

Beyond 2012: Why do we keep torturing ourselves with these predictions?

James E. Beichler, Ph.D.

Abstract: Many people throughout the world believe that the earth will undergo an apocalypse and/or significant and transforming event on the 21st of December 2012. Those people who believe this prediction claim that the prediction comes from many different sources, but the only confirmable source is a single pre-Columbian Mayan calendar carved in stone. The date and the event are open to interpretation by Mayan scholars, but most believers scoff at alternative interpretations and many falsely claim that science confirms their beliefs. This date, which is actually just the latest and by far the most popular of many similar predictions, has no special significance to the vast majority of people, including scientists, except for the simple fact that it marks the winter solstice for 2012. Yet the believers still do not waiver in their claim that recent events, from terrorist attacks to strange weather patterns, tsunamis and earthquakes are all part and parcel to the coming event. There is no doubt that people really sense that something must change and change radically given the many problems that society and culture face today. But the intensity of the belief in this single date cannot be completely explained by the belief that cultural and societal changes must take place before we harm our environment and world any further. Belief that something will occur seems to be an innate intuitive feeling that goes beyond mere logic and it may just be so. There is real scientific evidence that an evolutionary change or leap forward is nearing for humanity. A new theoretical approach to evolution theory also implies that an evolutionary leap is in store for the human race. So it is quite feasible that real evolutionary changes based on the emergence of a new higher level of human consciousness are being intuitively sensed but mistakenly attributed to the Mayan calendar date. People are just grasping at any simple explanation of what is really a very complex and complicated issue.

Introduction

In recent years, the number and intensity of predictions that the world will soon end has risen to a pandemic level. The latest of these predictions – that the world will end on 21 December 2012 – may well be the best known of these predictions, but similar predictions date back more than two millennia and probably longer. This date marks the biggest ever of all the predictions and everyone will be affected by it, no matter what its outcome. Hundreds of books, television documentaries, movies and even more magazine and journal articles have been written about this date, far more than any other event in the history of such predictions. A veritable sub-culture of believers has developed around this particular date. Yet when this date comes and passes something new will have been added to the folklore of such predictions. Nothing will have happened unless someone makes something happen.

We have already been affected by the so-called event even though the event is still a half-year away. Paradoxically, some of the intensity associated with the expected 2012 event, whatever it might be, has already worn off. This could possibly mean that people are

just tired of hearing about the prediction, or, worse yet, those who believe the prediction have just gone quiet and are hunkering down in their attempt to survive the event. Those who support the ‘theory’, if I may loosely characterize the prediction as such, claim to have scientifically verifiable proof that the event will occur, but astronomers and other scientists have bent over backwards to show that the so-called scientific proof of the events related to the date have been greatly exaggerated, if not outright falsified. All to no avail! So why do the predictions prevail against common sense and all evidence to the contrary?

This prediction has been haunting humanity for a long time; it did not just appear as the year 2012 grew near. I first heard of the 21 December 2012 date in 1977, when a co-worker who claimed to be a psychic told me about the prediction. He had recently traveled to Israel and said that everyone in Israel was talking about the prediction. In some cases, reactions to the prediction have gotten out of hand. One person that I know no longer speaks to me or has anything to do with me because I disputed his claim that NASA ended the space shuttle program because they knew that an asteroid will strike the earth and destroy it in December 2012. His source of information – “everybody is talking about it”. I told him that the shuttle program had just grown too costly and that he should get on the internet and look at the NASA webpage if he didn’t believe me, which only made him all the madder at me. In another example, Randy, a popular personality in the local psychic community has been predicting for several years that ETs in UFOs are now visiting Earth to prepare us for the ascension of some people on the 21st of December 2012 when the earth will be destroyed. Supposedly, the earth’s magnetic axis will align with the sun’s magnetic axis and the galactic magnetic axis for the first time in recorded human history to initiate the event and ascension. He claimed that this alignment was well known to the scientific community and could be confirmed by any professional astronomer. But it is not.

An astronomical event related to this possible alignment actually happened in the late 1990s, but nothing special is predicted by scientists for the coming December. Randy informed everyone that would listen that ETs were planning to take him away before the Earth was destroyed, so his fate was secure. Unfortunately, Randy was grossly overweight and died in his bed one night last year of a sudden and unexpected heart attack, which begs the question ‘why didn’t Randy’s ET friends warn him of his weight problem and predict his coming death instead of warning him of the coming events of 2012?’ In fact, why does the human race continue to make such silly predictions and fall for them again and again? Do we no longer believe in the old idiomatic expression “fool me once, shame on you, fool me twice, shame on me”, especially when we have been so fooled tens of times or more in the recent past.

Given this muddled situation, even in the midst of all the Hollywood hype that has further clouded the issue, a pattern to these unfortunate claims is slowly emerging. A psychiatrist or psychologist might say that these claims represent an inherent death wish in the human psyche compounded by mass hysteria or perhaps an unrealistic hope that all that is bad in our society will be destroyed by some unknown external force or agent and a new brighter age will emerge because we are unable to either deal with our own problems and accept our future as it happens, but such excuses and explanations are nearly as loony as the predictions themselves.

Every scientist knows that our world could come to a catastrophic and apocalyptic end at any moment. All it would take is our sun throwing off a massive solar flare in our

direction or an epidemic disease sweeping across the globe, an asteroid or rogue planet crossing our orbital path and colliding with us or even a nearby star unexpectedly going supernova, but these events are not presently predictable. They always have a very small, even an infinitesimally small chance of occurring in the foreseeable future. The real science is far scarier than anything that Hollywood could dream up, but it is not about to happen this December because we have not yet seen any warning signs. The nearby star Betelgeuse, a red giant, is shrinking and showing signs of imminent collapse into a supernova, but that event could happen at any time from 429 years ago to a million years from now. The exact time cannot be predicted. A supernova fifty light years away from the earth could cause some serious problems for our poor little planet, but Betelgeuse is 430 light years away. In other words, Betelgeuse is only 'nearby' and its predicted 'imminent collapse' must be interpreted on an astronomical scale, not by our everyday sense of measures. If it would go supernova it would merely appear as bright as the sun for a few weeks, even during the day. Scientists have a pretty good idea what is going on, so the likelihood that some unknown or unsuspected event could occur on 21 December 2012 is extremely remote.

