

The Dark Mysteries of Consciousness: Paranormality within the greater universe

James E. Beichler, Ph.D.

Abstract: The ultimate goal of science is to find truth in its understanding of nature. Science progresses toward this goal by making accurate observations of events and phenomena in nature and developing hypotheses and theories to explain the observations. In a very real sense, there is only one nature and one universe, so all observations are tied together such that science is one even though it may be split into many different academic disciplines. So it should come as no surprise that the smallest and simplest things in nature are intimately related to the largest and most complex things in nature. It is the goal of science not just to explain all of these individual things by the most accurate and simplest theory possible, but also to explain their intimate relationships. As different as they may seem, life, mind and consciousness are intimately related to the birth and death of stars and galaxies as well as the whole of the universe. The deepest mysteries of physics, Dark Matter and Dark Energy, are intimately related to the simplest forms of life imaginable as well as the most complex and elevated consciousness that could ever be conceived. However, science has a major problem in trying to understand such concepts. It is limited by the same human consciousness that stores and interprets the observations and data regarding all of physical and material reality. So in the end, science cannot understand the most basic and fundamental principles of reality, such as the true nature of matter, unless it also understands the consciousness that is sensing, observing and interpreting the data it collects on matter and the world around it as well as the limits that each imposes on the other. Everything in science is intimately related because everything in nature is ultimately connected. There are no exceptions.

We observe the world around us with our eyes, followed by touch, our sense of hearing, smell and taste. Science uses technology to enhance, extend and render our senses more accurate. Our sense of sight is perhaps the most sophisticated of the five senses and our overall view of the world is dominated by sight. That's why we talk of a world 'view' rather than a world 'smell' or a world 'taste'. The use of the word 'view' in this manner reflects the dominance of sight over our other sensations of the world around us. Through sight, we first determine that the world is three-dimensional by the relative position of material bodies placed around us. We determine the materiality of objects by sight as well as touch. However, we soon learn through our senses that the world is dominated by change and that leads to our sense of motion. It also leads to our sense of the passage of time. So already we have established that matter and the motion of matter are special and that motion occurs against a backdrop of space and time.

The ancient Greek philosophers were the first to note these facts and try to make logical sense of them. Over a period of several hundred years, they progressed from explaining events and phenomena in their world as produced by the whims and fancies of gods and goddesses to logical explanations of nature based on the commonality of matter and motion. By about 350 BCE, Aristotle became the first philosopher to put all of these elements together and thus became the first person that we could now recognize as expressing a scientific worldview. However, there is far more to the story.

The Greek Philosophers also noticed certain dualities in nature, but they did not interpret these dualities as fundamental aspects of nature as did philosophers in the Far East. So the foundations of science have been based upon two separate dualities instead of just single concepts: The (1) internal versus the external and (2) discrete versus continuity. These dualities still influence science today, right down to what we regard as the fundamental nature of reality itself. Science has no way of absolutely verifying whether the world that we sense is real (external) or a product of our minds and imagination (internal). Instead, science assumes that there is an external material reality that operates under certain specific rules of logic as opposed to the possibility that our internal minds interpret the external chaotic world as structured and orderly. Within this context, science has sought to discover the nature of matter and two important types of questions have evolved. (I) Is reality internal or external to the human mind? In other words, does the human mind create or alter reality or is there a reality that is completely independent of the human mind's interpretations of reality? On the other hand, (II) is that reality continuous or discrete, as presented to us by our sensations of the external world? These two problems weigh heavily over all of science and human thought in their many different forms.

For all intents and purposes, we can still assume that what we call science started with Aristotle who believed in an external reality which he sought to explain and catalogue. His teacher, Plato, believed more in an internal and thus abstract reality governed by his own idealistic system of forms. Yet it took nearly two millennia for culture to come to terms with these different approaches to understanding reality, culminating in the work of the philosopher René Descartes. Greek Natural Philosophy was next consumed carried forward by the Romans, at least until the Roman Empire fell. It was then dominated by the Christian church in the west, but also gained a new life that included specific additions and commentaries by the Moslems in the Near East, until the two strands of Greek Natural Philosophy came crashing together during the crusades of the twelfth and thirteenth centuries. This clash resulted in the Renaissance or rebirth of European thought which then evolved into the Scientific Revolution of the seventeenth century. By the mid-seventeenth century, Descartes succeeded in separating Natural Philosophy from religion when he separated all of human thought into two different realms: Mind and Matter. The Natural Philosophy of Plato and Aristotle had been absorbed by the rise of Christianity and the Church and the difference between internal and external reality evolved into a 'war of sorts' between science and religion. Descartes' separation of human thought into the realms of Mind and Matter set the battle lines between science and religion for the coming centuries.

The science that evolved has become more and more objective (externalized) over the years, decades and centuries, as opposed to its subjective (internalized) interpretations. However, the further science has become objectified, the more nature has forced science to look at the subjective sides of science. Science cannot deny the subjectivity of nature in spite of its best efforts to the contrary. Of a dozen or more major interpretations of quantum theory, by far the most objective theoretical structure that science has ever produced, consciousness plays a major role in each. So it would seem that even in the smallest regions of 'objective' physical reality, subjectivity cannot be dismissed. On the other hand, the one science that seems to study 'subjectivity', psychology, ignores direct reference to the mind and consciousness as well as subjective concepts such as spirituality. Psychologists are taught in college not to refer to or think about the very mechanisms that lay behind the behaviorism that they study. It seems paradoxical that the very science that evolved to study the subjectivity of mind and consciousness ignores them, but it is true. So a new science of parapsychology was developed to study the consequences of the direct interaction between different minds (consciousness) and the direct physical interaction between mind (consciousness) and matter. Yet many conservative scientists and scholars still argue that parapsychology is not a true science, just as they argue that paranormal phenomena and the survival of consciousness are either impossible or if possible lie outside the scope of science in religion.

The bottom line is simply that nature, the physical world around us, consists of both an external and an internal part, while neither can exist without the other. Even in mystic thought, which relies on intuition (internal) rather than scientific logic (external), there is a strict separation of the 'self' from the rest of the world although they are still intimately connected. In mystic thought, the consciousness (internal reality) is a perfect reflection of the universe (external reality) and the individual explorer must give up the concept of 'self' (the internal interpretation of the external reality) to truly understand the universe (the external reality). No matter how science approaches the problem, whether philosophically or practically, intuitively or logically, nature does not distinguish between internal and external, objectivity and subjectivity, or mind (consciousness) and matter. They are all one at the most fundamental level of reality. It is at this point, the most fundamental level of reality, that science and human thought run into the other dualistic barrier to understanding physical reality; whether nature and reality are either discrete or continuous. This last duality forms the basis of the fundamental difference between the two great physics paradigms of the present age: The quantum paradigm (discrete reality) and the relativity paradigm (continuous reality). Solving this last duality will also mean solving the internal-external reality question and finally understanding the true nature of both mind (consciousness) and matter, out of which the paranormal and survival will become natural even if they are still not quite normal.

So, it should be clear that science must understand the true nature of both matter (external reality) and consciousness (internal reality) to develop a complete theory or model of reality, which is after all the goal of physics. In other words, science in general and physics in particular will be incomplete in their description and understanding of nature until both consciousness and matter are included in their theoretical model of reality, but, as of yet, neither is directly included in any scientific model of reality except for the 'single (operational) field theory' or SOFT. Quite frankly, SOFT offers as

complete a cosmology and theory of the nature of reality as can be offered at present. SOFT also corresponds nicely with the characteristics set forth in both the external observation of reality and the internal mystical observations of reality.

The greater universe

In science, we usually use the term cosmology when we talk about the greater universe. However, the word actually has a more subtle meaning than just the 'greater universe'. The word cosmology entails the study of the universe in its entirety, which must also include both life and the place of humanity within the greater context of the universe. The subject of cosmology has been studied from many different perspectives for thousands of years even if the studies have not always been called cosmology. Although there are religious, metaphysical and scientific aspects to cosmology, the present understanding of the word more-or-less characterizes the scientific study of the cosmos. In fact, the academic discipline of cosmology is considered an extension of the science of astrophysics although technically this subject would only look at the physical aspects of cosmology.

