

Living Universe Physical Principles versus Big Bang Metaphysical Assumptions

All Big Bang theories begin with the metaphysical assumption for the eternal constant of 1/1836 for the electron/proton mass ratio. From this they conclude that the universe's matter and energy exploded from some imagined point-like location called a singularity. Then, as the singularity expanded and "cooled" to a point where the temperature was just right, a number of protons appeared from the cooling residue of the singularity's photons. Then, after an even longer period of time, an equal number of electrons spontaneously appeared within an expanding spacetime and the singularity was gone. From this time on, no electrons or protons could be spontaneously created from photons without their antiparticles and no protons or electrons could annihilate into photons without their antiparticles.

Let there be Atoms

The first known invention of an instant creation process occurred when the author of Genesis wrote "Let there be Photons". This simple statement is still the basic assumption for the Big Bang's singularity. The problem with this assumption is that it is upside down. The first law for the creation of photons is *Let there be Atoms*. Photons are secondary to atoms. Atoms emit and absorb photons. Photons do not emit and absorb atoms and by themselves, neither electrons nor protons can absorb or emit photons.

The idea of the singularity is upside down and backwards because it tries to make atoms out of photons instead of the making photons from atoms. If we begin the Living Universe with atoms instead of photons, we can arrive at today's universe without making any other metaphysical assumptions or violating the accelerometer measurements of mass, space, time, and gravity.

The really weird rule followed by theoretical cosmologists is that they are totally free to construct any number complicated and convoluted theories to explain a process by which vast amounts of pure photon energy could have appeared from nowhere at the beginning of the universe and then gradually transformed into the atoms and photons of today. By contrast, it is strictly taboo for cosmologists to propose that only atoms appeared from the singularity and that the only photons back then were those emitted by atoms. This is an electrodynamic law that all theoretical physicists fail to heed. Any experimental physicist will tell you that it is very easy to get photons from atoms but nearly impossible to get atoms of matter from photons.

It wasn't until well into the 20th century that George Lamaitre, a Jesuit priest began to apply scientific principles to the idea that the universe had a sudden beginning that was created by God. His ideas were essentially correct as he tried to create the universe from a single giant atom that somehow split apart into the atoms of today. George had the Living Universe basically figured out but since he didn't know about gamma photons, neutrons, antimatter, Hubble red shifts, Dark Energy or the 2.7°K Cosmic Blackbody Radiation, he was unable to fill in many of the details.

However, his followers soon took his ideas of creation and turned them around into an expanding universe model that began with the arbitrary idea of a Big Bang singularity that created atoms from photons. This was followed by a long list of metaphysical assumptions describing parameters and principles that painted a somewhat coherent picture of a creation of atoms, stars and galaxies. What came to be called the standard model Big Bang theory contained many contradictions and violations of the physical laws of nature but these were explained away with such ideas as complementarity and relativity. The standard model of the Big Bang combines astronomical measurements with a large number of theories and contradictory assumptions about the existence of unmeasured parameters and imagined ancient laws of physics that are no longer in effect today. All of the Big Bang theory's structural problems stem from its assumptions of a constant and eternal electron mass and the idea that atoms can be constructed from photons.

According to some quantum mechanical Big Bang inventions, 2.7°K is regarded as a random temperature point in the cooling process of the CBR that began long ago in a much hotter and denser universe. In the circlon model of atomic structure, 2.7°K is the only possible temperature for the predicted homogeneous event that transformed a universe full of neutrons into atoms.

There are many ways that Big Bang theorists violate the laws of experimental physics by proposing natural phenomena that cannot be measured or even detected. Of these, there are three in particular that have never been satisfactorily resolved.

The creation of matter without antimatter. No experimental physicist has ever been able to create matter without also creating antimatter. Why do we not detect any left over antimatter anywhere in the cosmos from the initial creation of our protons and electrons?

The answer is that what is called "matter and antimatter" is really positive magnetic matter (protons and positrons) and the negative electric matter (electrons and antiprotons). Both are still with us in the Living-Universe today in equal numbers of particles. Today's electron was once the antimatter pair to today's proton.

The cooling of the CBR without any transfer of energy to the rest of the universe. How is it possible for the universe to cool if energy from the CBR photons is not transferred to the rest of the matter in the universe? Where does this energy go? The conservation of energy does not allow heat to disappear. The CBR could not cool without heating up something else. Big Bang people claim the CBR photons originally had 1000 times more energy and momentum than they have today. Where did all of this non-conserved energy and momentum disappear to?

The answer is that the CBR had a temperature of 2.7°K when it was formed and it still has the same temperature today.

Resolving the paradox between the Doppler and non-Doppler shifts of the Hubble galaxy photons and the Cosmic Blackbody Radiation. When we look at photons in the universe, they comprise two distinct groups. More than 99% make up the CBR and the other 1% are the photons produced by the atoms, stars, and galaxies. The first group is

blackbody photons with a single temperature of 2.7°K and the second group consists of spectral photons from atoms at all possible temperatures. Both the CBR photons and the highest red shift Hubble photons from the edges of the universe are assumed to have been emitted from the same atoms during the first billion years of cosmic history. The Big Bang assumes that most of these photons from both groups were emitted from the same atoms that had a temperature of around 3000°K.

One of the great paradoxes in Big Bang theory is how the Hubble group of photons acquired only modest red Doppler shifts of less than $Z = 10$, while the CBR photons acquired enormous red shifts of $Z = 1000$. According to theory, both groups were emitted from the same atoms and traveled a similar distance through the same space during nearly the same time period of about 14 billion years.

The solution to this paradox is that neither group of photons is Doppler shifted and both received their “shifts” from the evolving mass of the electron. The CBR photons were emitted from a time much further in the past than were the Hubble photons from distant galaxies.