So then where might these feelings of impending doom come from? It seems that people have an innate and intuitive feeling that something is about to change, or at least something must change if we as a species are to survive, but they cannot put their fingers on what is about to happen so they either invent or accept ideas that are culturally popular and socially acceptable. Furthermore, these intuitive feelings seem to be growing stronger as well as becoming more frequent – hence the growing number of unscientific predictions as of late. It is easier to believe that an asteroid is going to destroy the earth or that ETs will arrive and save us than it is to deal with our own problems and the changes and challenges we face each day, let alone over the longer course of history. Even so, the truth of what could possibly happen in the not too distant future is far more momentous than anything anyone could dream up.

The truth has to do with real problems that the human race is facing in the near future, such as an unsustainably large population – last fall the census bureau announced that the human population on the earth surpassed 7 billion sometime on the 31st of October in 2011 – and the affect of humans on our climate. This large a population is putting an environmental and thus biological, not to mention psychological, psychic and mental stress, on our species that will only be relieved through evolution or self-destruction. We intuitively sense this, but are unable to articulate or logically interpret that intuition so some people find release from the stress by inventing stories like the 21 December 2012 claims. Technically, that particular date is not invented and does have meaning relative to the Mayan calendar which was the most accurate calendar in the world when it was first developed hundreds of years ago, but people have taken advantage of the real significance associated with that day to fill a void left by their inner feelings.

As tragic as these problems may seem, they do not really portend the end of everything we know as the prophets of the world ending in catastrophe would have us believe, and far from it. When these problems are taken into account with the many others faced by the human race as well as other historical indicators of change, science implies a wholly different set of events leading to different although just as challenging changes that are about to occur. The psychological, psychic and mental stresses are affecting the wiring in our brains (neural net connections) in previously unsuspected ways. If these changes do

not occur then the human race is possibly doomed – which either may or may not be a bad thing! When other current events and trends are taken into account, it seems far more likely that the human race is facing a threshold upon which we must change – take the next step in evolution – or fade away over the long run of time as an infinitesimally small footnote in the history of the universe.

Evolution physics

Many other non-environmental factors are causing just as much, if not more, mental, psychic and psychological stress on the human species. Overall knowledge is exploding at an unprecedented rate, population is increasing at an unbelievable and unsustainable rate, normal evolution is speeding up and many scientists acknowledge that a new fundamental paradigm and scientific worldview are beginning to emerge, i.e., our overall relationship with the universe is changing. These realities are well known to the academic and scientific communities and are accepted beyond any reasonable doubt – they are verifiable! Old religions, religious beliefs and related forms of spirituality are being openly questioned in an ever expanding wave of dissent that translates into civil action, reaction and unrest – take for example the Arab Spring movement of 2011 that has yet to abate or come to a conclusive end.

Many of the global political problems that we face are the result of backlashes to both expected and real changes that would move the world culturally and socially forward. The backlashes are initiated by people who are either afraid of the future, want to turn back the clock to non-existing simpler days or both. Terrorist organizations attack what they see as the greatest agents of change to fulfill their personal wishes that human civilization take steps backward instead of progressing forward. In so doing they are sowing seeds of dissent that will eventually interrupt the very fabric of civilization – our deep sense of trust in each other and among larger social groups. This overriding fundamental feeling of trust is both intuitively and spiritually based within every person's consciousness so terrorists' actions strike at the very heart of our deepest innermost self.

Meanwhile, many people think that what is happening is related to spirituality and as such it probably is, but not the relationship to spirituality that many would assume in the form of the world's major religions. Spirituality is normally associated with intuition and the knowledge that we gain without prior learning, scientific evidence or logical explanation from some unknown source. The feelings that we all have regarding the changing context of our lives is one of pure intuition. These feelings are manifesting in such esoteric changes as the increasing number of paranormal events (NDEs and etc) in recent years as well as the rising belief in the paranormal and survival, rather than just older forms of spirituality that are based on established religious dogma. Put all of this together and it is easy to see that the human race is on the cusp, standing at the very threshold of a major change. We can evolve and change or wither and fade away to insignificance. At the very least we, as individuals, intuitively sense that something must change and change soon or we are headed for trouble, but the reality goes deeper and is far more profound than these simple fears.

Quite simply, the human species is nearing if not already standing upon the threshold of a new evolutionary leap forward. It will be based on the increasing complexity of

consciousness rather than the cellular mutations (modern evolutionary biology) or natural selection (Darwinian evolution) that are common to modern evolution theory. While this may seem a rather radical notion, it is even more radical that this whole process of evolution can be better explained by physics than biology or psychology. To understand how the next step in human evolution will emerge, it is therefore necessary to understand a few new concepts in science: The physics of systems evolution, the physics of consciousness and the role of consciousness in living systems. The physics of system evolution actually goes by another name in academia – thermodynamics – but not exactly the thermodynamics that most scientists now study. The post modern version of this branch of physics will be quite a bit different from its well understood modern version. Science also evolves in lockstep with human consciousness. While the human species stands at the threshold of a new evolutionary leap forward, science stands at the threshold of a new scientific revolution. They are both part and parcel to the same developments in physical mind and consciousness.