From a historical perspective, there have been three major periods of scientific cosmology, each depending on a different set of scientific laws and principles as defined by whatever paradigm science accepted at that time. Aristotelian cosmology was a compilation of earlier Greek notions that were adopted and extended by Aristotle. He believed in an internal form of gravity in that gravity was part of the nature of individual material objects that were constructed from the four basic elements of earth, air, fire and water. It was in the nature of material objects to seek their natural place at the center of the universe, which was also the center of the earth. It was the nature of the fifth element, which was perfect, to always move in circles so everything in the heavens from the moon, the sun, the planets and stars outwards, was within a solid sphere of 'quintessence' rotating about the center of the universe or the earth. Fundamentally, the nature of matter itself was continuous, so there was no vacuum or void. Aristotle did not believe that gravity was an external force.

His cosmology was adopted and adapted by the Catholic Church during the Middle Ages and Renaissance and formed an inherent part of Catholic theology until the scientific revolution. The Catholic Church placed man on the surface of the earth with Hell at the center of the earth while the celestial heavens of Aristotle became the true heavens of God. Archangels pushed the planets, moon, sun and stars around the earth in perfect circular orbits. Man could strive upward toward the heavens or sin and go downward into Hell. This cosmology was best exemplified in Dante Alighieri's *Divine Comedy: Inferno, Purgatoria and Paradiso*. Otherwise, this seems to be the only period of time during which physical and spiritual cosmologies were officially unified.

It took several centuries for science to break the philosophical bonds and shackles that tied it to Catholicism and religion. As far as cosmology is concerned, the first real changes came with Nicholas Copernicus, who placed the Sun at the center of the universe in the mid 1500s. Copernicus's juxtaposition of the sun and earth completely destabilized the catholic spiritual cosmology, so his physical cosmology was considered heretical by the church. The next real changes came with Galileo's telescopic observations as well as

his law of free fall in the early 1600s. However, the biggest leap was made by Johannes Kepler in the first decades of the 1600s when he broke tradition and found that the planets orbited the sun in ellipses rather than Plato's perfect circles. Kepler was the first to develop a realistic physical system for describing and accurately calculating planetary motions. His three laws are still valid and used today. However, the final stroke that overthrew Aristotle's cosmology came with Newton's publication of the Principia in 1687. Newton incorporated the work of all of these men and gave them their due credit by claiming that he stood on the shoulders of giants. Newton not only derived the correct laws of motion and gravitation, but he unified the heavens and the earth: He demonstrated that the same physics was applicable throughout the whole universe. There was nothing physically different or significant about the celestial heavens. Indeed, Newton completely objectified science and took any hint of either spirituality or subjectivity out of physics and cosmology, thus out of all science. In essence, we are still very Newtonian today in our overall common worldview and only apply modern physics in the extremes of nature and the universe. Otherwise, modern cosmology developed after Einstein's general theory of relativity in 1915 and includes Hubble's 1929 observation that the universe is expanding equally and everywhere.

Our presently accepted picture of cosmology posits the creation of the universe in a 'hot big bang', followed by a short period of extremely rapid expansion called 'inflation' that quickly slowed to our presently expanding universe. In the beginning all that existed was a singularity, an infinitesimal point of something, within a void or absolute vacuum. That point singularity contained everything that would eventually become our present physical universe. That point exploded as an inflated expansion during which time and the three dimensions of space became realities. The 'inflation' period ended with the creation of elementary particles and intensely hot electromagnetic radiation. After a much longer period of much slower expansion, the universe settled and cooled down to form hydrogen and helium molecules, then stars evolved through gravitational attraction and the first generation of galaxies evolved. As the expansion continued, the older stars and galaxies died away and were followed by a second period of galactic formation. Our Milky Way galaxy evolved during that second period. The universe is now thought to be about 13.7 billion years old; or rather the big bang is thought to have occurred about 13.7 billion years ago. Although Newtonian gravity theory can be used to explain most of this 'standard model of cosmology', it is really a prediction and product of the general theory of relativity and relativity is needed to understand its finer points.

There are three possibilities for the old age and end of our universe. (1) Our universe could continue to expand forever until matter itself and atoms disintegrate into their component particles and dissipate into the empty reaches of vacuous space in a few hundred billion years from the present or (2) the universe could expand until it reaches an equilibrium state where the expansion outward is exactly counterbalanced by just enough matter pulling inward gravitationally to offset the expansion. Otherwise, (3) if there is enough matter in the universe to counteract and thus slow the rate of expansion until it reverses to become a contraction, it could send the universe into a period of shrinking in size until sometime in the far distant future when all matter and energy would come crashing together at one point in a 'big crunch'. So a large part of the science of

cosmology as well as observational astronomy is dedicated to locating all the matter in the universe to determine which of these ends the universe could eventually experience. This is the simple standard model that science accepts today, although there are many variations on this theme. Whatever that fate might be, it is well understood that the history of the universe, past, present and future, depends entirely on physical laws and rules that are discoverable and understandable by scientists.

However, these cosmologies all represent an external or physical cosmology. Attempts to internalize these by adding an air of spirituality to them have been known, but are for the most part limited to scientific as well as non-scientific speculations. Each of these cosmologies represents a particular revolution in science. Of course, the Newtonian and Einsteinian revolutions are well known, but the Aristotelian cosmology was a product of a Zeroth Scientific Revolution that has not yet been recognized as such by either scientists or historians. Their view of the progress of science is both limited and biased to the external paradigms that rule science, while the internal paradigms are not considered significant, especially in the case of revolutions. So the standard interpretation of scientific revolutions is flawed. Before Aristotle, nature and the forces of nature were thought to be governed by the whims and fancies of gods. That view forms the Pre-Greek paradigm for understanding nature. After Aristotle, logical rules and principles were thought to govern nature and thus our present science of the natural world began to evolve. So Aristotle can be seen as the most significant person in that paradigm shift, although the shift actually took place over a period of three centuries. In fact, the previously unsuspected dual nature of revolutions and paradigm shifts only becomes relevant and meaningful with respect to recent advances, which emphasize the role and significance of mind and consciousness in all aspects of science.

The changing cosmology

Within the purest halls of scientific academia, two new fundamental problems have developed in the past few decades. Neither can be explained or understood within the present paradigms of physics. The first is the existence of Dark Matter (DM) and the second is the discovery of Dark Energy (DE). Technically, DM was first discovered more than seven decades ago. While studying a cluster of galaxies in 1933, Fritz Zwicky noticed that the individual galactic structures within the cluster showed evidence of interacting with nearly ten times as much gravitational force as could be supplied by the individual galaxies making up the cluster. However, his discovery wasn't deemed important enough to warrant further study, so it wasn't until the 1970s that a young physicist by the name of Vera Rubin discovered the discrepancies in the speeds by which stars and star systems rotate or orbit around the central cores of galaxies. According to the known laws of gravity, any material object will maintain a stable orbit around a larger or more massive object at a constant speed, but the orbital speed necessary to attain a stable orbit would decrease the further the orbiting object from the central object being orbited. That is simple Newtonian gravity since Einstein's relativity only refers to large massive objects and the space near them. Yet the stars and star systems that orbit galactic cores form spiral arms which means that their speeds are practically uniform as their distance increases from the galactic core or center about which they orbit.

Furthermore, it is difficult to reconcile the simple fact that scientists and other scholars observed spiral galaxies for more than a century before they realized that there was something wrong with the rotational or orbital speeds of the stars forming the arms. It should have been obvious to scientists that the rotational speeds of galaxies were all wrong as soon as they observed the arms more than a century ago. The real puzzle should be why scientists took more than a century to discover or even question this obvious discrepancy between theory and observation, yet this question has seldom if ever been asked within the greater scientific or academic community that studies these phenomena.

The only thing known that could give the orbiting stars equal speeds would be a ring or 'halo' of invisible matter around the outer reaches of each spiral galaxy. Thus the notion of the galactic halo was born. The halo around spiral galaxies contains as much as ten times more mass than the galaxies themselves. The halos are thought to be made of Cold Dark Matter (CDM), so-called because they cannot be observed (Dark) while the only thing that science knows to cause gravity is Matter and Cold because whatever they are they seem to have no energy and therefore cannot emit light of its own volition. The existence of this CDM halo has been verified by the phenomenon of 'gravitational lensing'. If the plane of a spiral galaxy is perpendicular with respect to our observation point on the earth and another bright celestial object lies behind that galaxy, the CDM halo acts like a lens to bend and distort the light waves coming from the celestial object behind it. Observations of 'gravitational lensing' have been made, thus verifying the existence of the CDM halos.