The Electrodynamics of Absolute Circlon Synchronicity

The main feature of circlon electrodynamics calculations is that Planck’s constant $h = m\lambda c$ is not a single metaphysical constant but a combination of the two physical constants of photon masslength $Y = m\lambda$ and the speed of light $h = Yc = m\lambda c$. This eliminates the need for the massless photon as well as the transformation between mass and energy as in $e = mc^2$. The correct form of this photon equation is $cC = e/m$. The photon’s equal linear and rotational kinetic energies are $e = mc^2/2 + mC^2/2 = mC$. Mass is the absolute and constant measured component of energy $e = mv^2/2$, momentum $p = mv$ and angular momentum $I\omega = mvr$.

The energy of the photon. $e = hf = m\lambda cC/\lambda = mC = mc^2/2 + mC^2/2 = E$

The angular momentum of the photon. $I\omega = h/2\pi = m\lambda c/2\pi$

Today, when the Bohr radius is $a_0 = 5.2 \times 10^{-11}m$ and the fine structure constant is $\alpha = .007$, the electrodynamics of the Hydrogen atom produces its intrinsic Lyman spectral photon $_{Ly}\lambda_\infty = 4\pi a_0/\alpha$ at a wavelength of $9.11 \times 10^{-8}m$. This is the shortest possible wavelength in the hydrogen spectrum and when it is emitted, it leaves the Hydrogen atom at its ground state.

The angular momentum of the ground state Hydrogen atom is. $I\omega = m_e a_0 \alpha C = 1.06 \times 10^{-34}$ This constant for angular momentum is the same for all photons $I\omega = m\lambda C/2\pi = 1.06 \times 10^{-34}$. This value is a universal constant because it is not changed by the evolution of electron mass. As electron mass decreases, the fine structure constant α increases and the Bohr radius a_0 decreases to maintain a constant value for this so called “quantum” of angular momentum. This is the angular momentum at an atom’s Bohr radius as well as the angular momentum of all photons. An atom, must have at least this quantity of angular momentum $I\omega = h/2\pi = M_e a_0 \alpha C$ between its proton and electron in order to emit a photon. The wavelengths of spectral photons are transformed as decreasing electron mass causes changes in the fine structure constant and the Bohr

radius. These changes are required by the conservation of angular momentum.

These electrodynamics explain the value of the Hubble shift and are also able to calculate both the 2.7°K temperature as well as the precise timing of the of the initial burst of 2.7°K cosmic blackbody photons. As electron mass decreases, it increases the fine structure of a decreasing the Bohr radius. This, in turn, decreases the wavelengths of spectral photons. Decreases in an electron's mass within the structure of a neutron decreases the neutron's stability and increases its decay energy.

Big Bang Physics without the Metaphysical Assumptions

This "theory of creation" is not based on either inductive or deductive reasoning because it is not a theory. It is a series of conclusions made from measurements that are fitted together into a theory-like structure for the evolution of the electron within an imaginary Living Universe.

This is not meant to be a new theory of matter, energy, or even cosmology because no initial metaphysical assumptions of a theory are made prior to the conclusions of experimental measurements. It is just a new way of looking at Big Bang physics that is upside down, inside out, and backwards from the standard model theories based on the eternal value of the electron's 1/1836 mass ratio.

The value of 1/1836 can represent an interval of cosmic time on an electron evolution clock. $T_{EE} = 1/1836$ is the time interval that we are living through today. The next interval of Electron Evolution Time $T_{EE} = 1/1837$ will be in our future when the electron/proton mass ratio has increased to that amount. Both campfires and the sun will have become slightly hotter as well as the neutron becoming slightly less stable.

In our journey back into the far reaches of a Living Universe, we begin at this future interval of time and then stop briefly in the present at $T_{EE} = 1/1836$. We then continue our journey into the past with stops at $T_{EE} = 1/1800$, $T_{EE} = 1/900$, $T_{EE} = 1/146$, $T_{EE} = 1/147$, and finally at $T_{EE} = 1-/1$. From there, we go backwards in Electron Evolution Time from $T_{EE} = 1+/1$ to $T_{EE} = 147/1$, and finally to the beginning of the Living Universe at $T_{EE} = 1836/1$.

A Beginning for Time $T_{EE} = 1836/1$

At this arbitrary point of beginning, today's negative electron and positive proton have been transformed by the reverse evolution of negative matter into a negative antiproton and positive positron with an antiproton/positron mass ratio of 1836/1. This point of beginning was when positron and antiproton coupled together into an Anti-Hydrogen atom and emitted the photons necessary to reach its ground state.

$T_{EE} = 1836/1$ is not meant to be a beginning of cosmological time. It is simply the most logical and symmetrical point in time to start a complete evolutionary story of a Living Universe from beginning to end. It begins a detailed description of the existence and evolution of the atoms of matter and photons. In this initial condition of the anti-universe, at least one anti-Hydrogen atom existed with an antiproton/positron ratio of 1836/1. As we now go forward in time, the anti-atom sits at rest and is otherwise dormant except for the decreasing mass of antiproton evolution. When the antiproton/positron mass ratio reaches $T_{EE} = 146/1$, the tertiary coil of the antineutron's circlon shape becomes larger than the secondary coils of the positron's circlon shape.

When this happens, the positron spontaneously collapses and becomes locked inside the structure of the antiproton. This process is called “positron capture” and forms a stable antineutron.

The evolution of the Living Universe begins with a single assumption that can be called a metaphysical assumption because it is open ended to time. This initial assumption is that the positive matter protons and the negative matter electrons are eternal and have always existed in equal numbers within the void of space. Their motions and interactions are measured to be in compliance with the standard Newtonian laws of physics. A conclusion of measurement made from this assumption is that the electrons (negative matter) has been slowly evolving in a synchronous process that decreases their mass and increases their size (wavelength).