The new thermodynamics

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

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

Thermal equilibrium represents the state of highest entropy or greatest possible disorder within a closed system. Since the universe itself is a closed system, this means that the constant amount of energy in the universe tends to spread out more evenly as the universe grows older. The second law is often stated in reference to machines such that it is impossible to get as much or more work and energy out of a machine than the work and/or

energy originally put into the machine. This means that perpetual motion machines are impossible as is one-hundred percent efficiency or greater. And finally the third law states that the entropy of a system approaches a constant value as the system approaches the coldest (least amount of internal heat or energy) temperature possible. All internal kinetic energy of a system or material body ceases at absolute zero, which is a little more than negative 273 degrees centigrade. A body's constituent atoms and molecules would just stop moving at this temperature. These laws are simple and straightforward, but their implications and applications are not.

The famous British scientist C.P. Snow stated the basic three laws in a way that sometimes makes more sense. He stated that (1) "you cannot win" (since you cannot get something for nothing because matter and energy are conserved), (2) "You cannot break even" (since you cannot return to the same energy state because entropy always increases) and (3) "You cannot get out of the game" (since absolute zero is not attainable). Snow's way of stating the laws does seem to make more sense, but it still reflects a tongue-in-cheek attitude toward the seriousness with which the laws should be interpreted. A semi-serious movement to add Murphy's Law (if something can go wrong it will go wrong) to thermodynamics as the fourth law in the 1980s, but the notion soon faded away. It certainly seems to fit the physical situation presented by thermodynamics quite well. Otherwise there has been little change in the laws of thermodynamics for more than a century beyond the range of their application. Very few scientists or philosophers question them or challenge them although a few have written on the subject.

In essence, the laws of thermodynamics can be broken down to two basic principles: the conservation of energy and the simple observation that heat energy naturally flows from a warmer object to a colder object until they reach thermal equilibrium at the same constant temperature. At constant temperature their heat content would not necessarily be the same since different materials have different abilities to absorb and store heat energy. However, these two principles only apply to thermally closed systems (perfectly insulated or isolated) – little black boxes that are otherwise completely cut off from each other as well as the rest of the universe. But the universe is not made from little black boxes that have no intercourse or physical connection with anything else in the universe, so those boxes have to be opened up as far as thermodynamics is concerned. Unless the boxes are opened, thermodynamics is forced to compensate by redefining the size and limits of the system involved until the entropy shows an increase, which in a sense is a cheat. Opening the black boxes for a more complete view of reality is exactly what Ilya Prigogine did in developing his concept of dissipative energy systems, so thermodynamics is no longer forced to cheat by changing the initial conditions to fit the outcome its own calculations.

In other words, thermodynamics is not as complete and all encompassing as scientists believe because thermodynamics has to cheat by redefining the size of the black box to keep its rules from being violated. To begin with, thermodynamics is based solely on the concept of entropy or disorder, which is inherent in the dissipation of energy, even though large parts of the universe form little Mecca's of order within the broader expanse of space. For example, thermodynamics is at a complete loss to explain or even cope with the simple fact that the universe was originally chaotic (in a much higher state of entropy than today), but somehow elementary particles came together to form orderly groups of atoms, molecules, bodies of matter, stars, planets, star systems and galaxies. Thermodynamics not

only ignores or makes excuses for the development of naturally occurring orderly systems, but it ignores the contributions of the natural forces (gravity, electricity and magnetism) in the emergence of naturally orderly systems. This simple fact is well recognized in science.

It is widely held that in the physical sciences the laws of thermodynamics have had a unifying effect similar to that of the theory of evolution in the biological sciences. What is intriguing is that the predictions of one seem to contradict the predictions of the other. The second law of thermodynamics suggests a progression from order to disorder, from complexity to simplicity, in the physical universe. Yet biological evolution involves a hierarchical progression to increasingly complex forms of living systems, seemingly in contradiction to the second law of thermodynamics. (Thaxton et al., Chapter 7, 1)

So life, like the evolution of stars and star systems, also seems to defy the laws of thermodynamics. Technically, thermodynamics does not need to account for the natural forces involved in these processes, they are accounted for and explained elsewhere, but thermodynamics does need to explicitly take them into account. It does not need to explain how these forces work, but it must incorporate the results of these forces into its own explanations. This discrepancy in reality leads to the second shortfall of modern thermodynamics. Thus science is faced with but fails to cope with thermodynamics' (1) lack of symmetry, and (2) failure to account for the role of natural forces that affect its application.

Thermodynamics lacks any true physical symmetry even though the concept of symmetry is fundamental to physics and the workings of nature. All symmetries in nature are coupled with their anti-symmetries (opposites), which can take many different forms. For every up there is a down, for every left there is a right and for every particle there is an anti-particle. Symmetries and anti-symmetries keep nature and our world in balance. But the laws of modern thermodynamics ignore its symmetric partner – order. Thermodynamics is fundamentally non-symmetric even though it poses itself as a system that keeps nature in balance through entropy. This fact begs the question, why is order not represented in the laws of thermodynamics to balance the science and render it more complete? The answer is that thermodynamics could be rendered complete by adding four more laws based on order.

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

Although there have been no serious attempts to expand the laws of thermodynamics in this direction, there are still precedents for these new laws to be added. In fact, a *de facto*

expansion of thermodynamics has already occurred without it being admitted as such. Ilya Prigogine won the Nobel Prize in Chemistry in 1977 for his contribution to the thermodynamics of chemical systems and his concepts are now considered a check on the second law. He discovered that “the importation and dissipation of energy into chemical systems could reverse the inexorable disintegration into disorder predicted by the second law.” (Macklem, 2007) Prigogine literally developed a whole new classification of “dissipative structures” which describe coherent space-time (ordered) structures that form in thermodynamically open systems when there is an exchange of matter and energy between an open system and its environment.

