurotransmitters, made of a molecule called "acetylcholine". Cholinergic chemicals free the system used for cognition and behavior. They paralyze the body by sending pulses to the spinal chord, even if motor neurons are always in motion.

The idea is that wake and sleep are two different chemical systems hosted in the same "processor".

These two chemical systems are in dynamic equilibrium: if one retracts, the other advances. This means that our consciousness can fluctuate between two extremes, in which either of the chemical systems totally prevails (neither is ever completely absent). This also means that the brain states of wake and sleep are only two extremes, between which there exists a continuum of aminergic-cholinergic interactions, and therefore a continuum of brain states. This system can be said to control the brain. It resides in the brain stem and from there it can easily control both the lower brain (senses and movement) and the upper brain (feelings and thought).

When it doesn't work properly, when the balance of chemicals is altered, mental diseases like delirium occur. It is not surprising that diseases such as delirium are so similar to dreams: they are driven by exactly the same phenomenon.⁷³

Cf. The Chemistry of Conscious States by Hobson; where this is described in greater detail.

This could be what happens during astral projection. By stilling the body, asana, the sleep chemicals may be generated. These it seems, should also be influential in human dreaming, which is but a form of astral projection; especially lucid dreaming.

Hobson claims that the brain is in awake, dream or (non REM) sleep mode depending on whether amines are prevailing, cholines are prevailing or amines and cholines are "deadlocked".

Three factors account for the brain behavior at any time: activation energy (amount of electrical activity), information source (internal or external) and chemical system (amines or cholines).

When activation energy is high, the information source is external and the mode is aminergic: the brain is awake. As activation energy decreases, the external information source fades away and amines and cholines balance each other: the brain falls asleep. When activation energy is high, the information source is internal and the mode is cholinergic: the brain is dreaming. During an hallucination: activation energy is high, the information source is internal and the mode is aminergic. In a coma: activation energy is low, the information source is internal and the mode is cholinergic.

The extremes are rare and usually traumatic. Normally, both external and internal sources contribute to the cognitive life, and both amines and cholines contribute to the brain state.⁷⁴

The ability to produce an internal or aminergic state while awake seems to be a result of meditation and astral practice for the Occultist. Herein, the symbolic production of the brain can be viewed consciously and subsequently directed by the mind or the will. This may also be the description of where and how prophecy may be produced in the Merkabic Tradition.

The interplay of external and internal sources means that our perceptions are always mediated by our memory. Hobson thinks that our brains do not merely react (to stimuli), they also anticipate. The internal source tells us what to expect next, and thus helps us cope with the external source. Emotions are, in a sense, a measure of how well the internal source matches the external source: anxiety is caused by a major mismatch, whereas contentness is a sign of matching sources.

The interplay between the aminergic and the cholinergic systems may be responsible for all conscious phenomena (for Hobson, dreams are as conscious as thinking) and ultimately for consciousness itself. After all, conscious states fluctuate continuously between waking and dreaming. Dreams, far from being subjective, are "impersonal necessities forced on brain by nature".

This hypothetical history of the mind does not differ too much from the one in which the mind was created by memes. The relationship between memes and dreams is intuitive, and the psychologist Joseph Campbell indirectly summarized it with his celebrated aphorism that "a myth is a public dream, a dream is a private myth".⁷⁵

⁷³ Piero Scaruffi in The Physics of Consciousness

⁷⁴ Ibid.

⁷⁵ Ibid.

The public myth is then a zeitgeist or egregore that as a psychic force shows us that our thoughts and feelings can create complex working relationships by which human culture forms.

Emotion appears to be a key component in the behavior of conscious beings. To some extent, consciousness "is" emotion. There is probably no recollection, no thinking and no planning that occurs without feeling emotions. We are either happy or sad or afraid or something else all the time. There is rarely a moment in our day when we are not feeling an emotion. William James conceived mental life as a "stream of consciousness", each state of consciousness possessing both a cognitive aspect and a feeling aspect.

Emotions have been traditionally neglected by scientists researching the mind, as if they were a secondary aspect (or simply a malfunction) of the brain activity. The fact is surprising because emotions have so much to do with our being "aware", with differentiating intelligent life from dead matter and non-intelligent life. While the relationship between "feeling" and "thinking" is still unclear, it is generally agreed that all beings who think also feel. That makes feelings central to an understanding of thinking.

This is reflected by the way emotions are generated. The central processor for emotions is the brain structure called "amygdala" The thalamus normally connects senses to cortex and cortex to muscles. But the amygdala provides a much faster shortcut for decision making: the route from senses to amygdala to thalamus to muscles is much faster than going through the cortex.

An emotional state is created by a situation, through a somewhat mysterious chemical reaction in the nerve system. A cognitive state is created by a number of situations and by a thinking process that relates those situations and draws some kind of conclusion. The relation between emotional states and cognitive states is reduced to the need to draw conclusions when cognition would face combinatorial explosion of possible reasoning threads.

Jauregi distinguishes five systems of communication: the natural system (the sender is a natural thing, such as a tree), the cultural system (the sender is culture, something created by humans), the somatic system (the sender is the individual's own body), the imaginary system (the sender is imagination) and the social system (the sender is another individual). The human brain is genetically equipped to receive and understand all five kinds of messages. What ultimately matters is the emotional translations of sensory inputs.⁷⁶

That we can distinguish five systems of communication, we have a perfect corollation with the symbol of the elemental Pentagram. We then find what may be the origin of the development of the idea of the five elements of the Pentagram. If we adopt into our culture, a reflection of the symbolism of the brain, it is no wonder that human cultures in the past that haven't had contact or awareness of other cultures, have yet produced the same types of corresponding myths.

The difference is crucial. Emotions are fixed genetically, to a large extent: evolution has endowed us with a basic repertory of emotions that help us survive. My personality (which is mostly shaped by my interaction with the environment) may determine how I express and react to those emotions, but the emotions that occur in me are the same of my whole species. Emotion is a genetically-driven response to a stimulus: when that stimulus occurs (for example, a situation of danger), a region of the brain generates an emotion (fear) that is spread through the brain and the body via the nervous system and therefore causes a change in the state of both the brain and the rest of the body. This change of state is meant to somehow cope with the stimulus. Some emotions are acquired during development (eg, through social interaction) but they too are grounded in the universal, primary emotions of the species.

Somatic markers are the repertory of emotional learning that we have acquired throughout our lives and that we use for our daily decisions. The somatic marker records emotional reactions to situations. Former emotional reactions to similar past situations is just what the brain uses to reduce the number of possible choices and rapidly select one course of action. There is an internal preference system in the brain that is inherently biased to seek pleasure and avoid pain. When a similar situation occurs again, an "automatic reaction" is triggered by the associated emotion: if the emotion is positive, like pleasure, then the reaction is to favor the situation; if the emotion is negative, like pain or fear, then the reaction is to avoid the situation. The somatic marker works as an alarm bell, either steering us away from choices that experience warns us against or steering us towards choices that experience makes us long for. When the decision is made, we do not necessarily recall the specific experiences that contributed to form the positive or negative feeling.⁷⁷

The Automatic Consciousness is then also developed by experience and is not purely the result of the external on the internal as the human evolves. Our emotions, which most Western exoteric systems have sought to suppress as sinful and most esoteric Eastern systems have denigrated as excitations of mind that inhibit the meditative state seem to be the key to our evolution. The problem may actually be more that sometimes are emotions may become so automatically rigid that we then begin to misinterpret experience; skewing our evolutionary process.

⁷⁶ Piero Scaruffi in The Physics of Consciousness

⁷⁷ Ibid.

In philosophical terms, a somatic marker plays the role of both belief and desire. In biological terms, somatic markers help rank "qualitatively" a perception.

In other words, the brain is subject to a sort of "emotional conditioning". Once the brain has "learned" what the emotion associated to a situation, the emotion will influence any decision related to that situation. The brain areas that monitor body changes begin to respond automatically whenever a similar situation arises.

It is a popular belief that emotion must be constrained because it is irrational: too much emotion leads to "irrational" behavior. Instead, Damasio shows that a number of brain-damage cases in which a reduction in emotionality was the cause for "irrational" behaviour.

Somatic markers help make "rational" decisions, and help making them quickly. Emotion, far from being a biological oddity, is actually an integral part of cognition. Reasoning and emotions are not separate: in fact, they cooperate.

There is evidence that specific circuits in the brain are devoted to handling emotions. These regions communicate the "emotion" to the rest of the body via the bloodstream and the nervous system. The effect is to cause a change in the state of the body. So the emotion is really an "amplifier" of a signal that came from either the body itself or from the external world (itself mediated by the senses, which are part of the body). Ultimately, the emotion looks like a loop: a change of state in the body causes an emotion that causes a change of state in the body.

The brain is endowed with another mechanism for survival, the one that we call "cognition". The brain analyzes the world and make decisions about it. Emotion and cognition work towards the same goal on parallel tracks. The advantage of emotion over cognition is that it provides a short-cut: instead of analyzing every single stimulus separately, it allows the organism to react to different stimuli with the same action. Fear is the reaction to any kind of danger, even if they are completely different events. Emotion enables similar response to different stimuli, without any need to "think" about it.

The disadvantage of emotion is that sometimes the short-cut is not perfect: it may lead us to "over-react".

John Aggleton has offered a model of how memories about fearful experiences are created in the brain by interactions among the amygdala, the thalamus and the cortex.

Emotional memory (stored in the amygdala) differs from declarative memory (which is mediated by the hippocampus and the cortex). Emotional memory is primitive, in the sense that only contains simple links between cues and responses. A noise in the middle of the night is enough to create a state of anxiety, without necessarily bringing back to mind full consciousness of what the origin of that noise can be. This actually increases the efficiency (at least the speed) of the emotional response.

Emotional and declarative memories are stored and retrieved in parallel. Adults cannot recall childhood traumas because in children the hippocampus has not yet matured to the point of forming conscious memories, but the emotional memory is there.

Emotions are the brain's interpretation of reactions to changes in the world. Emotional memories involving fear can never be erased. The prefrontal cortex, amygdala and right cerebral cortex form a system for reasoning that gives rise to emotions and feelings. The prefrontal cortex and the amygdala process a visual stimulus by comparing it with previous experience and generate a response that is transmitted both to the body and to the back of the brain.⁷⁸

Childhood memories are then generally false in terms of relating the actuality of events. What becomes important is the emotions stored into the memory from these experiences, which when found under hypnosis is resynthesized into new symbols and then revealed to the mind as a memory that becomes significant. Though, we should be careful not to equate these memories with actual, historicity of our lives; the child not having the opportunity to observe the whole of any actual event that the memories might be impinging themselves upon. Without the ability to comprehend the complicated data of the adult world in which the child is residing, most of these events are never even taken into memory; a by-product of the unconsciousness of the child.

As neurophysiologists make progress on the functioning of the brain, it is beginning to appear that there is a difference between emotions and thinking. Emotions are often not desired: they occur because of external stimuli. I don't have much control over them, but they are not spontaneous: I can always relate them to an external event. Emotions have no logical construct, no flow, no time dimension. They simply happen and slowly fade away or change into other emotions: their only dimension is their intensity.

The main difference between emotions and thought is that thoughts do have a time dimension and can evolve over time. Thoughts can be controlled: I can decide if I want to think or not, and what I want to think. But they can also be spontaneous, just like emotions. Both emotions and thought result in behavior. Therefore, my behavior is driven by both emotions and thought, by both controlled and non controlled inner behavior. Thought also results in emotions, albeit of a different type (like depression or anxiety).

Cognition sort of mediates between emotions and thought. Emotions help organize the world in the mind, and that is what thought operates upon. Each emotion changes the mind and how deeply the emotion changes the mind depends on how intense the emotion is. That "change" is a change in cognition.

Thought can also generate a change in cognition, but we can fairly assume that even thought needs to generate an emotion before a meaningful, lasting change is performed on cognition. Basically, we can assume that nothing changes in our mind unless an emotion is created. The emotion is what causes the mind to reorganize itself.⁷⁹

If this has an affect on DNA, we can then create a personal eugenic process based on the interplay of thoughts and emotions if we can also deliberately control our experience. In the

⁷⁸ Piero Scaruffi in The Physics of Consciousness

⁷⁹ Ibid.

culture of the Occult lodge, this is called *initiation*. In an initiation lodge, an archetypal construct is visually presented to the candidate as an experienced drama-play is performed. It may then be said that Occultists control the emotions in such settings in order to consciously develop the DNA through the use of symbols and rituals that hold an effect upon a deep, fabric of mind; these archetypal images conforming to the principle: 'as above, so below' and hence, these archetypal images foster their effect on the dynamic form of the human body.

The self and free will operate at the level of "thought". Somehow cognition enables not only the "linguistic" form of consciousness which is thought, but also the self-reflection and the initiative that uniquely characterize thought.

The question, from an almost evolutionary viewpoint, is whether thoughts are simply an evolution of emotions: language enabled us to control emotion and to develop something equivalent to emotion but more subtle. Or whether they are two different aspects, and they always were different.

Free will is an important variable in this equation. There is no doubt that the ability to decide what I do has to play a key role in a definition of thought. But note that free will is almost the opposite of emotions: emotions are beyond "our" control.

The machinery of "mind", or "cognition" (memory, learning, reasoning, language), is at the service of our primary inner life: thoughts and emotions (and even dreams). The machinery of "mind" is really a mediator between our primary inner life and our bodily life.

A similar relationship applies to thought and consciousness. There is one skill, capability, that brains have, and there is the feeling associated to it. By "thought" we normally mean the capability of thinking, of putting memories and words and images together. By "consciousness" we really mean (among other things) the feelings associated with thinking. Thought is therefore also a "mediator": between consciousness and the brain. This distinction may prove essential to an understanding of emotions. Some emotions (let's call them "bodily emotions") are localized and refer to the life of body parts. Some emotions (let's call them "inner" emotions) are not localized and refer to the inner life of thought. If thought is an evolution of emotions, then these are emotions about emotions.

Consciousness (inner life):

Linguistic consciousness = Thought

Non-linguistic consciousness = Emotions

Sense-generated emotions (which we will abbreviate as "sensations", a particular type of emotions)

Thought-generated emotions (which we will abbreviate as "emotions" tout court)

Dreams

Most animals cannot afford to spend much time philosophizing: their minds are constantly working to help them survive in their environment.

Since tools were doing most of the job for us, our minds could afford the luxury of philosophizing, which is really mental gymnastics (to keep the mind in good shape).⁸⁰

Without the benefit of initiation, the individual may through force of Will; deliberate thoughts to override the forced responses of the emotions to achieve an evolutionary process. But where this may lead, may or may not take one to a higher state of being; the Cosmic Consciousness of a more fully realized human being. The initiation lodge, when instituted by one who has already attained to this state, would contain then, a far more effective scheme.

⁸⁰ Ibid

The Sexuality of Consciousness

The biological construct of the human body is as shown, developed by emotion, which has a corresponding effect on DNA. This begins to be apprehended through the medium of symbols produced by the mind that are then re-cognized in a special set of symbols we call language.

Two questions remain. The first one is: where does language come from?

We can answer the first question by relating these findings to neurobiologists such as Gerald Edelman who believe that a mind is a particular set of connections in the brain: if language changes the mind, then it must be capable of changing the connections in the brain. Why would it do that? Because, as Baldwin noticed, species capable of learning are better at evolving. If language is such an efficient tool for learning that shapes an entire system of thought in a few years, then it must certainly be useful to survival and evolution.

Language is more than just sound. Language is sound (or vision, when you are reading) with a structure, and therefore packs more information than just sound. This was a crucial invention: that you can use sound as a vehicle to carry more information than the sound itself. The tip probably came from Nature itself: Nature speaks to us all the time. The noise of a river or the noise of an avalanche create concepts in our minds, besides the representation of those sounds. Brain connections are modified at two levels: first to reflect the stimuli of the noise, and then to reflect what we can derive from the noise. Our brain can learn at two levels: there is a noise in that direction, and it is a river (meaning, for example, water to drink). Stimuli modify connections both at the level of perception and at the level of concepts. Language exploits this simple fact. (Yes, the same is true of cinema, but our bodies are not equipped with an organ to make images the way we are equipped with an organ to make sounds, and the invention of writing required a lot less technological knowledge than television or cinema, but in the future we may end up carrying our portable image-maker so that we can show what happened in images instead of telling it in words).

The second question is: how does language do what it does to our brain connections?

The answer may be that we are more poets than we think: in order to deliver feelings, poets use a vehicle called "metaphor". Metaphor is more pervasive than we think, and it may well be the foundation of language (some linguists even claim that all language is metaphorical). Metaphor is a powerful tool to shape a mind because it finds "connections" between things in the mind and the new connections enable the mind to "see" the world differently.

The ability to understand and utter language is due to the universal grammar that is somehow encoded in the human genome.

Which reflect in primis the organization of thought itself: a basic tenet of Fauconnier's theory is that linguistic structure reflects not the structure of the world but the structure of our cognitive life.

The idea is that, as the speaker utters one sentence after the other, she is in fact constructing mental spaces and the links among them, resulting in a network of mental spaces. Mental spaces, in particular, facilitate reasoning: while logic-based semantics (Chomskyan logical form, Montague's semantics, situation semantics) assume that language provides a meaning that can be used for reasoning, Fauconnier assumes that language builds the same kind of mental spaces from the most basic level of meaning construction all the way up to discourse and reasoning.

Mental spaces allow for alternative views of the world. Fauconnier thinks that the mind needs to create multiple cognitive spaces in order to engage in creative thought.

Fauconnier's theory provides the abstract tools ("accessing", "spreading" and "viewpoint") for the dynamics of mental space construction and linking.

Charles Darwin observed that languages seem to evolve the same way that species evolve, but, just like with species, he failed to propose what the origin of language was.

Today, we have growing evidence that his intuition was correct. Languages evolved just like species, through little "mistakes" that were introduced by each generation. It is not surprising that the evolutionary trees drawn by biologists (based on DNA similarity) and linguists (based on language similarity) are almost identical. Jones concludes that language may date back to the beginning of mankind.

What is puzzling, then, is not the evolution of modern languages from primordial languages: it is how non-linguistic animals evolved into a linguistic animal such as the human being. It's the "evolution of language" from non-language, not the "evolution of languages" from pre-existing languages.

Several biologists and anthropologists believe that language was "enabled" by accidental evolution of parts of the brain and possibly other organs. The American biologist Philip Lieberman views the brain as the result of evolutionary improvements that progressively enabled new faculties. In particular, rapid vocal communication influenced the evolution of the brain. Human language is a relatively recent evolutionary innovation that came about when speech and syntax were added to older communication systems. Speech allowed humans to overcome the limitations of the mammalian auditory system and syntax allowed them to overcome the limits of memory.

Our mind shares with the other minds a conventional system of metaphor. This is a system of "mappings", of referring one domain of experience to another domain, so that one domain can be understood through another domain which is somehow more basic. Normally, a more abstract domain is explained in terms of a more concrete domain. The more concrete the domain, the more "natural" it is for our minds to operate in them. Lakoff defined three types of metaphor: "orientational" (in which we use our experience with spatial orientation), "ontological" (in which we use our experience with physical objects), "structural" (in which natural types are used to define other concepts). Every metaphor can be reduced to a more primitive metaphor.

Language was probably created to deal only with physical objects, and later extended to non-physical objects by means of metaphors. Conceptual metaphors transport properties from structures of the physical world to non-physical structures.

Reason, in general, is not disembodied, it is shaped by the body.⁸¹

81 Piero Scaruffi in The Physics of Consciousness

So in other words, language as thoughts affect the body and vice-versa. Our evolutionary development must then in some way be hard-wired into our bodies.

A metaphor is recognized as a metaphor on the basis of the semantic anomaly produced by the juxtaposition of referents. And this also means that metaphor must be distinct from ordinary language (as opposed to the view that all language is metaphorical).

MacCormac adopts Philip Wheelwright's 1962 classification of metaphors into "epiphors" (metaphors that express the existence of something) and "diaphors" (metaphors that imply the possibility of something). Diaphor and epiphor measure the likeness and the dissimilarity of the attributes of the referents. A diaphor can become an epiphor (when the object is found to really exist) and an epiphor can become a literal expression (when the term has been used for so long that people have forgotten its origin).

Metaphor is a process that exists at three levels: a language process (from ordinary language to diaphor to epiphor back to ordinary language); a semantic and syntactic process (its linguistic explanation); and a cognitive process (to acquire new knowledge). Therefore a theory of metaphor requires three levels: a surface (or literal) level, a semantic level and a cognitive level.

At the other end of the spectrum, Plato claimed that ideas exist in a world of their own, independent of our material world.⁸²

These three levels of language can be compared to the three Grades of Liber AL; the *Hermit* represents language at the cognitive level, the *Lover* is language at the semantic level and correspondingly, the *Man of Earth* is language at the surface or literal level. It is at the 'highest' grade that one discovers the mystery of self as not-self as one connects fully with the Universal Mind.

The mind is selfless. "Self" refers to a set of mental and bodily formations that are linked by causal coherence over time. At the same time the world is not a given, but reflects the actions in which we engage, i.e. it is "enacted" from our actions (or structural coupling).⁸³

Then what is technically referred to as the Holy Guardian Angel must then be pure mind brought to the level where it may be perceived by the body in what may or may not be equivalent to the intuitive, automatic consciousness of the body. This would explain Crowley's injunction against building a philosophical system based on the literal interpretation of the metaphor or upon any mystical experiences for that matter.

Everything that exists is the projection of a brain.