As if this weren't problem enough for science and physics, the discovery of DE came as an even greater shock to the scientific community in 1998. Two different groups of astronomers were observing Type 1a supernovae in distant galaxies and noticed discrepancies in their light emission spectra. This type of supernova occurs when a white dwarf and a neutron star in a binary star system fall into one another. Neither start originally had enough mass to go supernova and collapse into a black hole; however the combined mass of the two is enough to cause a supernova and the subsequent collapse into a black hole. The physics of this phenomenon is well understood and the masses exact enough that astronomers use this event as a standard 'candle' for exact measurements. In other words, scientists know exactly what wavelengths of light will be emitted during this gravitational collapse and subsequent explosion, so this particular type of supernova event is used for measuring distances to other galaxies by the red shift method. However, both teams noticed that the red shift of light wavelengths for different supernova were slightly different for galaxies further away. The only explanation for this discrepancy would be a previously unsuspected increase in the expansion rate of the universe, even though the expansion rate is supposed to be slowing over time. Hence scientists developed the concept of DE to explain the increasing rate of expansion.

This discovery was such a surprise and so completely unexpected given the present paradigms of physics, the quantum theory and relativity, that the NSF, NASA and DOE called together a Dark Energy Task Force (DETF) in February of 2005 to confirm its existence and study the phenomena involved. More than one hundred scientists from around the world voluntarily submitted white papers to the task force outlining their opinions and studies on the DE problem, demonstrating the deep concern and interest of

the scientific community. The task force issued its report in 2006, calling for more research on the problem as well as further verification of the existence of DE. But more to the point, they included a paragraph summary on the cover of the report which is a bit damning to the present paradigms of science.

Dark energy appears to be the dominant component of the physical Universe, yet there is no persuasive theoretical explanation for its existence or magnitude. The acceleration of the Universe is, along with dark matter, the observed phenomenon that most directly demonstrates that **our theories of fundamental particles and gravity are either incorrect or incomplete. Most experts believe that nothing short of a revolution in our understanding of fundamental physics will be required to achieve a full understanding** of the cosmic acceleration. For these reasons, the nature of dark energy ranks among the very most compelling of all outstanding problems in physical science. These circumstances demand an ambitious observational program to determine the dark energy properties as well as possible. [Emphasis added by this author] (DETF, 2006)

Obviously, the DETF clearly concluded that a scientific revolution is near at hand, however, not without a caveat in its calling DM and DE “outstanding problems” for modern physics. These are not simply “outstanding problems”, a phrase that implies that the ‘problems’ are still solvable given the present paradigms of physics.

DM and DE are *fundamental* problems amounting to real *crises* for the scientific community. The scientific community presently seems willing to admit that it will take a revolution to explain DM and DE, but it also refuses to admit that the revolution will completely overturn the present paradigms of science. The ‘crises’ of DM and DE strike at the very heart of physics and science, while their mere existence begs for a definition of matter even though science has never precisely defined either matter or the nature of matter. Quite simply, the DETF has understated the problem even though they have recognized the revolutionary nature of these discoveries in science. These are not simple mysteries that can be solved within the present paradigms of physics and science, which alone implies the emergence of a Third Scientific Revolution.

Nor are these the only fundamental problems facing modern physics, they are just the ‘frosting on the cake’. Since the 1970s, many scientists have accepted the obvious fact that the unification of the quantum and relativity theories is the major goal of physics. However, they have failed to realize that the two theories are mutual incompatible. The quantum theory is based upon the ‘discrete’ nature of matter as well as reality itself, while the relativity theory is based upon the ‘continuous’ nature of reality. The quantum theory seeks unification of the two fundamental theories based upon the continuity of the ‘probability density field’, a strictly mathematical formalism that they claim exists prior to consciousness ‘collapsing the wave function’ and thus creating material particles. The quantum theory cannot otherwise cope with continuity. In other words, continuity is only a mathematical illusion before material reality sets in by an act of consciousness, at least according to the quantum paradigm.

The quantum paradigm is so strongly accepted within the scientific community that nearly all attempts at unification since the 1970s have been based solely and completely upon the 'discrete' philosophy of the quantum. Yet these attempts have failed utterly and completely and those failures have not raised any concerns that scientists might be taking the wrong approach to unification. In particular, the most advanced quantum efforts of unification have postulated of the existence a large number of new elementary particles and undefined physical structures such as gravitons, Higgs particles, axions, magnetic monopoles, strings, superstrings, branes, quantum loops and super symmetric particles, to name just a few, that have never been found to exist in nature. These quantum theoreticians have ignored a basic rule of thumb in science that says you cannot explain an unknown by inventing another unknown because you are just substituting one problem for another, yet they persist on inventing new discrete particles to explain everything.

In the meantime, relativity theory was nothing more than a mathematical curiosity before the 1960s, with very little in the way of practical applications. However, the practicality of relativity theory has blossomed since the 1960s, especially in the space program and astronomy, so relativity has become a 'force' to reckon with in science. The rise in the fortunes of relativity theory has now changed the dynamic the same scientific paradigms that are expected to explain the most fundamental aspects of physical reality and leveled the playing field in science. Given these significant changes in scientific attitudes and priorities, the possibility of a new scientific revolution has been growing in spite of the discoveries of DM and DE. These recent new discoveries have only added an air of urgency and impending 'crisis' to the possibility of a revolution that was already in the making. Yet even these advances only cover the 'external' aspects of human thought. These changes in attitude and scientific progress do not directly affect the 'internal' portions of science even though 'consciousness' seems to be required in the 'quantum' view of physical reality. The battle in physics over the 'discrete' and 'continuous' natures of reality is no more than a 'proxy fight' for the larger battle between the 'internal' and 'external' aspects of reality, while this larger looming battle addresses the ultimate natures of both matter and mind (consciousness) directly.

In each of the accepted major revolutions in science there have been two sides, not one as previously thought. One side recognizes the significance of the external nature of reality, the standard for accepted revolutions in physics, but there has also been a simultaneous revolution regarding the internal nature of reality in each case that has gone largely unnoticed. At the very least the significance of the internal aspect of the past revolutions have not been fully appreciated or taken into account as a revolutionary factor by historians, philosophers, sociologists and scholars in general, let alone the scientists and physicists fueling and conducting the revolutions. While Aristotle set the agenda for the further development of physics by attempting to understand the external workings of the world in terms of 'matter in motion', Plato set the standards for the relationship between mind (internal) and matter (external). While Newton set the standards for the new physics and overthrew Aristotelian cosmology, Descartes established the new boundaries between mind (internal) and matter (external).

Ernst Mach played the same role with respect to Einstein and Max Planck's modern revolution in physics. Einstein and Planck redefined the motion of matter in its most extreme limits under newly discovered physical conditions while Mach redefined the priorities and boundaries between mind and matter by developing his own version of empirical positivism. However, nature herself does not follow the philosophical whims of humans who do not completely understand her and just as our continuing scientific expeditions into nature have turned up DM and DE, they have also led to the scientific discovery that the nature of reality, whatever it is, even material reality, cannot be separated into two different categories and thus requires a corresponding understanding of mind and consciousness relative to matter. The new recognition that consciousness plays an important role in physics and material reality has developed alongside the corresponding interest in consciousness by physicists, non-physicists and scholars in general.

Quite frankly, scientific interest in human consciousness and consciousness studies has been growing geometrically since the 1970s. This growth is not a coincidence, but rather a natural extension of work completed on mind and consciousness dating back to the mid-1800s that was circumvented by Mach's positivism and the subsequent emphasis on behaviorism in psychology. Both psychologists and non-psychologists have become interested in the mechanisms of mind behind the behavior that humans display for the first time in nearly a century, although the lead in this development has been assumed by non-psychologists. A related interest and research in the paranormal has also been growing and that growth has increased at an exponential rate since the 1970s. Studies of NDEs, reincarnation, healing and similar phenomena have been increasing since the 1970s, while interest in spirituality and mysticism within the general culture have also been keeping pace with these other advances. All of these factors add 'internal' aspects to the revolutionary path that science has now undertaken.