In simpler terms, if a stable chemical equilibrium reaction is thrown out of equilibrium by the dissipation of energy or by the material exchange of chemical reactants, the system will move to a state of maximum chaos before returning to a new equilibrium state at a higher level of stability. This means that exchanging energy with an open chemical system could reverse the maximization of entropy rule imposed by the second law of thermodynamics since the second law only applies to closed thermodynamic systems. However, Prigogine’s “law” is more than a check on the second law of thermodynamics and should be made the fourth law of thermodynamics because it deals with order rather than chaos and entropy.

Prigogine’s work led to new scientific research on self-organizing systems such as life. Some years later Adrian Bejan, a thermodynamics engineer, attended a presentation given by Prigogine and was impressed enough to develop his own version of self-organization, which he called the “Constructal Law”.

It claims no more and no less than this: Everything that moves is a flow system that *evolves* over time; design generation and evolution are universal phenomena. The changes we witness in animals, plants, rivers, and steaming pots of rice represent a clear improvement over the configuration that had been flowing before. This is the direction of evolution, creating flows that move more easily, better, farther, etc. The design we see in nature – the shapes and structure of rivers, animals, cities, etc. – is a manifestation of this tendency in nature to generate shape and structure to facilitate flow access. (Bejan and Zane, 31)

Bejan’s Constructal Law has the right idea, but he goes about solving the thermodynamical problem of order and organization in the wrong manner. He claims that the generation of design (configuration, pattern, geometry) in nature is a phenomenon that can be explained by physics, which is correct except for the fact that he has put the cart before the horse. His method starts with the final designs of objects in nature and works back to discover how that design came about. His final design is given and how to derive that particular design’s origins is the problem. In physics though, the first principles are given and the problem is to find how which designs they lead to in general. Physicists and scientists start with basic principles and work toward a final end point such as his orderly organization, not a particular design. Moreover, Bejan claims that these designs unite all animate and inanimate systems in nature rather than being a product of processes in nature.

He is also ambiguous about the source of the ‘flow’ on which his theory depends. For example, Bejan stated his Constructal Law differently when he first developed it: "For a finite-size system to persist in time (to live), it must evolve in such a way that it provides

easier access to the imposed currents that flow through it." (Bejan, 1997) His formulation of the law is vague since he does not identify or state a method for determining "the imposed currents that flow" nor what he means by "provides easier access". Someone applying his Constructal Law could thus use it in any manner that they want, choose the "currents" and the "access" to them without limitations, and it would still yield the expected answers. Since they are working backwards from the end design to basic principles, the "current" or flow and "access" they chose would automatically give the correct design.

Bejan's solution to the order and organization problem is undoubtedly full of good intent, but it is unhelpful to furthering science in the end. It just duplicates what the final design, i.e., what is already known, and thus lacks the generality of application required by science for its theories. He is just doing his job and fulfilling his training as an engineer. An engineer thinks of a completed task and then figures out how to use the laws of physics to complete that design, whereas the physicist looks at nature, develops of theory how to explain nature's results and tests to see if the theory gives the correct results, verifying the theory. The point Bejan has missed, as has everyone else, is that the laws of thermodynamics need to be expanded to include self-organization and order and the first step in this direction is to elevate Prigogine's principle to the fourth law of thermodynamics.

Rupert Sheldrake has made similar assaults on the biological sciences, but his theoretical research is far more conclusive than Bejan's work. Sheldrake noted a simple fact that is missing from all of biology and genetics theory, rendering the theory of evolution grossly incomplete. Simply put, there is nothing in all of biology or genetics that can explain the form that living organisms take. Evolution is all about function and says nothing about function's symmetric partner – form. There is nothing in biology to explain why humans have two legs and dogs have four. In other words, there is no explanation of the self-organizing principle of life in the genetic code even though the genetic code is required for propagating species with similar forms. Bejan termed this 'design' in his theory, but there is far more to Sheldrake's theoretical model than just 'design' because Sheldrake starts from basic principles as in normal in science.

Sheldrake postulated the existence of 'morphic fields' that surround 'morphic units'. Morphic units could be anything, take for example a liver cell, the liver itself, a person's internal organs, the person, the person's family, and finally the person's cultural group and the human species. Morphic units could also be inanimate objects such as atoms, molecules, a crystal lattice and finally the crystal itself, or anything else for that matter. Morphic fields organize the units by controlling their structure (form) and activity (function). The morphic fields are generated by special patterns that Sheldrake calls 'habits'. His habits replace the laws of nature. The habits are learned characteristics and once learned are eternal, i.e., they become part of the fabric of reality and influence future events. In fact he would do away with natural 'laws' and physical 'laws' and just call them 'habits' that have formed over time. Morphic units follow the habits by tuning into them through a process of "morphic resonance", which then acts to guide the development of the morphic units. Any new and unique development that a morphic unit experiences will then feed back to the morphic field and other similar morphic units will be organized to reflect the change in the future.

Sheldrake also uses morphic fields to explain both living systems and knowledge. Once something is learned by one living being, it becomes part of the collective consciousness of all living beings that have access to that collective morphic field. If the

morphic unit in question is a human being, then Sheldrake's model explains how humans have evolved as a species. If the morphic unit is a crystal, then once the crystalline structure has appeared in nature for the first time similar crystals will form more easily throughout nature because they can draw on the experience of the original crystal through its morphic field. This model very conveniently explains how simple systems self-organize into increasingly more complex systems over time, which is a feature that is not well understood in normal evolutionary theory. Sheldrake also recognizes the shortcomings of his theory, such as the invention of a completely new form of physical field for which there is no precedent in science, but in the end he suggests that it will be up to physics to explain his morphic field and morphic resonance model. That suggestion leads directly to the formulation of other new laws for thermodynamics.