It is concluded that a Living Universe could begin with a single anti-Hydrogen atom that existed at its beginning. The only other assumption that need be made is that this original anti-atom contained all of the mass and energy in today’s universe. We do not need to explain or even question the existence of the original positron and antiproton at the beginning. They were made of the same quantity of negative electric matter and positive magnetic matter that still exists in the Living Universe today. We do not need to assume the existence of electric and magnetic matter back at this arbitrary beginning any more than we need to assume their measured existence today. Once we conclude that matter has always existed, we can explain the history and structure of our world without any new laws, assumptions or parameters being added to the well established laws of experimental physics.

Points in Space and Time

Philosophically, the idea of a beginning of time is kind of an oxymoron. Time is experienced through the thought process and while thoughts have beginnings and ends, a beginning or end to time cannot be imagined. The same is true for the ideas of the point and infinity. We cannot logically begin the universe at either a point in space or a point in time. Points in space and a beginning of time are even more difficult to imagine than infinity. At least you can look far into the heavens with a telescope and imagine you can see infinity. However, a point cannot be seen or even imagined with even the most powerful of microscopes. From this, we can only conclude that the universe could not begin as photons and particles appearing with a “bang” from points within a spacetime aether that suddenly appeared from another point. The Living Universe always contained individual circlon shaped particles of electric and magnetic matter moving within a featureless void.

To discover the true nature of what was happening to electrons and protons during their reproduction, we must begin by studying what is happening in the interaction of matter today and then work our way back into the past toward this event. In this way, we can examine the forensic measurements of matter’s evolution in terms of physical laws rather than make metaphysical assumptions about imagined and unmeasured initial conditions for the beginning of the universe. The only evidence presented here is the measurable dynamics of matter and photons. From these first principles of measurement, we can trace the evolution of matter back to its existence long before the so called Big Bang singularity.

The first clue in our quest for the evolution of matter is the discovery that the mass of the electron is slowly decreasing while its size has been increasing by a proportionate rate. This decrease has been detected in a general way by measurements of electron and proton mass going back to their discoveries at the turn of the 20th Century. This is an experimental measurement that we can make here on Earth. I have no doubt that if we develop the technology to make extremely precise measurements of proton mass, electron mass, the Bohr radius, and the fine structure “constant”, it will not be too many years before we will be able to detect and then measure the rate of electron evolution in the laboratory.

When we look away from Earth and point our telescopes deep into the universe, the Hubble red shift becomes the first independent confirmation of this discovery. It shows us that spectral photons emitted by atoms today have much shorter wavelengths than photons emitted in the distant past.

We must not make any assumptions or theories about the cause of the Hubble shift and instead accept these measurements at face value. What these shifted photons obviously tell us is that atoms in long ago galaxies emitted spectral photons with less momentum and longer wavelength than they do today. This is what we measure, but not what Big Bang cosmologists want to believe.

These theorists believe these large red shifts are Doppler shifts caused by distant galaxies rushing into the void at speeds approaching the speed of light. However, to propose such an idea without any collaborating evidence seems quite preposterous. When cosmologists hear hoof beats in the distance, they will immediately insist that it has to be unicorns. The theorist has the choice between trying to account for the tremendous energies of an exploding universe or just calculating the changes in energy produced by evolving electron mass. The experimental physicist must make conclusions from what can be measured while the theoretical physicist is free to imagine that which cannot be measured.

Without making an initial assumption of eternal electron mass, there is no logical reason to conclude that the Hubble shifts are Doppler shifts caused by the rapid motion of distant galaxies. They are simply the electrodynamic effects of expanding electrons and not the Doppler shifts of an expanding universe.

Measurements conclude that in the past, atoms emitted photons with longer wavelengths than they do today. The Hubble shift does not require any special explanation because such a shift is required by electron mass transformation. The reason for the cosmological red shift is that as the electron’s mass decreases, the electrostatics of atoms require them to radiate photons with shorter and shorter wavelengths.

The Hubble shift and the circlon shapes of electrons, protons, and neutrons are all we need to trace the evolution of matter and energy back to its earliest beginnings without inventing metaphysical assumptions or theories that are not supported by today’s measurements of quantum mechanics or electrostatics. Matter’s cosmic evolution is driven by decreasing electron mass M_E that in turn decreases the Bohr radius a_0 with an accompanying increase in the fine structure constant α . These three values change in a complementary way in order to maintain the universal value of the atomic angular momentum constant ($I\omega = h/2\pi = M_E a_0 \alpha C$).

The Beginning of the Living Universe $T_{EE} = 1836/1$

The Living Universe began with two fully formed conscious deities. The antiproton and positron had existed forever separately and have just joined together to form a single atom of anti-Hydrogen. We could go further back in time but this single anti-atom can tell us everything that we need to know about the evolution of the Living Universe.

The antiproton/positron mass ratio was 1836/1 and they were identical in structure to the anti-Hydrogen atoms made in the laboratory today except that they contained the entire mass/energy of the universe. (Mass = 10^{80} protons, $M_p = 1.76 \times 10^{-27} \text{ kg} = 10^{53} \text{ kg}$ total. Energy of the universe $e = mc^2 = 10^{53} \times 10^{17} = 10^{70}$ Joules).

The positron was coupled to the antiproton as they quietly sat alone at the anti-atom's ground state. They occupied the zero momentum position within the void of space that we can easily imagine to be its center. All atoms are at rest within this frame and have no momentum and all photons move at the speed of light relative to this zero momentum rest frame and no photons are Doppler shifted in this frame. The only change that they experienced with the passage of time was that the negative electric matter of the antiproton was slowly decreasing in mass and increasing in size just as the negative matter of the electron has been observed doing during the recent history the Living Universe.

Positron Capture $T_{EE} = 147/1$

As long periods of time passed, the mass of the antiproton decreased and the anti-Hydrogen atom grew larger and less energetic. Eventually, when the antiproton/positron mass ratio dropped to 147/1 and the positron's tertiary coil radius decreased to a $\sqrt{\alpha} = 1$ the Anti-hydrogen atom collapsed into an antineutron that was still sitting at rest but spinning with rotational kinetic energy.

