THE UNIVERSE

By Walter Hughes (1922-2020)

THE UNIVERSE

FORWARD

This should be read as the unfolding of a mystery. As clues arise they change the understanding of the basic scene. The mystery is not finished here but a coherent structure is provided.

For many years I have been trying to write down, in words I understood, the rules by which our universe developed and functioned. It has been an evolving process. I made up names for potentials required to perform a known function in our universe. The latest writing supplements or replaces earlier understanding. It is not a finished work. I have reached the limit of my ability to translate my understanding of the complex interactions of the fields and spectra, into prose.

THE UNIVERSE, HUMAN MIND, TIME AND $E=MC^2$

The impetus for this study of the non-local mind came from five directions. 1. The function of the mind under hypnosis as demonstrated in my son's hypnotherapy practice; 2. The inner mind aspects of Tai Chi practice; 3. My experience with out-of-body excursions; 4. The effect of Quantum mechanics on our perception of time; and 5.The echo of my Quaker ancestor's ethics; "God exists in each of us in equal measure".

Our personal conception of mind and brain causes what we call consciousness, what we see, feel hear and sense is the universe we live in. Medical and psychological studies show that there is another level of mind of which we are not normally conscious. It is the "inner mind" of Tai Chi and hypnosis. This inner mind operates in a fundamentally different manner compared to the conscious mind.

The primal universe is an unknowably intense collection of nonmaterial entities with no measureable physical attribute such as solid, heat, pressure, or energy. It is as though ideas, such as time, space, momentum, angle and charge have been compressed into potential functions without carrying any physical attributes. The relationship between the primal and our universes appears to be equilibrium because there is no mechanism for flow at the singularity where no physical interaction is possible.

One of the key problems in discussing universe problems is semantics. Space and time appear in three levels of the development of our universe. They have different definitions and functions at each level. It is difficult to describe things that have no clear definition.

In our Euclidean universe time is the orderly, one way relationship of all events we can name, from the beginning of e=mc2, to the limit of this moment. It includes the development of our universe, development of our solar system and in biology, the chronology of onset of life and effect of options leading to our current state. For us space is the expanse beyond our earth and atmosphere including all of the physical universe. In another sense, our metaphysical universe includes the entire bubble universe not occupied by the physical universe, and in a third sense, the non-physical primal universe.

In the relativistic universe, melded space time is the third dimension, the scaffolding and volume of our universe In the primordial universe time and space are separate constituents of the two dimensional primordium with different descriptions and functions.

Since our universe arose from the primordial singularity we can examine the items available at the black hole and the materials needed to build the universe at the singularity, for a list of constituent candidates. These constituents exist in some different phase or condition that we do not, possibly cannot, know. They have no definition or function; they are eastern philosophy's "That Which Is".

Our universe came into existence through interactions among these components. Among them are the information transfer group, the energy group, mass and the universe contraction group. A major metaphysical group is energy. Its primordial entity I call charge. Its physical effects include radiation, magnetism, work and electricity. A second group is mass. It arises from a point entity I call attraction. It functions in the physical universe as matter and gravity. A third structure group of the metaphysical universe is the contraction group. It consists of contraction, the increasing optical density and the increasing curvature of space time.

There may be other components but these suffice to produce $e=mc^2$. The dimension names are arbitrary, based only on what we can deduce form the de-construction of the universe at the black hole and the requirements of the developing universe at the singularity. Note that the relativity functions of time and space bear little resemblance to the definitions which we now give them in the physical universe.

The interval or frequency aspect of primordial time and angle acting on the “cooling or expansion” effect of space on primordial charge produced standing waves in primordial charge which resulted in energy. Energy is defined as force in motion. Binding the standing waves to form quarks requires enormous amounts of energy at the standing wave. Building quarks requires input from all the known forces. The only such intensity available is the concentrate that remains after the removal of mass at the black hole singularity, attraction. That binding force has a relationship with standing wave and energy; it may be the attraction force of mass. The mechanism of quark formation is not understood. At this point the standing wave becomes a quark with its locked-in mass. Since neither mass nor energy can be destroyed the energy is transferred into its equivalent mass. This introduces mass into the quarks and the mesons and hadrons which is the $e=mc^2$ universe.

The next step, binding the hadrons and electrons into elements employs a relative force, the weak nuclear force. It is a force that binds electrons to the proton nucleus forming atoms. It is active, decreasing in force across the increasing nuclear size of elements in the periodic table. Elements are stable to no. 82. Then its weakening force with distance increasingly reduces the half-life of higher elements. When these large nuclei spontaneously (fission) split into smaller elements of slightly less total mass, the energy of the destruction of the matter is radiated into space as energetic radiation, equivalent to, $e = mc^2$.

Some of the components of the new universe carry characteristics of the primary universe; such as the graviton photon, and the leptons which share the trait of being in all places simultaneously.. The mesons and baryons carry traces of the attraction function of the primary universe which provides them with mass, which appears as matter in the physical universe.

The photon seems the most primitive product of the singularity which our senses detect. It is stable. It is fundamentally different. It carries only energy, frequency (wavelength) and spin 1. Its energy is mediated by frequency its brightness (energy) is mediated by number, (Quanta). Photons carry the property of superposition and the lack electrical binding allows any one of them to occupy all space concurrently. It may be a product of the two dimensions of the primordial universe.

The electro-magnetic potential attains a wave potential at the singularity which converts it to energy. The confining of the waveform by gluons, possibly derived from mass, resulted in the formation of quarks. Some of these patterns can become stable by the interaction with gluons and quantum chrome dynamics... The result in, our universe,

are 6 quarks, 6 leptons and 4 forces. Quarks may be thought of as a pattern of basic energy, like an eddy in a river. The strong nuclear force binds the quarks into Hadrons, protons and neutrons. At this point, with the advent of mass, our universe became $e=mc^2$.

Our universe is made up, primarily of protons, neutrons and electrons. The Proton is made up of two Up Quarks and one down Quark, bound together by the strong force. The electrical charge of the Quarks is important. The up Quark carries a charge of +2/3 and the down Quark, - 1/3, giving the proton a net charge of 3/3= +1. The neutron is comprised of 1 up and 2 down Quarks, giving a net charge of 0. The proton is stable but is incomplete because of the +1 charge. It is completed by the binding of the -1 charge of the electron and becomes the element Hydrogen. The neutron has a relatively short half-life but is stable when bound to a proton by a product of the strong force.

The quarks have different but very short half- lives. They had to make the step, to Hadrons (protons and neutrons) quickly. This step was mediated by the strong Force. The final step to a stable element is the attachment of an electron to the proton-neutron. It is mediated by the electro-magnetic force or charge.
All these forms and functions are known and can be studied in books on Quantum Mechanics. Each of the original particles have antiparticles, they are not germane to this discussion.

The electron is derived from the singularity as a quasi-stable particle. It has very small mass, a spin of ½ and a charge of -1. The charge constrains its location within atoms. The electron retains the property of being able to be in all its probable positions at the same time, a nonlinear property Matter to be stable must have a zero net electrical charge. Thus, 1 proton with charge of +1, bound to 1 electron with charge -1, forms Hydrogen, the lightest and simplest atom of our universe. It formed naturally as soon as the new universe cooled enough to allow charge forces to act. The Proton is the first stable unit in our Universe and might be considered the starting point of time. This is not the time line of Human conception but might be called historical time. Time as we experience it began with the formation of the first element, Hydrogen. Hydrogen is the only element without neutrons. It has isotopes with 1 or 2 neutrons, Deuterium and Tritium. They are not a major constituent of the universe. Helium and Lithium were also formed after the singularity.

All other elements formed in a hierarchical manner, by adding protons and neutrons, one at a time. Only three elements, hydrogen, helium and lithium were produced in the expanding universe after the big bang. Increasing temperatures and pressures of the

gravity collapsing gasses were needed to produce the elements up to number 60, Iron. Iron requires conditions found in the interior of stars to form, the others require intermediate conditions found in the increasingly dense aggregations of mass due to gravity. To be stable each element must be electrically neutral, thus the elements have an equal number of protons and electrons. The neutrons carry no charge so their numbers may be more or less than protons. The results are called isotopes. The elements combine as a result of the electrostatic charges to produce chemicals. These chemicals are distributed throughout the universe by exploding stars and interstellar winds. Through chemical interactions many arise spontaneously in the atmospheres of exploding stars, many are formed in the denser mix of gasses and chemicals of accruing disks of new stars and their planets and in the stable conditions of our cooling planet.

Biological chemicals arise naturally in the chemical mix of the universe. The one universal requirement for life on this planet is water within a rather narrow temperature range. Life arose from a replicating biochemical that found a way to isolate itself with a limiting membrane and an energy source from the medium. Complexity came in many forms: Combining with other single cells for example to provide; an indwelling energy source, colony formation, sexual dimorphism and genome to control multiple life functions. All this before life split into plant and animal forms. Each step placed new restrictions on the environment where that life form could exist.

The hierarch system of food supply and mobility in the animal kingdom spurred the development of sensory organs, chemical including smell, touch, hearing and sight. Time allowed natural selection to build a brain of immense complexity.

Location sense arose from the prey-predator design of the animal world. It is one of the many complex senses arising from the interaction of one or more of the primary senses and mediated by the brain. A simple illustration is: I am here; a predator and you are there, my next meal. Another kind of location sense is the act of migration to utilize resources in different areas at different times, for different purposes, in birds, for example to avoid parasites by an annual circuit migration.