Once Prigogine's principle has taken its proper place within the overall structure of thermodynamics as a new law instead of a correcting condition for the old laws, the next law is very nearly self-evident. It is also implied in Sheldrake's concept of 'morphic' physics and self-organization. He and others are talking about the 'emergence' of an ordered state from a more chaotic physical system. Mathematicians have already developed this concept in a branch of mathematics called 'chaos theory'. In physics, the same subject is called 'non-linear dynamics'. Take for instance a simple weather system. A lot of high energy (hot) air particles (O_2 and N_2 molecules) are bouncing around in the atmosphere in a completely chaotic fashion. But external forces of gravity and the earth's spin are acting on them as well as energy (heat) exchange with the ocean below. This situation represents an open thermodynamical system. It also represents the development or emergence of a hurricane in the mid-Atlantic ocean above the equator.

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

A third new law based on the concept of 'system evolution' is directly implied by Prigogine's 'law' and the 'law' of emergence from chaotic systems. Prigogine's law presents the possibility of higher level stabilities emerging from a chaotic state while the concept of emergence deals with the self-organizational property of emergent systems due to the new physical properties of the emergent system. Together, these result in the natural development of progressively higher levels of self-organizing systems, i.e., 'system evolution'. So here we have a new sixth law of thermodynamics. Individual systems and groups of systems undergo a form of natural evolution as time flows forward. This last addition gives science three new laws of thermodynamics to deal with nature, the way things really are, in a more complete manner – (4) Prigogine's 'law', (5) 'law' of emergence, and (6) 'law' of systems evolution. It may be presumptuous to call these additions 'laws' of

nature instead of hypotheses, but they have been verified in other circumstances and they do have an extremely wide range of applications. Yet, still more might be necessary. We still have Murphy's Law – if anything can go wrong it will go wrong – which will always be the 'Next' Law of thermodynamics.

The beauty of these new laws of thermodynamics is that they equalize the process of thermodynamics and mediate between symmetrical opposites in the duality of disorder (entropy) and order (emergence from chaos). The Zeroth law is balanced by Murphy's Law and the first three laws dealing with entropy (chaos) are balanced by the newly added three laws that deal with order emerging from the chaos of entropy. They make thermodynamics perfectly symmetrical. They also increase the explanatory power of thermodynamics. Unfortunately, these new laws of thermodynamics cannot be found, at least stated as laws, anywhere else in science even though it is when they are so stated that they reach their full potential. Yet they are already used throughout science in both thermodynamical and other contexts.

With these additions, thermodynamics can now be included in an explanation of how stars, planets, galaxies and other material systems evolved out of chaos in the early universe, while the concepts of life, mind and consciousness can also be explained. Surprisingly, evolution is built into the very fabric of the physical universe and it is not just a biological process leading to humans and ending with the Homo sapiens branch of humans. The new laws also indicate that evolution does not stop at any given point in time or plateau of development such as our normal human consciousness. Evolution is an integral part of all processes, whether material or non-material, living or non-living, and all facets of physical reality. Everything in physical reality undergoes evolution as long as time pushes forward. The passage of time yields order, not disorder. Indeed, emergence and evolution become the true arrows of time rather than entropy. Now, given all of the external forces and stresses on mind and consciousness as well as the large chaotic population base that has grown in the past few decades, the next step in human evolution is all but required by the universe.

The evolution of Consciousness

All material bodies undergo internal chemical and physical interactions at one time or another. In the case of living bodies, those interactions are continuous over time and energetically stable, which means that the organisms must do something with any excess energy they create. In other words, living bodies are thermodynamically open systems that exchange matter (food, excretions, sweat and breath) and energy (expelled heat and mechanical motion) with their environment. For a living organism, the overall matter/energy field pattern is the very essence of life and is commonly referred to as the Biofield by many scientists. The matter/energy pattern (Biofield) is 'something extra' that exists beyond the mere biochemical interactions (physiology) and mechanical structure (anatomy) that define the living processes normally associated with life in the academic study called biology. Centuries ago, this was called the 'life force' or 'vital force' and more recently the 'élan vital'. It was once thought to exist within the very atoms of living organisms, but it does not. Instead, we now have an answer to the ancient question 'what is life?' Life is the matter/energy pattern of a material body that is self-perpetuating, self-motivating, self-organizing and internally stable over time with respect to thermodynamical considerations. Inanimate bodies also have similar matter/energy patterns, but theirs are not nearly as

complex and thus only minimally self-organizing (for example crystals and stars) and stable (nearly all inanimate matter).

An electric scalar field pattern that emerges from submicroscopic variations of electric potential (voltage) corresponding to chemical reactions in the body overlays or exists on top of the matter/energy (life) pattern. This pattern could be none other than mind because the material interactions (biochemical interactions) are governed and guided by electric potential (voltage) differences. Although mind covers the whole body or organism it is normally only associated with the brain because the brain has the greatest concentration of electrical activity in the body. Only in the brain does this electrical activity become complex enough for the permanent storage and recall of complex memories. And finally, overlaying the mind pattern is a magnetic potential field or complex vector potential pattern that we commonly define as consciousness.