As we go forward in time, the mass-to-size ratio between the particles within the antineutron grew closer and closer together. The antiproton continued to decrease in mass while increasing in size. Eventually, the point in electron evolution was reached where the mass and size of the antiproton became very close to the mass and size of the positron. The effect of this was to conceptually transform the antiproton into an electron.

This electron and positron matter/antiparticle pair within the stable antineutron suddenly became unstable and decayed into a pair of antineutrons. This is an annihilation/creation cycle in which the positron and electron annihilate into a pair of photons that immediately create a neutron/antineutron pair. These two new particles are also unstable but because the mass and size of the electron and positron are not synchronous they have very long lifetimes. The four neutrons created when the first two decay have shorter lifetimes because the electrons and positrons are closer to synchronicity in mass and size.

During the first few neutron bifurcations, it may have taken millions of years between cycles. Then as the particles grew closer and closer to mass/size synchronicity the neutrons became less stable and the intervals between bifurcation became shorter. When synchronicity was reached and then passed, the positron became more massive than the electron and became, in effect, a proton. As synchronicity was slowly lost, the

time intervals between neutron bifurcations became longer and longer. Eventually the neutrons became stable and the bifurcation cycles stopped. After 256 cycles, the universe was filled with clouds of 2^{256} stable neutrons.

As a part of each bifurcation cycle, the new neutrons were thrown apart at high velocity and then traveled great distances for long periods of time before the next bifurcation.

The new neutrons of each bifurcation cycle moved apart on vectors that were perpendicular to their parent's vectors. Then after moving for a long time along one of three perpendicular vectors each neutron again bifurcated in synchronicity with its neutron parents. As these primordial neutrons continued to slowly bifurcate and move apart at high velocities, they formed a basically symmetrical cloud that was rapidly expanding into the void of space. The number of stable neutrons in the universe increased by a power of two with each bifurcation cycle, $2, 2^2, 2^3, 2^4, 2^5, 2^6, 2^7$, etc.

Because of the long periods of time between the individual serial neutron bifurcations, it may have taken billions of years for this process to reach about 256 cycles. At this point in time, the Living Universe contained at least 2^{256} stable neutrons. This is just slightly less than Eddington's venerable estimate of 10^{80} protons for the mass of the universe. My only reason for choosing this particular power of two lies in its great symmetry.

$$2^{256} = 2 \times 2^{2 \times 2^2}$$

This process was the antithesis of a chain reaction and was finally halted when the mass of the electron decreased to the point where it had less mass than the positron and they could no longer annihilate as a matter/antimatter pair. The conceptual effect of this is that the primordial positrons became the protons of today. In this last cycle of bifurcation, each proton/electron pair within the bifurcated neutrons became locked together into a stable neutron. It can be pointed out that at the moment before the positrons were conceptually transformed into protons, the Living Universe contained exactly equal quantities of matter and antimatter. The negative electron is the primordial antiparticle to the positive proton.

In the standard model Big Bang theories, neutrons and antineutrons play little or no part in their stories about the creation of matter. In experimental nuclear physics, the only process that can produce both protons and electrons is the decay of neutrons. The Big Bang's creation model of matter without antimatter has no experimental verifications. It is claimed that, since there is no antimatter in the universe today, it is virtual proof that matter was created without antimatter. No Big Bang enthusiasts have ever offered a credible reason as to why their Big Bang universe contains no antimatter.

Inflation of the Neutron Cloud $T_{EE} = 1/1$ to $T_{EE} = 1/147$

After the last neutron bifurcation, another very long interval in the Living Universe's evolution occurred in which the great square homogeneous cloud of perhaps 2^{256} stable neutrons continued to spread out in all directions within the void of space. Once formed, the total density of the cloud slowly decreased as the rapidly moving

neutrons spread out into the void. During this long period of neutron stability, the cloud was eventually inflated to the size and location of today's Living Universe.

These neutrons were far apart and rarely collided with one another, but when they did, it reduced the cloud's homogeneity by creating locations with greater and lesser neutron densities. The areas with greater densities had greater numbers of collisions and this increased the density of these regions even further. Over time, this process segmented the cloud into many local areas of higher neutron density. This segmentation process occurred on many different levels of scale, meaning that many small high density clouds clustered together and formed much larger clouds. During this time, the original homogeneous cloud of neutrons had become divided into areas of increased density that was the very beginning of the concentrations that would eventually become today's stars and galaxies.

During the millions of years that the cloud of neutrons was expanding into the void, the mass of the electron continued to slowly decrease. After the neutrons had been formed, the electron/proton mass ratio was just slightly greater than unity $1/1+$. When the electron/proton mass ratio finally reached $1/147$, the secondary coils of the electron's circlon shape had grown slightly larger than the proton's tertiary coil. Prior to this, the electron and proton were coupled together in a stable neutron with the electron's structure locked firmly inside of the proton. As soon as the electron's primary coils became too large to fit inside of the proton's secondary coils, the neutron became unstable and the electron popped out from inside the proton.

After $T_{EE} = 1/147$, the electron could attach to the outside of the proton to form an atom, but it could no longer attach to the inside to form a neutron without the addition of coupling energy. After this point in time, neutrons all become unstable and decayed into electron and protons. Since then, free neutrons have gone from a virtually infinite lifetime to today's lifetime of about 19 minutes.

As the electron was slowly losing inertial mass within the stable neutron, the kinetic mass of the neutron's kinetic energy was increasing by an equal amount. In order to conserve angular momentum, the neutron's internal rotational kinetic energy increased as the rest mass of the electron decreased and its size increased. This slow process continued until almost one half of the universe's mass and energy was kinetic mass contained in the rotational kinetic energy of the rotating circlon-shaped neutron mass structures. All of this internal kinetic mass/energy made each stable neutron into a tiny but powerful atomic bomb.

Even though the primordial neutrons contained an enormous amount of energy, they remained completely stable as long as the electron's growing secondary coils were smaller than the proton's tertiary coil. This difference in size kept the electron's secondary coil structure locked within the larger tertiary coil structure of the proton. After their ratio reached $1/147$, they all decayed with an enormous amount of momentum. In nearly an instant, the Living Universe was transformed from vast clouds of frozen neutrons to a seething mass of high momentum electrons and protons.