An important development of the mind is form. The stable structure of the developing universe allowed measurement between objects and their relationships. The mind of animals ultimately became capable of very complex calculations of time, position, vector, and rate required for a cheetah to intercept a gazelle or a man to build a telescope and begin to explore our universe.

Time sense is another complex sense. It is interesting because its progressive development can be charted.Natural rhythms developed in plants and animals in response to daily, seasonal and annual variations in resources. These became increasingly complex and seemed correlated with the development of memory. Where instinct and memory intersect is undefinable but some birds cache food and find it. Elephants remember dead herd members for some time. The apes have some memory. All of these are episodes of time. None of these are time as Humans define it

Lineal time of our world has a beginning and end. We trace it backward from now to recorded history, to archeological history, to fossil history, to solar system development, to universe expansion to the first element, Hydrogen, the beginning of stable time. This is lineal time of this earth, strictly a product on the human mind. It does not exist in the mind of animals or anywhere else in this solar system. Time will end with the last man or his successor mind.

The early common measurement of time was the lunar system beginning about 6000 years ago. The yearly calendar was put into common practice in Roman times about 2500 years ago.

The early records of these observations began about 5000 years ago. Euclid consolidated all these findings about 2500 years ago into what are now known as Euclidean Geometry. Physical and chemical relationships began to be observed, Newton and others codified them. Continued refinement, such as the discovery that the sun was the center of our solar system, continued until 1900 when we had a system that almost perfectly described the world we lived in. It was the product of all sensory input to the human brain. Through the fossil, chemical and physics records, it provided a continuous time line from the first stable atom in our universe, the Hydrogen atom, to our understanding of the modern universe

ANOTHER VIEW

At the time of earliest records (6000 years ago) there was a competing world view broadly described as the Eastern Philosophy. It may have retained some of the ancient “Shaman’s”, understanding of the function of the mind such as hypnosis, awareness, and dreams. The eastern philosophy maintained that there was a deeper concept of universe, one of unbroken wholeness, in which all things are directly and continuously related.

Euclidean philosophy is based on symbols which the human mind has defined. Eastern philosophy allows the mind to escape the confines of symbols and beyond the symbols lies; “That what is”, pure awareness. The Buddhist philosophy reached its peak in the

second century A. D. in a practice called Tanta. The philosophy of Tanta can be described, Tanta cannot. It can only be done.

The eastern philosophy of the universe lagged the race of worldwide acceptance because of the easy testability of Euclidian theory and its correlation with observation. Western anthropomorphic religions were describable, easier to learn in the advancing Euclidean philosophy, and more compatible with its social organization of politics, the centralization of influence and power.

THE EUCLIDEAN UNIVERSE

5000 years of recording, discovery, testing and exploring produced a known universe. In it, a tree is a tree, perhaps 20 feet from a lake, explosives blew things up, a football field was 100 yards long, the sun ruled the solar system, waves and tides roiled the oceans and dinosaurs prowled the continents a hundred million years ago. Almost everything was explained by Euclidean science. This was 1900. Some thought that all physics had been discovered. But, there were a few niggling little unsolved problems. The perihelion of Mercury's orbit, the black body radiation and Morley – Michelson light speed experiment were not explainable using Euclidean physics. Then came the thunderbolt, e=mc\2. This equation and its follow ups, Quantum Mechanics and general relativity, provided explanation for the three unknowns. It allowed explanations for Euclidean physics but with a strikingly different basis. It gave clear evidence that Euclidean mechanics is not a true description of our universe. In the narrow range of our sensors description of earth, Euclidean geometry and Newtonian physics were close enough to the non-linear reality of our universe to allow us to build our world to 1900.

The brain has a very limited access to information from the Universe. The energy in motion which provides energy and mass, are not detectable by our senses. The photon which is energy, frequency and spin, comes from a very narrow frequency range of the vast spectrum of electromagnetic radiation which continuously bathes the entire universe. Gravity which defines our mass relationship to the universe, comes directly from the primordial universe. The rest of sensory input to the brain comes from physical sensors of the body which developed through the chemical and physical systems as did our intercellular communications systems.

As life became increasingly complex intercellular communications appeared. These led to reflex response, sensor cells, neural pathways and a separate organ to read organize and respond. The sensors transmit data in packet form and in lineal order. The brain assembles them from part to whole and draws conclusion or relays to action systems.

This is the conscious mind; it developed on this earth in conjunction with the body. Its functions are; analytical mind, rational mind, will power and short term memory. It constitutes only a tiny fraction of the power of the human brain. Early in process of sense development, perhaps at the beginning, an entirely different form type of sensor, one that could utilize the energy and a small portion of the waveform of the photon which could give the brain the ability to detect reflected light and color but of itself, does not explain many brain functions.

The Eastern Philosophy proposed that a second brain system was a part of the human mind. It is called the non- linear mind. The linear mind receives sensory input and erects it, in order, to a conclusion. The non-linear or subconscious mind senses a whole which needs to be sorted and examined for usefulness, then institutionalized.
It may be useful to explore the minds as separate because they operate differently but they are intrinsically and intimately entwined in both directions.
The conscious, lineal, mind developed with the creatures of this planet. It provides the analytical mind , the rational mind, the “gate” for will power and the short term memory.
The subconscious mind provides these functions: 1. Day to day operation of the body, blood pressure, temperature, alimentary and disposal systems, etc. etc. 2. Survival routines and protection. 3. Emotions. 4. Long term memory. 5. Habits.
The most critical function between the minds is an information gatekeeper. It functions at the interface of the conscious and the subconscious mind. It is under the control of the subconscious mind. It scans all Incoming information from the linear sensors and thought, compares it with stored information and rejects it unless it is compatible with information already there. This protects the operation of the body but also maintains the established habits and emotions.

The brain has been studied for a long time. Its physical and cellular structure, it’s chemical and electric operation and its reflex circuits were known by the early 20th century but how it operated was not. The higher functions of sight and memory were especially obscure. The earliest clues came from research on memory.

Karl Pribram produced experimental evidence in the 1940’s and 50’s that the brain appeared to function by the newly discovered holographic principles. The key discovery was that memory is not a specific part of the brain but occupied the whole brain and destroying parts of the brain did not destroy memory. The demonstration of the optical hologram in the mid1960’s supported the proposal that memory functioned on a holographic basis.

Visual holograms are produced by illumination of reflected wave patterns by the same wave type that produced the reflection. This is an explanation of how real images could be produced in the laboratory but not in the brain. In the 19th century Joseph Fourier discovered a mathematical function that adds a time or frequency to complex wave patterns that converts to simple waves. The next discovery in 1979, that the brain was using specialized cells in the visual cortex that processed the incoming reflected waves to add the frequency effect of Fourier transform, which produces the hologram effect. Fourier waves are stored as standing waves in the primordial energy of the non-linear universe. The hologram design of the brain allows distributed storage of the Fourier waves. The Fourier waves are the memory and can be evoked by thought. Any part of the storage recreates the entire storage. For example, if you remember a face and subsequently loose half of your brain, you still remember the entire face. Dimming of memory results in gradual loss of detail, not of the whole picture.

Vision is the direct effect of the Fourier transform of the reflected incoming visual frequencies. They are massaged in short time memory to provide motion, inverted and projected into the conscious mind and at the gatekeepers option entered into long term storage. All linear sensory input such as hearing, touch and motion is stored as distributed Fourier patterns.

There are other features of the holographic mind: 1. the vastness of memory. 2. The ability to recall and forget. 3. Associative memory, seeing a toy may evoke memories of the toy grandmother gave it to you years ago. 4. Ability to recognize familiar things. 5. Photographic memory. 6. Phantom limbs and how we create a “world out there”. 7. Entanglement with other persons minds, extra sensory perception, the mindfulness of Tai Chi and the manipulation of the gatekeeper in hypnosis.

The holographic brain is non-linear, there is no time lag (there is no time in the non-linear) while the wave image goes to the detector, goes by neurons to a processing cell to be acted on. It is received by the vision receptor, and is processed by the whole brain, as contrasted to an area or a few cells. You can test this by opening your eyes, there is no time delay. The key point is that the human brain is utilizing the non-linear functions of the universal energy, photon and electron to operate the human brain and to integrate the linear and nonlinear minds.

APPLICATION

Everything we experience a result of our lineal senses is a construct of the human mind. See that tree? It looks like a tree. In the non-lineal world it is a complex pattern of

standing waves in timeless unified sea of energy. Even seeing is a wave reflection of a tiny fraction of the frequencies of the electromagnetic spectrum of that energy. At the level of our sense receptors, this wave pattern stability has allowed the lineal mind of man to construct a three dimensional universe with time. It was only when we explore the foundations of the Universe do we discover that the linear world is incompatible with it.

Most of man's institutions are constructs of the human mind and they have been modified as the need arose. Philosophy is the accumulation of mankind's experiences and politics is the manipulation of philosophy by man's inventions of greed and power. The world financial structure is a prime example.
Religion is slightly different. There are faint echoes of the use of the inner mind by the shaman and his successors in all religions. There is the concept of the Whole or Oneness in the Eastern religions which more closely describes the basic universe. There have been Gods in the earth since the first thing went bump in the night and there was someone there to worry about it or the rains failed to fall, threatening survival. Religion has been subjected to the same human social massage and manipulation as all social structures. This has led to: My God is better than yours, or in war, God is on Our Side. Or when I took Catechism class as an adult; on the subject of Bishop Usher, I asked why are there dinosaur eggs with developing embryos, the reply was ,"perhaps to test our faith".