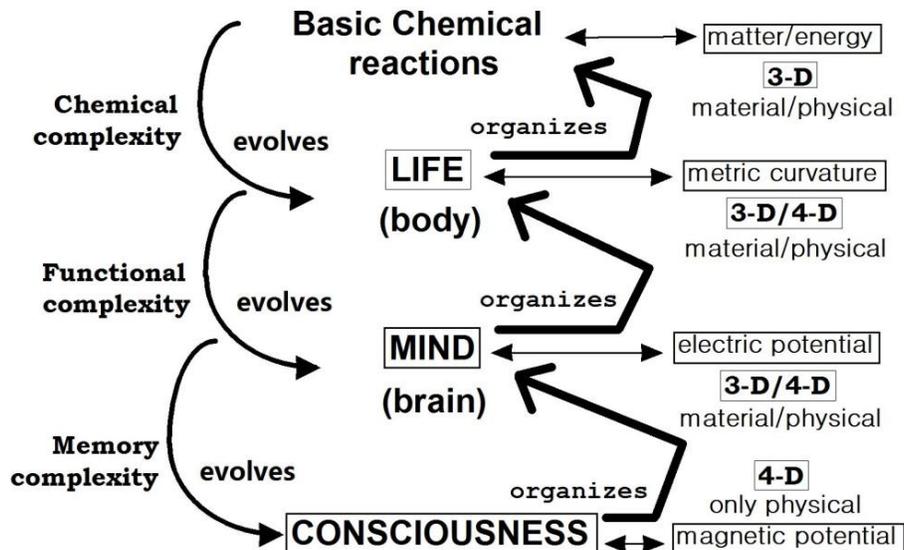
Like mind, consciousness includes the whole body, but we usually only associate consciousness with the brain because of the high concentration of neurons in the brain. Thoughts occur and memories are stored and recalled within the brain's system of neurons. We are literally fooled into falsely thinking that the brain holds mind and consciousness or that they are part of the brain. All living organisms are characterized by these three levels of patterns, but the electrical and magnetic patterns in simple living organisms are too chaotic and have not yet reached a high enough level for complex mind and consciousness to emerge as in higher animals and humans. So, all living organisms have at least pre-emergent minds and pre-emergent consciousness. Dead and inanimate bodies share the same set of field structures (matter/energy, electric and magnetic), but their electric and magnetic patterns never rise to the complexity level of self-perpetuation, self-motivation and self-organization as do animate bodies.

In other words, all living organisms have the same set of patterns to give them life, mind and consciousness, but most living organisms have only pre-emergent (non-aware) levels of mind and consciousness. Having said this, life as a whole displays an extremely wide range of mind and consciousness levels and present human levels are not necessarily the highest levels possible. When an organism evolves to a high enough level of internal complexity to develop different internal functional organs, a new functional organ must emerge to control and coordinate the functions of the others. This new organ is called a brain.

As the brain emerges during evolution, so do mind and consciousness at their lowest animal level of complexity. After this lowest animal level complexity of mind emerges memories are stored in mind. They continue to be stored, categorized and form new memory patterns that grow in complexity with the passing of time and experience as long as the organism lives. The stored memories are more chaotic (less ordered within the overall memory pattern) in primitive organisms, but the longer any species of organism survives the more ordered the memories become until they reach a high enough level of order to form a new complexity which emerges and alters the organisms in which they emerged. Successive higher level complexities emerge over generations until human level mind and consciousness is reached as characterized by self-awareness. Memories and memory patterns are stored as magnetic potential or vector potential patterns in the higher four-dimensional extension of the three-dimensional material body and brain.

All levels of mind and consciousness complexities organize lower level patterns for efficiently, stability, maintenance and continuity of the life process once they have emerged, but higher level complexities are accumulative and actually induce evolutionary leaps in the form of anatomical and physiological changes in the species. Neurobiologists only discovered the plasticity of the brain and neural nets within the last decade or so. According to their observations, the synaptic connections between neurons actually change positions of attachment and thus become more efficient with learning and experience. Such changes are referred to as neuroplasticity. How neuroplasticity is accomplished is still a mystery, but according to this model (in its more complete and comprehensive form) the dendrites which end in synapses just follow magnetic field lines for placement on other neurons. (Beichler, 2011; 2012)

When a high enough complexity of memories emerges the mind becomes aware of its locality in space and time as opposed to the non-locality of the external environment and human-level consciousness emerges.



The non-locality in space-time physics translates to the distinction between internal self and external reality, i.e., self-awareness in the mind as opposed to the world of matter and energy. The brain and body are then rewired by consciousness and mind so that the next generation of the species, in this case human, is born with a hardwired human level consciousness framework in the brain.

As each succeeding generation in a species grows up over time, individual members of the species fill their inherited consciousness framework with new data and knowledge as new and more complex patterns develop within mind, evolving individual consciousness and slowly raising the level of the species' collective consciousness. The progressive course of the species' evolution continues as each individual consciousness becomes more complex in itself. From here on out, beyond the emergence of human consciousness, mental evolution becomes dominant over the processes of evolution as described by either Darwinian or modern biological evolution. In other words, evolution due to the emergence of complexities is a form of top-down evolution that can explain rapid evolutionary leaps among species that cannot be explained by the bottom-up evolution of Darwin (based on natural selection) or modern cell biology (based on beneficial mutations in DNA). This

process continues until enough individual human consciousnesses have advanced the species as a whole to a threshold point whereupon the species consciousness as a whole forms a new shared complexity (Sheldrake's morphic field) which emerges as an evolutionary leap forward.

Consciousness itself is completely four-dimensional, which distinguishes it from three-dimensional mind. It is not just four-dimensional, but exists along the fourth direction of space as well as three-dimensionally. Mind and consciousness form the electromagnetic four-dimensional overlay and self-organizing control mechanism for the three-dimensional matter/energy body and Biofield. The human level of consciousness originally emerged when mind became aware of the four-dimensional space-time structure of reality, but nothing was as yet known about the fourth dimension of space. It took until 1905 when Einstein developed special relativity for science to begin catching up with what everyone knew intuitively – we live in a four-dimensional space-time continuum. That is why several scientists came up with nearly the same idea at the same time, as if the concept of relativity was 'in the air'. Such coincidences are actually common in the history of science and human thought as would be expected given this thermodynamical model of the evolution. These so-called 'coincidences' are bound up in the evolution of the collective human consciousness.