Organisms do not adapt to a pre-given world. Organisms and environment mutually specify each other. Organisms drift naturally in the environment. Environmental regularities arise from the interaction between a living organism and its environment. The world of an organism is "enacted" by the history of its structural coupling with the environment. Perception is perceptually guided action (or sensorimotor enactment). Cognitive structures emerge from the recurrent sensorimotor activity that enables such a process. And perceptually guided action is constrained by the need to preserve the integrity of the organism (ontogeny) and its lineage (phylogeny).

Varela assigns an almost metaphysical meaning to Maturana's biological findings. Life is an elegant dance between the organism and the environment. The mind is the tune of that dance.

To some extent the very genome of a cell can be viewed as a representation of the environment inside the cell.

The model of the extended phenotype is consistent with a theory advanced by the biologist Richard Lewontin. Each organism is the subject of continuous development throughout its life and such development is driven by mutually interacting genes and environment. Genes per se cannot determine the phenotype, capacity or tendencies.

The organism is both the subject and the object of evolution. Organisms construct environments that are the conditions for their own further evolution and for the evolutions of nature itself towards new environments. Organism and environment mutually specify each other.

The picture painted by these biologists is completely opposite to the one painted by the logicians who worked on formalizing Logic: where the logician's program is based on the assumption that reason is an abstract manipulation of symbols, the biologist's program is based on the assumption that reason is bodily experience grounded in the environment. The two views could not be farther apart.⁸⁴

This would suggest that 'objective' reality is a consensus reality as referred to by Carlos Castaneda. We each make each other and the environment around us; each creator gods. The mystery of 'Not-I' has an intimate connection with 'I.' These two must play together; the above and the below; the environment and the individual; the wave and the particle. Add to that the dynamic of a sexual relationship between a man and a woman; especially if working the Formula of ON, and we have the most interesting creative dynamic known.

⁸² Piero Scaruffi in The Physics of Consciousness

⁸³ Ibid.

⁸⁴ Ibid.

Implicit in the logician's project were the assumptions that meaning is based on truth and reference, that the mind is independent of the body, that reasoning is independent of the mind (logic exists in a world of its own, regardless of whether somebody uses it or not), and all minds use the same reasoning system. The biological approach puts the mind back firmly in the body, the body in the environment and meaning in the relationship between them. The reasoning system we use depends on our collective experience as a species and on our individual experience as bodies.

The development of an organism, an ecosystem or any other living entity, is due to interaction with the environment. In a different world, the same genomes would generate different beings. The universe is a message to life and to mind.

The paradox underlying natural selection (from the point of view of physicists) is that on one hand it proceeds in a blind and purpose-less way and on the other hand produces the illusion of more and more complex design. This continuous increase in information (i.e., the spontaneous emergence of order) seems to violate the second law of Thermodynamics, the law of entropy.

Ludwig von Bertalanffy borrowed the term "anamorphosis" from the biologist Woltreck to describe the natural trend towards emergent forms of increasing complexity.

Entropy is a measure of disorder and it can only increase, according to the second law of Thermodynamics. Information moves in the opposite direction.

Most things in this universe, if left alone, simply decay and disintegrate. Biological systems, instead, appear from nowhere, then organize themselves, then even grow!

This leads to the "two arrows of time": the behavior of physical systems pointing towards entropy increase and therefore disorder increase, and the behavior of biological systems pointing the other way by building increasingly complex structures of order.

Life displays two fundamental processes: creating order from order (the progeny has the same order as the parent) and creating order from disorder (as every living system does at every metabolic step, eating and growing). Living systems seem to defy the second law of Thermodynamics. In reality, they live in a world of energy flux that does not conform to the closed-world assumptions of Thermodynamics. An organism stays alive in its highly organized state by absorbing energy from the environment and processing it to produce a lower entropy state within itself. "Living organisms feed upon negative entropy": they attract "negative entropy" in order to compensate for the entropy increase they create by living. Life is "negentropic". The existence of a living organism depends on increasing the entropy of the rest of the universe. Life maintains itself far from equilibrium: the form stays pretty much the same, while the material is constantly being replaced by new material, part of which comes from matter (food, air, water) and part of which comes from energy (sun). The flow of matter and energy "through" the body of the living organisms is what makes it possible for the organism to maintain a (relatively) stable form. In order to stay alive, they have to be always in this state far from equilibrium.⁸⁵

The above is a scientific description of the dance of life; equating to the hermetic axiom, change = stability. In terms of sexual magick, the first law is the law of attraction, which in itself, is really a human mystery. What we do know about this is that there is an electromagnetic dynamic that takes place physiologically in the bodies of the two who are attracted to each other. This is witnessed by the change in physiological systems; increased heart rate and blood pressure, et al. Aleister Crowley notes in a footnote to Liber 418 "this explaineth the call of the Aethyrs, the curse that was pronounced in the beginning being but the creation of Sakti. And this mystery is reflected in the legend of the Creation, where Adam represents the Concealed One, for Adam is Temurah of MAD, the Enochian word for God, and Eve, whom he created for love, is tempted by the snake, Nechesh, who is Messiah her child. And the snake is the magical power, which hath destroyed the primordial equilibrium."

Equilibrium is death, non-equilibrium is life.

(In a sense, organisms die because this process is not perfect: if our bodies could be made to keep their shape exactly the same, they would always remain far from the equilibrium and they would never die).

Thanks to the advent of non-equilibrium Thermodynamics, it is now possible to bridge Thermodynamics and evolutionary Biology. By focusing on entropy, structure and information, it is now possible to shed some light on the relationship between cosmological evolution and biological evolution. Biological phenomena can be viewed as governed by laws that are purely physical. This step might prove as powerful as the synthetic theory of evolution.

Prigogine's non-equilibrium approach to evolution, i.e. that biological systems (from bacteria to entire ecological systems) are non-equilibrium systems, has become a powerful paradigm to study life in the context of Physics. Life is finally reduced to a natural phenomenon just like electromagnetism and gravity.

The distinguished British biologist John Maynard Smith defined progress in evolution as an increase in information transmitted from one generation to another.

The key to evolution is heredity: the way information is stored, transmitted and translated. Evolution of life as we know it relies on information transmission. And information transmission depends on replication of structures.

The authors believe that evolution was somewhat accelerated, and changed in character, by and because of dramatic changes in the nature of biological replicators, or in the way information is transmitted by biological replicators. New kinds of coding methods made possible new kinds of organisms.

85 Piero Scaruffi in The Physics of Consciousness

Today, replication is achieved via genes that utilize the genetic code. The authors argue that this is only the latest step in a story that started with the earliest, rudimentary replicators, the first genes.

The first major breakthrough in evolution, the first major change in the technique of replication, was the appearance of chromosomes: when one gene is replicated, all are. A second major change came with the transition from the solitary work of RNA to the dual cooperation of DNA and proteins: it meant the shift from a unitary source of replication to a division of labour. Metabolism was born out of that division of labour and was facilitated by the chemical phenomenon of autocatalysis. Autocatalysis allows for self-maintenance, growth and reproduction. Growth is autocatalysis.

Early, monocellular organisms (prokaryotes) evolved into multicellular organisms (eukaryotes). The new mechanism that arose was gene regulation: the code didn't simply specify instructions to build the organism, but also how cells contributed to the organism. Asexual cloning was eventually made obsolete by sex, and sex again changed the rules of the game by shuffling the genetic information before transmitting it. Protists split into animals, plants, fungi, that have different information-transmission techniques.

Individuals formed colonies, that developed other means of transmitting information, namely "culture; and finally social behavior led to language, and language is a form of information transmission itself.

Each of these steps "invented" a new way of coding, storing and transmitting information.

In the beginning was energy, matter came later.

The American physicist Ronald Fox showed how, from the beginning, it was energy flows (lightning, volcanic heat) that allowed for the manufacture of unlikely molecules like aminoacids that are the foundations of life.

The emphasis shifts to polymers: organisms use energy to excite monomers until they start creating polymers spontaneously. The organism reaches a state in which polymers help produce (synthesize) polymers.⁸⁶

Implicit in the above is the evolutionary philosophy of Eugenics. The parents, producing children that are installed with an increase of information than that of the parents means that heredity is the natural key. If memory and the memory of experience can affect the genetic makeup, these genes are first installed in the child. Should a sexual technique manage to produce change in the individual, what power might be invested in two individuals cooperating to produce a child? Phosphate is a key to the energy in the cell and integral in the new Alchemy of David Ormus as well as Piero Scaruffi, who writes in The Physics of Consciousness:

Fox speculates that organisms used an abundant natural source of energy (phosphate bond energy), that was created during the "iron catastrophe". That new flow of energy created a new kind of matter. Phosphate is still a key component of energy transactions in living molecules.

The "iron catastrophe" both created the Earth's magnetic field as it produced the Earth's core. Interestingly enough, Mars is the Occult planet associated with Iron and of which the meaning is 'energy.' It's as if the ancient Occultists already understood what modern scientists are just beginning to slowly re-discover.

Biological evolution was subsequently driven by energy regulation and storage.

Fox uses nonlinear thermodynamics and therefore chaos theory to show how complex structures can then spontaneously emerge.

Unlike Prigogine, Wiley and Brooks believe that biological systems are inherently different from dissipative structures. Biological systems, unlike physical systems, owe their order and organization to their genetic information, which is peculiar in that it is encoded and hereditary.

Dissipation in biological systems is not limited to energy but also involves information, because of the genetic code, which is transmitted to subsequent generations. Organisms simply live and die, they don't evolve. What evolves is the historic sequence of organisms, which depends on genetic code. The genetic code must therefore be put at the center of any theory of evolution.

Unlike most theories of information, that use information to denote the degree to which external forces create structure within a system, Brooks-Wiley's information resides within the system and is material, it has a physical interpretation. It resides in molecular structure as potential for specifying homeostatic and ontogenetic processes. As the organism absorbs energy from the environment, this potential is actualized and is "converted" into structure.

What they set out to prove (following Lotka's original intuition and exploiting Layzer's ideas) is that evolution is a particular case of the second law of Thermodynamics, that Dollo's law is the biological manifestation of that second law. Biological order is simply a direct consequence of that law. The creation of new species is made necessary by the second law and is a "sudden" phenomenon similar to phase changes in Physics. Phylogenetic branching is an inevitable increase in informational entropy.

In this scenario, the interaction between species and the environment is not as important in molding evolution: natural selection mainly acts as a pruning factor.

Over short time intervals, biological systems do behave like dissipative structures. But over longer time intervals, they behave like expanding phase space systems (as proved by Layzer). Their relevant phase space is genetic, an ever increasing genetic phase space.

The Brooks-Wiley theory is darwinian in nature, as it subscribes to the basic tenet that evolution is due to variation and selection, but, in addition, it also allows the possibility for evolution to occur without any environmental pressure.⁸⁷

86 Piero Scaruffi in The Physics of Consciousness

87 Ibid

Visualization is a key to sexual Magick, which occurs in the pineal gland and which has a connection through the endocrine system to the secretions in the genitalia and ultimately the secretions of the genitalia (both male and female). And as the images and symbols are products of the mind, we see the direct connection between mind and body. Our bodies become the products of all our thoughts and experiences. Dreaming reveals the intimately individualistic nature of our symbol systems as they reveal the continuous process of integration in the mind/body complex. The more historical and universal symbols of the Occult tradition represent then, a formation of racial consciousness.

While modern research focuses on how the neural processes of the brain can yield the mind, we often forget that brains are first and foremost alive, and no convincing evidence has been presented so far that dead brains can think. As far as we know, minds are alive. As far as we know, life came first, both from an evolutionary perspective and from a bodily perspective. If we accept this principle, then we come to recognize that "thinking life" may just be a particular case of "life", that the same type of processes which are responsible for life may be responsible also for the mind. And the mystery of the mind, or at least the mystery of the principle that underlies the mind, may have been solved a century ago by the most unlikely sleuth: Charles Darwin.

Darwin never really explained what he wanted to explain, but he probably discovered the "type of process" that is responsible for life. He called it "evolution", today we call it "design without a designer", "emergence", "self-organization" and so forth. What it means is that properties may appear when a system reorganizes itself due to external constraints, due to the fact that it has to live and survive in this world. This very simple principle may underlie as well the secret of thought. Darwin's theory of evolution is not about "survival of the fittest", Darwin's theory is about "design".

In technical terms, life has two aspects: metabolism and replication. Metabolism is the interaction with the environment that results in growth. Replication is the copying of information that results in reproduction. Metabolism affects proteins, replication affects nucleic acids.

This universe exhibits an impressive spectrum of natural phenomena, some of which undergo spectacular mutations over macro or micro-time (long periods of time, or short periods of time). Life deserves a special status among them for the sheer quantity and quality of physical and chemical transformations that are involved. Nonetheless, ultimately life has to be just one of them.⁸⁸

What becomes necessary for us is a way to interpret the symbols produced by the mind. This would be the key to the entire Merkabah Tradition. Whether we have but to remember that which we have forgotten or to discover it for the first time; the symbols of the mind/body complex must have been interpretable by the ancients and would most probably be of some sort of innate or intuitive language that is constantly evolving or emerging. As per the Gnostic Jesus, that which we have within ourselves must be brought forth.

Symbols, brought forth in images to the mind may be seen themselves to be composed of photons that also then come from what is at least a Fifth Dimension beyond the four-dimensional time/space continuum, as discussed in [Testing the Night of Pan](#). This is referred to by Occultists as the Astral Light. When the character of these symbols address the life of the individual, their interpretation belongs distinctly to that individual. But when the tone addresses a whole group of individuals, these symbols become prophetic; revealing the inner nature of humanity as a whole—rather than the inner nature of any one specific individual.

And as part of the light emitting phosphorylation of the DNA, this may be what connects psychic to physical processes as well as possibly even accounting for the prophetic or 'trans-dimensional' experience. Indeed, Charles Q. Choi, in a special to *Live Science*⁸⁹ notes:

Past research has shown that the body emits visible light, 1,000 times less intense than the levels to which our naked eyes are sensitive. In fact, virtually all living creatures emit very weak light, which is thought to be a byproduct of biochemical reactions involving free radicals. (This visible light differs from the infrared radiation — an invisible form of light — that comes from body heat.)

88 Piero Scaruffi in *The Physics of Consciousness*

89 Cf. <http://www.livescience.com/health/090722-body-glow.html>

For that matter, the graviton, like the photon is a connector or boson (Cf. [Testing the Night of Pan](#)). This sets up the idea of the Bose Condensate and Schuman's Resonance as involved in self-organization (Cf. [Liber Vox Viva Voce vel Video](#)). The human form exists as a hologram generated by the Earth herself. That this can then be affected by memory and experience and then can have an affect upon the DNA, a child who inherits this then altered DNA will carry the knowledge of these memories and experiences in his or her genetic structure and forward to the adding of additional memories and experiences. This then, constitutes a continually emerging racial memory, which for Occultists has an obvious parallel to the *magickal memory* or what Carl Jung refers to as the *collective unconscious*.

In 1957 Crick, by using only logical reasoning, reached the conclusion that information must flow only from the nucleic acids to proteins, never the other way around. In the 1960's biologists cracked the "genetic code", the code used by DNA to generate proteins, i.e. they found out how the four-letter language of DNA is translated into the twenty-letter language of proteins (the DNA is made of four kinds of nucleotides, proteins are made of twenty types of aminoacids). And, finally, in the 1980s biologists discovered ribonucleic acid (RNA), a single-strand molecule that partners with DNA to manufacture proteins. Recently, we started deciphering the genome of different animals, including our own.

A DNA molecule is made of two strings, or "strands", each one the mirror image of the other (in the shape of a "double helix"). Each string is a sequence of "nucleotides" or "bases", which come in four kinds (adenine, guanine, cytosine, thymine). These four bases are paired together (adenine is paired with thymine and cytosine is paired with guanine). Each nucleotide in a string is "mirrored" in a nucleotide of the other string. Each strand of the helix acts therefore as a template to create the other template. Nucleotides are the elementary unit of the "genetic code". In other words, the genetic code is written in an alphabet of these four chemical units.

Cells split all the time, and each new cell gets one of the two strings of DNA of the original cell, but each string will quickly rebuild its mirror image out of protoplasm. This process is known as "mitosis". Each cell in an individual has almost exactly the same DNA, which means that it carries the same genome.

The genome is made of genes. A gene is a section of the DNA molecule which instructs the cell to manufacture proteins (indirectly, by doing that a gene determines a specific trait of the individual). Genes vary in size, from 500 bases long to more than two million (long genes tend to have just a very long waste).

The genome is not a sequential program that is executed mechanically, one gene after the other. It is more like a network of genes that "regulate" each other. The genetic "program" behaves more like a network of switches.

More precisely, the DNA is organized into chromosomes (13 pairs in the case of the human race) which are in turn organized into genes. The human genome has 3 billion base pairs of DNA.⁹⁰

The five combinations of four DNA nucleotides into twenty types of amino acids brings up the five and four. Using Liber AL's dictum to divide, add and multiply, by division first, we found the four in twenty that leads to the five sets; equivalent to the five elements. Adding five and four, we get the number nine; where the work of Magick takes place. And in the multiplication, we return to the twenty we started out with. Additionally, the thirteen pairs of chromosomes represents the completed work; thirteen also being the number of transformation or mutation, which sets up the evolutionary paradigm. Interestingly enough, it is the value of the Hebrew word Achad (Unity) and Aheba (Love) and in Magick the number of the work being completed. And indeed, the "four-letter language of DNA" may in itself draw a corollary to the Tetragrammaton.

The human mitochondrial DNA (mtDNA is a circular genome of 16,569bp that encodes 13 proteins and the RNA components of the machinery for their translation (two ribosomal RNAs and 22 transfer RNAs). Because all 13 proteins are sub-units of the enzymes that perform oxidative phosphorylation, loss-of-function mutations in any part of the mtDNA deprive the cell of most if ATP-synthesis capacity. Once we knew that mitochondria have their own DNA and are also probably the main site of production of toxic oxygen radicals, it was but a small leap of induction to propose that the mitochondrial DNA (mtDNA) was the likeliest site of accumulating mutations leading to aging.⁹¹

The fact that the mitochondria is inherited through the mother/woman and it's being circular is synchronistic. It's lineal nature tells us how many lines descended through the female species dwells on the Earth. XIII is the Death Atu/Transformation and its thrashraq is 31⁹², being the key to AL. To affect this would be a true evolutionary development. Also, there's a

90 Piero Scaruffi in [The Physics of Consciousness](#)

91 Aubrey D.N.J. de Grey from his research on aging

92 Cf. [Achad's Key to Liber AL](#)

synchronicity of the twenty-two transfer RNAs and the twenty-two letters of the Hebrew alphabet and the Holy Tarot. More importantly, the function of the RNA is to assist the DNA in its mitotic duplication. To affect these proteins is to append the 'pure' line of the mother.

All living organisms use DNA to store hereditary information and they use the exact same code (the "genetic" code) to write such information in DNA. The genome of an individual is written in the genetic code. It is inappropriate (although common) to refer to the "genetic code" of an individual, as all living things on this planet share the same genetic code. The genetic code is a code, just like the Morse code. It specifies how nucleotides (through a "transcription" of the four nucleotides into RNA and a translation of RNA into the twenty aminoacids) are mapped into aminoacids, which in turn make up proteins, which in turn make up bodies. Different genomes yield different bodies. But they always employ the same genetic code to carry out this transformation. Genomes have confirmed the theory of evolution: genomes share common parts and different species are determined by the branching out of the other parts. The genealogical tree of living beings is carefully reflected in the structure of their genomes. The genome of a species is almost a "memory" of that species' evolutionary journey.⁹³

Chapter XXVII in Aleister Crowley's Book of Lies, entitled: STRUCTURE OF MIND BASED ON THAT OF BODY (HAECKEL AND BERTRAND RUSSELL), seems to corroborate or maybe even anticipate Pierro Scaruffi's scientific insights; describing here, how different states of consciousness connect to our evolutionary journey. In this chapter, he writes:

Sammasati is assuredly one of the most useful, as well as one of the most trustworthy and most manageable, weapons in the armoury of the Aspirant...It may be no more than a personal fancy, but I think Allan Bennett's translation of the term, "Recollection," is as near as one can get in English. One can strain the meaning slightly to include Recollection, to imply the ranging of one's facts, and the fitting of them into an organized structure. The term "sati" suggests an identification of Being with Knowledge...So far as it applies to the Magical Memory, it lays stress on some such expedient, very much as is explained in Liber Thisarb...This is a case where "clean thinking" is most absolutely helpful. The truth is of exquisite texture; it blazons the escutcheon of the Unity of Nature in such delicate yet forceful colours that the Postulant may well come thereby to the Opening of the Trance of Wonder; yet religious theories and personal pernicketiness have erected against its impact the very stoutest of their hedgehogs of prejudice.

Who shall help us here? Not the sonorous Vedas, not the Upanishads, Not Apollonius, Plotinus, Ruysbroeck, Molinos; not any gleaner in the field of ... priori; no, a mere devotee of natural history and biology: Ernst Haeckel. Enormous, elephantine, his work's bulk is almost incredible; for us his one revolutionary discovery is pertinent to this matter of Sammasati and the revelations of one's inmost subtle structure.

He discovered, and he demonstrated, that the history of any animal throughout the course of its evolution is repeated in the stages of the individual. To put it crudely, the growth of a child from the fertilized ovum to the adult repeats the adventures of its species.

This doctrine is tremendously important, and I feel that I do not know how to emphasize it as it deserves. I want to be exceptionally accurate; yet the use of his meticulous scientific terms, with an armoury of quotations, would almost certainly result in your missing the point, "unable to see the wood for the trees."