We are the product of the lineal mind of man. It has allowed us to support the largest number of humans the world has known in the best heath with abundant goods and services. It has allowed us to probe our past, but not to reliably forecast our future. It has required knowledge of the non-linear universe to produce modern communication and to put a man on the moon.

The problem is that our lineal world is not compatible with the non-linear Universe. The most obvious incompatibility is resource. The world is finite and replacement resource is not available. Resource is removed in two ways, use and degradation. Degradation of the oceans, once unthinkable is now a risk that must be considered. Population at some point is an incompatibility, either from insufficient resources or from contagion. The solution to the incompatibility is to align the linear and non-linear functions of the universe. The first requirement is to recognize that there is a difference. The 5000 years of recorded history and perhaps a million earlier years of observation and correlation render the task difficult, perhaps impossible.
The long term future of Homo sapiens depends on it.

REFERENCES:

1. Unlocking the Blueprint of the Psyche, Robert Hughes, In breath Communications, 2014
2. The Holographic Universe, Michael Talbot, Harper Perennial 1991
3. The Dancing WU LI Masters Gary Zukav Harper One, 1979
4. Technical Matters: Wikipedia and other Internet sources.

$e=mc^2$ RECYCLING – BLACK HOLE

The singularity and forces that initiated the $e=mc^2$ universe produced only the lightest three elements, hydrogen, helium and lithium. Further development of the universe required the action the force to bind protons, neutrons and electrons into heavier elements, each requiring specific and generally increasing pressure, temperature and force.

Gravity attracted the mass of the new elements into aggregations and compressed them into stars which continued to contract under gravity, raising the internal forces to the spontaneous ignition point, first hydrogen then under increasing mass to oxygen. The nuclear burning provided the nuclear forces to form all elements to iron. Nuclear fusion of elements in stars releases enormous amounts of energy which is radiated off as high intensity x rays.

The mass of the star defines its destiny. Brown dwarfs are aggregations of interstellar mass that are too small, smaller than a sun, to ignite nuclear burning. They are available for inclusion in future star accretion disks. Stars of somewhat less mass than our sun will burn elements up to carbon, explode, casting its outer layers of formed elements and compounds into interstellar space. The explosion occurs when the star exhausts its burnable nuclear fuel, its outer layers collapse with gravity but the mass cannot overwhelm the remaining nuclear forces and rebounds with enormous force. Many of our common compounds are found among the ejecta, salt, water and carbon dioxide for example. The star will again contract to about the size of the earth but it cannot overwhelm the binding force of carbon. Because of its temperature radiation it becomes a white dwarf and as it cools become a black dwarf, composed primarily of dense carbon and oxygen. It is sequestered matter and energy subject to the half-life of the proton. The elements and compounds cast into space become matter for aggregation into new stars.

Stars ten to twenty five times the mass of our sun burn elements up to oxygen, thereby allowing formation of the heavier elements through iron. They collapse and explode one or more times as novae, casting even more of their elements and compounds into

interstellar space with the rebound explosion. The mass and energy of binding forces are released as intense x rays. The binding force of iron resists further core collapse. The resulting core, consisting mostly of high density iron and nickel, remains in our universe. It has immense gravity and magnetism and may provide a nucleus for a new star's accretion disk.

There is one more stable form of exploding star. Stars of 30 times the mass of our sun go through the phases of nuclear fusion and collapse at the end of nuclear burning through oxygen. The collapse of the outer layers of the star are so intense they overwhelm the binding forces and warps the charge force that binds the protons and electrons to form elements. The result is that protons and electrons are forced to merge. With the release of a neutrino the merger becomes a neutron. The intense gravity, magnetism and angular momentum render this rare form stable in this universe, the Neutron star, has the mass of one and a half of our sun and a diameter of up to 20 miles.

The enormous mass and energy not blasted into space is radiated off in electro-magnetic waves of the highest cosmic order. The rotational rate is hundreds of times per second. The rotation and radiation form pulsars, among the brightest objects in the universe. The pulsar dims and slows its rotation as it cools.
Neutron stars no doubt create local gravitational waves and magnetic storms on their formation.

The most massive stars in the universe follow the same pattern as other collapsing stars except at the end of nuclear fuel burning and the loss of nuclear energy supporting its form initiate a catastrophic collapse. It overwhelms the valence force which binds elements into compounds, the charge force which binds the atoms into elements, even the strong nuclear force which forms atoms. The star collapses directly into a black hole.

There is a second type of black hole, the black hole of rotating galaxies. The process is the same as the stellar black hole, the overwhelming of the binding forces in the reverse hierological order of their formation. The procedure is different. The rotating galactic black hole has an accretion disk.

The gravity, magnetism and angular momentum attract mass, stars, to its center of mass, increasing the intensity of all parameters, including temperature, pressure and rate of motion, as they approach the accretion disk. Photographs show stars orbiting the accretion disk at enormous speed being torn apart by the tidal forces. The binding forces at each level are returned to our universe as electro-magnetic waves. When the

charge force and strong nuclear force are overwhelmed, mass and energy are returned as $e=mc^2$ and gravity is released as gravitational waves. At the galactic level this is a continual but highly variable process depending on the density of mass approaching the accretion disk. If it is a region of dense stars the radiation emanating from the vicinity could destroy bio-chemicals tens of thousands of light years from the black hole.

The angular momentum, gravitational potential and electro-magnetic potential continue to increase until they overwhelm the dimension at the lip of the black hole and are in equilibrium with the primitive universe. Some non-rotating galaxies support black holes. I suggest that their black holes would be more like stellar black holes.

This view of the $e\text{-}mc^2$ cycle gives some clue to the two dimensions of the primordial universe. Gravitational potential appears to concentrate toward a point and is associated with angular momentum so I call one dimension angular unity. The other appears to be associated with the electro-magnetic potential and a factor that approaches infinity. I call it charge infinity. The dimension added at the singularity allows the melding of the other two. I call it expansion. The interaction must allow $e=mc^2$, the definition of our universe.

Addendum

1. The force that stabilizes the charge frequencies to form quarks reappears in specialized biological molecules to permit sensory interpretation all of which are based on wave form, and in fixing the standing wave forms in disseminated memory.
2. The expansion dimension which allowed the integration of the primordial dimensions to form our universe, $e=mc^2$, raises the questions of how much and how fast. The universe formation was a single event. Since there is no measurement in the primordial universe, there is no answer.

   The rate of expansion has partial answers, the expansion occurred before our universe became $e=mc^2$ which became effective with the advent of energy and mass so it was not bound by our c^2 speed limit. Destruction of the dimension and equilibrium with the primordial uniform during super nova collapse appears, by our measurement, to be instantaneous or nearly so.

SPACE TIME

One of the key problems in discussing universe problems is semantics. Space and time appear in three levels of the development of our universe. They are the Euclidean, the metaphysical and the Primal. They have different definitions and functions at each level.

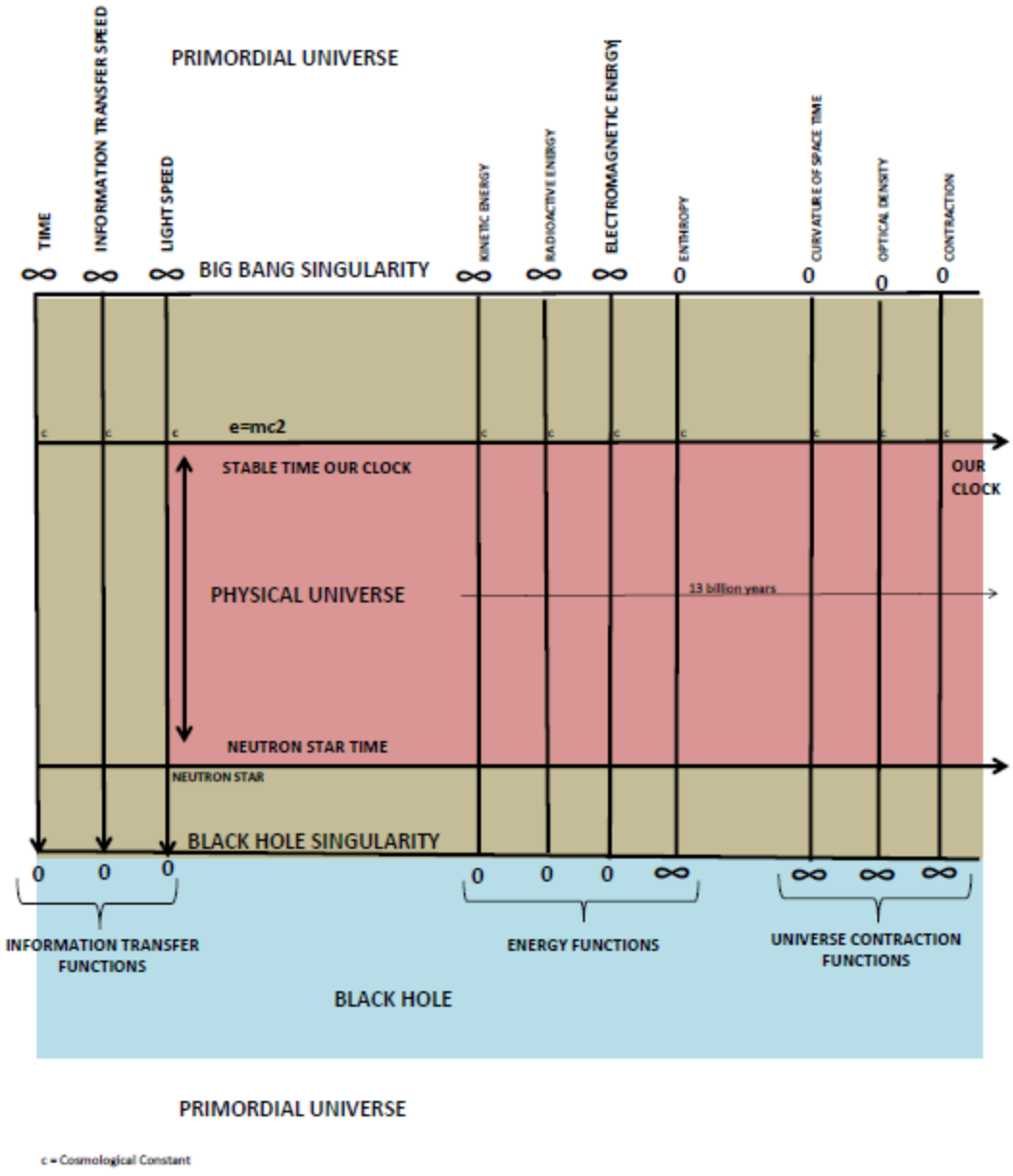
In our Euclidean universe time is the orderly, one way relationship of all events we can name, from the beginning of $e=mc^2$, to the limit of this moment. It includes the development of our universe, development of our solar system and in biology, birth, life and death. For us space is the expanse of our universe not occupied by matter.