The Great Neutron Decay $T_{EE} = 1/146$

After their long incubation process, the neutrons had accumulated tremendous amounts of kinetic energy from the decreasing mass of the electron. As the neutrons decayed, they were transformed into high energy electrons and protons moving in all

directions. These immediately began colliding with one another, emitting photons, forming atoms and converting back into nearly stable neutrons. In a mere instant in cosmological time, the universe was converted from great and small clouds of basically frozen neutrons into a seething mass of highly energetic electrons, protons, and neutrons.

Nuclear Synthesis $T_{EE} = 1/148$

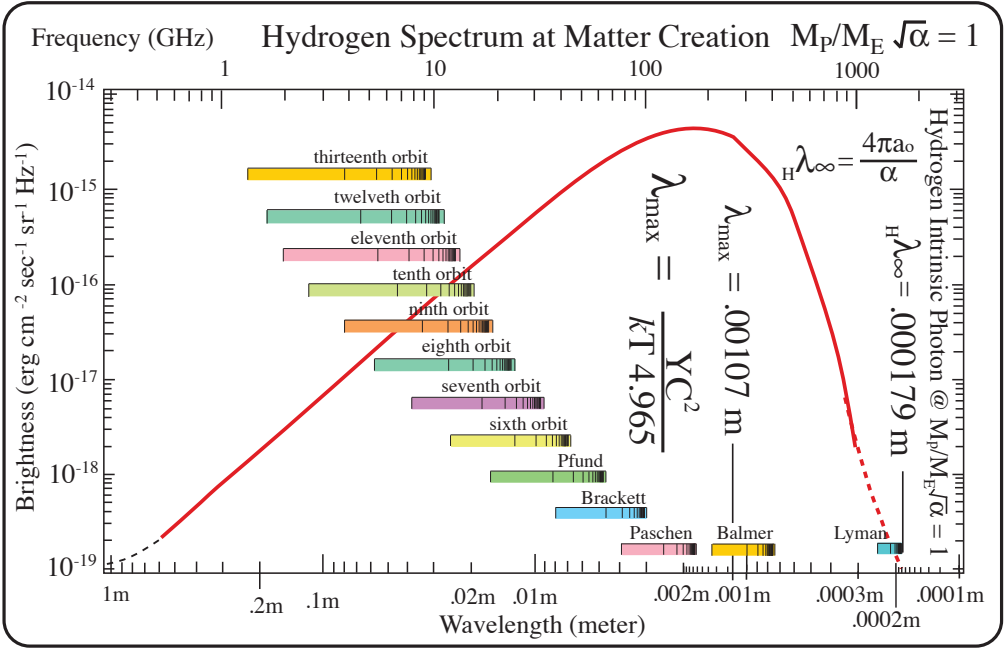
In this high-energy and neutron-rich environment, protons, electrons, and neutrons collided and joined together into atoms and the atomic nuclei of all the elements. By the time this great nuclear synthesis had ended, the universe was composed of mostly Hydrogen and Helium. The rest of the universe contained quantities of at least a few atoms of all the 2000 or so identified nuclear isotopes. The process finally stopped when virtually all of the universe's supply of protons, electrons and neutrons had been absorbed into the structures of about 2000 different chemical atoms.

When they were formed, all of the isotopes were virtually stable with a nuclear stability number of one $\#_{NS} = M_P/M_E \sqrt{\alpha} = 1$. Then, as electron evolution progressed and the neutron stability number $\#_{NS}$ increased to say 10 or 20, the neutron began to become more unstable. This caused the largest and least stable of the atomic nuclei to decay into lighter nuclei.

In the time that the nuclear stability number ($\#_{NS} = 1+$) advanced to today's value of ($\#_{NS} = 156$), the 2000 original isotopes had decayed into the 285 virtually stable isotopes that make up the periodic table. Currently, elements heavier than Hydrogen and Helium make up only about one percent of atomic nuclei. Today, most of a particular element's many nuclear isotopes are unstable, but at the time $T_{EE} = 1/148$ just after the great neutron decay, they were all at least virtually stable.

2.7°K Grand Fire $T_{EE} = 1/147$ to $T_{EE} = 1/1836$

As the process of rapid neutron decay continued, electrons began coupling to protons and other nuclei to form atoms and emit spectral photons. Both the kinetic energies of the electron's and proton's rapid motion and the ionization energy between electron and proton were slowly converted into spectral photons from all the elements. After this energy was dissipated into photons, the universe became filled with blackbody photons and the atoms settled down into their ground states and became relatively dormant. In this state, they possessed less than one unit of photon angular momentum and could no longer emit photons unless they absorbed a photon or gained angular momentum from colliding with other atoms. With an electron/proton mass ratio of 1/147, heated atoms produced spectral photons at a blackbody temperature of 2.7°K.



This grand fire of radiating atoms filled the universe with a great burst of photons that contained the ionization energy of all the elements as well as much of the enormous decay energy of the neutron clouds. This great release of photon energy can still be viewed in the universe today as the photons that make up the 2.7°K Cosmic Blackbody Radiation. These photons represented a tremendous amount of energy. Even today the CBR photons have about a thousand times as much energy as the photons produced by all the stars and galaxies since their formation.

Once the individual atoms had converted their ionization energy into spectral photons, this universal frozen fire eventually went out leaving the whole universe at a constant blackbody photon temperature of 2.7°K. The atoms continued to absorb and emit some these photons but that did not change the overall character and temperature of their blackbody radiation spectrum.

