

# QUANTUM GRAVITY PERSONALIZED

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Abstract –

The Illustris supercomputer simulation of the universe models a huge chunk of the universe: a cube 350 million light years across, and home to tens of thousands of galaxies. The computer's simulations are extraordinarily similar to images by the Hubble Space Telescope. It's been said that Illustris shows we do now understand the basics of how our universe evolved. The extraordinary similarity does not show we understand the basics. If the universe is represented as the numeral 1, there's more than one way to arrive at that number e.g. 2-1 or 3-2. Illustris takes one way, this article takes a different approach. Both can describe the cosmos but since the cosmos only has one history, both cannot be correct. Nevertheless, "Quantum Gravity Personalized" does say that the universe is indeed a computer simulation. This sounds outrageous, perhaps it would be better to say "an outgrowth of computer simulation". This is explained throughout the article, as are original interpretations of the basics (including the universe, string theory, gravity, computer science, topology, wave-particle duality, the wave function of the universe, the Holographic Quantum Model, and the Unified Field with its application not just in mathematics but also in human activities).

This article provides answers to the questions of what dark energy and dark matter are. It also links dark energy to gravitation, and gravity to mass (as the producer, not the product, of mass); as well as linking gravity to creation of black holes, and of electromagnetism and the nuclear forces. The end result is an original picture of everything cosmological, from the overall universe of space-time to the quantum world of string theory. The picture is developed from experiments as well as theory; and is of a universe that is fundamentally mathematical and electronic. The paper explains time travel to the past, giving it practical use and providing an alternative to the 3 concepts of a "primordial soup" creating life (evolution explains adaptations, not origins), a supernatural God and the multiverse. It culminates in a section about Special Relativity and General Relativity confirming this and previous papers' ideas regarding speed, light, motion, mass, division by zero, gravity both repelling and attracting, the Higgs field and boson, and even entanglement on both quantum and macroscopic scales. At the very end is the outline of an idea for further investigation – an idea about accessing and manipulating a 5<sup>th</sup>-dimensional hyperspace, which includes another time dimension, that draws on prior comments (whether the comment be a sentence, a figure or an equation). And for those who aren't afraid to speculate - the development of an all-powerful, all-knowing, omnipresent human body composed of photons and gravitons, and quantum entangled with every point in space-time is going to be proposed, for the purpose of overcoming the limits of

biological bodies – or biological bodies incorporating computer and robotic systems.

Outline -

This article has a section called "Motion", which will refer you to a section called Digital String Theory, which refers you to a discussion of the universe and subuniverses, which refers to the gravitational origin of matter and the other fundamental forces as well as gravity's origin in a higher dimension whose presence allows people in space-time to travel into the past and use their computer science to bring about digitized string theory. From there, you can read about the Higgs field and Higgs boson. From there - well, why not read the entire article?

Einstein's General Relativity gives a geometrical description of space-time and gravitation. The first section (Digital String Theory), speaking of the Mobius loop etc, doesn't contradict that description but complements it since the Mobius and Klein bottle belong to a branch of geometry called topology or "rubber-sheet geometry". String theory has been called "a little piece of the 21st century that dropped into the 20th century" (it's the 21st century now, so it's time for string theory to become more than a self-consistent theory and to blossom into the wondrous thing it was destined to be). Combining it with electronics and the above topology into "Digital String Theory" might possibly present an accuracy to description of space-time which simply wasn't available when Albert Einstein lived (although mathematician and physicist Leonhard Euler's 1736 paper on the Seven Bridges of Königsberg was one of the first papers on topology, the digital age was only approx. a decade old when Einstein died).

When Einstein penned  $E=mc^2$ , he used  $c$  ( $c^2$ ) to convert between energy units and mass units. Using this and Digital String Theory, it is concluded that when the digits form space-time, space-time's warps produce gravitation whose force (in the form of gravitons) interacts with photons' forces to produce matter and mass. The photons come into existence because gravitation can produce them. It's also speculated that the source of microwaves proposed from relativistic conversion should be kept in mind when the article later proposes that our "subuniverse" is expanding not from a Big Bang but from binary digits "creating" new space-time which displaces the old (the article concludes that the universe as a whole is infinite, eternal and in a Steady State; and that gaps or irregularities between subuniverses shaped like figure-8 Klein bottles are "filled in" by binary digits in the same way that computer drawings can extrapolate a small patch of blue sky to make a sky that's blue from horizon to horizon).