Even more recently, new discoveries regarding the possibility of extraterrestrial life have been increasing. New discoveries of earth-like planets are on the increase and over three-hundred extra-Solar planets have been discovered in just the past two years. NASA will soon be launching a satellite whose sole purpose is to look for signs of life in nearby star systems. The human genome and the genomes of other species have now been mapped. There have been numerous new discoveries in this area as well as fundamental new discoveries regarding what constitutes life. Vast amounts of new details on the human brain and how we think have been added to the growing knowledge of life and mind. These alternate developments clearly indicate the significance of life, mind and consciousness within the overall worldview of science and cosmology such that they form the other half of the coming revolution. Taken together, all of these advances raise the question, "what is the connection?" The answer is obvious, the connection is simple physics! So let's call it what it is, a cosmology of life, and look at the fundamental relationship between mind and matter from the perspective of simple physics.

When all of these recent developments are taken into account, it becomes evident that the coming revolution will have two sides, mind or consciousness (internal reality) and matter (external reality). In general, scholars now accept the fact that two scientific revolutions have taken place, one in the seventeenth century and the other at the outset of

the twentieth century. However, if this broader view is to be accepted in that revolutions have two sides, then the Zeroth Revolution that ended with Aristotle becomes all the more evident and the development of a physical concept of consciousness becomes an integral part of normal science. Consciousness already plays an important role in quantum theory, but it has never been considered a viable subject for theoretical work in the rest of physics. Within the commonly accepted quantum paradigm, consciousness seems to come out of nowhere to ‘collapse the wave function’ and create material reality. Otherwise, consciousness seems to have no place in physics, but again, it only *seems* that way. This attitude and seeming paradox is about to change and that change is actually quite straight forward and simple to explain.

The new physical reality

According to the quantum paradigm that dominates and pervades physics, science and culture, classical physics is deterministic and thus dismissed as irrelevant, ‘old fashioned’ and wrong. On the other hand, quantum theory is indeterministic in that the future is a probabilistic crap shoot, but it is modern and therefore correct. Whether these attitudes are philosophically true or not, they reflect how real physicists feel and act within the scientific community. Classical theory consists of Newtonian physics, Maxwell’s electromagnetic theory and Einstein’s relativity theory, all of which are suspect in the eyes of quantum theorists and philosophers. Yet the whole universe can be described in two basic classical equations or perhaps it would be better to say that as far as we know the whole universe conforms to the two basic formulas that describe classical electromagnetism and gravity. Maxwell’s electromagnetic theory describes the forces that hold atoms and molecules together as well as hold molecules to molecules to form gross material bodies. Otherwise, Newton’s gravity, except in extreme cases where Einstein’s general theory of relativity applies, powers stars and holds star systems together. Thus gravity governs the large scale features of the universe.

The original Newtonian paradigm that ruled physics, science and culture before 1900 could be summarized in two mathematical formulas or equations.

$$F_{EM} = qE + q\mathbf{v} \otimes B$$

$$F_{Gr} = mg$$

If you are not mathematically inclined, there is no need to be alarmed or balk at these equations. They are simply mathematical shorthand for simple ideas and concepts that anyone can understand. The first equation is called the Lorentz equation and the second is just Newton’s gravity as it defines the weight of an object relative to another object. The ‘**F**’ stands for a force. The subscripts merely tell what kind of force, ‘EM’ for electromagnetic and ‘Gr’ for gravitational. A force is just a push or pull. The letter ‘q’ just represents the electrical charge on an object, ‘**v**’ the velocity and ‘m’ the mass of the object. The small ‘**x**’ in a circle is a special type of multiplication called a ‘cross product’. It just means that the product resulting from the multiplication will be pointing at a right angle to the directions of the quantities being multiplied. The really interesting concepts here are the ‘**E**’ that represents the external electrical field, the ‘**B**’ which represents the external magnetic field and the ‘**g**’ that represents the external gravity field.

Physical fields are continuous, meaning there is no break or hole anywhere within their extent, and non-material, but they are still physical. Everyone is familiar with the concept of a field. If you put two magnets near each other, either the north pole to north pole or south pole to south pole, and try to push the magnets together, you cannot. The more you try, the more the magnets push each other away to resist your attempts as if there is ‘something’ between them that resists and pushes back against your efforts. That ‘something’ is the field. So fields are real and physical, but not material. These are not ‘force fields’ because there is no such thing as a ‘force field’. A force only occurs if you put another object within the field. The combination of the object and the field together create the force. So the force is not in the field itself. A gravitational field exists around every material object, including you and the earth. However, there is no gravitational weight (F_{Gr}) or pull to an object until you place that object (with mass ‘m’) into the gravitational field of the earth (with strength ‘g’) or the object attracting it. The weight of an object is the product of the mass and the external gravitational field into which that mass is placed, whence $F_{Gr} = mg$.

Physical fields are really fields of potential. Potential is what makes any field a field because only the field has the potential to create a force by interacting with a material object. When a particle or material body interacts with that potential, it gains an amount of potential energy that corresponds to the force. Everyone is familiar with electrical potential, which is measured in units called volts. Magnetic potential and gravity potential don’t have special names, but they still characterize their respective physical fields. Every point in an electrical field ‘**E**’ has a different value of scalar potential or voltage (whose particular value only exists at that point in the field), every point in a magnetic field ‘**B**’ is associated with a vector potential (which exists at that point but also has a length pointing in some direction) and every point in a gravity field ‘g’ has a scalar potential associated with it. The problem is that the magnetic potential, also called the electromagnetic vector potential, is associated with a length and points in a specific direction even though that direction and length do not exist in our normal three dimensions of space. So science accepts the mathematical reality of the magnetic potential, but then just ignores its physical reality because its physical nature cannot be explained by science, creating a paradox that standard science also ignores. Science ignores the physical reality of vector potentials because they imply the existence of a fourth dimension of common space with which science does not want to deal. The scientific community wants everything to be nice and simple and easily observable or detectable, so it works within a strictly three-dimensional space with time where things can be easily comprehended and cause no further problems.

The classical Newtonian equation of gravity has been rendered more accurate by Einstein’s general relativity, which posits the existence of a ‘curvature’ of the space-time continuum to explain gravity and make it more accurate. General relativity essentially maps out the space-time continuum, just like a normal paper map of the earth displays mountains, hills and plains in different colors. On the Einsteinian map of gravity and matter in space-time, space-curvature would be like the color and color codes that define the map of the earth and indicate differences in elevation or ground curvature. In relativity the measure of curvature is called the ‘metric’ of curvature and the amount of curvature or ‘metric’ depends on the mass or amount of matter (and energy equivalent of

matter) at any location on the space-time map. But normal or classical general relativity still depends on a three-dimensional space with time, which constitutes a four-dimensional space-time continuum. It is that extra fourth dimension of space that is implied by classical electromagnetic theory that changes everything: It renders space-time five-dimensional and allows the unification of electromagnetism and gravity within a single precursor field.

If you look at the two Newtonian equations above, they look lopsided even though you would think that they shouldn't be lopsided. Since both EM and gravity originate in the same single field, it would seem that they should have similar or matching components. Nature loves symmetries or things that balance out evenly: For every up there is a down and for every right there is a left. These equations wouldn't look so lopsided if there was a component to gravity which looked like the magnetic term in the Lorentz equation. So we would have

$$\mathbf{F}_{EM} = q\mathbf{E} + q\mathbf{v} \otimes \mathbf{B}$$

and

$$\mathbf{F}_{Gr} = m\mathbf{g} + \text{Something} .$$

The 'something' is the important thing in the gravity equation. This 'something' must be four-dimensional and renders the curvature of space-time in Einstein's expanded five-dimensional theory of general relativity a real curvature in the higher dimension of space rather than just a mathematical 'gimmick', just like mountains are really curved upwards not just a philosophical or mathematical gimmick (a corresponding two-dimensional picture of the real terrain) like they are on a flat map of the world. The reality is not the map, but the reality is pictured in the map. So Einstein's 'metric' map of space-time is just the mathematical equivalent to a real space curvature in the higher fourth dimension of space.