In the Metaphysical universe time is more like interval and the interval varies from nil to infinite. Time is not a single measurement, it incorporates all intervals.

The primal universe is an unknowably intense collection of nonmaterial entities in which no measureable physical attribute such as solid, heat, pressure or energy, can exist. It is as though ideas, such as time, space, momentum, angle and charge, can be compressed into a function without gaining any physical attributes. In the primal two dimension universe, time and space are separate and each is a constituent of one of the dimensions, they have no definition or function, they are a part of the eastern philosophy's, " That which is".

In the universe of relativity, time and space have both combined and individual functions. At the singularity, time and space meld into space-time. Together they constitute the 3^{rd} dimension which allows $e=mc^2$ to come into existence.

Universal Cycle



c = Cosmological Constant

THE UNIVERSE OF INFINITIES

Our universe arose from a bubble in a non-physical primordial entity. The evolving conditions of the bubble allowed phase changing and merger of the non-physical components. The result was a three dimensional universe composed of enmeshed structural and operational components evolving between the infinities of the Big Bang and the Black Hole. There is a physical formula, $a^2=b^2+c^2$ that describes a path between infinities. It is not a good description of the metaphysical process, I use it here only for lack of a proper description. This is our universe; it is currently active throughout its spectral range. The more intense parts of the spectra are seen in nova and neutron star interactions which include gravitation waves

The nonphysical components are of two types, those that range from nil to infinity and those that range from infinity to nil between the singularities of the bubble and the black hole. An example of the infinite to nil spectrums is the information transfer group, which includes light speed and non-lineal time.

An example of nil to infinite is contraction of the universe. This is a fascinating spectrum because there are two other descriptions of the same function, Maxwell's redefinition of Newton's optical density and Einstein's curvature of space-time.

The universe was stabilized at a specific point in its evolution by $e=mc^2$. This is a long term stabilization brought on by the sequestration of energy amd matter. The stability locked into place the universal constants that have allowed 14 billion years of lineal time (also a spectral function related to information transfer) which has allowed the ongoing development of the physical universe, the protons, atoms, elements and chemicals through the development of the human mind.

There are other points of stability with their enmeshed constants within the evolving universe, aggregations of mass such as stars or even planets where the constants vary according to mass. There is one longer term stability in $e=mc^2$, the neutron star. Its cosmologic constants should be calculable because it mass is constant and the spectra are entwined.

The contraction of the universe spectrum is special because of its interaction with $e=mc^2$ functions. At the singularity, contraction is nil. The spectrum follows the rate of reduction of expansion of the universe due to relativistic cooling with expansion. At zero expansion, $e=mc^2$ sequesters energy and mass which stabilizes that portion of the metaphysical universe where the parameters are met. At this same point of contraction, net gravity is zero since physical matter does not yet exist. Matter begins with the first atom. From this point, the contraction spectrum mirrors the increase of gravity to the point where gravity is destroyed, releasing its energy into the metaphysical universe.

The contraction spectrum continues to intensify as mass until it becomes an infinite point function and phase-changes into a nonphysical state at the lip of the black hole.

The information transfer spectrum begins at infinity at the bubble singularity where all information is part of unity, action at a distance, thus by definition, an infinite transfer rate. The rate decreases until at the lip of the black hole the transfer rate is nil. The information does not change, only the rate of dissemination. Lineal time and light speed are part of the information group.. The enmeshed state of the spectra dictate that at stable points, rate spectra will have physical constants; thus we have light speed, and time passes in equal measure in all of $e=mc^2$.

The several energy components of the evolving universe operate on the same basis. Entropy, a measure of the organization state is nil at the singularity and infinite at the black hole. Other energy structures, radiation, kinetic, electric, etc. have separate measurements thus cosmologic constants. Magnetic and Gravitational energy are a separate category operating only in the physical universe therefore having no cosmological constant.

Planck Constant appears to be the physical value where the entwined spectra of lineal time and energy are stabilized by $e=mc^2$. It too appears to be a physical constant. Like gravity and magnetism, it does not exist in the metaphysical universe.

On another subject: The work of Subir Sachdev seems likely to crack the door on the form and function of the phase transfer to and from the non-physical primordial universe and our metaphysical one. He has produced a form of entanglement among electrons described as entanglement or action at a distance or Unity. Unity in action is a property believed to be universal among the dispersed constituents of the primordial universe. Some of the basic forms of our universe, photons, electrons, neutrinos and gravitons, carry a limited version of this property into the physical universe. It is probably a step in the phase change to the diffuse portion of the primordial universe that allows conversion from nonphysical to physical properties.

WHAT IS $E=MC^2$?

$E=mc^2$ is obviously an important factor in the operation of the physical universe. One of its derivations, $e/m=c^2$ allows examination of its metaphysical components.

Energy (e) evolved from the singularity in an intense, somehow structured, probably a wave form that interacted with mass.

Mass (m) is the second force evolving from the singularity. Its interaction with e had two important outcomes, first; the binding or stabilizing of the resulting hadrons by the inverse square law and secondly; by endowing hadrons with its attractive force. Mass is a misleading name for this function. Its function is to gather or shepherd. The apparent mass of the black hole is the attraction equivalence of the mass that approached the black hole. At the quark dimension the intensity of attraction is essentially a glue. Enormous energy is required to break the bond.

e/m appears to be a ratio in this formulation because it in another context, It is the ratio of dark energy to dark matter. It may be a cosmological constant. It is a stable relationship. See below: e/m is condensed as matter in the metaphysical universe.

The c2 portion of the formula is far more complex because time and space have separate functions but are bound in such a way that stabilizing either limits the options of the other. C represents all space time.

Time has an interval function, all intervals. If one selects a single interval then a clock is established which beats at a steady interval. The evolution of the physical universe requires a clock because time is required for the manufacture and sorting of the increasingly complex materials required for physical, chemical and biological evolution.

The function of space is in the realm of form, location and position. The physical universe requires a form in which to exist. It is particulate and must have a three dimensional location in order to exist and that location must encompass the entire universe for the physical universe to exist.

C2 is a point of stability of space time. It sets the beat of time, a clock, physical time, for the evolution of matter, and the parameters of space in its interaction with e/m. It set the maximum information transfer rate of the physical universe which is numerically equivalent to light speed.

E/m equivalent to c^2 is the metaphysical formula for the components and the blueprint instructions for the production of a physical universe. When the evolving singularity reached the e/m ratio the universe collapsed into matter. This is not physical matter. Physical matter is particulate and follows the physical laws of the universe.

The primary consequence of the collapse is that 95 percent of the matter formed was so dense because of the intensity of area of collapse was within the accretion limit of the black hole that it instantly converted to dark-energy, dark-natter and was sequestered in the metaphysical universe outside the physical universe.

I had previously assumed that dark-energy and dark-matter were separate states but here they are linked as space/time are linked. Dark energy does retain a gathering and shepherding role.

The sequestration of DE/DM appears to be a non-violent episode probably because there is no associated free energy which cannot pass the accretion barrier but is forced out of physical relationships with high energy as they approach the black hole.

This reinforces my belief that the passage of matter/attraction across the black hole horizon is a quiet affair.

The area universality of matter formation suggests that the distribution of DE/DM should have followed the expanding universe design

FORMATION OF THE PHYSICAL UNIVERSE

There was no gravity or magnetism before the advent of the physical universe.

The formation of the physical universe was a single event in the expanding-cooling metaphysical universe. It began when a specific ratio of electro-magnetic energy to metaphysical mass e/m occurred. The trigger for formation was the concurrent slowing of entwined space-time. Space provided a form and location where particulate matter could exist and time provided a steady interval required for its evolution. This is a stable position and locked the parameters of the physical universe. All of the components of this reaction immediately collapsed into the physical universe.