The latter proposal (space-time's expansion) is made because the idea of quantum fluctuations is valid (a quantum fluctuation is the temporary change in the amount of energy at a point in space, and the fluctuations of 1's and 0's change the energy in quantum-size regions of space-time). But modern science

is incorrect when it uses quantum fluctuation to explain the universe originating from nothing. This violates its own Law of Conservation of Mass-Energy which says neither matter nor energy can ever be created (or destroyed). This article proposes that the 1's and 0's manifesting as the universe and space-time originate from something. If time always goes in a straight line from past to present to future, these binary digits would emanate from a God or another universe in a multiverse. But Albert Einstein showed that space-time is curved and warped, so it's possible that our own computer science found its way into the remote past (see explanation in "Imaginary Numbers and Electrical Engineering" in the article) and that there's only one universe.

Inflation is dismissed - primarily as a result of the aftermath of the BICEP2 experiment, but also as a result of space and time being unable to expand faster than the speed of light. If inflation never occurred, the 1998 conclusion of accelerating universal expansion deduced by Saul Perlmutter, Brian Schmidt and Adam Riess could not be correct (it is correct that our SUBuniverse has accelerating expansion while the universe as a whole isn't expanding or contracting at all). Edwin Hubble's discovery of cosmic expansion (without the word "accelerating") applies to our subuniverse and not the entire universe, too. The cosmos would not be unified to near-uniform temperature and curvature by the whole cosmos having once been small enough for everything to be in contact, then undergoing extremely rapid expansion from a big bang during a period called inflation. It would be quantum entangled (unified) by everything having the same origin of the previously mentioned binary digits.

Binary digits can be assembled into computer simulations. This question naturally occurs to everyone - although it's profoundly controversial and sounds like pure fantasy or science fiction, could the universe truly be the ultimate computer simulation, affecting every sense and all detectors? It's suggested the binary digits of 1 and 0 could be used not to write on paper in a linear fashion but to "write" in the 2D Mobius programs - when two Mobius loops are joined, they form the 4D warps of space-time (everything written in the Mobius programs is comparable to being on a piece of paper that's given a twist before the ends are joined). This causes curving and warping in space-time, confusion of "here" and "there" (quantum entanglement), and muddled causes and effects (retro- or backward causality).

Supplementing the above are five points (very briefly touched on here - see the article for details).

- 1) It has been shown that the space and time of the cosmos could result from electronics' ones and zeros. Gravitation (space-time's warps) can then also be viewed as the effect of the cause known as binary digits. A possible interpretation of dark energy would be to consider it as radiation of binary digits from hyperspace because this radiation of digits creates space-time. Gravitation, produced by emitted 1's and 0's, would then be the product of dark energy.

2) Relating gravitation to radiating dark energy means gravity must be a repelling force. If space-time (whose warping is gravity) forms mass, there could be "currents" of space-time flowing in the "oceans" between the galaxies. Space-time would form the matter in the galaxies, and it would form the Earth/objects on this planet. How? By some of the currents of space-time or gravity which pass the solar system's outer boundary being diverted towards the massive Sun's centre (just as some of the waves passing an island are refracted toward the shore by the island's mass). Along their course, the refracted gravitational waves are concentrated  $10^{24}$  times in the intense warping we call matter (see "c<sup>2</sup> and the Atom") - the more mass a body possesses, the more gravitation is diverted to play a part in that body's formation. Could sunward-heading gravitational waves from outside the solar system possibly explain why the Pioneer spacecraft are a few thousand miles closer to Earth than predicted?

3) Black holes may be thought of as meeting-places and "sinks" for the gravitational currents flowing in and between galaxies. Though they aren't composed of matter, they do have mass because they are "gravity sinks" and gravity is capable of producing matter and mass. The holes possess charge because the universe's mathematical foundation unites gravity/spacetime with electricity/magnetism. Since it has mass, a black hole can naturally possess the 3rd property of holes viz. spin. Far from the hole becoming infinitely dense, infinitely curved and infinitely massive; there is no singularity but the matter is "shred" into binary digits by the black hole's fantastic pressure.