This curvature can then account for and explain the DM halos around spiral galaxies in a very easy way. The matter in the galaxy must interact with all of the other matter in the universe (this is the new 'something' part of the equation) and when it does so, the interaction creates extra curvature around the galaxies (where the galaxy's edge comes into contact with the rest of the universe) that is not directly due to the normal gravitational matter ($m\mathbf{g}$) in the galaxy itself. So DM is just the extra space curvature due to the 'something' in the new equation or rather to the real fourth component of space. The halo is due indirectly to the normal matter in a galaxy that interacts with the rest of the matter in the universe. The new gravity equation would take the form

$$\mathbf{F}_{Gr} = m\mathbf{g} + m\mathbf{v} \otimes \mathbf{\Gamma} ,$$

which merely says that the momentum or moving inertia of a body relative to the central body orbited ($m\mathbf{v}$) interacts in a special way (\otimes) with the net gravitational attraction from all other material bodies in the universe ($\mathbf{\Gamma}$). Strangely enough, this concept or principle was first enunciated in the 1870s by Ernst Mach and is commonly called Mach's Principle, but has never before been expressed as a mathematical equation, let alone one explaining gravity. As a bonus, the new extra term to gravity is also associated with a

gravity vector potential that yields an as yet undiscovered gravitational potential energy when it interacts with normal matter. DE is therefore nothing more nor less than the new gravitational vector potential. More importantly these equations can be used to give just the results that have been observed by astronomers and scientists.

Also, as a further bonus, Theodor Kaluza developed his purely mathematical five-dimensional extension of Einstein's general relativity (in 1921) that combined or unified the electromagnetic and gravitational fields within a single field that fills all five dimensions of space-time. However, his theoretical model was purely mathematical so it was never accepted by science. Now, this new model of gravity gives Kaluza's theory a real physical basis that will allow for the total unification and explanation of physics, just the goal that physicists have been chasing for the last four decades using quantum theory as a basis. Physics has now been unified without any reference to the quantum concept of a discrete reality, yet this new model also explains the quantum completely. Under these circumstances, the purely external half of the revolution is all but complete, but what about the 'internal' half of the revolution dealing with mind and consciousness. It is just as simple and depends on the same physics as expressed above in the two equations used to describe the external universe.

Life, mind and consciousness

The bottom line is that everything that we ever sense or know in any form in the universe is just a combination of **E**, **B** and **g**-field patterns. These three patterns combine to make everything from atoms to molecules, chemical reactions, equilibrium chemical reactions, and biochemical reactions as well as all material objects from the smallest crystal or rock to the largest star, black hole and galaxy. But eventually a level of complexity is reached whereby the combined **E**, **B** and **g**-field patterns develop a persistent stability over time without change. All material bodies are mixtures of field patterns, but some material bodies constitute more complex field patterns. These complex patterns still yield material bodies, yet within these material bodies there are even more complex patterns such that the material bodies become self-sustaining from an energy standpoint. These particular entities range from stars to living bodies, all of which are energetically self-sustaining. However, in the case of life the patterns have grown or evolved into so high a level of chemical complexity that they become internally organized to maintain the viability of the patterns themselves and support self-perpetuation.

This internal organizing principle defines the biofield and life itself, that which goes beyond the simple biochemical reactions that characterize life and differentiate a living body from an inanimate body. Since this viability deals directly with energies and the exchange of energy between atoms and molecules, it can only be described by the metric field of general relativity, which deals directly with matter and energy even though the individual miniscule variations in the metric pattern occur at the quantum level of physical reality. Energy exchanges and the corresponding internal motion of electrons as they are exchanged (or shared) between atoms and molecules can be represented by something called the energy-stress tensor in Einstein's equation and its equivalence to the space-time curvature. Life can thus be modeled or explained on the basis of the equation $F_{Gr} = mg$, or at least according to Einstein's modern expression of it in the metric field

and curvature. So in the end, the same equations or mathematical models that explain the material cosmos also explain life, implying that they can also explain the mind and consciousness that are normally associated with life.

With this new theoretical model of matter, science only needs to look seriously at what exactly constitutes a material body to understand life or the biofield. It is already regarded as common knowledge in science that material bodies are not truly solid even though we sense them as materially solid. This fact is taught and demonstrated in every beginning physics class. Every material body is made of a combination of three fields: gravity, electric and magnetic. Or, all material bodies are just combinations of the metric (the modern equivalent to Newton's gravitational field), electric and magnetic fields. However, there are special self-sustaining energy interchanges between atoms and molecules in a living body that characterize life in that they do not exist within non-living or inanimate bodies of matter. These special interchanges form a stable energetic pattern or complexity of interactions that defines life and the biofield, rendering life a special metric field structure.

All materials bodies whether animate (living) or inanimate (non-living) are only 0.01% matter by volume and thus not really solid, if by solid we mean continuously material throughout. The only 'solid' things in a material body are the elementary particles which make up the individual atoms and molecules in the body. The protons, neutrons and electrons which make up the material content of atoms constitute only 0.01% or less of the volume of the individual atoms, so the gross material bodies that are made of these atoms are actually 99.99% or more empty space, devoid of any real solid material. A material body only appears solid because the rest of the body, the remaining 99.99%, is filled with the electric fields that hold the atoms and molecules together. In turn, these electric fields are constantly changing and thus generating corresponding magnetic fields. So, according to the above equations, the metric field that constitutes the biofield or life is directly associated with corresponding **E**-field and **B**-field patterns or complexities.

The electric field patterns correspond to the biochemical processes of life, but they are prior to magnetic field patterns. According to Maxwell's third and fourth laws of electromagnetism, a changing **E**-field generates a **B**-field and a changing **B**-field generates an **E**-field. So, while these fields are associated with the metric field they also hold a special relationship with each other: They are mutually bound together as expressed in the classical electromagnetic theory. However, the **E**-field is primary due to the exchange of electrons and ions during the bio-chemical interactions constituting life, so the overall electric field pattern of an organism constitutes mind, while the secondary **B**-field pattern constitutes consciousness: Mind comes before consciousness. The obvious question then becomes 'what's the difference between living material bodies of matter (animate matter) and non-living bodies of matter (inanimate matter)?' They are all constituted from a combination of the same three fields patterns.

In classical physics, the answer is that there is no difference because classical physics is incomplete. In classical terms, it doesn't matter whether you throw a fifty kilogram rock or a fifty kilogram person off of a cliff; they both accelerate or fall at the same rate. Classical physics is completely external or objective and normally does not

take mind and consciousness into account. Mind and consciousness have been relegated to religion. However, everyone knows from experience that the difference is real and that the living body screams and the other does not. Classical physics does not take the scream into account because it is so completely objective. So, the real difference between the two falling objects is not in their equal rate of fall as Newtonian and classical physics would have it, but in the complex patterns that constitute life, mind and consciousness, giving the living object or body the ability and desire to scream.

But then, science must also take into account the decision to jump off the cliff and that entails an even higher level function of evolved consciousness that is commonly called 'choice'. The unintended consequence of this SOFT model of life, mind and consciousness is that all living organisms, no matter how simple their being and existence, have mind and consciousness. What then is the difference between a simple amoeba or bacterium and a human with respect to this model? The answer is simple. 'Choices' are made at a higher level of mind and consciousness than many living organisms exhibit, in fact 'choice' seems to be limited to organisms with human or human-like consciousness. So it would be better to say that all living organisms have a pre-emergent mind and/or emergent consciousness and only higher forms of living organisms have developed an emergent mind and emergent consciousness. This answer then begs the question, how do higher levels of mind and consciousness, such as those exhibited by humans, emerge? The answer is simple evolution.