Let me put it that the body is formed by the super-position of layers, each representing a stage in the history of the evolution of the species.

The foetus displays essential characteristics of insect, reptile, mammal (or whatever they are) in the order in which these classes of animal appeared in the world's history.

Now I want to put forward a thesis --- and as far as I know it is personal to myself, based on my work at Cefal[u]--- to the effect that the mind is constructed on precisely the same lines.

You will remember from my note on "Breaks" in meditation how one's gradual improvement in the practice results in the barringout of certain classes of idea, by classes. The ready-to-hand, recent fugitive thoughts come first and first they go. Then the events of the previous day or so, and the reoccupations of the mind for that period.

Next, one comes to the layer of reveries and other forms of wish-phanstasm; then cryptomnesia gets busy with incidents of childhood and the like; finally, there intrudes the class of "atmospharics," where one cannot trace the source of the interruption.

All these are matters of the conscious rational mind; and when I explored and classified these facts, in the very first months of my serious practice of Yoga...The structure of the mind reveals its history as does the structure of the body...Just as your body was at one stage the body of an ape, a fish, a frog (and all the rest of it) so did that animal at that stage possess a mind correlative.

93 Pierro Scaruffi in The Physics of Consciousness

Now then! In the course of that kind of initiation conferred by Sammasati, the layers are stripped off very much as happens in elementary meditation (Dharana) to the conscious mind. Accordingly, one finds oneself experiencing the thoughts, the feelings, the desires of a gorilla, a crocodile, a rat, a devil-fish, or what have you! One is no longer capable of human thoughts in the ordinary sense of the word; such would be wholly unintelligible.

Influencing the mitotic process might be called by us as the evolutionary point. And indeed, the transference of memories and experiences into genetic coding as indirectly suggested below creates a spermogenetic process that can put us directly in control of the evolutionary development of our race in generational succession. The eugenic implications of this suggest that an enlightened society could produce a superior progeny than an unenlightened society. Science also confirms this recursively as we understand that the Monarch butterfly learns where it was born (its roots) and it passes this knowledge via genetics on to its offspring (from generation to generation). It seems quite clear that knowledge can be passed genetically, which may in itself be the manifestation of the *magickal memory* on the physical plane.

When a cell divides, the average number of mitochondria per cell in the two daughter cells is obviously half of what it was in the parent. This number must thus be doubled, on average, before those daughter cells are ready to divide again. Mitochondria are, of course, degenerate bacteria. Consequently it is natural to think of the mitochondria of a cell as a population of individuals, which maintain roughly constant numbers through a balance of biogenesis by division and death by autophagy. What is not at all natural is to think of them doing the opposite of biogenesis—fusing. However, there is now very solid evidence that they sometimes do exactly that. Progress has been greatest in a very specialized aspect of mitochondrial biology, spermatogenesis, in which a gene responsible for mediating fusion was cloned in 1997; this gene has homologues in all phyla yet examined and the yeast homologue also mediates fusion. In human cells the evidence is also by now very compelling: the foremost series of studies, including recently the first in vivo work, is that of Hayashi's group.⁹⁴

The “degenerate” mitochondria are actually symbiant life forms that live inside every human cell. In the movie series, *Star Wars*, this is presented to us as *Mitochlorians*; a symbiant life form that is the *Force*. And indeed, the mitochondria are the energy source of the cell and responsible for its metabolism. One might even speculate that they are the physical or biological link to the Aethyr; energy is the source of life; that force (pun intended) that animates the body. That this can be affected by memories and experiences strongly suggests that we need a thorough understanding of the human creature and the world about us, which is as innate drive in our species, as is the sex drive.

Most human genes, for example, date back to primitive organisms, and they are shared by all modern animals that descend from those organisms. Only a few can be said to be truly “human”. Every single cell in the body contains roughly the same genetic information (barred copying mistakes) but each cell ends up specializing in a task, depending on where it is located: a heart cell will specialize in heart issues and not, say, liver issues, even if the genetic information describes both sets of issues. A muscle cell is a muscle cell, even if it is identical to a liver cell. This is the phenomenon of “cell differentiation”, by which each cell “expresses” only some of the genes in the genome, i.e. only some of the possible proteins are manufactured (“synthesized”).⁹⁵ Differentiation seems to be regulated by topology: depending on where a cell is, it exchanges energy (which is information) with some cells rather than others. Neighboring cells “self-organize”. The process of “epigenesis” is the process by which the genotype is turned into the phenotype: DNA is transcribed into messenger RNA, which is in turn transcribed into chains of aminoacids (i.e., in proteins). In other words, the DNA is the sequence of instructions for building molecules called proteins, and proteins are manufactured of amino acids, whose order is determined by the DNA. Note that our genome has only 100,000 genes, but our body has 100 trillion cells.⁹⁶

Self organization readily implies that we are but the amalgamated collection of a community of these symbiant life-forms, the ‘corrupted bacteria;’ perhaps even on a par with William Burroughs theory on our species as a virus. ATP is discussed in the GCL document: [Liber Vox](#)

94 Aubrey D.N.J. de Grey from his research on aging

95 Piero Scaruffi in [The Physics of Consciousness](#)

96 Aubrey D.N.J. de Grey from his research on aging

[Viva Voce vel Video](#) along with the holographic design of the human race. We are creatures of the Earth; indeed formed of the initial protein that created life. Interestingly enough, we are but a complex amalgamation of this protein.

A cornerstone of textbook bioenergetics is that oxidative ATP synthesis in mitochondria requires, in normal conditions of internal and external pH, a potential difference DC of well over 100 MV between the aqueous compartments that the energy-transducing membrane separates. Measurements of DC inferred from diffusion of membrane-permeant ions confirm this, but those using microelectrodes consistently find no such DC — a result ostensibly irreconcilable with the chemiosmotic theory. Transmembrane hydroxide transport necessarily accompanies mitochondrial ATP synthesis, due to the action of several carrier proteins; this nullifies some of the proton transport by the respiratory chain. Here, it is proposed that these carriers' structure causes the path of this "lost" proton flow to include a component perpendicular to the membrane but within the aqueous phases, so maintaining a steady-state proton-motive force between the water at each membrane surface and in the adjacent bulk medium. The conflicting measurements of DC are shown to be consistent with the response of this system to its chemical environment.

Mitchell's most comprehensive presentation of the chemiosmotic theory I noted explicitly that mitochondria do not maintain a difference of pH Δp , between the two aqueous phases that their energy-transducing membrane separates, sufficient to drive the F_1F_0 -ATP synthase backwards as the theory required. Since that membrane has low permeability not only to protons but also to other ions present in solution *in vivo*, Mitchell suggested that an unequal distribution of charge density at the two membrane surfaces — that is, a potential difference DC across the membrane — adds to the effect of Δp , the two producing a sufficient "proton-motive force" PMF, $\Delta p + \Delta \psi$, to drive ATP synthesis.

Several transmembrane metabolite carriers must operate in order to maintain mitochondrial OXPHOS at steady state. The two with fastest turnover summed over a whole mitochondrion — the number of individual carriers per mitochondrion is not relevant here — are the adenine nucleotide and phosphate carriers, which must each cycle once for every ATP molecule synthesised within the mitochondrion and not re-hydrolysed there. The phosphate carrier is relevant to the present discussion because it operates by antiport with hydroxide anions. Traditionally, it has been considered impossible to distinguish between hydroxide antiport and proton symport, due to the membrane's permeability to H_2O noted above, but the careful kinetic studies in the laboratory of Kramer^{36,37} strongly indicate that the phosphate carrier uses hydroxide. Let us now compare the behaviours of a proton and a hydroxide ion when they are transported between the aqueous phases by a mitochondrial transmembrane carrier. In each case, there is a location at which the charge carrier loses its electrochemical contact with the surrounding water, and a location on the other side of the membrane at which it resumes such contact.

The term "plasma membrane redox system" is used to denote the machinery by which cells oxidize electron donors, typically NADH and/or NADPH, and transfer the resulting electrons to extracellular acceptors.

The appreciation that the plasma membrane redox system (PMRS) is so complex has come about as a result of studies in several laboratories and spanning two decades. These experiments have yielded a considerable body of information on the properties of the system in various cell types spanning the entire eukaryotic domain.

An exception to the above characterization of work on the PMRS occurs in phagocytic lymphocytes (phagocytes). Here there is an enzyme with some of the same properties as the PMRS but also important differences, whose molecular structure has now been resolved in detail (e.g. Abo et al. 1992, Dang et al. 2002). This enzyme, phagocyte NADPH oxidase (PHOX), has homologues in other cell types (Meier et al. 1991, 1993) that have recently been discussed systematically (Lambeth et al. 2000) using the terminology "NOX".⁹⁷

The term "NOX" indicates some type of shadow protein opposite of the phosphorylation; there is no light involved in the process of using it. This is in the non-nuclear DNA, the mitochondria and if put in parallel with Thelemic cosmogony, as found in my article, [Magickal Theory](#): "The regenerative powers of the darkness come from that called in Thelemic philosophy, N.O.X. come from the depths of matter." In the medical sense, this represents the regenerative power of the mitochondria; the energy source of the cell.

As far as the individual goes, we know that her genome is a synthesis of the genome of the parents plus some random shuffling. But it is not clear yet how much of the final individual is due to the genetic code and how much to the interaction with the environment. For example, the genetic code may specify that a muscle must grow between the arm and the trunk, but exercise can make that muscle bigger or smaller. For example, genetic code may determine some psychological characteristics of the individual, but study, meditation and peer pressure can alter some of them. The British biologist William Bateson thought that only the genetic code mattered: we are machines programmed from birth. John Watson, at the other extreme, thought that conditioning could alter at will the personality of an individual: it all depends on experience, the instruction contained in the genetic code is negligible.

A puzzling feature of genomes is that they contain far more useless junk than useful genes. The human genome, in particular, contains about 95% junk, in between genes.

Recently, a certain attention has been drawn to the internals of the cell. Cells contain a structure called cytoskeleton, which is made of a protein called "tubulin", which forms cylinders called "microtubules".

In reality, the process of copying DNA is not so smooth. When a cell splits, its DNA is copied to the new cells but the copying process (for whatever whim of nature) is prone to "error" (or, at least, to loss of information). In other words, genes mutate all the time inside our bodies.

These mutations may cause fatal diseases (such as cancer) and they are responsible for death.

Mutation is what causes aging and death. Millions of cells divide each second and a copy of DNA is likely to carry some mistake, which means that the older we are the more chances that serious mistakes have been made and that our genetic instructions are no longer rational.⁹⁸

⁹⁷ Ibid.

⁹⁸ Piero Scaruffi in [The Physics of Consciousness](#)

It has been suggested that cancer is a failed attempt at evolution. In the erratic mitotic process, and with all the “junk” contained inside the genome, we find the possibility of radically altering the genetic copying; especially when considering the experience of the individual. Perhaps even toxic cellular waste is a hint at the need to learn how to transform waste in order to not just perpetuate the individual by halting the aging process, but to indeed, deliberately focus on the will to evolve this process.

Aging is a three-stage process: metabolism, damage and pathology. The biochemical processes that sustain life generate toxins as an intrinsic side-effect. These toxins cause damage, of which a small proportion cannot be removed by any endogenous repair process and thus accumulates. This accumulating damage ultimately drives age-related degeneration. Interventions can be designed at all three stages. However, intervention in metabolism can only modestly postpone pathology, because production of toxins is so intrinsic a property of metabolic processes that greatly reducing that production would entail fundamental redesign of those processes. Similarly, intervention in pathology is a "losing battle" if the damage that drives it is accumulating unabated. By contrast, intervention to remove the accumulating damage would sever the link between metabolism and pathology, so has the potential to postpone aging indefinitely. We survey the major categories of such damage and the ways in which, with current or foreseeable biotechnology, they could be reversed. Such ways exist in all cases, implying that indefinite postponement of aging – which we term "engineered negligible senescence" – may be within sight. Given the major demographic consequences if it came about, this possibility merits urgent debate.⁹⁹

Of course, the Thelemic formula is expressed in terms of a fraction: 93/93...love under will. Love then provides the underwriting experience that we need in order to transform ourselves. As Ben Hecht writes in A Child of the Century, “Love is the magician that pulls him out of his own hat.”¹⁰⁰ And of course, when we speak of love, we are also addressing our sexuality.

Mutation is also the whole point of sex, and this turns out to be the mirror story of death. Sex is the antidote to the genetic deterioration due to the imperfect copying process. The human race would rapidly degenerate without sex: each individual would pass on genes that have already lost part of their information through so many million internal copies. Sex is what makes the paradox possible, and almost inevitable: individuals decay, but the race progresses. Because sex recombines the genes of the parents, it can produce both better and worse (genetically speaking) individuals, and natural selection will reward the better ones. The long-term outcome of sex is that it is more likely that better future individuals are produced from the deterioration of present individuals.¹⁰¹

If sex strengthens the process in order to prevent error in the child; can this energy be used to correct the problem in the copulating couple? Reich notes that the orgasm as an involuntary muscle movement is vital for health; Rick Miller (featured in the GCL article: Liber Vox Viva Voce vel Video) speaks of the child tapping his foot to regulate his relationship with the Earth. Mutation distributed generationally is the definition of evolution; being then, both our bane and our virtue; even as caused by the general breakdown in the efficient management of cellular metabolism.

Most interesting in the above quote is that sex is said to be the “mirror story of death.” This perfectly echoes the hermetic description of sex as ‘le petit morte’ or ‘the little death’; referring more directly to the egoic state of consciousness being ‘annihilated’ or transcended in the mythical crossing of the Abyss. Rather, this is probably more the connection of the ‘above and below’ as lightning connects the sky to the Earth (thus a Tiphareth experience and the realignment of energy in the body; even as one comes to realize the godhead at the center of the Self). The orgasm is equated to a flash of lightning ringing through the electromagnetic system of the body that may indeed be the lighting of the Magick Lamp in the Thelemic praxis.

Most phenotypes of aging in vertebrates may be caused by a progressive decline in the ability of antioxidant defenses to maintain cellular and systemic homeostasis. This is due both to a diminished efficacy of those defenses and to an enhanced level of pro-oxidant toxicity; the imbalance between the two has been termed *oxidative stress*. However, the cause of this increasing imbalance remains obscure. This article proposes a

99 Aubrey D.N.J. de Grey from his research on aging

100 Cf. <http://www.amhr.org/editorial.html>

101 Piero Scaruffi in The Physics of Consciousness

mechanism by which spontaneously mutant mitochondrial DNA (mtDNA), despite being present only in very small quantities in the body, may be the main generator of oxidative stress.¹⁰²

Spontaneity is a by-product of consciousness and probably the inductor mechanism connected to the flash of lightning. If mtDNA acts in this way, these symbiotic life-forms are centers of consciousness in themselves. It is then, the matrilineal line that evolves by the interaction of generationally recombined nuclear DNA. This might explain why the Jews, who “have the half” according to Liber AL vel Legis, descend along matrilineal lines; the mitochondria being inherited from the mother of the child. The breakdown of the cellular metabolism is also involved in the aging process. Interestingly enough, Crowley proclaims that the ‘elixir vitae’ that is the IXth Degree secret of his O.T.O., produced by sexual means (containing the sperm and vaginal orgasmic secretion), re-energizes the metabolism.

Mutant mtDNA is distributed very unevenly with a tissue: some cells apparently contain no wild-type mtDNA whatever. Those cells must rely on glycolysis for ATP production; furthermore, they require a system to stabilize their NAD⁺/NADH ratio. This can only be achieved by an efflux of electrons from the cell, most probably mediated by the plasma membrane oxidoreductase (PMOR). It is proposed that the required rate of electron efflux from these anaerobic cells exceeds the local electron-accepting capacity of “safe” acceptors in plasma such as dehydroascorbate, with the result that reactive species, such as superoxide, are formed. This leads to increased oxidation of lipids in the plasma, notably of low-density lipoprotein (LDL) particles, which are subsequently imported into mitochondrially healthy cells. This oxidized lipoprotein must be destroyed by the recipient cells’ antioxidant defenses. That task diverts the cell from the degradation of pro-oxidants that it is itself generating; thus, it imposes oxidative stress on the cell. As the number of anaerobic cells in the body rises, so does oxidative stress in all cells. The consistency of this hypothesis with known facts is discussed, and technically feasible tests are suggested both of the proposed mechanism and of its overall contribution to mammalian aging, including plausible interventions to retard the process.

The fundamentals of the mitochondrial free radical theory of aging were first described by Harman in 1956. Harman proposed that aging results, for the most part, from an ever-increasing level of destructive chemical reactions involving free radicals (molecules with an unpaired electron). He extended this hypothesis in 1972 with the idea that mitochondria are the main mediators of this process, in that:

Of all subcellular components, mitochondria are both the main source of free radicals and the main direct victim of free radical damage; Loss of mitochondrial function, and hence bioenergy capacity, is the driving intracellular change underlying aging, causing (rather than caused by) other pro-oxidant changes such as slower protein turnover.

There has since been strong experimental support for these tenets. There have been numerous reports of a decline in ATP syntheses capacity during aging. These studies have examined all components of the respiratory chain, and only those that are partly encoded by the mitochondrial DNA (mtDNA) are affected. Many other studies have shown a parallel increase in the levels of mtDNA lesions.

A severe challenge to the idea that mitochondrial DNA mutations play a major role in the aging process in mammals is that clear loss-of-function mutations accumulate only to very low levels (under 1% of total) in almost any tissue, even by very old age. Their accumulation is punctate, however: some cells become nearly devoid of wild-type mitochondrial DNA and exhibit no activity for the partly mitochondrially-encoded enzyme cytochrome c oxidase. Such cells accumulate in number with aging, suggesting that they survive indefinitely, which is itself paradoxical. The reductive hotspot hypothesis suggests that these cells adjust their metabolism to use plasma membrane electron transport as a substitute for the mitochondrial electron transport chain in the reoxidation of reduced dinucleotides, and that, like mitochondrial electron transport, this process is imperfect and generates superoxide as a side-effect. This superoxide, generated on the outside of the cell, can potentially initiate classical free radical chemistry including lipid peroxidation chain reactions in circulating material such as lipoproteins. These, in turn, can be toxic to mitochondrially non-mutant cells that import them to satisfy their cholesterol requirements. Thus, the relatively few cells that have lost oxidative phosphorylation capacity may be toxic to the rest of the body. In this minireview, recent results relevant to this hypothesis are surveyed and approaches to intervening in the proposed process are discussed.

A large and compelling body of evidence has been assembled over the past 30 years in support of Harman’s 1972 proposal [1] that oxidative damage to mitochondria, resulting from the adventitious production of superoxide by the respiratory chain, is a major determinant of the rate of aging. The most direct such evidence is the finding that mitochondrial superoxide production rates (measured as a proportion of respiration rate) correlate with rates of aging...

The role of mitochondria as mediators of oxidative damage leading to aging is made especially plausible by their possession of their own genome (the mitochondrial DNA, or mtDNA). The mtDNA encodes proteins essential for aerobic respiration and its proximity to the cell’s major source of free radicals renders it highly susceptible to mutagenic insults.

If the only effect of mtDNA mutation is to generate a very small number of cells lacking OXPHOS function, how can damage to mtDNA matter at the organismal level (i.e., drive aging)? Any such connection would seem to require that those few cells be actively toxic, rather than just bioenergetically dysfunctional. A hypothesis along such lines was put forward by the present author recently [33,34] and is summarised here (see Figure 1).

OXPHOS directly maintains two aspects of cellular homeostasis: the ATP/ADP ratio and the NAD⁺/NADH ratio. Yeast cells can survive without OXPHOS (as petite strains) because they can maintain ATP supply using glycolysis and also keep a stable NAD⁺/NADH ratio by reduction of the resulting pyruvate. Mammalian cells, however, die when deprived of their mtDNA unless additional, exogenous pyruvate is provided in the medium [35]. This indicates that, though OXPHOS is still dispensable for maintaining ATP supply, mammalian cells cannot emulate yeast’s ability to “balance the books” with regard to redox state by reducing glycolysis-derived pyruvate to lactate and exporting it; an additional electron sink is needed.

In sum, therefore, it is theoretically possible that OXPHOS-negative cells could survive by reducing oxygen at the plasma membrane rather than at the mitochondrial inner membrane. The rate at which they do so may be extremely high, since histochemical evidence of markedly elevated

succinate dehydrogenase, even if normalised to mtDNA content, suggests that such cells do not rely solely on glycolysis but also maintain an active TCA cycle, which entails a far greater rate of reduction (and hence reoxidation) of NAD. This may be possible only by reversing the usual direction of the malate/aspartate and glycerophosphate shuttles; the former operates close to thermodynamic equilibrium but the latter may require substantial shifts in cellular state in order to be reversed. (The possibility that electrons from Complex II are fed to cytosolic NAD by a route other than coenzyme Q and the glycerophosphate shuttle must also be kept in mind, however.)

...mitochondria with reduced respiratory function, due to a mutation or deletion affecting the respiratory chain, suffer less frequent lysosomal degradation, because they inflict free radical damage more slowly on their own membranes. Once such a mutation occurs in a mitochondrion of a non-dividing cell, therefore, mitochondria carrying it will rapidly populate that cell, thereby destroying the cell's respiratory capability. The accumulation of cells that have undergone this transition results in aging at the organismal level.