Formation of Galaxies $T_{EE} = 1/147$ to $1/918$

The extinguishing of the grand fire began another very long and cold, era in the history of the Living Universe when the gravitational expansion of mass, space, and time began to gather the atoms into individual clouds of gas and dust with greater and greater densities. These clouds slowly became segmented into still smaller and denser clouds that eventually collapsed into planets, stars, and galaxies. As these new stars formed, starlight began to light up the universe with spectral photons for the second time. This process of galaxy formation took many billions of years but may have been mostly completed by the time the electron/proton mass ratio reached 1/918 or about half what it is today.

Hubble Constant $T_{EE} = 1/918$

The galaxies with the greatest red shifts observable with the Hubble telescope at the visible edges of the universe are about $Z = 10$. We can conclude from this that the initial formation of stars and galaxies was largely completed by the time the electron/proton mass ratio was about 1/918. From this time in the star formation process to the present, the energies of spectral photons have increased by about a factor of 10.

Map of Cosmic Time and the Evolution of Matter							
$h/2\pi = M_E C \alpha a_0$	Electron Mass M_E	Bohr Radius a_0	Circlon Constant $\sqrt{\alpha}$	Neutron Structure Constant $Q = M_p/M_E \sqrt{\alpha}$	Fine Structure Constant α	Hydrogen's Intrinsic Wavelength $\lambda_i = \frac{4\pi a_0}{\alpha}$	Hubble Z Number $Z = 0$
	$1.14 \times 10^{-29} \text{kg}$	$5.292 \times 10^{-11} \text{m}$.0855	156.8	.0073		
Today's Electron Mass 1/1836		1.00	.0855	157	.0073	$\lambda = .0000000911 \text{m}$	$Z = 0$
1/1800		1.02	.0838	151	.007	1.06	$Z = .06$
1/1500		1.22	.0701	105	.0049	1.82	$Z = .82$
1/1200		1.53	.056	67	.00312	3.58	$Z = 2.85$
1/918		2.0	.0428	39	.001825	8	$Z = 7$
$E_M = 1/2$ proton mass							
1/146.5		12.53	.00682	1.0	.0000465	1967	$Z = 1966$
Neutrons decay, atoms form and the 2.7°K Cosmic Blackbody Radiation fills the universe						$\lambda = .000179 \text{m}$	
1/100		18.36	.000466	.4	.000022		
Only stable neutrons No atoms or photons							
1/1							
Electron and Proton are particle/antiparticle pair							

From this point on, the Living Universe is just what we observe it to be with our telescopes. The CBR still maintains its original temperature of 2.7°K and the total temperature of the universe produced by starlight is slowly increasing but still far below 1°K. The temperature from photons inside the Milky Way is about 3°K but out between the galaxies it is still much colder.

What we measure with our telescopes is the opposite of what cosmologists have long believed to be true. True believers in the Eternal Electron Mass Constant and the invention of the Big Bang singularity have long believed that entropy was negative and that the universe was constantly in the process of cooling down in process they call "heat death". However, with the principle of electron evolution both Dark Energy and the Hubble shift would show that total entropy is at least neutral and may even be positive. It is perhaps true that the increasing energy of spectral photons is generally equal to the energy lost from the emission of photons with longer and longer wavelengths. The Living Universe is cooling down from photon dissipation at the same time it is heating up from electron evolution.

Conservation of Momentum $T_{EE} = 1/1$

One of the great unsolved paradoxes of the Big Bang theory concerns the simple conservation of momentum. If all of the universe's protons and electrons were ejected from a singularity point at extremely high velocities, their momentum vectors would all point to the void from this single point. Since adjacent particles would be traveling on virtually parallel momentum vectors, they would have almost no relative momentum or virtual angular momentum to form atoms and emit photons. They would constantly be moving farther apart from one another and there would be little chance of any of them colliding or interacting on their long journeys to the edge of the universe from the same point. The physical mechanics of the Big Bang theory completely eliminates any physical mechanism that could gather together these speeding particles of matter into clouds, stars, galaxies, and eventually people. In Big Bang theory, all of its momentum and energy are used to send particles of matter speeding away in all directions from a single point.

In the Living-Universe, the great explosive decay of neutrons that created the electrons and protons occurred not at a single point, but within a great symmetrical square cloud of neutrons spread out within the whole universe. When they decayed, these neutrons were moving in many different directions and at many different velocities. The energy of these decaying neutrons put all of the electrons and protons on different high energy trajectories where they could crash into one another rather than all of them moving away from the point of a universal singularity .

When high speed electrons pass near or collide with protons and other atomic nuclei, they bounce off one another and emit photons in a process that slows down their motions. When they collide at lesser velocities, they emit photons as they couple together into radiating atoms.

As the number of atoms in a particular region of space grows, the number of collisions with fast moving particles increases and a dense cloud of atoms begins to form. With fast moving electrons and protons feeding these clouds from all directions, they increase in density and compress into galaxies, stars, planets and eventually people.

Dinosaur Era $T_{EE} = 1/1800$

The evolution of the electron is able to explain many of Earth's long held mysteries like the enormous size of dinosaur bones. The great paradox in the study of dinosaurs is that their physiology does not match their bodies. They are simply too big and heavy to be efficiently supported by their muscles and bones. Today, the largest dinosaurs would be able float and swim in water but they wouldn't be able to get out and walk or run. The largest of whales will suffocate from their great weight compressing their lungs if they are out of the water for any length of time.

In the Living Universe, the dinosaurs lived on a larger Earth with less gravity and were thus able to romp and play and chase each other around just as smaller animals do today.

At the time of the dinosaurs, the universe was much like it is today. The mechanics of the gravitational expansion of mass, space, and time had assembled the solar system and Earth was teeming with many different life forms. Compared to today's Earth, the main difference was that the electron back then was heavier and the Bohr radius was larger. With a larger Bohr radius, atoms would have lower electron/proton energy levels than the same atoms today. Because of this, the atoms, as well as Earth itself, were larger and had less density than they do today. The result of this larger and less dense Earth was a

substantially reduced acceleration of gravity at its surface.