Life first evolves when chemicals in a chaotic mixture of different chemical reactions begin to interact among themselves in such a way as to form a stable interdependent chemical solution. Or in other words, when the chaotic motions of atoms and molecules that constitute the chemicals themselves reach a point where a new stable and self-consistent energy complexity emerges, life emerges. This particular complexity would form simple life or what is commonly known as the biofield, but the biofield is also an organizational entity. Life and the biofield organize the internal chemical reactions and processes in such a way that new chemical processes can be added to the organism by assimilation or thus can evolve as a response to physical interactions with the organism's environment as long as they are beneficial to the evolving complexity and they do not disrupt the life complexity. Eventually, new functional complexities of biochemical processes emerge within the overall biofield or life complexity. These develop into the various functional organs within body of the organism. However, one of these functional organs becomes the director and coordinator for the other organs and is commonly called a brain. The brain emerges as a result of the material biological complication wrought by the organism's continuing evolution, while the corresponding electrical field pattern emerges simultaneously as a new higher-level complexity called mind. The mind, like the life complexity or biofield, is organizational, so it begins to organize the life pattern and corresponding biochemical reactions with the organism's body to enhance to its existence, and further initiating a new spurt or surge in evolution. Although the mind has now emerged, consciousness at this point is still in a pre-emergent state.

However, both body and brain continue to evolve at the micro-molecular level of chemical processes (from the bottom up), becoming ever more biologically complicated,

while the life and mind complexities not only evolve in pace with them but also from the top down. The brain is always converting new sensations to memories in the mind. These memories are stored as complicated magnetic potential patterns that correspond to the electrical patterns of sensations and thoughts in the brain. These new memory patterns in the brain would constitute the neural correlates of the pre-emergent consciousness. When mind first emerges, the memories would seem chaotic and unconnected except for any pattern given to them by their base biochemical processes, but new connections between different sensations and thoughts begin to develop within the mind independent of the biochemical processes in the brain as more memories and thought patterns are stored as magnetic potential patterns in the mind. These individual connections and connected groups of patterns then form small complex patterns, which become ever more complex as the mind learns new things from its environment and experiences new more complex thoughts in the brain. Eventually the magnetic potential patterns that are stored in the mind reach a point where a new stable and self-consistent complexity emerges, creating a higher level of consciousness corresponding to the first step in emerging human-like consciousness. This memory or magnetic potential complexity pattern corresponds to an individual's first mental recognition or abstraction of the concept of space. It occurs when the individual abstracts the notion that a material object continues to exist elsewhere in space even though the object is not within the individual's sensory range. In so doing, the person has just localized his or her 'self' in space (internally) relative to his or her non-localized (external) physical environment. Consciousness forces changes in the mind, brain and body that enhance its functioning.

Mind and this first rudimentary level of emergent consciousness then continue to evolve through the collection of a greater variety of memories as well as more complicated or complex memories. Eventually new patterns of memory complexes form and a still higher complexity precipitates or emerges. This higher level of consciousness is none other than the present level of human or human-like consciousness that gives humans the ability to distinguish 'self' from the environment and other like beings. The evolved mind gains the mental ability to recognize his or her material 'self' in a mirror at this level. This last memory complexity of magnetic potential patterns emerges when an individual begins to recognize and cognize the flow of time, or rather time is abstracted to the point that the individual can distinguish between past, present and future. In other words, the individual can now abstractly distinguish his or her temporal 'self' (locally) from the rest of his or her past and future 'self' (temporal non-locality). The individual has now differentiated his or her material 'self' (local existence in space and time) from the rest of the material universe (non-local space and time) including other similar beings. Human consciousness has now completed its evolution as a high-level magnetic potential complexity of memories stored in mind in the fourth dimension of space.

Just as biofield based life became an organizing principle for body and the mind became an organizer for life and brain after it emerged, consciousness also takes on the characteristics of an organizational principle for the memories in mind and thus reorders or organizes the mind from which it just evolved. This reorganization affects the brain, life and body directly, in that the brain would be restructured to enhance and accommodate the newly emerged consciousness. At each of these levels of evolution, the emerging complexity controls and organizes the levels below it. This organization

includes the DNA sequencing and species genome that controls heredity so that each succeeding generation is born with an overall blueprint for the emerged complexity and doesn't have to evolve over the same path again. The infant of any species is automatically born with the mental framework of the highest overall complexity level of its ancestors. All the infant has to do to learn is to fill in that framework with new memories and thus each generation has the ability to evolve further through the acquisition of knowledge in the form of more complex memories than its parent generation. This particular process lends some circumstantial evidence to the overall model. Under the normal understanding of heredity and evolution, evolutionary advances only occur at the micro-molecular level. So evolutionary changes are slow and occur over many generations. The only fast way to evolve at this micro-molecular level is through mutations, but mutations are generally weeded out in the next generation. So sudden beneficial leaps in evolution have not yet been adequately explained by science even though science knows that sudden leaps have taken place in the past.

At the beginning of the Cambrian age some five-hundred and thirty million years ago, living organisms showing a right-left symmetry suddenly appeared, as single celled organisms and colonies of such organisms gave way to a grand diversification of new organisms. The diversity of new living organisms began to resemble what we have today. This evolutionary change is known as the Cambrian Explosion and cannot presently be explained by evolution science. Nor can the separation of life into the two major categories of plants and animals be explained. More recently, humans began developing large brain capacities about one-hundred and fifty thousand years ago thereby marking an abrupt evolutionary jump from their most immediate ancestors. Humans also mysteriously started showing the modern human characteristics of abstract thought, planning, innovation and symbolic behavior about fifty thousand years ago, without explanation. This sudden evolutionary leap to modern humans has been called the 'big bang of human consciousness'.

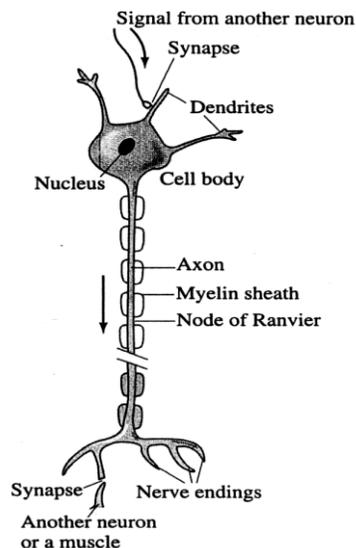
Since science only accepts the possibility of slow micro-evolutionary advances over time, these exceedingly rapid evolutionary jumps pose a significant problem for science. In fact, these sudden unexplained evolutionary leaps form the basis of modern arguments against evolutionary theory as a whole and allow people who do not like or understand scientific evolution to invoke counter arguments such as 'creationism' and 'intelligent design'. However, if science would accept the idea of top-down evolutionary jumps that conform to the emergence of various complexities as presented in this SOFT model instead of the slow bottom-up form of evolution that they have pursued for over a century and a half, these seemingly miraculous genetic leaps forward could easily be explained. The appearance of the large human brain capacity could correspond to the emergence of a rudimentary human consciousness and the subsequent material changes in the brain/body that resulted, while the emergence of modern human-like concepts of abstract thinking about fifty thousand years ago could have resulted from the final emergence of human consciousness as described above.

In any case, it should be evident that this physical model begins with and completely conforms to the same two fundamental equations for electromagnetism and gravity that are used to explain such mysterious physical concepts as DM and DE. The

‘metric’ gravitational potential pattern, electrical and magnetic potential patterns that are life (the biofield), mind and consciousness together form the ‘internal self’ as opposed to the material ‘self’ of the brain and body and the external material reality of our world and cosmos. However, one thing is still missing in this model: The emergence of consciousness depends on the storing and retrieval of memories by the brain in mind, yet no mechanism for this process has yet been provided.

The memory mechanism

To find such a mechanism, it is necessary to look at some simple brain anatomy and physiology. The brain is largely a collection or concentration of densely packed neurons and neuron cell bodies, at least to the biologist. To the chemist it is a complex system of various biochemicals and biochemical processes. Yet to a physicist the brain is an electro-mechanical organ or device. Neurons are specialized cells consisting of an axon, cell body and dendrites. The dendrites end in synaptic bulbs which can attach themselves to other neurons, muscles or other cells.



The neurons carry small electrical impulses or signals to and from the brain. These signals travel up and down the outer layer of the axons as well as between neurons and other neurons or cells via the synaptic gaps, which are breaks between the synaptic bulbs of one neuron and other cells to which they are attached. Specialized neurotransmitter chemicals carry the electrical signals across these gaps. For this reason, many scientists have long thought that the synaptic gaps in the brains are the seat of consciousness.