The mitochondria of a single cell are an isolated population undergoing replication and destruction, so there is the opportunity for selective pressure to exist and supportive evidence has been reported. Therefore, in order to have any mitochondria left in the long term, the cell must avert the above process by maintaining the degree of contamination of its mitochondrial membranes at a stable level. It achieves this by degrading some of its mitochondria and replicating others. This works because the degraded membrane is recycled, and the new membrane (added to the parent mitochondrion in order to bring it to a size ready to divide) is pristine. Turnover thus acts to dilute the existing membrane damage.¹⁰³

OXPPOS or Oxidative phosphorylation is a process that essentially involves light introduced into the cell via enzymes that is discussed in the GCL document, Liber Vox Viva Voce vel Video, wherein we propose: "Light or Fire and Water are key Alchemical elements to the life of the cell. The light of phosphorylation and the by-product of H₂O in the redox formula shown above provide the Scientific Illuminist with the secret of the nature of life at the cellular level."

Qabalistically breaking down the scientific term, OXPPOS, we immediately derive two separate words. The first, Ox is a correlary with the first letter of the Hebrew Alphabet, Aleph, which translates into the Greek Alpha. The second derived word is Phos, the Greek word for Light. Note that Aleph is not assigned as the origin of the Hebrew alphabet in Qabalistic lore; rather that is given to Beth. Aleph then pre-originates the alphabet as light pre-originates the material Universe.

It was in 1952 that a young American physicist, Stanley Miller, advanced the idea that the first molecules of life (including aminoacids, the building blocks of proteins) were formed accidentally by the Earth's early volcanism and then triggered into reproducing systems by the energy of the sun and lightning strikes. His calculations of how lightning may have affected the Earth's primitive atmosphere gave rise to the quest for the experiment that would reproduce the birth of life in a laboratory (with hints of Frankenstein and all the rest). One catch remained, though: the product of Miller's prebiotic chemistry would still be inactive chemicals.¹⁰⁴

The path of the lightening flash illustrated on the Tree-of-Life introduces this primordial energy that is also equivocated to the orgasm in conjunction with a primal and archetypal drive connected to human sexuality; possibly connected with the cerebellum. The light figures as archetypal symbols indeliably impressed upon the mind during the lightening flash of orgasm. This is a certain key to sexual Magick that mimicks in the microcosm of the copulating couple as it figures into nature's process for creating life on Earth.

In the conjoined process, it is said that the two genders generate an exchanging loop of energy; sometimes symbolically referred to as an Egg. It is in this that the shared orgasm makes such an imprint into the shared visualization upon an egregore or mind working as one transcendent of the two participants; also called the *Magickal Childe*. But the encoding into the genetic activity of the physical bodies of the man and woman, each individually becomes the *Wanga* to the *Obeah* that is the *Magickal Childe*.¹⁰⁵

Since the pioneering work conducted in the 1960s by the German physicist Manfred Eigen, autocatalysis has been a prime candidate to explain how life could originate from random chemical reaction. Autocatalysis occurs when a substance A catalyzes the formation of a substance B that catalyzes the formation of a substance C that... eventually catalyzes the formation of A again. At the end of the loop there is still enough A to restart it. All the substances in this loop tend to grow, i.e. the loop as a whole tends to grow. Life could originate precisely from such a loop, in which case the chances that the right combination of chemical reactions occurred at the right time is much higher.

103 Aubrey D.N.J. de Grey from his research on aging

104 Piero Scaruffi in *The Physics of Consciousness*

105 Cf. our article, The Obeah & the Wanga

The German patent lawyer Gunter Waechtershauser has improved on that model by explaining how the first forms of life could have synthesized their own vital chemicals rather than absorbing them from the environment, i.e. how a metabolic cycle could have started. Unlike Miller, Waechtershauser speculates that prebiotic reactions occurred not in water but on the ground. At high temperatures, chemicals bound to a metallic surface are much more likely to mix and form the complex molecules which are needed for life. Particularly, iron sulfide Mars/Horus (a very common mineral on the Earth) could have been a catalyst of chemical reactions that created the biochemistry of living cells. He proved that peptides (short protein chains) could be created out of a few given aminoacids. The next step in the chain would be the emergence of RNA (ribonucleic acid), that he considers a predecessor to DNA. Waechtershauser's emphasis is on "autocatalysis" (in general, as a process that is fast enough for yielding dramatic consequences) and on the ability of minerals in particular to catalyse the right reactions. Life would be but the natural evolution of a primitive chemical cycle that originally arose on an iron-sulfur surface.¹⁰⁶

This explains why the traditional Philosopher's Stone might have been found with metal in the athanor. Lead may be turned into gold, but iron may be an energizing agent; shall we say, in one of the processes leading up to the final successful experiment. Mars is the planet attributed to iron and is interpreted astrologically to emphasize force or energy. It is also the planet attributed to Horus, which sits on the throne of Ra, the Sun...or gold. And Iron in its digestible form is a key element in the blood, which is integral to the metabolic process of the cell.

In 1995 the Dutch chemist Anthonie Muller has shown that "thermosynthesis" is a viable alternative to explain the origin of life. Muller points out that life probably originated in conditions where photosynthesis and chemosynthesis (getting energy from light and food) were unfeasible, simply because there were not enough life and food. If life originated in an underwater volcano covered with ice, neither light nor food were abundant. What was abundant was a temperature difference. This "gradient" of temperature would cause convection currents, that would drag the early forms of life up and down in thermal cycles, from hot to cold and back to hot. The larger the temperature difference, the stronger the convection currents, the faster the thermal cycles, the more efficient the energy production. Heat was therefore the main source of energy, and heat was coming from the environment. Photosynthesis and chemosynthesis do yield much more power, but thermosynthesis was simply the only feasible form of energy production. The early living cells were basically built around "heat engines". Some of their enzymes or membranes worked essentially as heat engines.¹⁰⁷

Energy seems not to be a particle, but perhaps a wave which suggests the photon (boson) and again, phosphorylation as a Fifth Dimensional attribute. More interesting, thermosynthesis explains the life-force generated of the N.O.X.; the extreme material end of the spiritual-material duality. Consciousness is an a-priori component of movement and all things are moving at each and every moment. Nothing remains at a true inert and still state, but that it is a component of human imagination; an intellectual concept that even has a cosmogonic perspective, i.e. the Ain Soph Aur.

In a steam engine, for example, water is thermally cycled: water is heated until it turns into steam; the steam expands and performs work; the steam loses its energy and returns to liquid form; and the cycle resumes.

In a thermosynthetic cell, a protein is thermally cycled in a similar manner: it is heated until it turns into a more fluid state; this generates work in the form of ATP (the chemical which is the energy source for almost all physiological processes) while the protein returns in its original state; and the cycle resumes.

Whatever the mechanism that created it, the progenitor of all terrestrial life, four billion years ago, was able to tolerate the extreme heat conditions of the time (a few hundred degrees or even a thousand). As a matter of fact, if we walk backwards up the phylogenetic tree (the tree of species), we find that genetically older organisms can survive at higher and higher temperatures. Thermophiles (the microbes that live at temperatures of 70-80 degrees) are living relics of the beginnings of life on Earth.

Based on such a phylogenetic tree, the American biologist Carl Woese has proposed a classification of living creatures in which thermophiles (or "archaea", first discovered in 1964 by Thomas Brock) are different both from eukaryotes (in which DNA is held by a nucleus) and prokaryotes (in which DNA floats free in the cells of bacteria): in thermophiles, DNA floats free (like in prokaryotes) but resembles the DNA of eukaryotes. Thermophiles can be found underground: some have been retrieved from 3 km beneath earth. An archaea has about two million base pairs of DNA (a human cell has about three billion).

Surprisingly, very little has been made so far of a discovery due to Louis Pasteur: that living systems prefer molecules with a certain handedness (all proteins are made of L-aminoacids and genetic material is made of D-sugars). Actually this molecular asymmetry is the only difference between the chemistry of the living and of the dead matter.

The mystery of the origin of genes is particularly challenging because a gene is such a complicated structure, unlikely to evolve spontaneously. Walter Gilbert has noted that most of a person's DNA does not code genes but what appears to be gibberish, and even the part that is code is distributed in fragments (or "exons") separated by useless pauses (or "introns"). In his opinion the first genetic material was made of exons, who symbiotically got together and formed new, more complex genetic material. Introns are not random leftovers, but sort of gluing elements from the original material. In a sense, his theory points to the possibility that the gene is not the ultimate unit, but exons are.

106 Piero Scaruffi in *The Physics of Consciousness*

107 Ibid

Attention has been focusing on RNA since RNA has been shown to be a self-replicating molecule that can act as its own catalyst. DNA cannot make copies of itself, and proteins cannot create themselves. They both depend on each other. But (some kind of) RNA can act as its own enzymes (i.e., its own catalyst). Therefore, RNA is capable of replicating itself without any need of proteins. Stanley Miller proposed that the first living creatures may have been able to synthesize protein and reproduce without the help of the DNA, depending solely on RNA to catalyze their growth and reproduction. Thomas Cech had already proved (in 1982) that RNA molecules alone can induce themselves to split up and splice themselves together in new arrangements. It is also chemically plausible that all four RNA nucleotide bases could have been created in nature by ordinary atmospheric, oceanic and geological processes. Miller's theory, though, requires that life was born in lukewarm water, not the very high temperatures of thermophiles.¹⁰⁸

Mitochondrial RNA functions to produce 'specificity' in mammalian organs. Influencing this could possibly produce new organs in the normally slow process of natural evolution. This is the method of the increasing complexity of organisms leading to the evolution of the homo-sapien. We can speculate that if the replication of the mRNA can be influenced by thoughts and experiences, then we can not only direct the evolutionary process, but speed it up, which is itself the nature of work in the Alchemical laboratory.

The American Nobel laureate Melvin Calvin was perhaps the first one to suggest that "autocatalytic" processes can make life more likely by speeding up the manufacturing of the basic ingredients. The German physicist Manfred Eigen induced RNA molecules to replicate by themselves, thereby lending credibility to the hypothesis that RNA came before DNA and that the first forms of life employed only RNA. Eigen's experiments with "autocatalytic cycles" involving RNA showed that, under suitable conditions, a solution of nucleotides gives rise spontaneously to a molecule that replicates, mutates and competes with its progeny for survival. The replication of RNA could then be the fundamental event around which the rest of biology developed. Eigen speculates that the genetic code was created when lengths of RNA interacted with proteins in the "primordial soup". First genes were created, then proteins, then cells. Cells simply provide physical cohesion. Cells first learned to self-replicate and then to surround themselves with protective membranes.¹⁰⁹

Mutation can be postulated as the nature of the work of evolution. Any possibility in the theory we present, also presents great danger. We can imagine that like the disease of cancer, which may be one of the probable range of potential failures in experimentation, another could be that which leads to evolutionary lines that suffer weakness and or other genetic defects, such as those lines (the Neanderthal or even the Nephilim!...et al).

The American physicist Freeman Dyson believes that one cannot consider life only as metabolism or only as replication. Both aspects must be present. Therefore, we must look not for the origin of life, but for the origin of replication and the origin of metabolism. Since it is unlikely that both metabolism and replication occurred at the same time in one of the primitive organic molecules, life must have had a double origin. It is more reasonable to assume that life "began" twice, with organisms capable of reproduction but not of metabolism and with (separate) organisms capable of metabolism but not of reproduction, and only later there arose a mixture of the two: organisms capable of both reproduction and metabolism.

Dyson's idea is that first came organisms that could reproduce but not replicate. Reproduction is simply a cell division: two cells are created by dividing a cell in two. Replication implies that molecules are copied. Reproduction with replication implies that the new cells "inherit" the molecules of the mother cell. Replication became a parasite over metabolism, meaning that organisms capable of replication needed to use organisms capable of metabolism in order to replicate. First proteins were born and somehow began to metabolize. Then nucleic acids were born and somehow began to replicate using proteins as hosts.

The two organisms became one thanks to a form of symbiosis between host and parasite. Dyson borrows ideas taken from Manfred Eigen (who claims that RNA can appear spontaneously) and Lynn Margulis (who claims that cellular evolution was due to parasites). Basically, his theory is that RNA was the primeval parasite.

Genetic code is just a code that relates mRNA triples and protein's aminoacids.

The paradox of DNA is that a mono-dimensional structure like the genome could specify the function of a three-dimensional structure like the body: the function of a protein is underspecified in the code, it is the environment that determines a unique interpretation. There is no causal connection between the syntactic (genetic) information and the semantic (phenotypic) information that results from it.

Then the growth of our body, the spontaneous and autonomous morphogenesis, rests upon the properties of proteins.¹¹⁰

The "mono-dimensional" structure of the DNA has a parallel with both the one-dimensional aspect of the Tree-of-Life in the Atzliuthic world and as well, the mono-atomic elements in the alchemical science that has developed into a product called *Ormus*. That life itself emerges from two methods or sources shows the inherent dualistic nature of life in this dualistic Universe.

108 Piero Scaruffi in [The Physics of Consciousness](#)

109 Ibid

110 Piero Scaruffi in [The Physics of Consciousness](#)

My basic theory is that the written word was actually a virus," he once said, "that made the spoken word possible. The word has not been recognized as a virus because it has achieved a state of stable symbiosis with the host..."¹¹¹

That the RNA is some sort of virus is also reminiscent of William Burroughs Virus. It both appears spontaneously and enters a symbiotic relationship with the cell. Much as the formulation of vocabulary enters into a symbiotic relationship with human thought. And of course, human thought is the measure of experience. Words are then used in Magick formulary and given what until now, can only be assumed to be strong power and the now we can positively induce to be accurate.

The term "negligible senescence" was coined to denote the absence of a statistically detectable increase with organismal age in a species' mortality rate. It is accepted as the best operational definition of the absence of aging, since aging is itself best defined as an increase with time in the organism's susceptibility to life-threatening challenges. It has been compellingly shown to exist only in one metazoan, *Hydra*; certain cold-blooded vertebrates may exhibit negligible senescence but limitations of sample size leave the question open; and it has not been suggested that any warm-blooded animal (homeotherm) does so. Indeed, humans are among the slowest-aging homeotherms. Since Gilgamesh, civilization has sought to emulate *Hydra* – to achieve a perpetually youthful physiological state – by intervention to combat the aging process. Such efforts may appropriately be termed "strategies for engineered negligible senescence" (SENS). This phrase makes explicit the inevitable exposure to extrinsic, age-independent causes of death (which is blurred by more populist terms such as "immortality" or "eternal youth"), while also stressing the goal-driven, clinical nature of the task (in contrast to the basic-science tenor of, for example, "interventive biogerontology"). Here we discuss the feasibility, within about a decade, of substantive progress towards that goal. It is worth stressing, at the outset, civilization's considerable untapped ability to increase mean lifespan. One of us (B. N. A.) has devoted much energy to spreading awareness of the extremely cheap and straightforward measures already available for reducing one's age-specific susceptibility to the major lifethreatening diseases, particularly cancer, by micronutrient supplementation. In poorer societies, micronutrient deficiency is endemic due to poor diet; efforts to induce better dietary habits (particularly the greater consumption of fruit and vegetables) have been notably unsuccessful. However, such dietary shortfalls can also be avoided with a daily multivitamin costing just 3 cents. A large increase in such societies' mean healthy lifespan should result, just as has been achieved by public health measures in the past century.¹¹²

The very nature of Crowley's O.T.O. IXth Degree secret; the production of the Elixir of Life is produced by sexual contact. Its affect is partially demonstrated by a masturbatory process (noted to belong to the VIIIth Degree instruction); the results of which Crowley details in his autohagiographical account of his well-known experience on Oesopis Island. On the IXth Degree elixir, Crowley contemplates perpetual youth; writing in a June 7, 1919ev entry in his diary:

The conditions of life are that the organism should be able to adjust itself continually to its environment. Any individual, to do this for long, needs either very great intelligence or very great luck. His chief physical asset is elasticity, the power of compensation and recuperation. Our bodies are some 75% pure water; we are a mere sponge, our strength arises from the great mechanical ingenuity of our structure. But we are not 'solid bodies' like most inanimate beings. This water, by kidneys, lungs, and skin, constantly cleanses us, and carries off most of our waste and oxious matter. Block one of these conduits; death follows very rapidly. However, this drainage system is not quite perfect; our pipes 'fur' like a kettle. Disease and accident apart, we die of arterio-sclerosis caused by the gradual depositions of insoluble salts which harden the arteries and destroy the elasticity which enables them to adjust themselves to new conditions...

As in philosophy, change is life, stagnation death; we should not fear a brisk metabolism. Why should the process which we call growth only a few years ago become degeneration?...

Now all means that we take to prolong life, such as I have outlined above, have so far failed to supply this superfluidity of energy which we really desire...

There are only two solutions possible, the invention of either a solvent more perfect than water, or a super-Food. The first alternative is theoretically none too probable. As to the second, if food were merely a chemical and mechanical agent in us, the problem would be one of diet. But there is some reason to believe that food contains a substance yet unanalyzed and unweighed which is of the nature of puer Energy. Live foods, like oysters, stimulate inexplicably; foods long stored lose their nutritive value, though the chemist and physicist can detect no change. We need to psychical research but only common sense and common experience to tell us that here is a difference between a live thing and a dead one beyond the detective powers of the laboratories of Mid-Victorian arrogance and dogmatism...

As yet we cannot drink at the source of Life, Keep Youth perpetual as we can no keep Light—strange realization of the Rosicrucian's dream, or, it may be, discovery of his secret!

But we have found the Super-food. We know a vehicle of which a few grains can house enough pure light to fill a man not only with nourishment, but with Energy almost superhuman, and parallel, Intelligence incredibly sub-bright for four-and-twenty hours. That substance is theoretically easy, but practically hard to obtain.¹¹³

111 (from *The Job*, 1974)

112 Aubrey D.N.J. de Grey from his research on aging

113 [The Magical Record of the Beast 666: the Journals of Aleister Crowley](#)

Some of the Ormus elements, Copper, Silver, Gold, Platinum, Rhodium and Iridium are micro-nutrients that have been found in daily vitamins and of course, nutritional food sources. “The iridium and the gold seem to speed up the metabolism of the body about 40% and they seem to not go into the bloodstream and not go through the kidneys. It seems to be taken into the acupuncture system of the body and it seems to be associated with the spinal cord and the thymus. Which, in fact, is the consciousness and the metabolic rate of the body”¹¹⁴ as suggested to be a key factor by Aleister Crowley in his notes on the Elixir of Life. These elements, along with gold are atomically altered into mono-atomic (one electron) elements and may be classified inert minerals. They are found to permeate the environment, our food sources, and our bodies and are often referred to as colloidal metals; also mentioned in another deGray document on the aging process.

When Darwin discovered evolution, he also indirectly created the premises for a momentous shift in the scientific paradigm. Over the centuries, Science had always held that order can be built only rationally, by application of a set of fundamental laws of Physics. Scientists like Newton and Einstein simply refined that model by using more and more sophisticated mathematics. Throughout the theoretical developments of Physics, the fundamental idea remained that in nature order needs to be somehow created by external forces. Darwin showed that order can build itself spontaneously, without any help from the outside. Evolution is such a process: it is capable of building higher and higher degrees of order starting from almost nothing. As far as Darwin was concerned, this paradigm only applied to Biology, but the idea has been so powerful that recently more and more natural phenomena have been reduced to some kind of spontaneous “emergence” of order.¹¹⁵

Both Isaiah in the Old Testament and Jesus of the New Testament reaffirms that “ye are gods.” This certainly implies that we create ourselves; not our parents and not some anthropomorphic god. It is we ourselves, that organize both our minds and bodies...or I should say, the mitochondriatic consciousness, an aggregate or “Force” determine its own consciousness through its own volition (Will in Thelemic terms). Darwin refers to this as *natural selection*.

Natural selection optimises each species’ rate of aging for its evolutionary niche, and that optimum is thought never to be infinitesimal – in other words, negligible senescence is always sub-optimal. (*Hydra* escape the logic underlying this generalisation because their lack of long-lived cells means that the “maintenance cost” of living indefinitely is no more than that of living a few months.)

...we suggest that **reversing mammalian aging is not necessarily any harder than dramatically postponing it**. The most influential molecular changes in age-related decline, such as accumulation of mutations and undegradable material in long-lived cells, are irreversible by natural cellular processes.

A low-technology, but nonetheless important, aging-reversal strategy with considerable promise is appropriate exercise. Though conventional sporting activity will not extend maximum lifespan, other regimes (particularly pliometric contraction, where the muscle is extended while in tension) have the potential to restore both muscle mass and bone density, and are indeed used by body-builders. This appears to operate by releasing a splice variant of liver IGF-1 that is secreted by skeletal muscle and operates in an autocrine and paracrine fashion.¹¹⁶

Exercise is also a key factor in the preservation of vitality in the body. This also seems to effect the consciousness in that regular exercise seems to stimulate or nurture a state of alertness and increased awareness of the senses. And of course, it is a part of the process of sexual coitus; along with imagination, emotion and mood. These elements, added together create an operating point where distinct impressions can be imprinted on the mind and hence, as shown above, into the experiential database that is human DNA.

Muscle and bone are also rejuvenated by hormone supplementation, since hormonal changes underlie (for example) the change in relative activity of osteoblasts and osteoclasts that causes loss of bone density and eventually osteoporosis. Similarly, growth factor-induced reversal of thymic involution has been reported recently and may comprehensively restore youthful immune function.¹¹⁷

114 Notes from [Portland workshop, July 29, 1995](#)

115 Piero Scaruffi in [The Physics of Consciousness](#)

116 Aubrey D.N.J. de Grey from his research on aging

117 *Ibid.*

The thymal secretions are induced during sexual engagement; again, a true physical workout. The pineal secretions, a part of the visualizations during sexual foreplay are connected with the emotional aspects of sexuality and trigger still other secretions in the genital glands adding to the complexity of this most complex, life-energizing primordial stew.