There is a problem with this interpretation dark energy/dark matter is not physical matter. It does not interact with the gravitational force. The most likely explanation is that e/m is matter but it was sequestered before the leavening of space, form and location and stable time, completed its conversion to physical matter. It does not explain why 95 percent was sequestered and 5 percent completed the conversion. Regarding sequestration, of dark matter/dark energy, there would have been no molecular force to limit collapse so that if the chandrasakhar density was met, sequestration would occur without disturbance. There would be no interaction with gravity because there was no physical mass involved and since de/dm does not interact with anything physical it disappears from all direct observation,

Since the product of e=mc2 is physical matter, even though it is hadrons atoms and the lightest elements it is subject to physical law, ie gravity and magnetism. In the case of e=mc2 matter, energy is separated and radiated away from mass before mass, a metaphysical entity enters the black hole. e/m matter is sequestered as dark energy/dark mass, a metaphysical entity. The best evidence for this interpretation is l.

the distribution of dark matter/ dark energy in the physical universe is similar to the distribution of but very different from the content of the earlier cosmic background radiation, and 2. Dark matter/dark energy does not interact with gravity or magnetism but does weakly interact with mass.

If dark matter/dark energy interacted with energy there would have been an instant universe expansion.

Dark energy/dark matter does contribute to the energy and mass of the physical universe. It has the same effect on space curvature as visible matter so its location can be detected by tests such as gravitational lensing which confirms its spatial distribution.

One of the consequences of this study is that merger of black holes do not explode and cause gravitational waves. There is no energy to initiate it. Of course the agitation and ablation in matter being attracted to the black hole provides energy up to quasars, in active galactic nuclei.

Intensity of gravitation waves is related to density of the fuel or the plank distance. It increases from star collapse to novae to neutron star. The next step would be the interaction between clumps of dark matter/energy. If it could be induced to decouple I should produce the greatest gravitation waves.

MATTER: Metaphysical, Physical and Dark

At the singularity energy and mass are bound in the same sense as time and space are bound. They are bound in a ratio which condenses into the metauniverse as protons. E/m at that ratio is matter but not yet physical matter. It is metaphysical matter which follows the rules of all matter, the inverse square of the radius law which states that the intensity of attraction decreases with the square of increasing distance between the centers of attraction and the sequestration law that states that when the intensity (density) of matter exceeds a specific point, matter sequesters. In the case of physical matter this state evolves when a light weight star burns its nuclear fuel, and the increasing gravitational force narrows the radius between protons thereby exceeding the Chandrasekhar limit it, collapses until it encounters the weak nuclear force where the resistance of the weak nuclear force halts the collapse and the star and its matter/energy is sequestered as a physical brown dwarf star. In the case of metaphysical matter, there is no limit to the collapse of matter/energy and that portion of protons not incorporated into atoms at e/m at equivalent to c2 is sequestered in situ as metaphysical dark energy/dark matter.

NOTES TO UNIVERSE FUNCTION

Physical law applies only to that portion of the bubble universe which has been stabilized by $e=mc^2$, roughly that portion between $e/m=c^2$ and the destruction of matter

at the neutron star. The evolution of the metaphysical universe continues around the physical universe.

Time is a member of the information transfer structure. Its rate of passage is infinite at the bubble singularity and time interval ceases to exist at the black hole.
Contraction of the universe is very special. At the big bang there is no contraction. Contraction begins when the universe begins to cool and continues to infinity at the lip of the black hole. The contraction has two other precise descriptions. Maxwell's modification of Newton's increasing optical density and Einstein's increasing curvature of space time. Both go from nil at the big bang to infinity at the lip of the big bang.
The contraction function is divided into three discreet parts. First, decrease in the universe's expansion rate. When the rate of decrease reached zero, the universe was stable in size, (volume). Second, gravity was nil at the stable point of the universe. Gravity began when the stability allowed matter to form from the mass infused particles of the physical universe. Gravity increased in lockstep with the contraction of the universe until gravity was overwhelmed by mass. Third, mass increases to infinity until dimensional change at the black hole.

$E=mc^2$ stabilized the evolving bubble universe at a specific point in its cycle. It occurred where the expansion of the universe became zero as a result of dimensional cooling. The zero rate of expansion was locked in by the sequestering of energy, the agent of expansion, as matter. This occurred at the point where rate of universe expansion became zero. It was also at the point where gravity was zero because gravity did not occur until the matter form of mass was established. It froze all the evolving operating functions and structures into physical entities. It was the beginning of our physical Universe.

One of the major consequences of universe stability was the establishment of a clock. The beat of time, its rate of passage, is inversely related to the rate of the increasing increase in the curvature of space time, which is a measure of the contraction of the bubble universe. The significance of our universal clock is that it beats at a constant rate by which we can measure time relationships within the universe. More importantly it gives our universe the time for the development of the physical universe; the time it takes for protons to become atoms, elements, chemicals, and finally the human brain. In our solar system the final part of that evolution, from compounds to the human brain, has required four and a half million years The stability will last as long as the universe remains its physical component , i.e., $e=mc^2$.

Our stable physical clock is not suitable for measuring what goes on in the non-physical part of our universe. The nanosecond of our time might be a billion years on a clock

stabilized near the big bang singularity and the clock stabilized at the neutron star might see our million years pass in a few hours. Every stable point on the contraction spectrum has its own potential clock, for example, since the time function is congruent with the gravity function, the neutron star is a stable point and has its own clock. In fact each star has a clock based on its mass. This was proven by the experiment of timing light passing near the sun.

Light speed is a part of the information transfer function. Its physical representation at the point of $e=mc^2$ stability is three times ten to the eighth power meters per second. This means that light and all members of the group can travel no faster in the physical universe. This includes photons, neutrinos and all other zero mass particles.

MATTER

Matter emerges from entwined electromagnetic energy and mass as the metaphysical universe cooled following the big bang, e/m = matter. e/m is a cosmological constant and is found in no other ratio. It is bound in the same sense as space/time is bound.

It condensed into entwined e/m matter, 95 percent of it exceeded the Chandrasekhar density limit and immediately collapsed into dark energy/dark matter. Both forms of matter remained separate but uniformly distributed throughout metaphysical space.

The remaining 5 percent of matter interacted with co-evolving space-time to give it a form for particles to exist in and area to evolve into physical matter. The entwined time provided a stable passage interval, a clock, that allowed physical matter to evolve.

The Chandrasekhar limit comes into play later in the evolution of the physical universe when the collapse of fuel drained light stars led to matter density greater than the Chandrasekhar limit. The matter collapses but the collapse is interrupted by the internal particle strength of the weak nuclear force resulting in a sequestered brown dwarf star. Larger stars collapse through the brown dwarf, sending the binding energy into the physical universe but the collapse stopped by the binding strength of the strong nuclear force. The result is the neutron star. The final collapse to the black hole is different in that the energy bound by mass is released into the physical universe primarily as gravitational waves and the mass continues to the black hole, carrying with it the attraction of the associated matter.

RANDOM NOTES

Time and clocks

We cannot reliably measure time passage beyond the point where e=mc2 stabilized time by which we measure the function of our universe. Earlier than that and after that event, time rate varied with the change in rate of the contraction of the universe and its equivalent, the increasing curvature of space time. The rate of time passage is infinite at the big band and is nil at the black hole.

The rate time passage and universe expansion rate decreased in lockstep, under the operational rules of our universe until the expansion reached zero, $e=mc^2$ at which our rate of time measurement was established.

Time is a metaphysical measurement. Its near physical equivalent is interval. In the metaphysical universe it appears in its square version, interval rate of beat. It exists between no interval or infinite beat at the singularity and no beat or non-existence at the black hole.

We cannot reliably measure time passage beyond the point where $e=mc^2$ stabilized time by which we measure the function of our universe. For events that occurred in the evolution of the universe before or after $e=mc^2$ time rate varied with the change in rate of the contraction of the universe and its equivalent, the increasing curvature of space time. The rate of time passage is infinite at the big band and is nil at the black hole.

We can extrapolate the rate of time passage near the big bang according to our time measurement. When we do, we find that in fractions of nanoseconds the universe expanded from zero volume to our proto universe. If we evoke a stable time, a clock, near the big bang, that nanosecond on our clock might record a million years on the local clock.

A clock is a device for measuring interval in lineal time. It can be applied only where the universal time has been stabilized. Universal time is stabilized at many points in the universe cycle, all in lockstep with the operating system of the bubble universe. It

includes contraction of the Universe and increasing curvature of space time which both describe the same function, information transfer rate and energy-work relationships.

The most important agent of stabilization in our universe is $e=mc^2$. It is the point in our universe development where the expanding energy resulting from the merging of primordial charge and attraction produce energy to a level that it spontaneously condenses to mass. This stops the energy driven expansion of the universe and establishes the long term stability documented by the entwined cosmological constants of $e=mc^2$. This has resulted in the long term stability, 13.5 billion years of our lineal time that has allowed the development of the physical universe, all the elements chemicals and biochemical to produce life and its apex, the human brain. This stable platform establishes the habitable zone. It does not protect life from the regular functions of the universe which override and negate the habitable areas. These are primarily temperature, bio-chemicals, gravity and radiation.