In reality, the synaptic gaps do have a role in consciousness, but that role is not significant enough to fix the gaps as the seat of consciousness. According to the SOFT model of consciousness, the seat of consciousness is the whole living body or organism and the magnetic potential complexity that corresponds to all electrical actions within the whole of the body or organism is consciousness itself. So the role of the synaptic gaps is important in the overall EM structure of the mind and consciousness as well as the internal processes of thought, however they are not consciousness itself. However, they do add to the evidence that the brain is the main communicating device between consciousness, mind and body. Nor do the synaptic gaps measure up to a direct role in the

memory storage and retrieval system that is necessary to explain the emergence of higher levels of consciousness. So what is the mechanism for memory and where is memory stored?

The mechanism is well described within the equations above and is a product of early radio research in the late 1800s. The primary component of a radio is an induction coil, literally a cylinder of continuous round wire wrappings. As a current goes through the wrappings, an electromagnetic field is produced within the coil of wire. The cytoskeleton of the neurons is composed of Microtubule (MT) cylinders. These cylinders are composed of tubulin proteins along a staggered path. So when an electrical current passes up or down the axon wall in a neuron, carrying an electrical signal to or from the brain, or even within the brain, the electrical impulse induces the staggered sequence of tubulin proteins in the MT cylinder to fire (ionize) in a spiral sequence around the cylinder. Firing in this spiral sequence mimics the electrical current path in an ordinary inductance coil and thus renders the MT cylinders small induction coils. In other words, each MT in the skeleton of the neuronal axons, throughout the whole body but especially in the brain, becomes a small radio transmitter/receiver. Since neurons are packed so tightly and densely in the brain, as either neuronal bundles or neuronal nets, the normal EM transverse waves that are emitted and received by like-sized MTs in the brain resonate together at their fundamental frequencies to create the coherence needed for a thought or stream of thoughts in the brain. However, they also emit a pattern of EM longitudinal waves in the higher fourth dimension of space that stores the memory of that resonance pattern or thought in the mind in the four-dimensional single field.

Within classical EM theory there are three things or aspects of the theoretical model that have never been discovered or confirmed to exist in the real world. Maxwell's EM theory predicts that EM waves can travel both backwards and forwards in time. Scientists have known this for more than a century, but either throw out the backwards propagating wave as impossible or say that the forward waves from the past cancel them out. The theory also predicts the existence of the vector potential or magnetic potential even though it has never been directly measured. The real existence of the EM vector or magnetic potential has however been confirmed indirectly by experiment so it is an accepted reality and its existence is taught in all the textbooks. The four-dimensionality of this potential was first argued by W.K. Clifford in 1869, but never accepted by science. It is also the basis of the present SOFT model of physics that has been explained throughout this paper. This fourth dimension of space is where mind and consciousness are located; or rather the four-dimensional extension of the body constitutes life, mind and consciousness. Meanwhile, standard EM theory also predicts the existence of longitudinal EM waves whose existence has never been directly observed or indirectly verified. That is because these waves travel in the fourth direction of space, which also cannot be detected or observed directly. So, while the various MTs within the neuronal axons in the brain resonate with each other to create the coherent patterns in the brain that we call thought and streams of thought, they also transmit longitudinal waves through the fourth dimension of space that store these thought patterns within the mind pattern in the single field occupying all of space and time. These are memories.

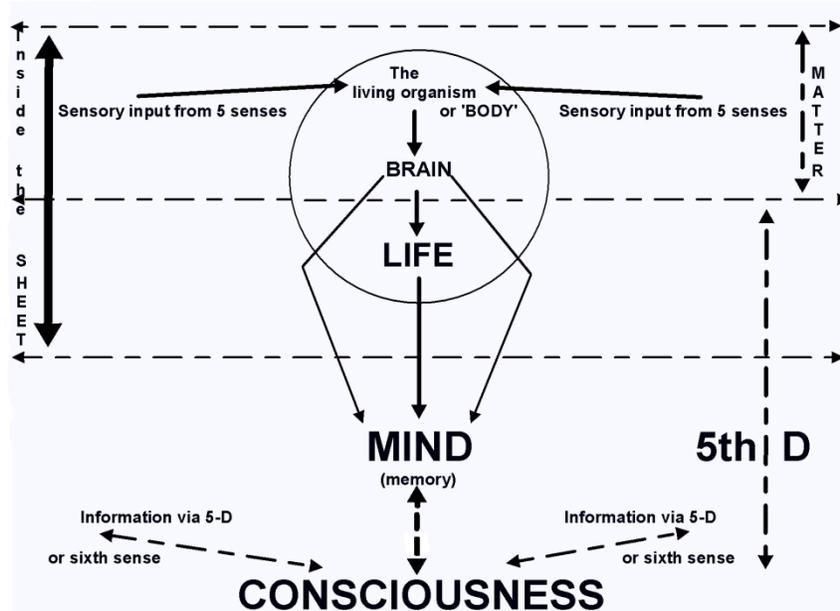
If a person thinks of an object, the corresponding memory magnetic potential pattern in the fourth dimension of space resonates causing a corresponding resonance in the MTs in the person's brain, allowing that person to 'see' or form a mental image in his or her brain of what he or she is recalling. If a person sees someone he or she knows, the electrical impulses flow through the optic nerve to the brain, setting up a specific thought pattern in the MTs that corresponds to the sight of that person. But the MTs also send out a longitudinal wave matching that pattern to the mind where a magnetic potential memory pattern for that person already exists. Thus the person that is being seen is recognized. In this manner, this model explains the major features of memory: storage, retrieval, recall and recognition. When the stored memories become complex enough, following this mechanism, in a primitive being with emergent mind but no emergent consciousness, the consciousness emerges and reorients the brain for quicker and more efficient signaling between the brain, mind and consciousness in the future. Once again, this model is completely compatible with the basic equations for EM and gravity that explain all else in the universe. So now the only problem left is to explain the paranormal and the survival of consciousness within this SOFT model.

Paranormality within the greater cosmos

It would be simpler still to refer to recognition, recall, retrieval and memory storage as examples of pattern matching in mind between the brain and consciousness of an individual. In each of these cases a pattern stored in mind, the complex of patterns from which consciousness emerges through evolution, matches an MT pattern in the material three-dimensional brain. The mode of pattern transport between brain, mind and consciousness is the longitudinal EM waves. This model couldn't be simpler once the obstacles of accepting and cognizing the four-dimensional space are accomplished. However, the longitudinal waves emitted as complex patterns into the fourth dimension of space do not just travel 'up' in the fourth direction. These complex magnetic potential pattern waves can also spread out 'sideways' or three-dimensionally within the higher fourth dimension of space. That means that it would be possible for the consciousness of other sentient beings to intercept or cognize the longitudinal wave patterns under the correct physical conditions from other individuals or even material events that emit simpler longitudinal EM wave patterns. This possibility opens up a whole new range of mental-physical interactions that normal science neither accepts as real nor studies as of yet.

For example, this mechanism could easily account for direct consciousness (mind) to consciousness (mind) communication by the direct transfer of longitudinal wave patterns between different minds. This process is called ESP and the mechanism is normally referred to as 'psi'. So this physical model easily accounts for all types of 'psi' phenomena. In the case of 'remote viewing' and 'clairvoyance', the mind of an individual merely 'cognizes' or uses his or her own consciousness to set up a pattern match with material objects without the intervention of transverse waves of other form of contact within the normal three-dimensions of space. In the case of precognition, the pattern matching occurs over the dimension of time within a five-dimensional space-time continuum and finally, for psychokinesis (PK) the person performing or causing the material event merely establishes a complex wave pattern over time that he or she

projects from their consciousness into the three-dimensional material world. Although the explanation sounds simple, the practice is not so easy for many different reasons. The problem in the past, especially with PK phenomena, has been explaining where the energy comes from to move a material object. Since the pattern that is being matched to a real material object is a complex EM vector potential pattern, when it interacts with matter the vector potential is converted to magnetic potential energy that can be used to move the object. In other words, the vector potential pattern is a guide and draws energy from any type of EM fields that are associated with the material body or the local environment near the material body.



Under these circumstances, paranormal phenomena can be explained easily as prescribed by the same physics and physical equations that describe the rest of the normal universe. However, it should be noted that consciousness itself acts as the sensory organ for a sixth sense that interacts through the fourth dimension of space just as the normal five senses interact with the material world through the normal three-dimensions of space. That leaves only one very important question unanswered.