Actually, all of our mitochondrial DNA and the nuclear DNA in some cells are rather short-lived too, but DNA in general is functionally long-lived. This is because new DNA is synthesised by copying old DNA, so DNA damage can still accumulate, even though it's not all inflicted upon the same molecule. DNA suffers three major types of damage: mutations (changes to the sequence), epimutations (persistent changes to the decorations that control gene expression), and senescence-inducing changes (such as telomere shortening). [Note: the term "epimutation" was coined many years ago by the eminent gerontologist Robin Holliday (3), but has not really caught on. I like it, because the more usual phrase "heritable epigenetic change" clearly also encompasses the plethora of "deliberate" changes that occur during cellular differentiation (during development and throughout life) to control gene expression.] All three happen to nuclear DNA; only mutations happen to mitochondrial DNA. Outside the cell, the situation is even simpler. Nothing in our blood exists for very long. The proteins that form blood vessels, and, indeed, maintain the three-dimensional structure of all our tissues, are rather different. Many of them are very long-lived, and they accumulate the "crosslinking" referred to above. Also, especially in the brain and the artery wall, junk accumulates between cells.

The immune system. The immune system relies heavily on the coexistence of a wide spectrum of different cell types that are distinguished by the presence or absence of certain proteins on the cell surface; also, within each such cell type there needs to be substantial genetic variation, which is achieved by special "hypervariable" regions of the DNA that are deliberately scrambled in order to make the immune system discriminating (that is, capable of homing in on anything foreign while not destroying the body itself). This polyclonality diminishes with age, and there are also changes to the relative and absolute abundance of the various cell types. Both of these changes lead to a progressively impaired immune system. However, because all this complexity is laid down by a genetic system that is still present in the old individual, the declining immune system might just recover on its own if its cellular environment were restored to a youthful state. A hint that this hypothesis might be true comes from the finding in mice (4) that restoring youthful concentrations of certain growth factors stimulates regrowth of the thymus, an organ that produces many of the immune cell types mentioned above and loses as many as 90% of its cells during the first half of life.

The endocrine system. The endocrine system is in the same boat—but, luckily, it is also a relatively straightforward system to repair directly if such repair is needed. Most glands secrete progressively less of the hormones that they make, and this decline, in most cases, does not occur because the glands shrink in size (like the thymus), but because the constituent cells become less active. This inactivation could result from debilitating changes in the extracellular environment, or from accumulation of lysosomal junk. It's hard to see what else could drive it, so I'm optimistic that the endocrine system will mostly fall off the list of things we need to fix. But also, since (by definition) these glands make substances that circulate in the blood, it doesn't matter which cells make them. We can therefore engineer other cells to do the same job, and we already know to some extent how to do this; this would also work for hormones whose decline is "programmed", such as estrogen. It wouldn't help for hormones whose levels rise with age, such as insulin, but those are the ones most likely to revert when everything else is fixed, because the age-related rise is a compensatory response.¹¹⁸

We have shown in other writing (documents of the GCL) that the endocrinal system is an integral consideration in Sexual Magick. These secretions are let into the blood, which circulates throughout the body and is particularly involved in the genital secretions. Indeed, in Occult symbology, these secretions are referred to as if they were the blood itself.

Indirectly Darwin is causing a dramatic change in the idea of Physics itself: are splitting the atom and observing distant galaxies the right ways to explain the universe? Or should we focus instead on the evolutionary process that gradually built the universe the way it is now? Should we study how things are modified when a force is applied (the vast majority of what Physics does today) or should we deal with how things modify themselves spontaneously?

As a matter of fact, Darwin's laws, unlike the laws of nature claimed by physical sciences, cannot be written down in the form of differential equations. They can only be stated in a generic manner, and any attempt to formalize them resorts to algorithms rather than equations. Algorithms are fundamentally different from equations in that they are discrete, rather than continuous, they occur in steps rather than instantaneously, and they can refer to themselves. A Science based on algorithms would be inherently different from a Science based on equations.

Finally, Darwin's paradigm is one that is rooted in the concept of organization and that ultimately aims at explaining organization. Indirectly, Darwin brought to the surface the elementary fact that the concept of organization is deeply rooted in the physical universe.

Darwin's treatise on the origin of species was indeed a treatise on the origin of order. There lies its monumental importance.

One of the themes straddling both biological and physical sciences is the quest for a mathematical model of phenomena of emergence (spontaneous creation of order), and in particular adaptation, and a physical justification of their dynamics (which seems to violate physical laws). Bernard Derrida will show that a system goes through a transition from order to chaos if the strength of the interactions among its parts is gradually increased. But then very "disordered" systems spontaneously "crystallize" into a higher degree of order.

First of all, the subject is "complexity", because a system must be complex enough for any property to "emerge" out of it. Complexity can be formally defined as nonlinearity.

The world is mostly nonlinear. The science of nonlinear dynamics was originally christened "chaos theory" because from nonlinear equations unpredictable solutions emerge. A very useful abstraction to describe the evolution of a system in time is that of a "phase space". Our ordinary space has only three dimensions (width, height, depth) but in theory we can think of spaces with any number of dimensions. A useful abstraction is that of a space with six dimensions, three of which are the usual spatial dimensions. The other three are the components of velocity along those spatial dimensions. In ordinary 3-dimensional space, a "point" can only represent the position of a system. In 6-dimensional phase space, a point represents both the position and the motion of the system. The evolution of a system is represented by some sort of shape in phase space.¹¹⁹

118 Aubrey D.N.J. de Grey from his research on aging

119 Piero Scaruffi in The Physics of Consciousness

Overall, Darwin challenges endeavors and values had been generally assumed and imply the immanence of consciousness in matter that provide order out of chaos. As ultimately this involves the rearrangement of atoms in their formation of complex molecules, electricity, especially in the form of a lightning flash (stirring the primordial stew as the Earth was cooling) must be an integral part of this operational formula.

Dr. Royal Raymond Rife discovered in the 1930s that certain precise electrical frequencies not only affirms this, but can even reverse many diseases; viral, bacterial and cancerous. At these frequencies only the malignancy is uprooted without any collateral damage to tissue. An interesting question confronts the experimenter; can such frequencies be produced by the mind, utilizing visualization and thought combined with the rhythmic movement of the two bodies in coitus?

The shapes that chaotic systems produce in phase space are called "strange attractors" because the system will tend towards the kinds of state described by the points in the phase space that lie within them.

Darwin's vision of natural selection as a creator of order is probably not sufficient to explain all the spontaneous order exhibited by both living and dead matter. At every level of science (including the brain and life) the spontaneous emergence of order, or self-organization of complex systems, is a common theme.¹²⁰

From this complexity emerges the true religion in its evolutionary nature, which is why Horus sits on the throne of Ra, temporarily. We must assert then that life and order are immutable forces, they cannot be destroyed; but merely changed or temporarily suppressed by another force while simultaneously affecting whichever force is concerned. This would only be a logical necessity since science is showing more and more that order is a condition of chaos and vice versa. But it's the involutory nature of spirit, down into matter that is more clearly suggested by the above quote. For this, Madame Blavatsky offers the Occult account; both criticizing Darwin for having missed half the formula as she by inference, praise him for his important discovery. Those who would stick specifically with the 'evolution only' formula, have but to consider AL:II.32 - **Also reason is a lie; for there is a factor infinite & unknown; & all their words are skew-wise.** In other words, we don't know everything. As Crowley states in *Magick in Theory and Practice*, logic itself is but an agreed-upon convention.

The spontaneous emergence of order would be more akin to the forces of N.O.X. (the darkness of matter), which are themselves evolutionary as the L.V.X. (light) is involutory. The L.V.X. seems more self-explanatory than the N.O.X., which we might say is that matter that the L.V.X. then infuses itself into. Yet, even that matter is but a structure of light, though it doesn't seem apparent that this also comes from the fifth dimension of which we said light emanates. We might then suggest that as this fifth dimension is postulated as originating from that which is above our material plane, the N.O.X. then might originate from a plane beneath the material plane.

What we are readily implying here is that life itself is organized into a hierarchy, which should be self-evident to the reader. From minerals to plants, animals to human beings, all of life displays various levels of complexity. The so-called simpler forms of life, including minerals, plants and animals, exist with consciousness but no awareness of that consciousness. Human beings are distinguished as being the sole possessors of this special awareness.

Language has to do with a hierarchical process of spelling out implicit ideas in explicit terms by means of rules and feedbacks. Organisms and societies also exhibit the same hierarchical structure. In these hierarchies, each intermediary entity ("holon") functions as a self-contained whole relative to its subordinates and as one of the dependent parts of its superordinates. Each holon tends to persist and assert its pattern of activity.

Wherever there is life, it must be hierarchically organized. Life exhibits an integrative property (that manifests itself as symbiosis) that enables the gradual construction of complex hierarchies out of simple holons. In nature there are no separated, indivisible, self-contained units. An "individual" is an oxymoron. An organism is a hierarchy of self-regulating holons (a "holarchy") that work in coordination with their environment. Holons at the higher levels of the hierarchy enjoy progressively more degrees of freedom and holons at the lower levels of the hierarchy have progressively less degrees of freedom. Moving up the hierarchy, we encounter more and more complex, flexible and creative patterns of activity. Moving down the hierarchy behavior becomes more and more mechanized.¹²¹

Humanity is an aggregate of many living beings producing one chaotic consciousness that itself, must become unified; a congealing of the soul (as noted in our article: [Congealing of the Soul](#)). Dr. Buck in his book; [Cosmic Consciousness](#), details a theory of the evolution of human consciousness that shows us first having perceptual awareness, which may still be part of the cognition process involving the cerebellum and the precept or symbol-laden dreaming brain. This was said to evolve into an aggregate of precepts to form conceptual awareness that is the current capacity in humanity. From there, *cosmic consciousness* then would be our destined aggregating of concepts into meta-concepts, which we can speculate may be a part of our intuitive mind. Consciousness as it develops and evolves is itself and aggregate of physical organization.

These meta-concepts have already approached our consciousness in the form of symbols, which start in philosophy with Plato's concept of the ideal form. From there, they take on a multi-layered complex of meaning that address both our external and internal lives; the most basic of these forms being geometrical.

Our universe presents us with forms (that we can perceive and name). A form is defined, first and foremost, by its stability: a form lasts in space and time. Forms change. The history of the universe, insofar as we are concerned, is a ceaseless creation, destruction and transformation of form. Life itself is, ultimately, creation, growth and decaying of form.

Every physical form is represented by a mathematical quantity called "attractor" in a space of internal variables. If the attractor satisfies the mathematical property of being "structurally stable", then the physical form is the stable form of an object. Changes in form, or morphogenesis, are due to the capture of the attractors of the old form by the attractors of the new form. All morphogenesis is due to the conflict between attractors. What catastrophe theory does is to "geometrize" the concept of "conflict."

The universe of objects can be divided into domains of different attractors. Such domains are separated by shock waves. Shock wave surfaces are singularities called "catastrophes". A catastrophe is a state beyond which the system is destroyed in an irreversible manner. Technically speaking, the "ensembles de catastrophes" are hypersurfaces that divide the parameter space in regions of completely different dynamics.

The bottom line is that dynamics and form become dual properties of nonlinear systems.

This is a purely geometric theory of morphogenesis. His laws are independent of the substance, structure and internal forces of the system.

Thom proves that in a 4-dimensional space there exist only 7 types of elementary catastrophes. Elementary catastrophes include: "fold", destruction of an attractor which is captured by a lesser potential; "cusp", bifurcation of an attractor into two attractors; etc. From these singularities, more and more complex catastrophes unfold, until the final catastrophe. Elementary catastrophes are "local accidents". The form of an object is due to the accumulation of many of these "accidents".

In the early 1960s, Monod and others discovered that genes are assembled not in a long string of instructions but in "genetic circuits". Within the cell, there are regulatory genes whose job is to turn on or off other genes. Therefore genes are not simply instructions to be carried out one after the other; they realize a complex network of messages. A regulatory gene may trigger another regulatory gene that may trigger another gene... etc. Each gene is typically controlled by two to ten other genes. Turning on just one gene may trigger an avalanche of effects.¹²²

Our internal visualization process can then be speculated to be a conduit for genetic response. It has always been a matter of intensity in the production of images brought about by a variety of trance-inducing activities in order to heighten and narrow the focus. Indeed, as these symbols may be said to manipulate genetic response, we find a parallel in the circuitry of neurons on the brain; one thought or observation bringing about a host of memories and associations from the brain's complex filing system.

The genetic program is not a sequence of instructions but rather a regulatory network that behaves like a self-organizing system.

By using a computer simulation of a cell-like network, Kauffman proved that, in any organism, the number of cell types must be approximately the square root of the number of genes.¹²³

121 Ibid

122 Piero Scaruffi in [The Physics of Consciousness](#)

123 Ibid

The nuclear repair of mtDNA mutations inherently involves phosphorylation. If the nucleus can fix mtDNA mutation, we have ‘ “mind over matter’ possibility. At least we have the possibility of making some slight alterations. That there are 13 proteins that are encoded into the mtDNA corresponds with the qabalistic number of transformation. From this we can perhaps surmise some synchronicity as in all Occult Science that is now correlating so well with modern science.

Mitochondrial DNA is extremely minimal—it encodes only 13 proteins. Unfortunately, those proteins are really, really important; there is still doubt whether mitochondrial DNA damage matters in aging, but that’s only because such damage is present only at very low levels. Work has been on going for over a decade to solve the problem of mitochondrial DNA damage in a comprehensive way—by making mitochondrial DNA superfluous. Basically, all we need to do is make some fairly obvious changes to the DNA sequences that encode these important proteins and then put that DNA into the nucleus of cells, where it would benefit from the much greater fidelity of maintenance that our naturally nuclear genes enjoy (see below). As with lysosomal enhancement, this would be done by germ line transformation in mice and, later, by gene therapy in people. The machinery to make this work already exists in our cells, because the 1,000 or so other proteins that make up mitochondria are encoded by nuclear genes. And, sure enough, a couple of groups recently have caused one of the 13 target genes to be expressed in exactly this way in culture.¹²⁴

Finally, it is in the synergistic energy worked up by the copulating couple that works up these images through the frenetic embrace. It has been presupposed by some Thelemites, including Crowley that one, and most specifically, the male in a heterosexual union should be the one that focuses on the symbol and directs the operation. But it doesn’t seem that there can be any synergy if the two are not working in tandem. The male then becomes the active director of the operation as the female is the passive reflector; returning the energy back to the male. We may then possibly experiment with a reversal of these roles; and there’s also need to consider the dynamics in lesbian and homosexual workings.

In the 1970’s the American physicist Buckminster Fuller developed a visionary theory, also called “synergetics”, that attacked traditional science at its very roots.

“Synergy” is the behavior of a whole that cannot be explained by the parts taken separately. Synergetics, therefore, studies system in a holistic (rather than reductionistic) way.

The way it does this, is by focusing on form rather than internal structure. Because of its emphasis on shape, Synergetics becomes a branch of Geometrics, the discipline of configurations (or patterns). Synergetics employs 60-degree coordination instead of the usual 90-degree coordination. The triangle (and tetrahedron) instead of the square (and the cube) is the fundamental geometric unit. Fuller’s thought is inspired by one of his own inventions, the “geodesic” dome (1954), a structure that exploits a very efficient way of enclosing space and that gets stronger as it gets larger.¹²⁵

Indeed, we can even speculate on the positions used in coitus by the working couple to be representations of geometric patterns; perhaps as complex as the patterns drawn into the sky that is the Starry Gnosis. To this end, it would be worth exploring the work of the Citatiza-Tet Tarot for more in this.

124 Aubrey D.N.J. de Grey from his research on aging

125 Piero Scaruffi in The Physics of Consciousness

The Cosmogony of Consciousness

Sacred Geometry is the first occult truth revealed in the West; particularly by the Pythagorean Mystery School (cf. [Greek Qabalah II](#)). In her historical accounting, Madame Helena Petrovna Blavatsky demonstrated that this *Gnosis* was also a part of Eastern philosophy in and around the same period with the onset of Buddhism (cf. [Theosophical Discussion](#)).

[Editor's Note: Buddhism emerged during a period in which there was an increased popularity of ascetic traditions in India. Buddhism is estimated as emerging around 4-500 BCE and the Upanisads are believed have been composed around 4-600 BCE. The Upanisads essentially provide ascetic teachings within the Vedic framework often reinterpreting the mainstream rituals in terms of inner meditative techniques and moral developments and placing emphasis on soteriology rather than worldly gain as traditionally emphasized in the earlier vedic rituals and literature. (Cf, Rg Veda) Buddhism is really an innovative interpretation of it's contemporary Upanisadic teachings, and the much earlier Jain and other ascetic teachings associated with the pre-Aryan peoples that inhabited India]

The bottom line is that reality is not made of "things", but of angle and frequency events. All experience can be reduced to only angles and frequencies.¹²⁶

This may at first, come as a theoretical exegesis to the modern mind; leaving mathematics involvement in spirituality to the abstraction of symbols and symbolism. Yet in the previous chapter we have already noted the transcendental or evolutionary importance of symbols and symbolism to the development of the mind and cellular structure of the body. That this now can be shown to have a fundamental importance in the physical sciences shows the integral connection with spiritual science in an emerging interdisciplinary paradigm.

Fuller finds "prisms" to be ubiquitous in nature and in culture. All systems contained in the universe are polyhedra, "universe" being the collection of all experiences of all individuals.¹²⁷

Arriving at a point in life where the mind begins to perceive the spiritual aspect of life, after having reached the nadir of involution into matter and as apart from its religious dimension, one can be said to have raised one's awareness; positioning such on the Tree-of-Life, in its lower triad of Sefiroth, in what is called the Veil of Qesheth. Here it is shown that the singular ray of divine light coming from the Sun (Tiphareth; just above the Veil of Qesheth) is said to be fragmented as if having gone through a prism. One also comes to realize the interconnectedness of all humanity as a collective consciousness, with the divinity itself being revealed in all things and referred to as the Universal Mind.

Considering the electrical dynamic discussed above in relation to morphogenesis, we have a working, scientific theory that affirms our interconnectedness as human beings on a purely racial topology; this synergetic connection being called the 'morphogenetic field.' This has been explained for the simian race; showing a monkey that on one side of an island, learns to wash the dirt off potatoes before eating them, and suddenly, spontaneously, monkeys on the other side of the island start doing the same thing. In human culture we often refer to this as psychic activity.

Synergetics rediscovers, in an almost mystical way, most of traditional science, but mainly through topological considerations (with traditional topology extended to "omnitopology"). For example, Synergetics proves that the universe is finite and expanding, and that Planck's constant is a "cosmic relationship".¹²⁸

126 Piero Scaruffi in [The Physics of Consciousness](#)

127 Ibid.

128 Ibid.

We have also shown that the synergistic relationship between a man and woman in coitus develops a special synergistic dynamic that we can now extend to the field of consciousness in human society on this Earth. That thought generates waves and waves then have an integral relationship with energy, we have a perfect corollary with the Thelemic principle of Energized Enthusiasm; consistent with the physical principle known as Planck's Constant, where the energy of a photon is said to be directly proportional with the frequency of its wave. It all comes down to a theory of mind and its particulate connection with the Aethyr. We should note that though modern science has rejected Newton's theory of the Aethyr, all that Newton put into the Aethyr is rejuvenated philosophically, with the theory of Dark Energy and Dark Matter. Our minds have an intimate connection with each other and with the Universe surrounding us.

The vast majority of theories of mind still assume that the world is a Newtonian world of objects, of continuous time, of absolute reality and of force-mediated causality. What that means is very simple: most theories of mind are based on a Physics that has been proven wrong. Newton's Physics does work in many cases, but today we know that it does not work in other cases. We don't know whether mind belongs to the set of cases for which Newton's Physics is a valid approximation of reality, or whether mind belongs to the set of cases for which Newton's Physics yields wrong predictions. Any theory of mind that is based on Newton's Physics is a gamble.¹²⁹

Einstein noted that "God doesn't play dice with the universe." Dr. Harold Aspen shows us that the Aethyr can be a geometrical substratum of mind. (cf. Scientific Proof of Levi's Aethyr). To this end, Sacred Geometry has a vital corollation. Geometry is an intellectual construct with the various shapes and forms not being inherently found in nature. In other words, these forms are a product of the human mind; giving validity to Plato's theory of ideal forms, which in itself suggests a plane of consciousness that is inherently human in origin.

These forms were said to be on a higher plane, where they manifested in their ideal state. Any higher plane is a plane of mind and in modern thought, these forms are then existent within a 'field;' giving them position and movement, which necessarily and especially in Qabalistic thought, also gives them consciousness.

Modern Physics is not necessarily right (although Newton is necessarily wrong on several issues, otherwise Hiroshima would still be standing). But many theories of mind rely on a Physics that, de facto, is either Newton's or is a Physics that has not been invented yet. In the Nineteenth century, the Irish mathematician William Hamilton realized what Newton had only implied: that velocity, as well as position, determines the state of a system. He also realized that the key quantity is the overall energy of the system. By combining these intuitions, Hamilton redefined Newton's dynamic equation with two equations that derived from just one quantity (the Hamiltonian function, a measure of the total energy of the system), that replaced acceleration (a second-order derivative) with the first-order derivative of velocity, and that were symmetrical (once velocity was replaced by momentum). The bottom line was that position and velocity played the same role and therefore the state of the system could be viewed as described by six coordinates, the three coordinates of position plus the three coordinates of momentum. At every point in time one could compute the set of six coordinates and the sequence of such sets would be the history of the system in the world. One could then visualize the evolution of the system in a six-dimensional space, the "phase" space.¹³⁰

These forms then actualize in material nature into a three-dimensional construct in the same way that the fourth Sefira of the Tree-of-Life also represents this same construct. The fifth Sefira then implies motion, with the sixth being derivative and stating that motion implies consciousness. Therefore, energy is consciousness; expressed in a "six-dimensional space," which is itself represented in time.