It is interesting to note that in one respect the opposite is true. For our particular type of life a small amount of gravity is required. This narrows the already tiny fragment of the universe suitable for life.

There are other fairly long term points of stability in the universe cycle, the neutron star and every star or mass, for its stable lifetime. Each has its own set of cosmological constants as shown by mass-light speed relationship at each stable mass. Beyond mass destruction, the time rate continues to decrease with increasing space-time curvature until its conversion at the black hole where the rate function of information transfer disappears.

$E=MC^2$ AND THE HABITAT FOR LIFE

$E=mc^2$ locked the developing universe into a physically stable entity by locking the entwined operating entities of the universe wherever its requirement was and is met. The locked operating systems provide the physical Cosmological Constants which define the habitable zone. $E=mc^2$ is but a single point on the infinite spectrum of the cycle of our bubble universe.

Life's components are not a consequence of $e=mc^2$, they are manufactured in other temporarily stable parts of the universe cycle, such as stars, which by the way have their own cosmological constants based on their space-time curvature, and are cast into the interstellar medium. Some of them wash up on the stable work bench of $e=mc^2$ which gives them time to mix and evolve into life forms. This bench is the tiniest fraction of the universe and sentient life a tiny fraction of life on our planet. There is other life in our universe but we are separated by time, distance and the roulette of genetic and physical evolution.

Mass for Early Quasars

Recent research has revealed that Quasars occurred in our universe about the same time as the appearance of matter in protons and other hadrons, well before mass produced by $e=mc^2$ should have been present in the concentrations required for super novae.

I have long thought that something that mimicked mass must exist in the non-physical primary universe, something that acted across the dimension barrier that separates the universes. This is required because of the apparent mass of the black hole which cannot be a physical entity, i.e. the primary universe has no physical properties and the mass mediated development of quasars at such an early stage of our universe's development.

I think this entity is the dimension changed gravitational force which has the property of attraction which acts across the dimension barrier. This means that the attractive force (apparent mass) of the black hole is directly proportional to the amount of mass that approached the phase change at the black hole.

This interpretation of the function of the gravitational force leads to a possible explanation of the early quasars. The examination of the early particles condensing out of the singularity reveal that those particles carry traces of the contents of the primal universe. I refer to the leptons which exhibit the property of being everywhere allowed at the same time and the hadrons which exhibit mass, this being the physical manifestation of primordial attraction.

The strength of attraction, like the gravitational force is great at short distances but declines with distance, for instance the sun's gravity is enormous at its surface but at our distance it is much less than our own earth mass derived gravity. In the early universe there would be intense concentration of condensing hadrons. Their aggregation by attraction force would lead to separation of the energy and mass leading to the quasar ejection of energetic particles

THE UNIVERSE

The conundrum is, what gives the black hole the appearance of mass equal to the mass that disappears at the black hole, and its counterpart, what gives the hadrons the appearance of mass at the big bang. One obvious possibility is that it is the dimension-changed mass. Because of the attraction of its non-physical form would be attraction and its cross-dimension function would endow mass to the black hole equal the mass

equivalent that actually crossed the accretion disk of the black hole. The interaction of attraction with the hadrons at the big bang would endow them with mass.

EVOLUTION AND STABILITY OF THE UNIVERSE

Our Universe arose as a bubble from the primary universe source at an infinite rate of expansion. It "cooled" to an expansion rate of zero. At this point in evolution, the energy "density" of the developing universe reached $e=mc^2$, sequestering the expansion force, energy, with mass. This stability is maintained throughout the universe where $e=mc^2$ is active. This includes the entire physical universe. It extends from the proton through the neutron star. It does not include the evolution of the universe from the singularity to the proton, nor the universe evolution after the destruction of matter at the neutron star to the lip of the black hole

This theory predicts that the rate of universe expansion declined and was stable for an extended period. It was followed by an increasing rate of expansion caused by the destruction of matter and release of the bound energy into the bubble universe. The mass portion of $e=mc^2$ continues to intensify as a part of black hole attraction.

MAGNETISM

Magnetism is a physical manifestation of the energy system of our universe in the same manner that gravity is a physical manifestation of the mass system. This relationship predicts that both begin at nil at the point of physical stability of the universe, build in intensity until each is overwhelmed when the physical universe disappears at the minimum intensity of the nova collapse.

STABLE TIME

The key to the physical universe is stable time. The heretical development of the universe requires it. The formation of the energy states, standing waves and gluons (mass), etc. are consequences of the evolvement metaphysical system but it cannot progress to physical stability in evolving time. $e/m=c^2$ describes a clock. That clock will remain stable for as long as physical matter exists. That clock provided the time required for the evolution of the physical universe.

COSMIC CONSTANTS

Cosmic constants are stable positions along the infinite series of positions occupied by operational and structural components of the bubble universe in its evolution. The universe cycle extends from the big bang singularity to the black hole singularity and the functions all vary in expression from nil to infinity or from infinity to nil between these limits. All the components are entangled varying in unison regardless of their infinity

relation. Each point of stability in the cycle has its unique set of cosmological constants.

There is a subset to this view of the universe cycle, the expanding bubble universe. The mass portion of the universe goes to the black hole. The energy portion of $e=mc^2$ released when mass overwhelms the gravitational force binding matter, the remains but the bound energy returns to the bubble universe, forcing expansion. Energy does not seem to be removed by black hole dimensional shift.

MASS AND MATTER

Mass is a metaphysical object. It has no weight. I think of the word mass in the sense of push to simulate weight. In function it has the property of attraction or tugging which in some ways mimic weight. Gravitational force is mass stabilized by $e=mc^2$. It interacts with matter to create the appearance of weight, the physical force of attraction among physical objects. There is no gravitational force at the black hole. The gravity ends when there is no matter to attract. The energy and matter of $e=mc^2$ revert to mass and energy when the intensity of mass overwhelms $e\text{-}mc^2$ at the accretion disk, releasing energy into the bubble universe and continuing the buildup of the intensity of mass until it phase changes into attraction at the lip of the black hole. The apparent mass of the black hole is the cross dimension manifestation of mass in the same manner it is transferred to the hadrons. It carries the attraction function equivalent to the intensity of mass crossing the lip. Magnetism plays a similar role in relation to energy. The electromagnetic field is a physical manifestation of the energy function. It too disappears at the breakdown of matter and energy and is not a component of the black hole.

Stated in a different way; Weight is a function of gravity in a physical universe. Mass is a function of attraction in a metaphysical universe. In both cases the function is a tug, not a push. The same is true at the black hole. The weight of the black hole is the result of attraction, not the push of weight.

The recent discovery of the existence of quasars and black holes contemporary with the earliest hadrons needs a functional explanation. If mass has a gathering or attraction function on hadrons and the early atoms formed during the big bang then It would provide an explanation for their existence. The understanding of the operation of the metaphysical universe would be simplified by a redefinition of the term mass more in alignment with its function. Mass exhibits a function more related to tug, pull or gather through attraction than the push or weight connotation commonly applied to action at the black hole. At the development of hadrons, the same force endows them with mass and gathers them for change to atoms. At the big bang the same forces endowed the

emerging hadrons with mass and because of their density, attraction gathered them to the ignition point of quasars and black holes.

DARK ENERGY-DARK MATTER

Oct. 12 2018

These are not separate entities, they are a single entity. It arose from the force called electromagnetic energy and its entwined force called mass. A more apt definition for mass is a force that attracts and gathers interacting material and acting by the negative square radius law, binds the interacting materials.

The ratio of energy and mass as they condensed, entwined, from the plasma of the big bang singularity, is the formula for matter. It is also the formula for the proton. Matter arrived in the metaphysical universe as a sea of protons. Matter density is controlled by a law called the Chandrasekhar limit. The density of matter exceeded the Chandrasekhar limit to the extent that ninety five percent of it was sequestered. Dark energy/dark matter is fossilized protons. It is not a physical entity.

Sequestration of matter occurred in place and its distribution follows the usual distribution of cosmic events, varying slightly depending on the timing of the onset. It is a universal sea. Dark energy/ dark mass does not interact with the physical universe and only weakly with the metaphysical universe. The primary evidence for this conclusion is that in interaction between galaxies, Dark matte/dark energy is associated with the center of mass (attraction), not with the center of gravity.

MASS AND ENERGY

Mass is not energy. It emerged (condensed) entwined with electro-magnetic energy in a specific ratio. It bound the energy into matter and endowed mater with its function, attraction, which is not a physical function, however it did supply matter with all of what is called mass. Physical function did not occur until e-mc2 provided a physical particle. Then the physical form of attraction (mass), gravity draws the physical matter together. Both forms of mass operate on the inverse square of radius rule.

I originally thought that the black hole was a singularity related to the big bang, loosely, an exit back into the primordial universe. I think that is incorrect because I can account for the materials from the big bang sequestered in our metaphysical universe. In the

physical universe time has a stable interval, in the metaphysical universe interval increases until there is not another interval. Space expands to the supply of free energy. Space and energy cannot exit the physical universe entwined. Their exit is through the increasing intensity of gravity. As the intensity of gravity increases, the ratio of release as gravitational energy to free energy increases. Free energy is released into the physical universe and results in expansion. Gravitational energy is released into the physical universe as gravitation waves. All of the mass remaining from the release of gravitational collapse is sequestered at the black hole which contains nothing else. Ninety five percent of the universe's mass and energy are sequestered as dark energy/dark mass uniformly dispersed through the metaphysical universe.