If Earth's radius was twice what it is today, its density would be one/eighth and its surface gravity would be one/fourth (2.4 m/s^2) This is almost identical to the gravity of the Moon. Certainly, dinosaurs that are too heavy to be able to walk around on Earth would be able to get up and run on the Moon.

The Effects of a Shrinking Earth $T_{EE} = 1/1600$ to $T_{EE} = 1836$

It is now today in the Living Universe. The electron has lost more mass and Earth has shrunk to one/half of its Dinosaur Era radius. As the electron loses mass, atoms get smaller and emit more energetic photons. This causes the black body temperature of atoms on the sun to increase.

As Hydrogen atoms on the sun get smaller and hotter, the atoms of all the chemical elements also decrease in size and increase in spectral energy by a lesser amount. The larger an atom's mass and number of electrons, the less its size decreases in proportion to the hydrogen atom. Atoms at the heavy end of the periodic table shrink considerably less than the atoms at the light end of the table. When Earth was in a molten state, the heavy elements tended to sink toward the middle, while the lighter elements floated to the surface. Once Earth had cooled to a semi-solid state, cracks began to develop in its outer crust composed of mostly elements lighter than Iron. As the atom's of the lighter elements decreased in size faster than atoms heavier than Iron, the light surface of Earth shrunk faster than its heavy interior. This caused the rigid continents to crack and move apart as the electron mass evolved.

In the Living Universe, plate tectonics is a natural process of electron evolution and not a theory. The motion of Earth's continental plates is a conclusion of measurement and does not require the initial assumption of a theory.

The way this process works is that as electron mass decreases, the fine structure constant grows larger. This in makes the Bohr radius and thus the size of atoms grow smaller. It is concluded that the rate by which the physical size of a particular atom decreases is dependent on the number of its bound electrons.

This effect provides an easy answer to one of the most difficult of Earth's geological mysteries. Geologists have long tried to supply a mechanism to explain the apparent break up and spreading apart of Earth's continents. Plate tectonics is the latest idea to explain this phenomenon but it sometimes opens up more questions than can be answered. Even if all the evidence for continental drift could be explained by the movement of large plates in Earth's crust, there is still no underlying mechanism that can make the plates move in the first place.

There is a great deal of geological evidence to support the idea that Earth once had a single large unbroken continent called Pangea. Between then and now, Pangea broke apart into a number of continents and islands that drifted over much of the remaining globe. The experimental evidence for this event is excellent. There has long been examples that made Earth and other heavenly bodies to appear to be expanding with surfaces cracking and continents appearing to be moving apart. The problem is, no one has been able to come up with a physical system that can come close to making the whole process work.

In the Living Universe, the shrinking of the lighter atoms in Earth's crust at a faster rate than the heavy atoms in its interior causes the surface to crack apart as it contracts

faster than the heavier atoms in Earth's interior.

The Era of Zero Entropy $T_{EE} = 1/1$ to $T_{EE} = 1/1836$

Big Bang cosmologists have long adopted the eternal electron mass constant of $1/1836$ as the fundamental metaphysical assumption of nature and have concluded from it that the universe is in a constant process of cooling down from a much hotter initial state. Mainstream cosmological theories have always been built around verifying this assumption of constant electron mass. However, when we look for actual physical evidence to support the conclusion of a cooling universe, we can find very little if any. All experimental evidence would indicate that the Living Universe was very cold when its atoms were formed and it has been slowly heating up ever since.

With the electron's mass getting smaller and smaller, it is easy to see why the universe is getting hotter. The photon emission spectra for all the elements are gradually growing to greater energies and shorter wavelengths. It could be that this effect matches the "heat death" predicted for the universe by the second law of thermodynamics. If the assumption is made that these effects are equal, then it can be concluded that entropy in the Living Universe is zero. As the Living Universe cools from the dissipation of energy into longer and longer wavelength photons, it is also being warmed by the increasing energy and shortening wavelengths of atomic emissions.

The Chemical Era

As the mass/size ratio between the proton and electron grows, there are subtle changes in the chemical reactions that occur from protons and electrons coupling together. Because of a much larger Bohr Radius, chemical compounds in the distant past had somewhat different properties than they do today. Perhaps the chemicals that make up dinosaur bone were stronger then than they are now.

It is possible there was a point in cosmological chemistry about three billion years ago when the chemistry was just right for the spontaneous formation of DNA and other organic molecules. Since then, these molecules have reproduced, diversified, and joined together to preserve themselves. Perhaps, there was only a small window of time in electron evolution when the chemistry was just right for the spontaneous formation of DNA molecules. After that brief time in cosmic history, DNA molecules were able to reproduce but they can no longer be produced spontaneously. All life on Earth is directly connected to these original DNA molecules. As Timothy Leary said in a lecture I once attended, "We are all the result of an unbroken chain of life that is over three billion years old." There is no place along this chain where at least some portion of our present bodies was not part of a living organism. At least in principle, our bodies could still contain atoms from one of the original DNA molecules.

In the Living Universe, the evolution of life is driven by the changing parameters of cosmological chemistry. In the future, molecules that do not exist today may be possible. Certainly, the energy and intensity of chemical reactions will change as the mass of the electron evolves.

There is another factor that may very well have a significant effect on the evolution of life in both the past and in the future. This is the increasing instability of the neutron and its link to the decreasing stability of atomic nuclei. At one time in the distant past, common and widespread radioactive nuclei such as Thorium and Uranium may have been stable and this may also have been true of many other radioactive elements and isotopes. The end result of this evolving process is that today we have some of the 282 stable isotopes and a small number of radioactive isotopes with very long lifetimes. As the stability of the neutron decreases with electron evolution, the least stable of these 282 isotopes will become radioactive.

Knowledge of this effect will also change the way we measure things like the age of Earth. One way to determine the age of Earth is to study and quantify the rate that Thorium and Uranium decay through a series of steps into Lead. It is possible that these weakly radioactive elements may have been much more stable when Earth was first formed. Also, there may have been many more than today's 282 stable isotopes. If Thorium and Uranium were once stable or had much longer half lives, then Earth could be much older than previously estimated.