Einstein also set the stage for the next step in human conscious evolution by placing science and humanity in a position to rediscover or become aware of the concept of four-dimensional space and five-dimensional space-time. This rediscovery was in all probability a necessary precursor to the next step in consciousness evolution. His discovery and the work of others did not initiate an evolutionary leap, just a slow rewiring of neural pathways in the brain. The next evolutionary step will be the complete realization and awareness of the four-dimensionality of space that comes from the common experience of that newly discovered higher dimension through a more complete rewiring of the brain. Mystically enlightened people as well as Near Death Experiencers (NDErs) and a few others who are in better touch with their inner intuitive selves have very nearly reached this plateau of consciousness, but those individual cases have not yet reached a high enough threshold (weight) to initiate a species wide evolutionary leap or a larger group event. This event would amount to an 'ascendance' or perhaps an apocalypse, as has been foreseen and predicted under many names. As such, the concept carries with it many misconceptions.

Since consciousness is a four-space-dimensional physical object, there is no reason for mind and consciousness to cease existence when the three-dimensional material body dies. In fact, when the material body dies the matter/energy pattern or Biofield is disrupted and the biochemical processes that support life cease to function. But this disruption does not affect mind and consciousness other than to free them from their material reliance and captivity in three-dimensional space. Mind and consciousness survive death as a mutually cohering physical but non-material complexity without a material body or even a material connection to the three-dimensional world of matter and energy. However, the roles of mind and consciousness reverse. While alive, consciousness is dominated by the mind and hidden away as intuition. Consciousness takes over and dominates mind upon death of the material body and severance from the three-dimensional matter/energy pattern. The degree to which the surviving mind is aware of its new existence is a completely different matter. In fact, it is a matter of how advanced the individual consciousness became and its state of awareness of the higher dimension of space before death.

If a person reached a high enough level of knowledge of his or her existence in four-dimensional space (five-dimensional space-time) during life, the afterlife body that remains will be aware to some extent of its new continued existence. Knowledge and experience of the higher dimension alone have the potential to radically change culture and society in so far as they are necessary precursors to the next step in human evolution. In fact, with the next evolutionary leap forward, a common knowledge of the fourth dimension of space will open people to the possibility of directly sensing those who have passed before. Since consciousness operates as the sensory receptor in the higher dimension of space, those phenomena which we call paranormal will also become more commonplace after the evolutionary leap.

As real as it gets

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

The modern theory of biological evolution cannot yet explain how beneficial mutations or favorable variations lead to the larger evolutionary leaps that are inherited by succeeding generations of a species. However, mutations of any kind are successful (beneficial) within this new model if and only if they enhance the overall life pattern in some manner. As a living organism becomes more and more complex in its pattern structures, normal bottom-up evolution (Darwinian and genetic) becomes harder to accomplish and when it is accomplished it takes a very large number of generations to manifest within the general population. Yet scientists have now determined that the rate of human evolution has been increasing for the last century or so. Scientists claim that this increasing rate is due to the mixing of diverse populations as travel and movement between distant locations becomes easier, i.e., the melting pot effect for mixing of genetic pools. However, the melting pot effect could not possibly account for new beneficial evolutionary trends, especially in light of the fact that other factors such as the vast increase in knowledge and expanding worldview during the past century or more favor top-down evolution instead. Top-down changes occur all the time as rapid microscopic variations that are inheritable against the background of slow variations due to natural selection and mutations in the DNA that occur over eons.

Genetic mutations are normally unfavorable and either die off after being inherited or are just not inherited in the next generation. However, giant leaps forward in human

progress such as the large brain capacity that characterizes humans appeared suddenly in the recent geological past, rather mysteriously it would seem, according to the fossil record. No one has ever been able to explain how or why the last such leap occurred among humans, the development of a large brain. Evolutionary variations of this type can only proceed from the top down, there is no other possible explanation given the radical nature of the variations and how quickly they manifest in the general population of a species.

Until recently, most scientists thought that normal evolution had ceased in humans, but in fact it had only slowed to nearly zero because the human animal had become so complex that small bottom-up changes have become insignificant by comparison. On the contrary, these earlier unexplained but well documented leaps were due to top-down evolution and similar circumstances are repeating themselves today. Humans are still evolving and the rate of evolution is increasing within the melting pot of the world community, rather than because of the melting pot. The human species is presently experiencing a melting pot of cultural ideas and associated mental stresses that are advancing evolution from the top down, rather than a melting pot of genetic codes that would cause evolution from the bottom up although the latter reinforces the effects of the former.

P.M. H. Atwater, who has studied the phenomenon of NDEs for several decades, has come to nearly the same conclusion – we are presently standing on the threshold of a new evolutionary leap. She came to this conclusion by studying the increased number and intensity of NDEs by children. As we come closer to the threshold of a dramatic evolutionary leap, it would be expected that more individuals would experience their own moments of spiritual awakening through NDEs as well as enlightenment and other psychic events and phenomena. Children would be especially susceptible since their brains are more ‘plastic’ and thus more easily changeable. *USA Today* has recently reported that autism in young children is also undergoing an unexpected increase. (Szabo and Loehrke, 2012) Diagnoses of autism in eight year old children have increased from one in one-hundred and fifty to one in eighty-eight between 2002 and 2010 according to the Centers for Disease Control and Prevention. Such an increase would also be expected as we near the threshold point since the human brain would have higher plasticity the closer humanity comes to the evolutionary leap.

The increasing complexity of mind and consciousness due to modern stresses is forcing evolution forward and the next leap will be neither Darwinian (natural selection) nor cellular (random DNA mutation), but a mentally driven mutation that brings human beings closer to their intuitive sense of spirituality. Exactly when this ‘event’ will occur is unknown because the threshold point, where the balance becomes unequal, is not yet known. There are just too many factors to take into account to give a good estimate, but evidence shows that it is approaching rapidly. However, we can intuitively sense this event and that intuitive feeling is fueling the predictions of asteroids, aliens, the devil and epidemics destroying our world and/or the human species on the 21st of December 2012. People who sense the coming event are just grasping at straws to try and explain their innermost intuitive feelings.