I have not seen and certainly do not understand the evidence for antimatter as a component of the universe. I see no scars of its passage. If it proves to be a necessity then I think it must have had a different development pathway obscured from ours.

I look at mass/attraction in a different way. Instead of being that which happens when you pile stuff on a scale, it is what happens when you tie a string on the suspended scale and pull on the string, a tug. The tug measures the attraction between the black holes and the universe. The size of the black hole dictates the "tug" (force of the attraction).

CHARGE AND MAGNETISM

Charge is a companion force to attraction. Attraction is the force which binds energy to form quarks which assemble to form the proton and endows it with the force of attraction called mass. Charge is the force which binds photons into electrons and endows electrons with magnetic force.

GRAVITY AND MAGNETISM

The attractive force (mass) acts in two ways on the time space stabilized energy-matter of the physical universe. On the matter portion, attraction is the gravitational force which controls physical matter by the inverse radius square rule. To the electro-energy portion of physical matter, attraction is the magnetic force that controls magnetism.

Gravity and magnetism are products of the physical universe. They do not occur in the metaphysical universe where the force of attraction (mass) binds the standing waves of energy and adds the attractive force to produce matter, the proton.

STABILIZATION OF THE PHYSICAL UNIVERSE

The metaphysical universe is in a state of evolution that does not allow for fixed definitions such as equals. It does however permit equivalences of positions in evolution to interact. The entwined energy and mass condense in the metaphysical universe into matter, protons. When matter encounters c, entwined space-time at an equivalent point, e/c equivalent c^2, it becomes physical matter and defines the physical universe, $e=mc^2$.

This fixing or locking of the evolution of the physical universe renders equality a valid function. E/m equivalent c^2 is the metaphysical formula for the physical universe and $e=mc^2$ is its operational formula.

This transition fixed the parameters of the physical universe: for example. It fixed the amount of non-physical matter (protons) that could be accommodated in the physical universe. That turned out to be 5 percent of the protons condensed into the metauniverse at the big bang singularity. The balance was sequestered in situ, where they remain in distribution similar to the cosmic microwave radiation. They are dark energy/dark matter. DM/DZ can be visualized by observing that it follows the concentration of attraction, (mass), rather than the concentration of gravity when galaxies interact, collide. It is crucial that metaphysical mass carries the definition of gather and binding rather than physical push or weight.

The interactions accompanying the e/m equivalent c^2 transition are many and complex and must have occurred in a short physical time.

One of the most important was the formation of the physical particle, the atom. Electrons are radiative energy bound and stabilized by negative charge. Charge is a force related to radiative energy whereas mass/attraction is related to neutral energy. Charge produces magnetism. Magnetism is a repulsive force to contraction whereas gravity promotes it. Both gravity and magnetism function only in the physical universe. They do not exist in the metaphysical universe.

The structure of the electron dictates the physical structure of the universe. It retains the structure of a coffee cup when you squeeze it. It maintains the stellar structure when gravity squeezes it. The increase in electron resistance as stars burn, contract and increase in density, increases the magnetic resistance which flings physical matter into space as solar wind.

The electro-magnetic force, Charge, emerged from the big bang and condensed as monopoles. The negative monopole bound radiative energy as electrons. The

monopole endowed the electron with its expansive force or operationally described as resistance to contraction. The greater the force, for example gravity, the greater the resistance to further contraction. The positive monopole attached to the physical proton when it appeared at e/m equivalent c^2.

The mutual attraction of proton and electron monopoles produced the particulate atom which occupied the physical space created by e/m equivalent c^2. It is the weak nuclear force.

CHARGE AND ATTRACTION

These are the two forces that condensed out of the Big Bang. Charge is the electro-magnetic force. It emerged as positive and negative monopoles.

Attraction is the force named mass in the Standard Model, and designated as m in Einstein's equation. Its function is gathering and binding kinetic energy.

The evolution of protons is not well defined. A logical pathway is that kinetic energy and the positive monopole emerged entwined as standing waves of energy bound in position by the monopole. The next step in evolving physical universe is complex because most quarks evolved in with fractional electric charge, up quarks with positive 2/3 and down quarks with minus 1/3. The positive charge is related to the positive monopole and the minus to the negative. The attraction force binds the standing waves into quarks. The evidence for this is that the quarks are endowed with the force before they are gathered into protons. Fractionally charged quarks gathers to form the integral, 2 up and 1 down, +1charge of the proton and 2 down and 1 up 0 net charge of the neutron, both retain the attractive force. The proton is stable, the neutron not, with a half-life of 15 minutes. The proton is now non-physical matter converting non-physical matter into physical matter must await interaction with c, space-time.

The negative monopole emerges with radiative energy, gathers it and binds it as electrons. This gaggle of bound photons takes up almost all space of the atomic nucleus when bound to the proton by the by the weak nuclear force, i.e. the magnetic attraction between the poles.

The electron and all leptons have no smaller divisions, such as quarks in the case of protons, and has a charge of -1. The electron arises in the physical universe because it occupies space and space does not exist outside the physical universe It operates as a force resisting compression of the physical universe, the stronger the compressive force the greater the resistance. Unlike the uniform negative radius square action of its counterpart, resistance to separation rule of the proton, the resistance to electron

compression is incremental that related to the energy status of the underlying electron, The resistance increases as the electron is gravitationally forced into a lower energy orbit, decreasing radius.. This action is exhibited in the physical universe when gravity of collapsing stars decreases the radius between protons below the Chandrasekhar limit. The protons sequester in situ resulting in dwarf stars, which liter the universe.

Gravity and Magnetism are forces of the physical universe. They do not exit outside the physical universe.

They are the physical manifestation of the metaphysical forces, Attraction (mass), and Charge, the electro-magnetic force. Gravity attracts matter, protons, if they are free to move they aggregate to the Chandrasekhar limit and then sequester to inactivity, i.e. dark energy/dark matter.

Magnetism begins as a counterforce to gravity. It ceases to exist when the weak nuclear force is overwhelmed, destroying the atom. It has no interaction even with non-physical matter, dark-matter dark-energy.

Energy and Magnetism do not exist at the accretion black hole, only charge and attraction appear there.

BUILDING THE UNIVERSE

There are 5 constituents of the universe. Two forces, “charge” of the electro-magnetic force which condenses from the plasma as monopoles; and “mass”, which has a tug or attraction function. Two forms of energy, “kinetic” and “radiative”. And the fifth constituent, space-time.

The force called “mass” which has a tug or gathering function, binds kinetic energy to form quarks, and endows them with its function, attraction. This forms the proton. It is matter but not yet physical matter. The interaction is the strong nuclear force.

The monopoles of the charge force interact with the energy fields, the positive to the proton. The negative binds radiative energy to produce the electron. The electron operates in a fashion opposite to the proton. Its function is expansive or more specifically resistance to contraction. The level of resistance is tied to the energy level of the electron orbitals, the more they are forced to contract the stronger the resistance.

The proton is bound to the electron by the attractive force of the monopoles. This is the weak nuclear force.

The protons resist separation, the closer the distance between the protons the stronger the attraction. In the physical universe this is the basis of gravity. The proton is also subject to the Chandrasekhar rule. When the gravity in a star reduces the distance between protons the protons sequester, losing all function except their attraction. This is the genesis of the dwarf star.

The electron resists constriction in the same manner the more it forced inward the greater the resistance. The electron may have a stepwise resistance form because it operates under the Pauli Exclusion Principle. In the physical world this resistance to crushing, affects magnetism, the greater the constriction, the more intense the magnetism. This electron resistance is the force that maintains the shape of your coffee cup when you squeeze it.

At a single point in the expansion of The Big Bang, c^2 (space time), interacted with e/m, (energy/mass) which resulted $e/m=c^2$, the operating formula for the physical universe. That resulted in these important consequences:

1. It established a physical universe; space provided a form and area for physical particles.
2. It rendered the universe finite, within the Big Bang structure.
3. It stabilized time, a clock for that point of evolution.
4. It established cosmological parameters for the physical parameters for the physical universe including the rate of information transfer and Planck's constant.
5. It allowed physical forces to manifest, such as gravity and magnetism, which do not occur outside the physical universe. It allowed the environment and the time to build the complex elements, compounds and chemicals that make up our universe

NON-PHYSICAL MATTER: PROTONS AND NEUTRONS

Nonphysical matter has absolutely nothing whatsoever to do with particles. It is free of particles. It is something. There are two kinds of nonphysical matter in the universe. The first and most common one that people think of is the proton. The proton is a cementing of quarks which have been derived of standing waves of energy. Fractional charges have been assigned to the standing waves and then standing waves auto-assemble into unit forces. The unit forces are quarks. The proton is two fractional up quarks and one fractional down quark, which add up to a positive one force. The neutron force which is two down quarks and one up quark, auto-agglutinates into the unit force "neutral". These quarks are formed and the force "attraction" binds them into place as protons and neutrons.

The proton and neutron are matter. They are nonphysical matter which means that they are not particulate. The proton was the first energy to be derived from cooling of the plasma of the big bang singularity. It was produced in enormous numbers to the extent that in today's universe the bound energy of the protons is the largest store of energy that exists in the universe. We know what it is and where it is because of systems we have for tracking it. The protons as they emerge were subject to a force called Chandrasekhar limit which says that if the radii between protons is less than a certain distance then the protons are sequestered. I don't know exactly what sequestered means but what it actually turns out to be is that they are arrested in place and for one reason or another, their self-agglutination ability has been neutralized. In other words they don't self-agglutinate anymore. If they did they would form into proton stars and grow in intensity exponentially.