4) Imaginary time can be equated with dark matter in this way - it's already known that calculating time using imaginary numbers makes distinctions between time and space disappear. A negative 5th-dimension (translated 180 degrees from positive space-time) is described by imaginary numbers so imaginary numbers eliminate distinctions between space-time and the 5th dimension, permitting dark matter to exist as "ordinary" matter's framework. The total amounts of matter and dark matter can indeed be equal i.e. dark matter can be ordinary matter's framework if it is not assumed that we can perceive, or that our scientific instruments can detect, ALL of the matter in any region of space-time. Time travel (explained in article) could account for a portion of the invisibility.

5) Since the universe appears to be fundamentally electronic and mathematical in nature (consisting of 1's and 0's), the final paragraph seeks to show that this is the key to attaining immortality.

Article –

## **DIGITAL STRING THEORY**

String theory says everything's composed of tiny, one-dimensional strings that vibrate as clockwise, standing, and counterclockwise currents. We can visualize

tiny, one dimensional binary digits of 1 and 0 (base 2 mathematics) <sup>1</sup> forming currents in a two-dimensional program called a Mobius loop – or in 2 Mobius loops, clockwise currents in one loop combining with counterclockwise currents in the other to form a standing current. Combination of the 2 loops' currents requires connection of the two as a four-dimensional Klein bottle. This connection can be made with the infinitely-long irrational and transcendental numbers (see <sup>2</sup> for support of the universe's infinity). Such an infinite connection translates - via bosons being ultimately composed of the binary digits of 1 and 0 encoding pi, e,  $\sqrt{2}$  etc.; and fermions being given mass by bosons interacting in matter particles' "wave packets" – into an infinite number of Klein bottles which are, in fact, "subuniverses".

Slight "imperfections" in the way the Mobius loops fit together determine the precise nature of the **binary-digit currents (the producers of space-time, gravitational waves, electromagnetic waves, the nuclear strong force and the nuclear weak force)** and thus of exact mass, charge, quantum spin. When the digits form space-time, space-time's warps produce gravitation whose force (in the form of gravitons) interact with photons' forces to produce matter and mass. The photons come into existence because gravitation produces them (see "c<sup>2</sup> and the Atom "). They would also produce black holes - whose binary digits could, in the case of the sun, come from our star being compressed to 2.95 kms, in which case the pressure increase "shreds" the sun into its binary digits (its mass is relativistically converted into the energy of binary digits).

### Mobius Loop

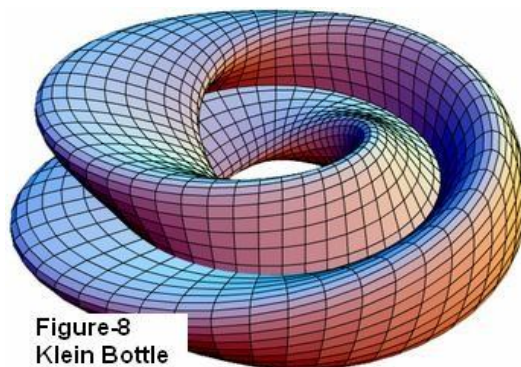
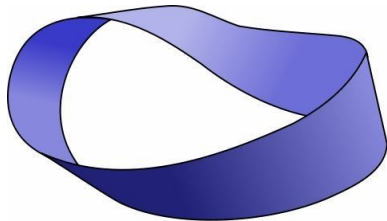


Figure-8  
Klein Bottle

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## **c<sup>2</sup> and the Atom**