As life, the incarnation of spirit into matter is but one part of a dualistic process that is completed by death, we now then, arrive where we began; in our first quote on page 8 of this work, written by David M. Kiersey in his work, entitled: Towards the Physics of Death, wherein he writes that death is a process where "major levels of complexity within the context of dissipative

129 Piero Scaruffi in The Physics of Consciousness

130 Ibid.

structures,” such as the human body, upon death, “release stored information that is key to the further evolution of complexity.” This this is “inherent in the massive dissipative structures,” and that it is “thermodynamic” in nature, the breakdown of the body, though as Mr. Kiersey asserts, “returns to chaos.” That the body loses a small amount of weight upon death, demonstrates that the soul or aethyric consciousness that houses the spirit has mass and weight in and of itself. But that the body moves to a ‘hot death’ as discussed in [Liber DN](#) of the GCL, information is then passed that evolves to an even greater complexity, generationally. And as the soul is itself a mirrored reflection of the body, or the Khu in Thelemic terms, that houses the spirit (the Khabs), it must then shake off certain, less complex elements in order to refine itself to greater complexity. We must then deduce from this that this is a part of the process of congealing or avoiding what the ancient Egyptians termed the ‘second death.’ Hot Death is then a transformation of energy; allowing the Will of the Individual to work in harmony with the Law of Change. But more to the point, Hot Death is passionate and connected to karmic evolution, while the Cold Death, freezes the physical body and denies its return to the womb of Babalon...the Earth. In other words, the immortality of the body sought by ignorant Alchemists can only result in the formation of a vampire.

The single biggest change in scientific thinking may have nothing to do with Relativity and Quantum theories: it may well be the discovery that some processes are not symmetric in time. Before the discovery of the second law of Thermodynamics, all laws were symmetric in time, and change could always be bi-directional. Any formula had an equal sign that meant one can switch the two sides at will. We could always replay the history of the universe backwards. Entropy changed all that. Entropy was "discovered" around 1850 by the German physicist Rudolf Clausius in the process of revising the laws proposed by the French engineer Sadi Carnot that would become the foundations of Thermodynamics. The first law of Thermodynamics is basically the law of conservation of energy: energy can never be created or destroyed, it can only be transformed. The second law states that any transformation has an energetic cost: this "cost" of transforming energy Clausius called "entropy". Natural processes generate entropy. Entropy explains why heat flows spontaneously from hot to cold bodies, but the opposite never occurs: energy can be lost in entropy, not viceversa. The universe as a whole is proceeding towards its unavoidable fate: the "heat death"¹³¹

The law of change (change=stability) should be enough to lead such ignorant Alchemists away from the intuitively obvious and to a truth that is counter-intuitive. The state of maximum entropy, in which no heat flow is possible, assumes that temperature is a ubiquitous constant, which would mean that there is no energy available to produce more heat and evolution would become an impossibility. All the energy in the Universe is to our perception, heat; a heat that naturally moves towards the coldness of space to reconnect with the Aethyr and reformulate itself into form.

The only escape from the heat death would be if the energy in the universe were infinite, which would require an infinite source, such as God; making God into a holism at a hierarchical dimension above our 4 dimensional universe...the fifth or in Qabalistic terms, the *Ain Soph Aur*. Involution and evolution require time; the fourth dimension, which is itself a product of our consciousness.

Even the very concept of the flow of time is questionable. There appears to be a fixed space-time, and the past determines the future. Actually, there seems to be no difference between past and future: again, it is just a matter of perspective. Mass and energy are not exempted from "relativity". The mass and the energy of an object increase as the object speeds up. This principle violates the traditional principle of conservation, which held that nothing can be destroyed or created, but Einstein proved that mass and energy can transform into each other according to his famous formula (a particle at rest has an energy equal to its mass times the speed of light squared), and a very tiny piece of matter can release huge amounts of energy. Scientists were already familiar with a phenomenon in which mass seemed to disappear and correspondingly energy seemed to appear: radioactivity, discovered in 1896. But Einstein's conclusion that all matter is energy was far more reaching.¹³²

131 Piero Scaruffi in [The Physics of Consciousness](#)

132 Ibid.

Energy moving from a hot to a cold object is then becoming crystallized in that object; much in the same way that energy moving into the coldness of matter is the animating factor that we commonly refer to as soul; it is the involution of the light into matter. Time therefore, must move into the future and cannot move into the past so that our effort at living and reaching to pinnacles in the human experience are not simply illusory vanities.

The speed of light is finite and one of Relativity's fundamental principles is that nothing can travel faster than light. As a consequence, an object located in a specific point at a specific time will never be able to reach space-time areas of the universe that would require traveling faster than the light.

The "light cone" of a space-time point is the set of all points that can be reached by all possible light rays passing through that point. Because the speed of light is finite, that four-dimensional region has the shape of a cone (if the axis for time is perpendicular to the axes for the three spatial dimensions). The light cone represents the potential future of the point: these are all the points that can be reached in the future traveling at the speed of light or slower. By projecting the cone backwards, one gets the light cone for the past. The "world line" is the spatio-temporal path that an object is actually traveling through space-time. That line is always contained inside the light cone.

Besides the traditional quantity of time, Relativity Theory introduces another type of time. "Proper" time is the space-time distance between two points on a world line, because that distance turns out to be the time experienced by an observer traveling along that world line.

Relativity erased the concept of an absolute Time, but in doing so it established an even stronger type of determinism. It feels like our lives are rigidly determined and our task in this universe is simply to cruise on our world line. There is no provision in Relativity for free will.¹³³

The idea of light being considered "perpendicular" to the three spatial dimensions has been rendered in spiritual writing as coming "from above." Indeed, it is the first acknowledgment of most banishing rituals in Magick. To "cruise on our world line" both suggests that we interact (at least) with this light as if to travel the orbit of our True Will. However, it should be noted that the "determinism" should not be viewed as predestination; merely as the natural finite limitations as each our beings are and moving within this finite speed of light. Therefore, we are what we are or "I am that I am." Or as Liber AL vel Legis puts it:

AL II.58: "Yea! deem not of change: ye shall be as ye are, & not other..."

On a macroscopic scale, to escape the limitations of our individuality we should shall we say, ride up that perpendicular beam of light to its origin; wherein we propose this beam emanates; the Fifth Dimension (cf. [Testing the Night of Pan](#)). The primordial problem is the weight of our interconnected consciousness; often referred to as the 'machine' or in more contemporary terms, the 'Matrix.' To be able to effect this escape of our individually limited viewpoint then becomes a paradoxical action because the mechanism won't allow us to do so. An 'abyss' is approached requiring a loss of the consciousness of our individual ego that is electromagnetically connected to the machine by an affect of consciousness by which we fully actualize ourselves in order to become the polar opposite of that NOT that awaits us in the Fifth Dimension. Transcendence then becomes an act of Will that is simultaneously a physical event!

Einstein's Relativity Theory is ultimately about the nature of gravitation, which is the force holding together the universe. Relativity explains gravitation in terms of curved space-time, i.e. in terms of geometry. Since gravitation is natural motion, Einstein's idea was to regard free falls as natural motions, as straight lines in space time. The only way to achieve this was to assume that the effect of a gravitational field is to produce a curvature of space-time: the straight line becomes a "geodesic", the shortest route between two points on a warped surface (if the surface is flat, then the geodesic is a straight line). Bodies not subject to forces other than a gravitational field move along geodesics of space-time.

The curvature of space-time is measured by a "curvature tensor" originally introduced in 1854 by the German mathematician Bernhard Riemann. The Riemann geometry comprises the classical Euclidean geometry as a special case, but it is much more general. Minkowsky's four-dimensional spacetime is characterized by a "metrics". A metrics is a 4x4 matrix, each row and column representing one of the dimensions. The metrics for

133 Piero Scaruffi in [The Physics of Consciousness](#)

Newton's spacetime has zeros everywhere except in the diagonal of the matrix. The diagonal has values 1,1,1 and -1. This means that Pitagora's theorem still works, and time is an added dimension. The zeros in the other positions of the matrix specify that the space is flat. When the ones and the zeros change, their values specify a curvature for spacetime. Euclidean geometry works only with the flat-space metrics. Riemann's geometry works with any combination of values, i.e. with any degree and type of curvature.¹³⁴

Gravitation as the 'law of attraction' (a Thelemic concept) is what takes the fully realized self-mind construct in its positively charged polarization to the negatively charged source that is effectly the NOT in Qabalistic rendering. Viewing this as an ultimate natural motion in psychic forces, we gain from this that "View from Nowhere" that Thomas Nagel asserts allows us to view the Universe outside the finite limitations, yet connected to the self in an objective manner. And it is by this that we gain the creative power that is the integral motive of human evolution.

A specific consequence of Riemann's geometry is that "force" becomes an effect of the geometry of space. A "force" is simply the manifestation of a distortion in the geometry of space. Wherever there is a distortion, a moving object feels a "force" affecting its motion. Riemann's geometry is based on the notion of a "metric (or curvature) tensor" that expresses the curvature of space. On a two-dimensional surface each point is described by three numbers. In a four-dimensional world, it takes ten numbers at each point. This is the metric tensor. Euclid's geometry corresponds to one of the infinite possible metric tensors (the one that represents zero curvature). Not only space and time are relative, but space-time is warped.

With his 1915 field equations, Einstein made the connection with the physical world: he related the curvature of space-time caused by an object to the energy and momentum of the object (precisely, the curvature tensor to the "energy-momentum tensor"). Einstein therefore introduced two innovative ideas: the first is that we should consider space and time together (three spatial dimensions and one time dimension), not as separate; the second is that what causes the warps in this space-time (i.e., what alters the metric from Euclid's geometry) is mass. A mass does not voluntarily cause gravitational effects: a mass first deforms space-time and that warping will affect the motion of other objects that will therefore be indirectly feeling the "gravitational force" of that mass.¹³⁵

You need to unpack this quotation and then discuss its relevance to your next statement.

The 'law of attraction' is the 'force' that distorts the geometry of space; a sort of breakdown of the original form to be recapitulated into ever expanding new forms. The ontology described in [Liber Trigrammaton](#), may be said to represent mass through the symbol of the stain or imperfection as shown in its second verse:

Now cometh the glory of the Single One, as an imperfection and stain.

Before that, the NOT is introduced as the informant of all things, which we may admit through the medium of light, as described above. We might even postulate that the NOT is pure undifferentiated consciousness involuting into form; a "Single One" or Kether, the first Sefira on the Tree-of-Life. This then creates that initial disturbance in the field of space, which is nothing more than its own reflection; that reflection being pure, undifferentiated consciousness, which informs all being (absolutely everything that exists; the "ALL") as the field of space is the emanation of this reflection, physically described as the Aethyr. The condensation of any grouping of these sub-atomic particles disturbs this as yet, unconscious equilibrium is the cause of the warping in the Aethyric field, which is the first attempt at organization in this chaotic menstruum. It originates as a blind volition; itself, yet, an "imperfection or stain" that then forces a continuing effort at reorganization to more and more sophisticated levels of complexity in being. God is then the *Grand Geometer* as taught in Freemasonry; the intent of perfection, which can only exist in the NOT or Ain Soph Aur.

Summarizing: the dynamics of matter is determined by the geometry of space-time, and that geometry is in turn determined by the distribution of matter. Space-time acts like an intermediary device that relays the existence of matter to other matter.¹³⁶

134 Piero Scaruffi in [The Physics of Consciousness](#)

135 Ibid.

136 Ibid.

Space-time and matter meet on an electromagnetic pole; each holding an opposite charge with the other. The movement from zero through to the three-dimensional expression of nature as shown by the numerical emanation of the Sefirot on the Tree-of-Life is itself a Pythagorean application of this important symbol. As shown by the Sixth Sefira, consciousness emerges out of space-time, a-priori by the sefirotic emanations. The seemingly apparent tautology is easily by-passed; the emanations are the unfolding of dimensions from the NOT and through the first, second and third dimensions, respectively. The ontology is of the one becoming the many with the many existing by the coagulation of Aethyr into crystallized matter.

Reality Theory and Quantum Theory said something important about the mind. They were as much about mind as they were about matter, only in a more subtle way. Relativity Theory was not only about reality being "relative" to something. It was (first and foremost) about reality being beyond the reach of our senses. Einstein's underlying principle is that we don't always see the universe as it is. Newton's underlying principle was that we see the universe as it is. Newton's Physics is a description of how our mind perceives the universe. There are bodies, there is absolute time, etc. Einstein's Physics is a "guess" about what the universe really is, even if our mind cannot perceive it. Einstein's Physics implied that there may be aspects of the universe that our mind cannot perceive, and that we can guess only by analyzing the aspects that we can perceive.¹³⁷

Thomas Nagel uses his deductive reasoning to demonstrate an objective reality beyond the direct experience of the mind attached to the individualized self (as discussed above). Philosophically, he presents a path beyond the solipsism suggested by the problem of the observer in quantum physics. This is that the point where the mind moves beyond its intellectual reach; separated by this apparent 'Abyss' to a quantum level of consciousness that might even correspond to a greater consciousness of the congregate life-force of the mitochondria in each and all the cells in our bodies.

Quantum Theory was not only about reality being "quantized". It was also about reality being beyond the reach of our mind. The single most distressing finding of Quantum Theory is that reality as we know it only occurs when somebody observes it. The electron is in a certain place only when somebody actually looks at it, otherwise the electron is, simultaneously, in several different places. We can analyze this finding with either of two stances. Our mind has no limitations. It can perfectly perceive nature as it is. It observes only one value because that is what nature does: the multiple choices for a quantity's value collapse to just one value when that quantity is observed by an observer. Our mind has limitations. The quantum collapse from many values to just one value is due to a limitation of our mind. Our mind cannot perceive nature as it is. It can only perceive one value for each quantity. The electron is in many places, but our mind cannot perceive a thing being in many places at the same time, so it "collapses" the electron into only one specific place at a time. This is just an effect due to the limitation of our mind. We are forced to "sample" reality because we can't handle all of it. After all, that's what all our senses do. They are bombarded all the time with data from the environment, and they only pick up some of those data. We don't perceive every single detail of what is going on around us, we are forced to be selective. The mind turns out to be a sense that also has limited capacity, although the limitation is of a different kind. Each item of reality (a position, a speed, etc) "has" many values. The reason we observe only one value is that our mind can't handle a universe in which quantities have more than one value.

The conceptual revolution caused by Quantum Theory was somewhat deeper than the one caused by Relativity Theory. Reconciling Newton and Einstein is relatively easy: Newton's theory was not false, it was just a special case of Einstein's theory, the one in which the spacetime is Euclidean. Reconciling Newton and Quantum Theory is, on the other hand, impossible: Newton's theory is just false. It seems to work because we insist to assume that such things as big objects truly exist.¹³⁸

To get us beyond the limitations of the mind, symbols are cleverly employed in Occult science. The layers of meaning built into a symbol become multi-dimensional appealing to our intellect and what is called Astral Perception or perception of the Aethyr. The mistake commonly made in reference to Astral Projection is that the soul/mind is 'projected' outwards to some fixed point or theoretically real place. But in a Universe of non-locality, this doesn't need to be and actually can't be so. The non-locality of the Aethyr and aethyric particle/waves can be most readily proscribed as a 'sea of possibilities' to borrow a phrase from Patti Smith.

137 Piero Scaruffi in *The Physics of Consciousness*

138 Ibid.

A theory of mind that does not take into account Relativity is a legitimate approximation, just like a theory of the Earth that does not take into account Relativity is a legitimate approximation. But no theory of mind can ignore Quantum Theory. These two constants were determined, indirectly, by studying two minor phenomena that were still unsolved at the end of the century: the ether and the black body radiation. The presence of the ether could not be detected by measuring the speed of light through it; so Einstein assumed that the speed of light is always the same. The black body does not radiate light with all possible values of energy but only with some values of energy, those that are integer multiples of a certain unit of energy; so Planck assumed that energy exchanges must only occur in discrete packets. Einstein was proven wrong in 1964 by the Irish physicist John U., whose theorem basically ruled out "local hidden variables", precisely the type that Einstein invoked. Bell's conclusion is that, on the contrary, there are objective, non-local connections in the universe. In other words, two particles, once they have interacted, will keep interacting forever (their wave functions get entangled forever). Einstein believed in the law of locality, i.e. that two objects can interact only if they touch each other or if their interaction is mediated by some other object; but Bell proved that the "wave" is enough to provide interaction. Two measurements can be related instantaneously even if they are located in regions too far apart for a light signal to travel between them. Non-locality, or inseparability, is a fact of nature. Since then, experiments have provided concrete examples of non-locality. The American physicist David Bohm believed in an "undivided whole" even before Bell's experiment. His idea was that the whole universe is entangled in one gigantic wave.¹³⁹

Non-locality in itself seems to specify an Aethyr; a-priori. Each and every wave touches all and that each and every part of that which we call ourselves, body and soul, are put quantum particle/waves; touching all. The ONE is ALL and the ALL are ONE has been heralded by mystics since ancient times. This is the mystical truth of our existence as much as it is scientific fact. It has been said that what was once Magick is now Science...and we can add that what has been Magick is becoming Science in this, our time. This giant web that binds us is the physical and vital Aether that we may also call 'Universal Mind.'

Bohm assumed that the wave function does not represent just a set of probabilities: it represents an actual field. A particle is always accompanied by such a field. This field is a real field and acts upon particles the same way a classical potential does. (Bohm resurrected an interpretation of Quantum Theory that de Broglie had abandoned, the theory of an ordinary wave guiding an ordinary particle). The beauty of this assumption is that, with the introduction of this additional potential, something momentous happens to the equations of Quantum Mechanics: position and momentum of a particle are no longer incompatible, they can be measured precisely at the same time, and Heisenberg's principle is defeated.¹⁴⁰

The most sublime truths in mystical study have always been recognized by the intrinsic beauty found in a potently revealing simplicity. And so the same goes with scientific theory and the solving of practical problems in the creativity that goes with discovery and invention. Einstein's 'Special Relativity Theory' ($E=MC^2$) is as simple as it is sublime. When Frater Achad presented the number 31 as the Key to Liber AL, Crowley was moved in the same way. That the Aethyr is a projection of Universal Mind into a field is as beautifully sublime a proposition that we could possibly hope to consider in respect to the ineffable source of this projection (God) that we can only postulate as the NOT (Ain Soph Aur). This source is beyond the totality of the field it projects and that totality is all that we can reasonably apprehend.

In Physics, a potential describes a field in terms of how, at each point in space, the particle located at that point will be affected by that field. In Newton's physics the effect of the classical potential on a particle is proportional to the magnitude of the field. Bohm thought that his quantum field, in particular, had to reflect whatever is going on in the environment, including the measuring apparatus. Therefore, the quantum potential depends only on the form, and not on the magnitude, of the quantum field. The "strength" of the quantum potential does not depend on the intensity of the wave but only on the form of the wave. Even a very weak quantum potential can affect the particle. Even a very distant event can affect the particle. The field that Bohm introduced in the equations to fix Heisenberg's indeterminism represents a "sub-quantum" reality. Bohm's quantum potential does not act within the 4-dimensional geometry of spacetime; it acts beyond it. In a sense, it defines a common pool of information, a way to connect everything together, just like dancers can use the music to move together in harmony.¹⁴¹

We have already discussed that which is beyond the four-dimensional space-time continuum as being a fifth dimension that is the realm of light. And we also have the Aethyr as the material "environment" of which the "quantum potential" for the materialization of a wave into a particle is left up to the 'will' of the observer; consciousness itself. The dance of life is our creation as is

139 Piero Scaruffi in [The Physics of Consciousness](#)

140 Ibid.

141 Ibid.

all of nature; we are all gods. This dance involves the interaction a various particles that distort the geometry of space; forcing it to re-adjust—a theme inherent in the Adjustment Atu of the Holy Tarot. Intellectually of course, this gives us the concept of Justice; the original title of this Atu.

Bohm thought that this field must be fluctuating rapidly and what Quantum Theory observes is merely an average over time (just like Newton's physics reads a value for quantities that are actually due to the Brownian motion of many particles). Quantum physics deals with mean values of an underlying reality just like Newton's physics deals with mean values of thermodynamic quantities. At this "sub-quantum" level, quantum effects all but disappear: a particle's position and momentum are well-determined. The mystery of the collapse of the wave function, of the discontinuity in the transition from the quantum world to the classical world, occurs only at the quantum level, whereas Bohm believes there is a deeper level at which the apparent discontinuity of the collapse disappears. After all, the study of "elementary" particles has shown that even elementary particles can be destroyed and created, which means that they are not the ultimate components of the universe, that there must be an underlying reality, or, in Bohm's terms, an underlying "flux". Bohm thought that the basic problem lied in an obsolete notion of "order". Thus, Bohm distinguished between the "explicate" order (the world of isolated spacetime thing-events that our senses experience) and the "implicate" order (all thing-events are part of a whole, the "holomovement"). The explicate order emerges from the holomovement. The holomovement contains all instances of explicate order as potentialities.¹⁴²

This has led to the theory of a 'holographic universe' involving a working theory referred to as 'Schuman's Resonance'; based on the Bose-condensate as discussed in the GCL document; Liber Vox Viva Voce vel Video. That we are each individually as microcosms, exact replicas of the macrocosm is but the Occult rendering of the scientific truth of a holographic universe.