The distribution of the protons is universal. They were sequestered in place which meant they were absolutely everywhere. They have the same distribution as the CMB (Cosmic microwave background radiation). The physical universe is adrift in a sea of sequestered protons. Sequestered protons are what we describe as dark matter.

At the other end of the spectrum the neutron is bound by the same force that bound the proton. The primary difference between the two is that the proton is stable, especially when sequestered by the Chandrasekhar limit. The neutron is not bound and therefore is subject to unlimited accumulation. The primary problem is the neutron is not stable; it is subject to half-life degradation through the beta process. If degradation had occurred, there would have been some sign of it in the universe because that amount of energy could not simply disappear. This means that something interfered with the decay of the neutron. The fate of that enormous amount of energy has not been adequately explained. It is clear that its destruction has been avoided. Something prevented the destruction of the neutron bound energy.

The earliest work on a possible explanation was in the mid-2000s where someone suggested that the neutron star was a crystalline object. It is clear that something protected the neutron from being degraded. *Scientific American* magazine in their Nov 2019 issue, published an article about the broken symmetry of time which could provide a harmonic lattice structure that could accommodate non-physical matter. It appears that a crystalline structure of the neutron was the condition that protected the neutron energy from being released.

The symmetry of space provided a form and location for neutron matter. The broken symmetry of time provided a harmonic arrangement to stabilize the neutron structure. The mutual attraction of neutrons resulted in the neutron star. When the star reaches a critical density-intensity, its internal charge and attraction forces overwhelm the strong nuclear force and releases the bound energy. The neutron star is only detectable through the release of its bound energy as the quasar.

Space provided a template for matter, both proton and neutron to exist, but that does not provide the protection against the destruction of the neutron star by beta decay. The harmonic structure of neutrons in a time crystal would provide precisely the protection needed for its preservation. The neutron did not lose its individual aggregation

tendencies. The closer the neutrons were together the greater the tendency to aggregate. The nature of the neutron is that they are not particles therefore their density-intensity has no limit so that they can accumulate until the intensity of the constituent forces overwhelms the strong nuclear force, leading to the release of the neutron bound energy. There have been hints for some time that the neutron star was actually a crystalline form of neutrons. This explanation ties several threads together, number one being that there was the existence of neutron stars very early in the development of the universe, at the time of, or even perhaps before the development of particulate matter or the physical universe. The aggregation of the neutrons into stellar sized objects would continue into an aggregation of crystalline form that could become large neutron stars.

The force that breaks down the strong nuclear force is a combination of the two primary forces of the universe. One is the charge force, which provides angular momentum, electrical force and monopole attraction. The second is the force, attraction.

The vehicle of the combined primordial forces must be dimensionless in order to achieve the intensity which is required to overwhelm the strong nuclear force that binds the energy to form matter.

Shortly after the protons were formed they were sequestered by the Chandrasekhar limit, and that rendered them in such a state that they no longer had a close inter attraction which limited their ability to build up their numbers locally. They were distributed uniformly through the universe. The process of this reduction of their intimate accumulation is not known to me. The simplest explanation is the expansion of the universe was rapid enough that the nuclei separated far enough so that they no longer auto-accumulated. That is not a very satisfactory solution. It would seem more likely that some process of the sequestration itself removed this ability to self-accumulate.

The neutron on the other hand had no such limitation. As soon as they were stabilized they began to accumulate to the point that they ultimately became crystalline stars with the expected intensity of point source density.

The physical proton, the atom, cannot directly go to a proton star because the dimensions of the atom, which includes the proton, are too large and the protons too far apart to allow the density-intensity needed to reach a level for the rupture of the strong nuclear force.

The proton is protected by the space limitations of the atom. In order for a physical proton to reach the intensities of attraction and charge to break the strong nuclear force, it must go through sequestration. That happens when the gravitational forces of collapsing stars squeeze the atom to the point of the Chandrasekhar limit and forces the proton into a sequestered state. The electrons in that case boil off. So you have, at some points, dark matter stars, which are sequestered protons. In extremely large stars the protons of the matter are rendered sequestered and since they are now non-point concentrations of protons they ultimately compress to the point that the intensity of the combined primal forces overwhelms the strong nuclear force, resulting in the nova

energy release. When the intensity of the primal forces overwhelms the strong nuclear force, the proton bound energy is released.

The neutron is self-accumulating due to the nature of its relationship with the attractive force, “attraction”, and grows to the size of neutron stars. The breakdown force of the strong nuclear force is combined accumulation of “attraction” and “charge”, the two basic forces of the universe. In the non-physical world the intensity of the strength of the combined forces accumulates without dimension, therefore can be considered a point accumulation. The point accumulation of the combined nuclear forces can overwhelm the binding of the strong nuclear force. When that occurs the bound energy of the proton or neutron is released in a catastrophic form. The method of buildup of the intensity of the crystalline neutron star provides protection against the breakdown of the neutron. Ultimately the concentration of the primal forces overwhelm the strong nuclear forces and releases bound energy. This occurs in the neutron star in an ablative way. The visualization of the release of bound neutron energy is the quasar. It is accompanied of course by a black hole into which the charge and attraction disappear carrying with it the full measure of the energy that previously was contained in the neutron star.

The combining of the proton and the electron by the attraction of the monopoles started the physical universe. The neutrons of the physical universe are already time stabilized as crystals and the Coulomb force of crystallization binds into the physical protons of elements. It happened at the same instant that time stopped its evolution, just as $E=MC^2$ stabilized the evolution of time and space. Also accompanying this change was the fact that the physical universe represented what became finite. The information transfer system stabilized at the speed of light and the clock was established at a uniform interval.

Magnetism and gravity both require the intact weak nuclear force, the attractive force between the monopoles, to provide the substrate for their functions. Gravity only occurs in circumstances where the proton/electron form is active. It is the weak nuclear force. Therefore there is no gravity or magnetism anywhere in the nonphysical universe. The attraction of the black hole is strictly the non-physical entity “attraction” which measures exactly the amount of non-physical matter that enters the black hole.

The combination of the proton/electron bond keeps the protons separate beyond the influence of the Chandrasekhar limit. In the process of stars burning nuclear fuel and contracting, stars of a certain size, when they collapse, squeeze the proton/electron form below the Chandrasekhar limit and the protons immediately sequester to the dark matter form. The electrons are released. Now we have a star-sized form of dark matter. It is sequestered in place so there are star sized clumps of dark matter scattered throughout the galaxies. The dark matter is subject to the universal attractive function of the force “attraction”. It can be swept clear of its location in the galaxy by a nearby black hole.

Summary:

I have described three routes for the release of strong nuclear force bound energy at the black hole.

The first route is the proton route which is through dark matter and its accumulation to its final rupture by the intensity of the combined charge and attraction forces at the accretion disk.

The second route is the neutron star which is a more direct path and occurs earlier in the universe evolution. The direct accumulation of time crystalized neutrons finally reached a point where the intensity of the combined charge and attraction forces rupture the strong nuclear bond between quarks and energy, releasing the energy in the quasar.

The third route is the physical form of matter. It must first undergo the destruction of the weak nuclear force which renders the protons as dark matter. The density of the dark matter intensifies to a point that its primal forces overwhelm the strong nuclear force and the energy is released as the nova, a confirmation of the process.

These three different approaches to the black hole should have different energy release signatures. The accretion disk should have an enhanced ratio of up quarks. The quasar black hole should have an enhanced amount of down quark substrates. The big bang release of energy should be a fairly well balanced release of proton and neutron derived energy. Therefore there should be a detectible difference in the release energy patterns.

Notes:

One of the most difficult problems of cosmology is to come to some understanding of infinity and its relationship among and between the forces of the universe. Fortunately there is, in the human mind, a separation of mental processes into a nonlinear mind and a linear mind. A linear mind is the one you think with and a nonlinear mind is the one that runs your body. In understanding what a nonlinear mind is and cultivating it one can deduce at least some inferences of what the infinities of the universe are. This inner mind is probably the strongest correlation engine in the existence of our universe. It works on the basis that if you learn everything you can about with the question you are concerned with and then simply leave it to the inner mind, the inner mind will work out the correlations. I find this most helpful in trying to understand what nonphysical matter is.

PROTONS AND BLACK HOLES

The most probable explanation for the sequestration of Proton matter in the early universe is that the positively charged proton matter is electrically neutralized by an emerging negative monopole. Electromagnet force existed as monopoles of positive and negative charge for a brief period during pre-physical evolution of the universe.

These monopoles bestowed positive charge to emerging proton matter and negative charge to the emerging radiant energy-endowed electron. The monopoles also provide the negative monopole to neutralize the proton which protected proton matter from aggregation, assuring its universal distribution as dark matter. It is the negative monopole that binds radiative energy to form the electron, a partner to the one that gives the proton its positive charge.

In the physical universe the polar bond between the proton and the electron forms the physical atom. This polar bond, the weak nuclear force, is a required substrate for "ALL" gravity and magnetism. If there is no physical bond, gravity and magnetism have no force to interact with and therefore they cannot exist outside the physical universe.