When Einstein penned  $E=mc^2$ , he used  $c$  ( $c^2$ ) to convert between energy units and mass units. The conversion number is 90,000,000,000 (light's velocity of 300,000 km/s x 300,000 km/s) which approx. equals  $10^{11}$ . Gravity can produce electromagnetic force, though there are other methods. For example, X-rays can be emitted by matter swirling around a black hole when the atoms jostle and compress, and are heated to millions of degrees. If absolutely everything in space-time is the result of gravitation, it's OK to leave out the word "can" and just say "Gravity produces electromagnetic force" (to be technical, the word "gravitation" is used when referring to the universe and "gravity" when referring to Earth – but I get lazy sometimes, and just type "gravity" because "gravitation" is too long a word). Gravity waves with a strength of  $10^1$  are, via gravitational lensing, concentrated  $10^{24}$  times after they're focused to form matter (to  $10^{25}$ , weak nuclear force's strength - giving the illusion that a weak nuclear force that is not the product of gravitation exists). (If binary digits form space-time and gravitation, and all particles are composed of those digits, the sequence of 1's and 0's composing gravitons can become the sequence making up the  $W^+$ ,  $W^-$  and  $Z^0$  particles of the weak force; the gluons of the nuclear strong force; or of electromagnetism's photons.) Waves are magnified by the matter's density to achieve electromagnetism's strength ( $10^{36}$  times gravity's strength) i.e.  $10^{25}$  is multiplied by Einstein's conversion factor [ $10^{11}$ ] and gives  $10^{36}$  (this gives the illusion of the existence of electric and magnetic fields that are not a product of gravitation – last century, Einstein stated that gravitation and electromagnetism are related.). After absorption by atoms, the depleted remnant of the gravity waves is re-radiated from stars, interstellar gas and dust, etc. as electromagnetic waves - possibly gamma rays, or a **microwave background** \* - and as gravitational waves which have lost most of their energy or strength during formation of forces (returning to a strength of " $10^1$ ".) ^^

\* The cosmic microwave background is assumed to be left over from the "Big Bang" of cosmology, and was discovered in 1964 by American radio astronomers Arno Penzias and Robert Wilson. The source of microwaves proposed in the above paragraph should be kept in mind when "Universe as a Whole is Infinite and Eternal" proposes that our subuniverse is expanding not from a Big Bang but from binary digits "creating" new space-time which displaces the old.

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^ It's tempting to say some waves are magnified to  $10^{25}$ , some separate ones to  $10^{36}$ , and that some escape depletion during formation of matter and forces to simply radiate into space again with a strength of  $10^1$ . It's possible, since the number of gravity waves encountering a piece of matter could be too great for all of them to be absorbed and re-radiated. But what if 100% of the waves are absorbed and re-radiated? This means a particle like a proton would have a finite lifetime unless its structure and forces were constantly renewed by other gravity waves (it has long been considered to be a stable particle, but recent developments of grand unification models have suggested that it might decay with a half-life of about  $10^{32}$  years). If a wave magnified to  $10^{25}$  is re-emitted at  $10^1$ , shouldn't a wave magnified to  $10^{36}$  be depleted by the same amount i.e. to  $10^{12}$ ? Why does it actually acquire a strength of  $10^1$ , too? Attempting to explain why gravity is so weak compared to other fundamental forces (like electromagnetism), physicists asked if gravity might be radiated into a higher dimension. According to this article, that is indeed possible. As stated in "What Is Dark Matter?", "Imaginary numbers give negative results when multiplied by themselves e.g.  $i$  multiplied by itself gives  $-1$ . Imaginary time can be equated with dark matter in this way - it's already known that calculating time using imaginary numbers makes distinctions between time and space disappear. A negative 5th-dimension (translated 180 degrees from positive space-time) is described by imaginary numbers so imaginary numbers eliminate distinctions between space-time and the 5th dimension".

So gravity waves could travel from space-time to hyperspace without even "knowing" they'd crossed into a higher dimension - and a trillion parts of that  $10^{36}$  would end up in the 5th dimension, ensuring a kind of Cosmic Homeostasis (equilibrium of stable environment) where all gravity in space-time maintains a strength of  $10^1$ . This would be consistent with "Strength of gravity shifts – and this time it's serious": September 2013 by Katia Moskvitch (<http://www.newscientist.com/article/dn24180-strength-of-gravity-shifts--and-this-time-its-serious.html#.VDyrVWeSybs>) which says, "It's possible that both experiments suffer from a hidden, persistent error, but the result is also prompting serious consideration of a weirder possibility: that  $G$  (the gravitational constant) itself can change. That's a pretty radical option, but if correct, it would take us a step closer to tackling one very big mystery – dark energy, the unknown entity accelerating the expansion of the universe."