Cartesian order (the "grid" of space-time events) is appropriate for Newtonian physics in which the universe is divided in separate objects, but inadequate for Quantum and Relativity theories to reflect their idiosyncrasie and in particular the undivided wholeness of the universe that Bohm has been focusing on.

Bohm's solution was to contrast the "explicate order" that we perceive and that Physics describes (the Cartesian order of isolated space-time thing-events) with the "implicate order", which is an underlying, hidden layer of relationships. The explicate order is but a manifestation of the implicate order. Space and time, for example, are "forms" of the explicate order that are derived from the implicate order.

The implicate order is similar to the order within a hologram: the implicate order of a hologram gives rise to the explicate order of an image, but the implicate order is not simply a one-to-one representation of the image. In fact, each region of the hologram contains a representation of the entire image. The implicate order and the explicate order are fundamentally different. The main difference is that in the explicate order each point is separate from the others. In the intricate order, the whole universe is "enfolded" in everything, and everything is enfolded in the whole. In the explicate order "things" become (relatively) independent. In the implicate order, all thing-events are part of a whole, the "holomovement". The explicate order emerges from the holomovement. The holomovement contains all instances of explicate order as potentialities.¹⁴³

That which is within is as that which is without; or as the Gnostic Jesus puts it in the third verse of the Gospel of Thomas:

If your leaders say to you, 'Look, the (Father's) kingdom is in the sky,' then the birds of the sky will precede you. If they say to you, 'It is in the sea,' then the fish will precede you. Rather, the kingdom is within you and it is outside you.

When you know yourselves, then you will be known, and you will understand that you are children of the living Father. But if you do not know yourselves, then you live in poverty, and you are the poverty.

Bohm suggested that the implicate order could be defined by the quantum potential, the field consisting of an infinite number of pilot waves. The overlapping of the waves generates the explicate order of particles and forces, and ultimately space and time.

Since Bohm's quantum field is affected by all particles (the pilot-wave that guides all particles is affected by all particles), nonlocality is a feature of reality: a particle can depend strongly on distant features of the environment. Bohm's universe is one indivisible whole. Everything in the universe is entangled in everything else, and ultimately in the whole. It does not make sense to analyze particles of subsets of the world as independent and separate parts. One of Newton's postulates was that "time flows equably".

It is also a mystery how Nature knows which of the two systems is the measurement system and which one is the measured system: the one that collapses is the measured one, but the two systems are just systems, and it is not clear how Nature can discriminate the measuring one from the measured one and let only the latter collapse. If a wave collapses (i.e., a particle assumes well-defined attributes) only when observed by a conscious being, then Quantum Theory seems to specify a privileged role for the mind: the mind enters the world through the gap in Heisenberg's uncertainty principle. Indeed, the mind "must" exist for the universe to exist, otherwise nobody would be there to observe it and therefore the world would only be possibilities that never turn into actualities. Reality is just the content of consciousness, as the Hungarian physicist Eugene

142 Piero Scaruffi in The Physics of Consciousness

143 Ibid.

Wigner pointed out in 1961. Of course, mind must therefore be an entity that lies outside the realm of Quantum Theory and of Physics in general. The mind must be something special, that does not truly belong to "this" world.

Wigner observed that Schrodinger's equation is linear, but would stop being linear if its object were the very consciousness that collapses the wave. Therefore, Schrodinger's equation would result in a non-linear algorithm that may justify the mind's privileged status.

If the collapse occurs only when observed by a conscious being, if the collapse occurs at the border between mind and matter, as Wigner believes, then the evolution of the universe changed after the appearance of human beings (there was no collapse anywhere before mind appeared).

Undeterred by this objection, the American physicist John Archibald Wheeler believes that ours is a "participatory" universe, one in which consciousness participates in creating reality. The observer and the phenomenon are engaged in a creative act that yields reality. Consciousness does not create reality. Consciousness' role is extremely limited: it can't even choose which of the possibilities contained in the wave function will become reality. It can only "precipitate" reality out of many possibilities. Which possibility becomes reality is up to nature. Nonetheless, Wigner and Wheeler believe that consciousness is crucial to creating reality: as limited as its contribution is, without it there would be no reality, only possibilities. Wheeler even speculated that the rise of consciousness retroactively determined the history of the universe because it collapsed the mother of all waves that had never been collapsed before, thereby fixing every single event in the previous life of the universe.¹⁴⁴

If we can fix the past, then we are practicing a movement in time that is a reverse from its normally observed direction. Both the past and the future are actually determined in the present and indeed, are a part of the present. We might view this fixing of historical quantum events as an involutory process from the origin of consciousness.

In Everett's multiverse, Quantum Theory is deterministic and the role of the observer is vastly reduced (we really don't need an observer anymore, since the wave collapses in every single universe, albeit in different ways). Quantum Theory looks more like classical theory, except for the multiplication of universes.¹⁴⁵

The multiverse theory in this case, is still affected by mind. The problem here is that if the observer and/or the universe is split, there is a need for an enormous amount of energy and perhaps, matter. However, if we use the Heavy Neutrino as an analogy, the 5th-dimension then fixes the particle in cooperation with mind, which is of this 5th dimension.

The first conundrum of philosophy: if a tree falls in the woods with no one present, does it make a sound? The answer in Everett's physics would be yes. And human consciousness would be irrelevant. This would negate the hierarchy.

So we need four strands of science to understand reality: a theory of matter (quantum theory), a theory of evolution, a theory of knowledge (epistemology), and a theory of computation. The combined theory provides the "explanations" that Deutsch is interested in.

It follows from Dirac's equation that for every particle there is a corresponding anti-particle which has the same mass and opposite electric charge, and, generally speaking, behaves like the particle moving backwards in space and time. Forces are mediated by discrete packets of energy, commonly represented as virtual particles or "quanta". The quantum of the electromagnetic field (e.g., of light) is the photon: any electromagnetic phenomenon involves the exchange of a number of photons between the particles taking part in it. Photons exchange energy in units of the Planck constant, a very small value, but nonetheless a discrete value. Other forces are defined by other quanta: the weak force by the W particle, gravitation by the graviton and the nuclear force by gluons. Particles can, first of all, be divided according to a principle first formulated (in 1925) by the Austrian physicist Wolfgang Pauli: some particles (the "fermions", named after the Italian physicist Enrico Fermi) never occupy the same state at the same time, whereas other particles (the "bosons", named after the Indian physicist Satyendra Bose) do. The wave functions of two fermions can never completely overlap, whereas the wave functions of two bosons can completely overlap (the bosons basically lose their identity and become one). (Technically, "boson" is the general name for any particle with an angular momentum, or spin, of an integer number, whereas "fermion" is the general name for any particle with an odd half quantum unit of spin). It turns out (not too surprisingly) that fermions (such as electrons, protons, neutrons) make up the matter of the universe, while bosons (photons, gravitons, gluons) are the virtual particles that glue the fermions together. Bosons therefore represent the forces that act on fermions. They are the quanta of interaction. An interaction is always implemented via the exchange of bosons between fermions.

(There exist particles that are bosons but do not represent interactions, the so called "mesons". Mesons decay very rapidly. No stable meson is known). Three forces that act on elementary particles have been identified: the electromagnetic, the "weak" and the "strong" forces.

Correspondingly, there are bosons that are weak (W and Z particles), strong (the gluons) and electromagnetic (the photon). Fermions can be classified in several ways. First of all, the neutron and the proton (the particles that made up the nuclei of atoms) are not elementary: they are made of 18 quarks (6 quarks, each of one comes in three "colors"). Then there are twelve leptons: the electron, the muon, the tau, their three neutrinos and their six anti-particles. A better way to organize Fermions is to divide them in six families, each led by two leptons: the electron goes with the electron's neutrino, the down quark and the up quark. This family makes up most of the matter we know. Another family of Fermions is led by the muon and contains its neutrino and contains two more quarks. The third family contains the tau particle, its neutrino and two more quarks (bottom and top).

Particles made of quarks are called "hadrons" and comprise "baryons" (made of three quarks, and therefore fermions, such as the proton and the neutron) and "mesons" (made of one quark and one antiquark, and therefore bosons). The electromagnetic force between leptons is generated by the virtual exchange of massless particles called "photons". The weak force is due to the W and Z particles (there are two W particles). The

144 Piero Scaruffi in *The Physics of Consciousness*

145 Ibid.

"strong" force between quarks (the one that creates protons and neutrons) is generated by the virtual exchange of "gluons". Quarks come in "six" flavors and three "colors". Gluons are sensitive to color, not to flavor. The strong force between protons and neutrons is a direct consequence of the color force. Leptons do not have color, but have flavor (for example, the electron and its neutrino have different flavors). The "weak" force is actually the flavor force between leptons. W^+ and W^- are the quanta of this flavor force. This model explains what we know of matter. It does not explain why there are 4 forces, 18 quarks, six leptons, etc. The numbers seem to be arbitrary.¹⁴⁶

We in no way presuppose that the Qabalah can clearly explain a rationale in nature for why subatomic particles numerate with the totals that have amounted to. But if we can say that the four forces are represented by the four worlds of the Holy Qabalah, it becomes interesting to then find six leptons that are themselves "generated by the virtual exchange...of photons" in that six in the Qabalah is of the light (L.V.X.) that we may say is generated in the fifth dimension. These are six of twelve fundamental particles called Fermions; twelve representing the ecliptic and the twelve divisional qualities of the sky. Quarks enumerating to the number eighteen suggest the Atu of the Moon; themselves being duplicitous with top and bottom quarks as well as up and down quarks...not unlike the ebb and flow of the lunar tides, especially when expanded into their wave form.

Gluons are fundamentally different from photons: photons are intermediaries of the electromagnetic force but do not themselves carry an electric charge, whereas gluons are intermediaries of the color force that do carry themselves a color (and therefore interact among themselves). Why? Also, because color comes in three varieties, there are many gluons, while there is only one photon. As a result, the color force behaves in a fundamentally different way from the electromagnetic force. In particular, it extends to infinite. That confines quarks inside protons and neutrons. Why? Also, the symmetry of the electroweak force (whereby the photon and the bosons get transformed among themselves) is not exact as in the case of Relativity (where time and space coordinates transform among themselves): the photon is massless, whereas bosons have masses. Only at extremely high temperatures the symmetry is exact. At lower temperatures a spontaneous breakdown of symmetry occurs. This seems to be a general caprice of nature. At different temperatures symmetry breaks down: ferromagnetism, isotropic liquids, the electroweak force... A change in temperature can create new properties for matter: it creates magnetism for metals, it creates orientation for a crystal, it creates masses for bosons.¹⁴⁷

To rewrite the above quote, we might start out by saying that the light (photons) is affected by a concentration of mind (gluons) to focus on a specific event. The light itself becomes the astral menstruum by which we create the world around us. The original massless nature of bosons being developed to a certain mass shows the hazy nature of our comprehension of the Universe not unlike the illusions said to be created by the Moon.

The fundamental forces exhibit striking similarities when their bosons are massless. The three families of particles, in particular, acquire identical properties. This leads scientists to believe that the "natural" way of being for bosons in a remote past was massless. How did they acquire the mass we observe today in our world? And why they all have different masses? The Higgs mechanism gives fermions and bosons a mass. Naturally it requires bosons of its own, the Higgs bosons (particles of spin 0). Finally, Quantum Theory does not incorporate gravity. Since gravity is an interaction (albeit only visible among large bodies), it does require its own quantum of interaction, the so called "graviton" (a boson of spin 2). Once gravity is "quantized", one can compute the probability of a particle interacting with the gravitational field: the result is... infinite.¹⁴⁸

Gravity belongs to the Aethyr, which is connected to mind. We are fundamentally talking about the law of attraction, which has both objective and emotional 'colors.' In other words, we can look at the law of attraction as between two bodies and being a scientific law (specifically, the law of gravity) or we can interpret the phrase poetically and in terms of the procreative evolution of humanity. This remains for both science and the poet, a marvelous mystery into the very heart or essence of life and consciousness; as mysterious as a full Moon or lunar eclipse.

The difficulty of quantizing gravity is due to its self-referential (i.e., nonlinear) nature: gravity alters the geometry of space and time, and that alteration in turns affects the behavior of gravity.

146 Ibid.

147 Piero Scaruffi in *The Physics of Consciousness*

148 Ibid.

The fundamental differences between Quantum Theory and General Relativity can also be seen topologically: the universe of Relativity is curved and continuous; the universe of Quantum Theory is flat and granular. Relativity prescribes that matter warps the continuum of spacetime, which in turn affects the motion of matter. Quantum Theory prescribes that matter interacts via quanta of energy in a flat spacetime. (Even finding a common vocabulary is difficult!) The bridge between the two views would be to "quantize" spacetime, the relativistic intermediary between matter and matter: then the two formulations would be identical. If spacetime warping could be expressed in terms of quanta of energy, then the two prescriptions would be the same. Recently, Abhay Ashtekar has proposed the "loop-space model", based on the 1985 theory of Amitabha Sen, that splits time and space into two distinct entities subject to quantum uncertainty (analogous to momentum and position). The solutions of Einstein's equations would then be quantum states that resemble "loops". The truth is that Quantum Theory had reached an impasse. There seems to be no way that (General) Relativity can be modified to fit Quantum Mechanics. The problem is that they are founded on different "metaphors" of the world. Relativity Theory binds together space-time and matter. Quantum Theory binds together matter and the observer (an observer who is supposed to verify the consequences of binding together matter and the observer who is supposed to...). Relativity focuses on how the gravity of massive bodies bends the structure of time and space and are in turn influenced in their motion by the curvature of space-time. Quantum Theory focuses on the fuzziness in the life of elementary particles. Basically, we don't have a Physics that holds in places where both gravity and quantum effects are crucial, like at the centers of black holes or during the first moments of the Big Bang.¹⁴⁹

We are as if caught between two world views; one macrocosmic and the other, microcosmic. Ultimately, these must be harmonized into one intuitive comprehension of oneself and the Universe in relation. It seems our mythologizing throughout the many cultures in history has always intuited society's collective science and wisdom on a scale that shares a collective conscious and unconscious (zeitgeist). Our connection with each other is so intimate, we even modify how our senses apprehend the world around us. In other words, everybody sees exactly the same thing when looking at the color red.

In 1919, the German physicist Theodor Kaluza discovered that electromagnetism would follow if a fifth dimension was added to Einstein's four-dimensional spacetime continuum: by re-writing Einstein's field equations in five dimensions, Kaluza obtained a theory that contained both Einstein's General Relativity (i.e., the theory of gravitation) and Maxwell's theory of electromagnetism. Kaluza thought that light's privileged status came from the fact that light is a curling of the fourth spatial dimension. Later, the mathematician Oskar Klein explained how the fifth dimension could be curled up in a loop the size of the Planck length (the shortest length that Quantum Physics can deal with). The universe could have five dimensions, except that one is not infinite but closed in on itself. In the 1960s, the American physicist Bryce DeWitt and others proved that a Kaluza theory in higher dimensions is even more intriguing: when the fifth and higher dimensions are curled up, the theory yields the Yang-Mills fields required by Quantum Mechanics.¹⁵⁰

Whether a fifth dimension holds other dimensions within it and/or is encroached in other dimensions folded around it, seems too abstract a perspective. But certainly from our own experiential perspective, it is that which is beyond the sensorially perceived space/time continuum. That physics can scientifically lead us to what was once considered to belong exclusively to the domain of faith and superstition derived from the myth of Magick is now scientific fact. It is not the various heavens in the dogmas that worship anthropomorphosized forces as God. As the ancient Magick, it employs its own specialized symbol system that amazingly can be shown to have some correspondence with the Magickal symbol system.

Space-time must have ten dimensions. Six of them are curved in minuscule tubes that are negligible for most uses. Matter originated when those six dimensions of space collapsed into superstrings. Ultimately, elementary particles are compactified hyper-dimensional space. In 1996 the American physicist Andrew Strominger has even found a connection between black holes and strings: if the original mass of the black hole was made of strings, the Hawking radiation would ultimately drain the black hole and leave a thing of zero size, i.e. a particle. Since a particle is ultimately a string, the cycle could theoretically resume: black holes decaying into strings and strings decaying into black holes. Superstring Theory is the only scientific theory of all times that requires the universe to have a specific number of dimensions: but why ten? Current cosmological models speculate that the four fundamental forces of nature arose when symmetry broke down after the very high temperatures of the early universe began to cool down.¹⁵¹

149 Piero Scaruffi in [The Physics of Consciousness](#)

150 Ibid.

151 Ibid.

It would seem these 10 dimensions, being inside space-time, are a feature of space-time. The Tree-of-Life certainly reflects this idea in perfect symmetry; each Sefira representing one of the ten dimensions as dimensions of consciousness. The four worlds of the Qabalah then represent the four forces.

Most physical laws can be reversed in time, at least on paper. But most will not. Time presents another asymmetry, the "arrow of time" which points always in the same direction, no matter what is allowed by Mathematics. The universe, history and life all proceed forward and never backwards. It turns out that entropy is a key factor in enabling life (and, of course, in ending it). Living organisms maintain themselves far from equilibrium and entropy plays a role in it. Moreover, in 1848 the French biologist Louis Pasteur discovered that aminoacids (which make up proteins which make up living organisms) exhibit another singular asymmetry: for every aminoacid there exist in nature its mirror image, but life on Earth uses only one form of the aminoacids (left-handed ones). Pasteur's mystery is still unexplained (Pasteur thought that somehow that "was" the definition of life). Later, biologists would discover that bodies only use right-handed sugars, thereby confirming that homochirality (the property of being single-handed) is an essential property of life. Finally, an asymmetry presents itself even in the site of thinking itself, in the human brain. The two cerebral emispheres are rather symmetric in all species except ours. Other mammals do not show preferences for grasping food with one or the other paw. We do. Most of us are right-handed and those who are not are left-handed. Asymmetry seems to be a fundamental feature of our brain. The left hemisphere is primarily used for language and the interplay between the two hemispheres seems to be important for consciousness.¹⁵²

The implicit idea presented here is that humans are the only complete microcosm. Our mirroring of nature is complete; even down to the quantum level. This that has been taught in Occult circles since time immemorial is now more a scientific fact than merely some faith-reliant mystical axiom.

To closer inspection, the main subject of Relativity and Quantum theories may well be Time. Most of the bizarre implications of those theories are things that either happen "in time" or are caused by Time. Relativity turned Time into one of several dimensions, mildly different from the others but basically very similar to the others. This clearly contrasts with our perception of Time as being utterly distinct from space. Hawking, for example, thinks that originally Time was just a fourth spatial dimension, then gradually turned into a different type of dimension and, at the Big Bang, it became Time as we know it today.¹⁵³

Time is implied by the Sefira Geburah, which represents movement and subsequently results in consciousness (Tiphareth). This unique dimension lends credence to the idea of a phenomenal universe with a linear ontology. In other words, despite those that would assert that this universe is an illusion, they must be confounded by the idea that effort to 'escape' the snare of material existence is probable. The idea that we can affect our destiny necessarily implies time and without an acceptance of this, life is purely deterministic and we must accept the nihilistic notion that we can do nothing to affect our existence.

Such helplessness is anathema to our most basic survivalist instincts. The actuality of the phenomenal Universe is as scientifically true as the aethyric connection to our minds indicates the actual existence of the human soul and the interconnectedness of all human souls with the remainder of material existence.

There are no doubts that physical Time does not reflect psychological Time. Time, as we know it, is subjective and relative. There is a feeling to the flow of time that no equation of Physics can reproduce. Somehow, the riddle of Time reminds us of the riddle of consciousness: we know what it is, we can feel it very clearly, but we cannot express it, and we don't know where it comes from. Unfortunately, human civilization is founded on Time. Science, the Arts and technology are based on the concept of Time. What we have is two flavors of Time: psychological time, which is a concrete quantity that the brain creates and associates to each memory; and physical time, an abstract quantity that is used in scientific formulas for the purpose of describing properties of matter. The latter was largely an invention of Isaac Newton, who built his laws of nature on the assumption of an absolute, universal, linear, continuous Time. Past is past for everybody, and future is future for everybody. Einstein explained that somebody's past may be somebody else's present or even future, and thereby proved that time is not absolute and not universal. Any partitioning of space-time into space and time is perfectly legal. The only requirement on the time component is that events can be ordered in

152 Piero Scaruffi in [The Physics of Consciousness](#)

153 Ibid.

time. Time is pretty much reduced to a convention to order events, and one way of ordering is as good as any other way. In the meantime, the second law of Thermodynamics had for the first time established formally the arrow of time that we are very familiar with, the flowing from past to future and not viceversa.

The British physicists Arthur Milne and Paul Dirac are two of the scientists who have wondered if the shaky character of modern Physics may be due to the fact that there are two different types of time and that we tend to confuse them. Both maintained that atomic time and astronomical time may be out of sync. In other words, the speeds of planets slowly change all the time in terms of atomic time, although they remain the same in terms of astronomical time. A day on Earth is a day regardless of the speed of the Earth, but it may be lasting less and less according to an atomic clock. In particular, the age of the universe may have been vastly exaggerated because it is measured in astronomical time and astronomical processes were greatly speeded up in the early stages of the universe.