Sheldrake correctly pointed out that knowledge itself follows his morphic model. This implies that science in particular is evolving in pace with the human mind and consciousness in so far as science is a creation of mind and consciousness as well as by its own internal characteristics as a morphic unit. Science is at its most chaotic point in decades,

just that point of maximum chaos in Prigogine's principle between lower and higher levels of stability. In science, the chaos appears just prior to a new scientific revolution after which science attains a new higher level of stability, or rather a more advanced paradigm that incorporates the scientific truths of the previous pre-revolutionary paradigm. So now science, along with human consciousness, must evolve or continue to live with its own mistakes. Evidence that a new scientific paradigm is emerging is overwhelming, just as would be expected before a new evolutionary leap, although a scientific paradigm change or revolution does not necessarily guarantee that an evolutionary leap will follow. That event would depend on the intensity and the radical nature of the scientific revolution and the coming revolution is showing signs of being extremely intense and radical in that it will challenge our basic notions of what we are, how we relate (are connected) to the universe as a whole and how matter, space and time are connected to each other.

A radical new scientific paradigm must emerge, is about to emerge and will emerge because that is how the natural universe works. Just because someone like my friend Randy and others have described the coming crisis a spiritual ascension does not mean it will not happen. The Mayan calendar is open to interpretation, so the date of 21 December 2012 is not 'set in stone', figuratively speaking that is since the Mayan calendar is literally carved in stone. Many Mayan scholars interpret the Mayan date as a marker of change to a new era rather than a date of destruction, and in a sense that is what will happen. The odds that we will reach the scientifically implied evolutionary threshold by 21 December 2012 are extremely low and the exact date, even if the event can be limited to a single day, that we will leap forward is completely unknown. The change will come in the not too distant future, but it is a foot race whether we will actually reach that point before we commit genetic suicide through other means or not.

People who stand in the way of this change will be losers. People who actually fight the change will be bigger losers. People who are passive to the possibility, who do not even believe in evolution, will lose but not quite so badly. Non-belief in evolution will not affect the outcome of the next evolutionary leap at all. People do not even need to believe in evolution and change, because non-belief is a valid part of their own personal evolution. They will still evolve whether they believe in evolution or not. It is even possible that a very large group of people will evolve and many others will not, creating a situation where the newly evolved humans (*Homo paradoxus*?) stand side-by-side with *Homo sapiens* as was the case when we evolved and coexisted with earlier humans in the family tree. Those who recognize and embrace the change will be the winners because they are consciously aware and mentally prepared and thus ready for the new consciousness. Ironically, some of those people who believe the strongest in predictions of an impending disaster, whether it is 12 December 2012 or not, are the same people who do not believe in evolution. Come it will, in its own time at its own pace, as sure as the sun will rise tomorrow.

Bibliography

- P.M.H. Atwater. (2011) *Near-Death experiences: the rest of the story*. Charlottesville, VA: Hampton Roads.
- James E. Beichler. (2008) *To Die For: The physical reality of conscious survival*. Victoria, BC: Trafford.
- James E. Beichler. (2010) *Evo: The next step*. Victoria, BC: Trafford.

- James E. Beichler. (2011) "Consciousness or Consequences." In Ingrid Fredrikssen, editor. *Aspects of Consciousness: Essays on Physics Death and the Mind*. MacFarland.
- James E. Beichler. (2012) *Fallacies in Fysics*. To be published as an e-book.
- James E. Beichler. (2012) *Four Pillars of Wisdom: The conceptual foundations of natural science*. To be published as an e-book.
- Adrian Bejan and J. Peder Zane. (2012) *Design in Nature: How the Constructal law governs evolution in biology, physics, technology, and social organization*. New York: Doubleday.
- Bejan, Adrian. (1997) *Advanced Engineering Thermodynamics*, 2nd edition. New York: Wiley.
- Thomas R. Eddlem. (2009) "EPA declares human breath (CO2) a pollutant". 20 April 2009. Available online at www.thenewamerican.com/tech-mainmenu-30/environment/1022.
- P. T. Macklem, (2008). "Emergent phenomena and the secrets of life." *Journal of Applied Physiology* 104, 6: 1844–1846.
- Rupert Sheldrake. (2009) *Morphic Resonance: The nature of formative causation*. Park Street Press. Revision of *A new science of life*, 1981.
- Rupert Sheldrake. (1988, 1995) *The Presence of the Past: Morphic resonance and the habits of nature*. Park Street Press.
- Charles B. Thaxton, Walter L. Bradley and Roger L. Olsen. (1992) *The Mystery of Life's Origin: Reassessing Current Theories*, second edition. Dallas: Lewis and Stanley. Available online at www.1dolphin.org/mystery/chap7.html.
- Liz Szabo. (2012) "Autism's puzzle is coming together." *USA Today*, 10 April 2012: 1. Graphic "Swift rise in cases" by Janet Loehrke.
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James E. Beichler, P.O. Box 624, Belpre, Ohio, 45714
Jebco1st@aol.com

Professor Beichler has been teaching Physics, Mathematics, History and Philosophy of Science and European History as well as other related subjects at the university and college level for more than three decades. He earned his Ph.D. in 1999 from the Union Institute and University in Paraphysics, a new and highly controversial 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. after completing all of the work in a Ph.D. program in the History of Science except for rewriting his dissertation. 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* He is presently 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 a unification of quantum theory and relativity based upon a five-dimensional Einstein-Kaluza space-time geometry. Explanations of paranormal phenomena emerge naturally from the space-time structure of the theory. Professor Beichler 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 published a science fiction novel titled *Evo: the next step*, which is based on the same scientific theory and the real prediction, as expressed in this paper that humanity is close to a new evolutionary leap forward. He will soon publish two e-books, *Phallacies in Fysics* and *Four Pillars of Wisdom: The conceptual foundations of natural science*.