In this article, dark energy is associated with gravity (it says gravity is created by dark energy, which is defined as the programming done by binary digits in 5<sup>th</sup>-dimensional hyperspace). Dark matter (particles in 5<sup>th</sup>-dimensional hyperspace which are invisible yet have gravitational effects) also has an association with gravity that is explained in the following paragraph resulting from astronomer Vera Rubin concluding, in the 1970s, outer stars in the Milky Way were being sped up by the gravitational attraction of unseen Dark Matter in a halo well beyond the galaxy. The paragraph also states that, in this case, gravity waves do not radiate into a higher dimension –

The average density of the Milky Way is much less than the solar system. More than 99% of our own solar system's mass is in the Sun. But the vast reaches of near vacuum between systems lowers average density enormously – the MacMillan Encyclopedia of Physics says the average density of matter between the stars of the Milky Way is 0.1 neutral hydrogen atoms per cubic centimetre. Since density corresponds to concentration of wave packets – a term from quantum mechanics describing, here, matter's gravitational building blocks - and magnification of gravitational waves, there would be extremely little magnifying of gravity waves in interstellar space (a process related to gravitational lensing). And there would be insufficient gravitational magnification to push or accelerate the stars near the central core or bulge beyond the orbiting speeds of the galaxy's outermost stars (the outermost stars were expected to orbit the galaxy's centre more slowly than stars further in, but have been found to possess very similar orbiting speeds).

So can gravity waves be magnified within the higher density of a solar system – with the mass of outer planets amplifying waves to give inner planets an extra push and accelerate them to faster orbital speeds? Possibly – variations in gravity in the space between planets haven't been detected, however. It appears more reasonable to think of interplanetary space as a rubber sheet, with the gravity waves that form the Sun creating enormous mass that depresses the sheet and causes the planets to roll around the resulting "valley" like marbles. Their orbital speeds keep them from falling into our star – and the closer a world is to the depression caused by the Sun, the faster it orbits. Any gravitational magnification within the planets and solar system would, following the anthropic principle<sup>^</sup>, be siphoned off to 5<sup>th</sup>-dimensional hyperspace and maintain a Cosmic Homeostasis where all gravity in space-time maintains a strength of  $10^1$ .

<sup>^</sup> The Anthropic Principle says the universe is designed for life (maybe not for the limited, fragile lives we know but certainly for the immortal life to come that is entangled with all spacetime – see this article's final few pages).

When a gravitational wave becomes an electromagnetic wave, it not only has to change its strength in the way described above but it also has to change its shape. Although the rest of this paragraph speaks of the photon, it can adapt to



include the graviton if these particles are simply two variations in sequences of binary digits. It's accepted in physics that a single photon can actually interfere with itself e.g. particles can be quantum entangled by sending a single photon through a special crystal that yields two photons. Does this mean a photon is **not indivisible** (consisting of 1's and 0's) but can decouple from itself and separate into two photons, or decouple from itself to alter a wave's shape from quadrupole gravitational to dipole electromagnetic? The decoupling and consequent change in the wave's shape might result from the extreme forces involved in matter's density magnifying (lensing) gravitational waves that enter it.

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<sup>1</sup> Maybe binary digits are able to be called hidden variables - Einstein said hidden variables carry extra information about the world of quantum mechanics and complete it, eliminating probabilities and bringing about exact predictions. The 1's and 0's in space-time's so-called vacuum are usually labelled "virtual particles". The idea of quantum fluctuations is valid (a quantum fluctuation is the temporary change in the amount of energy at a point in space, and the fluctuations of 1's and 0's change the energy in quantum-size [subatomic] regions of space-time). But modern science is incorrect when it uses quantum fluctuation to explain the universe originating from nothing. This violates its own Law of Conservation of Mass-Energy which says neither matter nor energy can ever be created (or destroyed). This article proposes that the 1's and 0's manifesting as the universe and space-time originates from something. If time always goes in a straight line from past to present to future, these binary digits would emanate from a God or another universe in a multiverse. But Albert Einstein showed that space-time is curved and warped, so it's possible that our own computer science found its way into the remote past (see "Imaginary Numbers and Electrical Engineering" and that there's only one universe.

### **Imaginary Numbers and Electrical Engineering**

The universe is infinite and eternal not only into the future but also into the past. It will never end - and this is why it had no beginning: The space-time we live in is described by ordinary [or "real"] numbers which, when multiplied by themselves, result in positive numbers e.g.  $2 \times 2 = 4$ , and  $-2 \times -2$  also equals 4. Inverted "positive" space-time becomes negative hyperspace which is described by so-called imaginary numbers ^ that give negative results when multiplied by themselves e.g.  $i$  multiplied by itself gives  $-1$ . Entering hyperspace with its negatives (energy, matter, distance, time ^^) permits travel to the past since it would be impossible to travel 700 lightyears there, and only possible to travel minus 700 lightyears. Doing so instantly would enable a spaceship to arrive at a spot in the past which a light beam could only reach by traversing negative distance for 7 centuries.