The really important question is the one regarding the survival of consciousness and the afterlife, yet the answer should be obvious. Upon death, the biochemical interactions of the body cease and the Biofield (life complexity pattern) breaks down and dissipates. The various biochemical processes in the body that define the body as living according to normal science no longer work or interact together without the guidance or organization of the biofield or life pattern. The chemical processes break down and the chemical constituents (material particles) that constitute the body eventually dissipate after the life pattern decoheres: "Ashes to ashes and dust to dust". All of the mass and inertia of the body dissipate and the gravitational (metric) equation no longer applies. It would also seem that the electric charges associated with the material particles would also disappear through dissipation when the body dies and the EM equation would no longer hold true, so mind and consciousness would also dissipate to nothingness: Thus no afterlife. While it is true that the electric charges are no longer pertinent in that the exchange of electrons during the biochemical interactions that defined a living body and originally led to the emergence of the mind and consciousness complexes since the

biochemical processes have ceased functioning, once those complexes emerged they took on a life of their own, figuratively speaking. The electrical and magnetic potentials had a special relationship between them, even during life, they survive death.

According to the first two of Maxwell's laws of EM, the presence of real material particles are necessary to form the electric and magnetic fields, *i.e.*, the particles generate the fields in the space around them. However, according to Maxwell's third and fourth laws of EM, a changing E field generates a B field and vice versa without the intervention of material charged particles, so EM patterns can exist independent of the particles that produced them once they have been produced. Common transverse EM waves (light) are a direct product and example of this exact same process as describe by Maxwell's laws. This means that the complex EM patterns that are mind and consciousness can remain intact after the material particles that produced them dissipate upon death if there is something else to render them coherent or reinforce them. And of course, they are mutually coherent according to their complexities, so the electric (EM scalar) and magnetic (EM vector) potential patterns continue to reinforce each other after the body dies and thus survive together as a compound complexity. Normal light is similar as a product of the interaction of E and B -fields, but transverse light waves are three-dimensional, carry energy and are only constituted of a very simple and regular field pattern. The mind and consciousness patterns are irregular in that they evolved chaotically as emerging complexities in the scalar and vector potential patterns of the EM fields and as four-dimensional patterns of EM potential they do not directly carry energy. So what exactly remains after death?

It has now been established that when the life pattern dissipates upon death, the mind and consciousness patterns remain intact by continuing to reinforce each other, such that they do not dissipate into nothingness. So whatever the afterlife body is, it has a minimal existence consisting of the combined EM scalar and vector potential patterns. Otherwise, they have been disconnected from their three-dimensional material origins, so theoretically the remaining EM complexity that forms the mind and consciousness should be free to drift through the higher spatial dimension. The surviving complexity pattern would have some level of 'self' awareness depending on the living person's previous level of consciousness or enlightenment and/or his or her pre-death knowledge of this final state of being. This means that the more the person knew about this new existence before they died, the better they would be able to recognize their new existence after they died. The afterlife 'body' could easily be more than just this compound EM complexity, but it cannot be less than this. In other words, the survival of consciousness in this manner makes no statement about the structure or existence of a 'soul'. The 'soul' is a strictly religious concept that cannot be defined by science, so its existence is left to each and every individual's personal beliefs. All that science can say about the soul is no matter what it is or how it is defined, it would at least have some form of awareness so it would incorporate the mind-consciousness complexity that is predicted by this scientific model, if this scientific model proved to be accurate and true.

Even so, this does not guarantee that any given person will be cognizant or aware of this new existence after death. Each person's physical existence after death is a combined complex EM potential field pattern in the higher fourth dimension single field

that fills all of space and time. If a person has reached a high enough state of consciousness (enlightenment) during life, he or she will be aware of their new situation and their new physical four-dimensional environment upon or after death. If a person is completely unaware of this possibility before death, they would probably not recognize the next level of their existence and believe whatever they had been told about the afterlife because that is what their mind would be expecting at death. It is highly possible, even scientifically probable that we create our own vision of the afterlife and adhere to that pre-death vision after we die (or be stuck in it). Under these physical circumstances, this model of cosmology and consciousness explains everything, including such esoteric phenomena as reincarnation, NDEs, Death Bed Visions, apparitions and haunting, and so on.

Conclusion

It must be stipulated that this theory does not establish the existence of a *soul*, but whatever a *soul* is it would 'at least' contain this mind and consciousness complexity pattern. Yet this model also means that every living organism and being has life, mind and consciousness corresponding to the whole body. Human or human-like mind and consciousness are emergent properties in simple living organisms with pre-emergent mind and consciousness. Mind emerges as a complexity corresponding to the evolution of a brain in the three-dimensional material body while consciousness emerges from memory patterns when the organism distinguishes between self (locality) and its environment (non-locality) in three-dimensional space with time. The magnetic field pattern controls the electrical changes just as consciousness controls mind after consciousness has reached self-awareness or a high enough level of conscious awareness. What we normally associate with consciousness, or that part of consciousness that interacts with the brain, is the complex of stored memories that makes up our worldview, literally the internal mental framework by which we interact with the external physical/material world including our material bodies and brains.

Now consider the fact that this theoretical model posits a real fifth dimension of space-time or equivalently a fourth dimension of space. If human consciousness emerges when the memories stored in mind become complex enough that the mind can distinguish between locality (the self) and non-locality (the material environment) in four-dimensional space-time, then an even higher level of consciousness must exist and emerge when the mind learns to distinguish between the higher dimension of space and the normal four dimensional space-time continuum.

In other words, this model predicts that a still higher level of consciousness is emerging as humans realize and/or experience the higher fourth dimension of space. Since it is already accepted that spiritual enlightenment is the next higher level to which human consciousness attains, enlightenment must be neither more nor less than the direct experience of this higher dimension of space. If human consciousness evolved over time so that we could fully appreciate and gain knowledge about our physical and material environment, then humans must also be evolving toward a higher state of consciousness or enlightenment whereby we will be able to think and be five-dimensional beings just as we are now four-dimensional beings. This means that the human species is presently evolving toward a state of enlightened beings and perhaps beyond, assuming that there are more than five or more physical dimensions to our universe.

The existence of the next higher dimension will only be accepted by science in answer to some radical ‘crisis’ that cannot be dealt with or adequately explained by any other hypothesis, such as the Dark Matter and Dark Energy ‘crises’ that science now faces. Science and culture are about to embark on a new scientific revolution that is embodied in the two equations above and their unification into a single equation, concept or expression as represented by the five-dimensional single field theory called SOFT. In any case, a new and greater cosmology awaits us if we can survive that long.

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James E. Beichler, P.O. Box 624, Belpre, Ohio, 45714

Jebco1st@aol.com

Professor Beichler has been teaching Physics, Mathematics and the History and Philosophy of Science at West Virginia University at Parkersburg for the past seven years, but will soon take an early retirement to conduct his own independent research. He has taught these as well as other related subjects at the university and college level for more than two decades, but only obtained his Ph.D. in 1999 from the Union Institute and University. He earned his Ph.D. in Paraphysics, a branch of theoretical physics. It is the only such degree from an accredited university in the world. Professor Beichler designed his own course of study for the Ph.D. He combined past advanced degrees and doctoral work in Physics and the History and Philosophy of Science with new studies in Parapsychology. He formerly edited an online journal, *Yggdrasil: The Journal of Paraphysics*, and is also conducting theoretical research in Cosmology to explain Dark Matter and Dark Energy, in Physics to explain the nature of life, mind, consciousness and matter and will soon develop a new physical model of the atom. All of these advances are applications of a new fundamental theory of physical reality, called 'single field theory' or SOFT, which he has developed. SOFT is based upon a five-dimensional Einstein-Kaluza space-time geometry. Explanations of paranormal phenomena emerge naturally from this space-time structure. Professor Beichler has just published a book, *To Die For: The physical reality of conscious survival*, that gives a thorough explanation of his theory in laymen's terms and explains what happens when we die. He has also finished writing and is in the process of publishing a Psi-Fi novel titled *Evo*, which is based on the same scientific theories and the prediction the humanity is close to a new evolutionary leap forward.