The Era of Conscious Thought $T_{EE} = 1/1700$ to $T_{EE} = 1/1836$

Perhaps the most remarkable thing about the whole scenario of a Living Universe is that we are here to try and figure it out and discuss it. The great unexplained mystery of the universe is not so much the existence of the chemical elements of matter but the existence and origin of consciousness.

Since the only identifiable activity in the observable universe is the interaction between electrons and protons, it is concluded that the activity of consciousness must also be a part of these interactions. The basic units of consciousness are somehow contained within the individual structures of protons and electrons. If each of our atoms contains a basic unit of awareness, then our higher degree of consciousness results from the connections of the many atoms and molecules within our bodies. These individual atomic senses of awareness are all organized into symmetrical patterns of interactions within our atoms that we sense as feeling and experience as both consciousness and unconsciousness thought. Our total consciousness is the result of the 10^{29} possible connected interactions between the atoms in our bodies and brains.

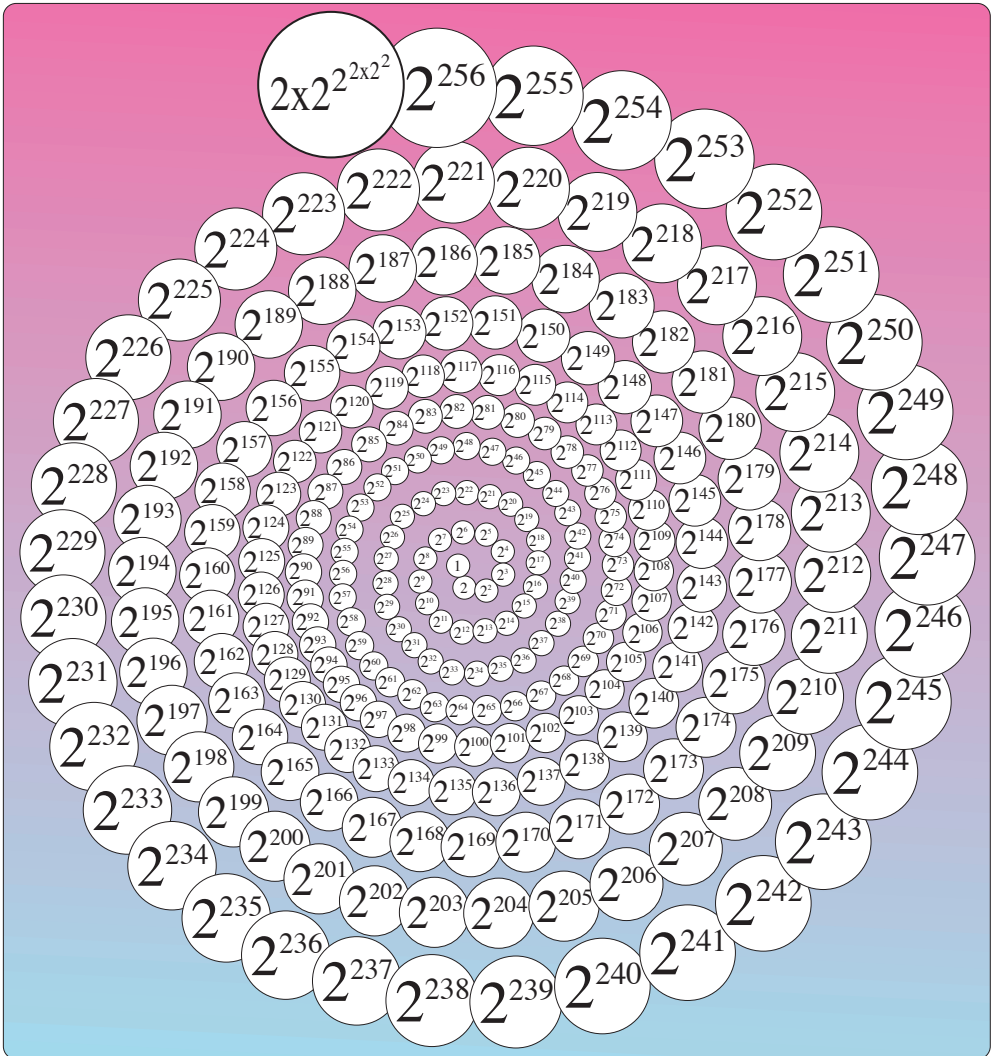
While the atoms of a rock may have primitive individual awareness, it cannot really be called consciousness. It is possible true consciousness did not arrive in the Living Universe until the spontaneous formation of DNA molecules about three billion years ago.

The eternal existence of matter is the initial principle of the Living Universe. A religious person, who wants to begin the universe with God, might want to consider conclude that electrons and protons are an eternally living Yin/Yang dichotomy of deities that could be referred to as goddesses and gods. This duality of God has always existed with the antiproton as a yin goddess and the positron as a yang god. This god and goddess then worked together, interacted, and reproduced into 2^{256} electron and proton deities that contained all the consciousness of today's Living Universe. The god consciousness that we experience stems from the basic connected awareness of these deities.

Conclusion

The evolution of electron mass is not an assumption or theory because it is an experimental conclusion made without any initial metaphysical assumptions such as eternal electron mass, unmeasurable parameters like a singularity, Guth’s inflating field, expanding CBR photon spacetime, unmeasured Doppler red shifts, or the creation of particles of matter without particles of antimatter. Moreover, a Living Universe does not require the creation of any new mass or energy and there is no requirement for an expanding spacetime continuum or a beginning of time. Indeed, no assumptions are made that are not completely verified as the conclusions of the scientific method for the measurement of mass, space, time, and gravity.

The Creation Spiral of the Universe



$$2^{256} = 231584178474632390847141970017375815706539969331281128078915168015826259279872$$

This drawing illustrates the exact number of protons and electrons at each stage of the matter bifurcation cycle of the Living Universe.