^ As Stephen Hawking writes ("A Brief History of Time", p.139), "Which is real,

'real' or 'imaginary' time? It is simply a matter of which is the more useful description." Earlier in that paragraph, he says, "In real time, the universe has a beginning and an end at singularities that form a boundary to space-time and at which the laws of science break down. But in imaginary time, there are no singularities or boundaries. So maybe what we call imaginary time is really more basic ..."

^ Since the time associated with the 3 dimensions of up-down, back-front and side-to-side is often called the 4<sup>th</sup> dimension, should negative time in a 5<sup>th</sup> dimensional hyperspace be called the 6<sup>th</sup> dimension?

Applying this practically, a 2009 electrical-engineering experiment at America's Yale University, together with the ideas of Albert Einstein, tells us how we could travel to other stars and galaxies in literally no time. Electrical engineer Hong Tang and his team at Yale demonstrated that, on silicon-chip and transistor scales, light can attract and repel itself like electric charges or magnets ("Tunable bipolar optical interactions between guided lightwaves" by Mo Li, W. H. P. Pernice & H. X. Tang - Nature Photonics 3, 464 - 468 (2009). This is the "optical force". For 30 years until his death in 1955, Einstein worked on his Unified Field Theory with the aim of uniting electromagnetism (light is one form of this) and gravitation. Achievement of this – see "Digital String Theory" plus "c<sup>2</sup> and the Atom" for a proposed method - means the microscopic components (gravitons) of warps of space (gravity, according to General Relativity) between spaceships and stars could mimic the Optical Effect and be attracted together, thereby totally eliminating distance (this is similar to traversing a wormhole, or shortcut, between two folds in space-time). Distance is not only deleted in space. There would no longer be any "distance" in time. Just as we can journey to particular stars, we could take trips to particular years in the past or future. Now we just need some clever engineers to design a spacecraft that works according to the Einstein-Yale principle.

**So we can produce the effect of faster-than-light travel for both matter and information, without engaging in actual faster-than-light travel (that is impossible). We only appear to re-locate matter and information superluminally because distance is eliminated (or, if you prefer, time is stopped) by attracting together the folds in space-time that are called gravity.**

By employing Intergalactic/Time Travel, the beginning of each subuniverse can be at any location in space and time. Since the number of subuniverses is infinite, their beginning-locations in space and time are literally infinite, and the start of the universe as an entirety is therefore forever indeterminate or unknowable (this could be translated to: there is no start to the universe as a whole, and transfers Heisenberg's Uncertainty Principle to the cosmic scale \*). When a subuniverse ends - by expanding so much that other stars and galaxies drift so far apart that every point in space is left freezing and in darkness, possibly with even protons eventually decaying – another can be started in its

place: and the universe as a whole has no end. As well, it can't expand any further and leaves a vacancy for another expanding subuniverse (the universe as a whole simply remains its infinite size and doesn't expand, which it can't). (See **Universe as a Whole is Infinite and Eternal** and **Digital String Theory**)

\* German scientist Werner Heisenberg formulated his famous uncertainty principle in 1926. It says the more accurately you try to measure the position of a particle, the less accurately you can measure its speed (or velocity), and vice versa. Applied to the above paragraph, it says the more precisely you measure the contents of space e.g. the location and speed of movement through space of all the subuniverses, the less you know about when the universe as a whole originated in time. If everything in infinity and eternity is ultimately composed of the same thing, matter particles and force-carrying particles and the universe itself would all obey the uncertainty principle. If it was possible to avoid any measurement (even any approximation) of the positions and velocities of space's contents (this occurs when all distance is deleted in space-time via the Optical Force), it's possible to know more about the beginning of space-time (that it's indeterminate). Space-time had no exact beginning because the infinite number of subuniverses each have a separate beginning.