Einstein proved that Time is not absolute and said something about how we experience time in different ways depending on how we are moving. But he hardly explained what Time is. And nobody else ever has. In classical and quantum Physics, equations are invariant with respect to time inversion. Future and past are equivalent. Time is only slightly different from space. Time is therefore a mere geometrical parameter. Because of this, Physics offers a static view of the universe. The second law of Thermodynamics made official what was already obvious: that many phenomena are not reversible, that time is not merely a coordinate in space-time.¹⁵⁴

A quality of sacred geometry would then be that its various shapes, each must be a measure of time as they describe their qualities; i.e. as they become manifest. In this way, geometry clearly becomes reality as the Sefirot emanate on the Tree-of-Life. We move from Plato's ideal forms into the actual; where they 'become', even in their ideal form. The movement from the NOT (Ain Soph Aur) unto Malkuth is in the direction of the arrow of time.

In the 1970's Prigogine showed, using Boltzmann's theorem and thermodynamic concepts, that irreversibility is the manifestation at macroscopic level of randomness at microscopic level. Prigogine then attempted a microscopic formulation of the irreversibility of laws of nature. He associates macroscopic entropy with a microscopic entropy operator. Time too becomes an operator, no longer a mere parameter. Once both time and entropy have become operators, Physics has been turned upside down: instead of having a basic theory expressed in terms of wave functions (i.e., of individual trajectories), he obtains a basic theory in terms of distribution functions (i.e., bundles of trajectories). Time itself depends on the distribution and therefore becomes itself a stochastic quantity, just like entropy, an average over individual times. As a consequence, just like entropy cannot be reversed, time cannot: the future cannot be predicted from the past anymore.¹⁵⁵

Clairvoyance is of no use in from the past, nor from the present. Predestination doesn't exist in a Universe we are co-creating together. The value in clairvoyance is that in 'seeing,' one delves more deeply into the 'now.' Indeed, clairvoyance is merely an extreme clarity of mind that enables one a greater perception of things as they are. The arrow of time is the backbone of our conduct in the Veil of Qesheth; the fractured astral world wherein we as gods, create.

Traditionally, physical space is geometrical, biological space (the space in which biological form develops) is functional (for example, physical time is invariant with respect to rotations and translations, biological space is not). Prigogine's Time aims at unifying physical and biological phenomena. In the 1970's Stephen Hawking proved that black holes evaporate, therefore information is not only trapped inside the black hole, it truly disappears forever. The disappearance of matter, energy and information in a black hole has puzzled physicists since the beginning, as it obviously violates the strongest principle of conservation that our Physics is built upon. It also highlights the contradictions between Quantum Theory and Relativity Theory: the former guarantees that information is never lost, the latter predicts that it will be lost in a black hole.¹⁵⁶

The theory of the infinitude of the Universe is expanded into a theory of multiverses. No longer does the myth of a waking and sleeping god manifesting and contracting existence hold its sway. The Big Bang as with any creation myth merely shows the start of this particular Universe. Though equally as valid is that this is a fifth dimension from which all of manifestation originates.

Einstein himself realized that black holes implied the existence of a "bridge" between our universe and a mirror universe which is hidden inside the black hole, and in which Time runs backwards. Since the discovery that the universe is expanding, the most popular models have been the ones that predict expansion of space-time from an initial singularity. Since a singularity Kether is infinitely small, any cosmological model that wants to start from the very beginning must combine Relativity and Quantum Physics. The story usually starts with an infinitely small universe (Roger Penrose and Stephen Hawking have proved that Relativity implies this), in which quantum fluctuations of the type predicted by Heisenberg's principle are not negligible, especially when the universe was a size smaller than the Planck length. The fluctuations actually "created" the universe (space, time and matter) in a "Big Bang". Time slowly turned into space-time, giving rise to spatial dimensions. Space-time

154 Piero Scaruffi in [The Physics of Consciousness](#)

155 Ibid.

156 Ibid.

started expanding, the expansion that we still observe today. In a sense, there was no beginning of the universe: the "birth" of the universe is an illusion. There is no need to create the universe, because its creation is part of the universe itself. There is no real origin. The universe is self-contained, it does not require anything external to start it.¹⁵⁷

The implicit paradox is described qabalistically by the Ain Soph Aur concentrating a center, and projecting Kether. That the Universe would suddenly come into existence from nothing is a logical absurdity if only understood from a literal viewpoint. In the poetic rendering of the teaching, we have existence and the Universe herself folding inwards towards the Black Hole (the N.O.X.) and through to a new manifestation. The Universe itself is conscious and constantly creating itself.

Then the universe expanded. If the mass of the universe is big enough (and this is still being debated, but most cosmologists seem to believe so), then at some point the expansion will peak and it will reverse: the universe will contract all the way back into another singularity (the "Big Crunch"). At that point the same initial argument holds, which is likely to start another universe. For example, John Wheeler claims that the universe oscillates back and forth between a Big Bang Devolution on the Tree and a Big Crunch Evolution on the Tree. Each time the universe re-starts with randomly assigned values of the physical constants and laws. Both the beginning and the end are singularities, which means that the laws of Physics break down. The new universe can have no memory of the old universe, except for a higher entropy (assuming that at least that law is conserved through all these singularities), which implies a longer cycle of expansion and contraction (according to Richard Tolman's calculations).¹⁵⁸

The gradual evolutionary return to the Ain Soph Aur has usually been equivocated with the Hindu myth describing the sleep and waking life of Brahma. Rather, we should probably focus on the Lotus itself as the devouring flower that is constantly at the work of transformation. In other words, there is no reason to assume that the totality of the Universe or of the Multiverse would ever fully withdraw back into the NOT. But actually, as modern physics is beginning to speculate, such withdrawal would only be through the Black Hole at the center of galaxies and into new galaxies and/or new universes.

In this sense, the Universe is a totality, symbolized by Occultists as a circle, who's circumference is beyond our ability to perceive and therefore, who's center is at every single point. Each of us are composed of so many of these centers that we are, shall we say, hyper-centers; complex aggregates that will ultimately dissipate back into the Aethyric field in order to reformulate at yet greater complexity. There is no reason to assume that that volition which projects this field could desire to return to latent activity. Such volition really has no beginning and no end, with the projection of the Aethyric field being the eternal elements of its mind; each element then being eternal in and of itself.

Very few people are willing to take the second law of Thermodynamics as a primitive law of the universe. Explicitly or implicitly, we don't seem happy with this law that states an inequality. Somehow it must be a side effect of some other phenomenon. Thomas Gold (among others) believes that the second law follows the direction of the universe: entropy increases when the universe expands, it decreases when the universe contracts (or, equivalently, when Time flows backwards). The second law would simply be an effect of the expansion or contraction. In that case the universe might be cyclic. In 1974 Stephen Hawking discovered that black holes may evaporate and eventually vanish. The "Hawking radiation" that remains has lost all information about the black hole. This violates the assumption of determinism in the evolution of the universe, i.e. that, if we know the present, we can always derive the past, because the present universe contains all information about how the past universe was. After all, Stephen Hawking and Jacob Bekenstein have proved that the entropy of a black hole is proportional to its surface, which means that entropy should decrease constantly during the collapse of the black hole, which means that information must somehow increase, and not disappear...

What was there before the Big Bang created our universe? A widely held "cosmological principle" requires that the universe has no center, no special place. That means that the Big Bang did not occur in a specific point of the universe: it occurred everywhere in the universe, it was the universe. The universe was a point and the Big Bang is merely the moment when it began to expand. By cosmological standards, the Big Bang is still occurring now, in every single point of the universe. Space is being created as the universe expands. There was "nothing" before the Big Bang and there is "nothing" beyond the universe. The Big Bang creates the universe which is everything that exists.¹⁵⁹

157 Piero Scaruffi in [The Physics of Consciousness](#)

158 Ibid.

159 Ibid.

This clearly suggests that as God, the Universe “is, was and always shall be” and dare I say “world without end, Amen?” Therefore the Universe remains in a state of constant flux and reflux; constantly creating and regenerating; transforming. The ancient symbol of the circle whose circumference is nowhere and whose center is everywhere found takes on a scientific literalism.

While everybody agrees that the universe is expanding, not everybody agrees on what that means. In the quest for an explanation of dark matter and dark energy, the British physicist Geoffrey Burbidge, the American physicist Fred Hoyle and the Indian physicist Jayant Narlikar have developed the "Quasi Steady State Cosmology" (reprinted in the "Cyclic Universe Theory" by the American physicist Paul Steinhardt and the British physicist Neil Turok), according to which there is no "big bang" to begin with, and there will be no "big crunch" to end with. Space and time existed ever since and will exist forever. There is no beginning nor end. The evolution of the universe is due to a series of "bangs" (explosive expansions) and "crunches" (contractions). The big bang that we observe today with the most powerful detectors of microwave radiation is simply one of the many expansions following one of the many contractions. Each phase may last a trillion years, and therefore be undetected by human instruments. Burbidge doubts black holes, quasars and the cosmic radiation. It may also be that a universe is not born just out of a parent universe, but of many parent universes. A region of the universe expands because of the effect of many other regions. This is similar to what happens with neural networks.¹⁶⁰

We arrive then at a clear conception of a Universal Mind that is the massive aggregate consciousness of the Universe; the truly divine! We as humans, having the power to interact with particles and waves; participating in their determinism, are clearly the most conscious expression; each of us in singular nodes. In this way, we are truly an expression of divinity; creative gods being omnipotent, omnipresent and omnipotent in by own individual rights. In Occult science, the Aethyr was always labeled the Chaos; an ancient Greek term; meaning, the Universe as it initially became manifest and from that, space space and the cosmos; even a darkness (N.O.X.) or an abyss.

With a little imagination, the view of the chaotic inflationary theory can be interpreted in this way: The expansion of a new region may be determined by many regions, not just one. Each region somehow inherits its laws from those regions. The laws in a region may change all the time, especially at the beginning. The laws determine how successful a region is in its expansion. Different expansion regions with different laws can communicate. They are likely to compete for survival. Adaptation takes a toll on expansion regions. Regions die. Branches of regions become extinct. Obviously, this scenario bears strong similarities with biological scenarios.

Another theory that presupposes evolving universes is the one advanced in 1992 by the American astrophysicist Lee Smolin. He thinks that black holes are the birthplaces of offspring universes. The constants and laws of Physics are randomly changed in the new universes, just like the genome of offspring is randomly mutated. Black holes guarantee reproduction and inheritance. Universes that do not give rise to black holes cannot reproduce: there is therefore also a kind of "natural selection" among Smolin's universes. Our universe's delicate balance of constants and forces is the result of evolution.

The ultimate goal of Loop Quantum Gravity (LQG) is still the "quantization" of general relativity, but the way it approaches the problem is very different: it is purely geometric. In 1971, Roger Penrose introduced the notion of a "spin network" (derived from Louis Kauffman's "knot theory") in an attempt to explain the structure of 3-dimensional space. Lee Smolin then discovered something that is built into any theory of "quantum gravity" (into any quantization of relativity): the volumes of regions in space must come in discrete units, like energy comes in discrete units. If energy comes in discrete units, then space must come in discrete units. Just like matter is made of discrete particles, space itself must be made of discrete units. A volume cannot be divided forever: there is an elementary unit of volume.

This conclusion had been reached independently by Jacob Bekenstein (in his studies on the thermodynamics of black holes). The space that we experience is continuous. Spin networks, instead, are discrete. They are graphs with edges labelled by "spins" (that come in multiples of 0.5) and with three edges meeting at each vertex. As these spin networks become larger and more complex, they "yield" our ordinary, continuous, smooth 3-dimensional space. A spin network, therefore, "creates" geometry. It is not that a spin network yields a metrics (the metrics being what defines the geometry of a region of space) but that each vertex of a spin network creates the volume of a region of space.¹⁶¹

Three edges at a vertex are a part of the significance of pyramid design and construction. Is it that the ancients left this as part of a hint to help us to find the correct course in our understanding of nature? Sacred geometry describes space; modern physics is then a study of sacred geometry carried into its most infinitesimal and hence most magnificent expression. Sacred Geometry is essential in order to understand both the macrocosm and the microcosm.

160 Piero Scaruffi in *The Physics of Consciousness*

161 Ibid.

Spin networks "spontaneously" combine to form space. The formation of space resembles the Darwinian process that creates order via natural selection of self-organizing systems. Space appears to be the result of spontaneous processes of self-organization à la Stuart Kauffman. Spin networks thus solve "quantum gravity" in three dimensions. The problem is that the fourth dimension ("time") is not accounted for, i.e. the "dynamics" of the universe is not accounted for.

In 2001 the Greek physicist Fotini Markopoulou has shown that spin networks evolve in time in discrete steps: at every step, the change of each vertex of the spin network only depends on its immediate neighbors. This is reminiscent of Von Neumann's cellular automata and of algorithm-based thinking, as opposed to the traditional formula-oriented thinking of Physics.

Mathematics is a human invention, but it is amazing how well it describes the universe. True, Mathematics is more a discovery process than an invention process. But, even so, it is a discovery of facts that occur in the realm of mathematical ideas (theorems and the likes). It is amazing that facts occurring in that abstract realm reflect so well facts that occur in the physical realm.¹⁶²

The abstract realm is the spiritual realm of Plato's reason and the realm of his ideal forms. Aristotle was even more correct in asserting that these forms exist in the material world (showing the co-existence of Spirit and matter!) in that they are a part of our mind/reason/soul and hence have quantum weight...or as might be said, the forms interact with our manas being both generated by mind and apprehended by mind.

The human being is the crown of the many "spontaneous processes of self-organization." Indeed, we create ourselves as omniscient, omnipotent and omnipresent gods should be. Per Crowley's Star-Sponge vision, we are all unique points of expression, though our origin is ubiquitous.

Most Mathematics that is employed today so effectively for describing physical phenomena was worked out decades and even centuries before by mathematicians interested only in abstract mathematical problems. The rule almost never fails: sooner or later a physical phenomenon will be discovered that perfectly matches a mathematical theory. It feels like the universe is a foreign movie, subtitled in mathematical language. Even more intriguing is the fact that the world of Mathematics is accessible by the human mind. Our bodies have privileged access to physical space, our minds have privileged access to the notes that describe it. We get both treats. The body perceives physical reality through the senses, the mind perceives mathematical reality through reasoning.¹⁶³

Jung's idea of the 'collective unconscious' and the 'akashic records' is dependent on the mind having access to the apprehension of the Universe through mathematical models, so well expressed by Pythagorus. From him, Plato would derive his theory of reason being of the human soul; informed by that spirit that resides at its unique universal coordinates.

Chaos is a matter of life in this universe. What is surprising is that we do not live in chaos. We live in almost absolute stability. The computer I am writing on right now is made of a few billion particles of all kinds that interact according to mechanic, gravitational, electric, magnetic, weak and strong forces.¹⁶⁴

This is a return to Newtonian physics that science, since Einstein has claimed to have made obsolete. Newton's theory of the Aethyr is synchronistically connected with the resurgence of Magick during the Renaissance and Einsteinian physics has actually expanded on this to the point of the Occult revival that flowed through the twentieth century ev. In this, there is a uniting force generated by consensus reality that brings stability to the forms being isolated away from the chaotic matter of the Universe and maintaining themselves in the 'virtual' reality of the mind/soul complex. Indeed, it is the human ego or the ego derived of the human soul in all its various components that fixes the Universe; rendered as a picture in the mind. The Aethyr or Chaos is the mindstuff by which we accomplish this by virtue of the direct connection to the mind/soul complex.

162 Piero Scaruffi in The Physics of Consciousness

163 Ibid.

164 Ibid.

Stability is what we are built to care for. We care very little about the inner processes that lead to the formation of a tomato plant: we care for the tomatoes. We care very little for the microscopic processes that led a face to be what it is: we care for what "it looks like". At these levels stability is enormous. Science was originally built to explain the world at the "natural" level. Somehow scientists started digging into the structure of matter and reached for lower and lower levels. The laws of Physics got more and more complicated, less and less useful for the everyman. The surprising thing is that at higher levels we only see stability. How does chaos turn into stability? We witness systems that can create stability, order, symmetry out of immense chaos.

One answer is that maybe it is only a matter of perception. Our body was built to perceive things at this level, and at that level things appear to be stable just because our senses have been built to perceive them stable. If our senses weren't able to make order out of chaos, we wouldn't be able to operate in our environment. Another answer, of course, could be that all other levels are inherently false...

The main property of neural networks is feedback: they learn by doing things. Memory and learning seem to go hand in hand. Neural networks are "self-organizing" objects: response to a stimulus affects, among other things, the internal state of the object. To understand the behavior of a neural network one does not need to analyze the constituents of a neural network; one only needs to analyze the "organization" of a neural network.¹⁶⁵

The Aethyr is one such organization, as it is also an organizing factor in that holograms are one of the natural by-products of its manifestation. These are such "systems" as noted above and as well, are directly related to mind; that again, virtual reality that is the dimension of Soul. Physicists to date have found corollation in Hindu science and hence Piero Scaruffi can speculate that the observed Universe may be "inherently false;" submitting to the concept of 'maya.' This is actually a Yellow School perspective with the White School perspective admitting the Universe to be *inherently real*. That the mind can create and hold the Universe to be stable is more the testimony of our regal nature than it is any proof of illusion, which is an alienating nihilism that essentially makes all human striving to be meaningless.

Nature exhibits a "hierarchy" of sort of self-organizing systems, from the atomic level to the biological level, from the cognitive level to the astronomical level. The "output" of one self-organizing system (e.g. the genome) seems to be a new self-organizing system (e.g. the mind). Can all self-organizing systems be deduced from one such system, the "mother" of all self-organizing systems?

We are witnessing a shift in relative dominant roles between Physics and Biology. At first, ideas from physical sciences were applied to Biology, in order to make Biology more "scientific". This led to quantifying and formalizing biological phenomena by introducing discussions on energy, entropy and so forth. Slowly, the debate shifted towards unification of Physics and Biology, rather than unidirectional import of ideas from Physics. Biological phenomena just don't fit in the rigid deterministic model of Physics. Then it became progressively clear that biological phenomena cannot be reduced to Physics the way we know it. And now we are moving steadily towards the idea that Physics has to be changed to cope with biological phenomena, it has to absorb concepts that come from Biology.

In order to accommodate biological concepts, such as selection and feedback, in order to be able to encompass neural and living systems, which evolve in a Darwinian fashion and whose behavior is described by nonlinear equations, Physics will need to adopt nonlinear equations and possibly an algorithm-oriented (rather than equation-oriented) approach.

Physics is meandering after the unified theory that would explain all forces. What seems more interesting is a unification of physical and biological laws. We are now looking for the ultimate theory of nature from whose principles the behavior of all (animate and inanimate) systems can be explained. Particles, waves and forces seem less and less interesting objects to study. Physics has been built on recurring "themes": planets revolve around the sun, electrons revolve around the nucleus; masses attract each other, charged particles attract each other. Still, Physics has not explained these recurring patterns of Nature. Biology is explaining its recurring patterns of evolution.

A new scenario may be emerging, one in which the world is mostly nonlinear. And somehow that implies that the world self-organizes. Self-organizing systems are ones in which very complex structures emerge from very simple rules. Self-organizing systems are about where regularity comes from. And self-organizing systems cannot be explained by simply analyzing their constituents, because the organization prevails: the whole is more than its parts.

One pervasive property of the universe and everything that exists is communication consciousness. Things communicate all the time.

The dynamics of the universe is determined to a large extent by the messages that are exchanged between its parts (whether you look at the level of RNA, synapses or gravitation).

Things communicate. It is just their nature to communicate. More: their interactions determine what happens next. Things communicate in order to happen. Life happens because of communication. We think because of communications.

Messages can be studied by defining their "languages". Maybe, just maybe, instead of sciences like Physics and Biology we should focus on the "language" QBL? of the universe.

Newton thought that signals could travel at infinite velocities, that position and momentum could be measured simultaneously and that energy could be manipulated at will. Relativity told us that nothing can travel faster than the speed of light. Quantum Mechanics told us that we cannot measure position and momentum simultaneously. Thermodynamics told us that every manipulation of energy implies a loss of order. There are limits in our universe that did not exist in Newton's ideal universe...¹⁶⁶

165 Piero Scaruffi in The Physics of Consciousness

166 Ibid.

The Aethyr is the plastic medium for manipulating energy. Its natural motion is propelled by the law of attraction; intimately connected with its mass that we may postulate as a primal method of communication between and amongst its infinity of particles. Indeed, the eternal quest of the highest in human aspiration is to communicate with the Divine; the totality of the Universe itself. This is the Great Work of human striving and as I hope we've shown, the creative deterministic work of humanity in the forging of universal apprehension, which is as the Qabalists have postulated—God projects into the Universe that it might come to know itself. There is no leap beyond some external wall or abyss, but merely to begin that journey that would lead us to the Gnosis of each, ourselves. And through that as the Gnostic Jesus asserts in the Gospel of Thomas, we will come simultaneously to the knowledge of the ALL (that totality).

...while Physics kept introducing limits, Biology has been telling us the opposite. Once all these views are reconciled, Newton's Utopia may be replaced by a new Utopia, with simple laws and no constraints. But it's likely to look quite different from Newton's.¹⁶⁷

But yet, we come back to Newton and the Aethyr. This takes us, through the long detour of material science, back to the spiritual model of Magick. But in cooperation with science, we will have a more mature model as science and religion have finally become reunited. Overall, from a cultural and historical perspective, we have started with science, aeons ago, being one with spirituality (i.e. religion) and then undergoing the alchemical process known as 'solve' (separation); only to be finally reunited in the alchemical process known as 'coagula' and completing the alchemical axiom: *solve et coagula*.

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