### **Universe as a Whole is Infinite and Eternal**

<sup>2</sup> "Infinite Universe" by Bob Berman, "Astronomy" (Nov. 2012) says, "The evidence keeps flooding in. It now truly appears that the universe is infinite" and "Many separate areas of investigation – like baryon acoustic oscillations (sound waves propagating through the denser early universe), the way type 1a supernovae compare with redshift, the Hubble constant, studies of cosmic large-scale structure, and the flat topology of space – all point the same way." Support for the article – a) after examining recent measurements by the Wilkinson Microwave Anisotropy Probe, NASA declared "We now know that the universe is flat with only a 0.4% margin of error." (WMAP's Universe ([http://map.gsfc.nasa.gov/universe/uni\\_shape.html](http://map.gsfc.nasa.gov/universe/uni_shape.html)) and b) according to "The Early Universe and the Cosmic Microwave Background: Theory and Observations" by Norma G. Sánchez, Yuri N. Parijskij - published by Springer, (31/12/2003), the shape of the Universe found to best fit observational data is the infinite flat model)

Each "subuniverse" (bubble or pocket universe) is one of an infinite series composing the physically infinite and eternal space-time of the universe. The infinite numbers make the cosmos physically infinite, the union of space and time makes it eternal, and it's in a static or steady state because it's already infinite and has no room for expansion. Our own subuniverse has a limited size (and age of 13.8 billion years), is expanding (not from a Big Bang but from binary digits "creating" new space-time which displaces the old), and has warped space-time because it's modelled on the Mobius loop, which can be fashioned by giving a strip of paper a 180-degree twist before joining the ends.

The inverse-square law states that the force between two particles becomes infinite if the distance of separation between them goes to zero. Remembering that gravitation (associated with particles) partly depends on the distance between their centres, the distance of separation only goes to zero when those particles' centres occupy the same space-time coordinates (not merely when the particles' or objects' sides are touching i.e. infinity equals the total elimination of distance, both in space and time). The infinite cosmos could possess this absence of distance in space and time via the electronic mechanism of binary digits (making it as malleable as any image on a computer screen). To distinguish this definition from "the universe going on and on forever", we can call it "electronic infinity or e infinity".

With all distances deleted, the cosmos has become infinite (it has shrunk infinitely beyond quantum-size to become purely mathematical (a mathematical cosmos is introduced in "The Mathematical Universe" by cosmologist Max Tegmark - <http://arxiv.org/abs/0704.0646>). The "pairing up" of bits (binary digits) by e-infinity i.e. of the electronic binary digits of 1 and 0 in the largest and the smallest scales, means this: quantum effects are not distinct from macroscopic events, and become apparent on a large (even astronomical) scale. This permits a "distant" event to instantly affect another (exemplified by the quantum entanglement of particles separated by light years), or permits effects to influence seemingly separate causes (exemplified by the retrocausality or backward causality promoted by Israeli physicist Yakir Aharonov and others). (One of the others is the USA's Washington Uni's John Cramer – "Physicist's weird reverse-causality experiment goes in a new direction" by Alan Boyle, Science Editor NBC News – Jan. 6, 2014 (<http://www.jeraddatz.com/2014/01/09/physicists-weird-reverse-causality-experiment-goes-in-a-new-direction/>))

### **Space-time Cannot Expand Faster Than Light**

Cosmic inflation is the exponential expansion of space in the early universe. The inflationary epoch lasted from  $10^{-36}$  seconds after the Big Bang to sometime between  $10^{-33}$  and  $10^{-32}$  seconds. Following the inflationary period, the universe continues to expand, but at a less accelerated rate. The inflationary hypothesis was developed in the 1980s by physicists Alan Guth and Andrei Linde. Technically, the expansion during this period of inflation proceeded faster than the speed of light. We often hear that the laws of physics aren't violated by space-time expanding faster than the speed of light. On 17 March 2014, astrophysicists of the cosmic microwave background (CMB) experiment called BICEP2 (Background Imaging of Cosmic Extragalactic Polarization) announced the detection of a swirling imprint of inflationary gravitational waves in the Cosmic Microwave Background. If confirmed, this would provide clear experimental evidence for the theory of inflation.

However, on 19 June 2014, lowered confidence in confirming the findings was reported by 3 sources: 1) Ade, P.A.R. (BICEP2 Collaboration) et al. (19 June 2014). "Detection of B-Mode Polarization at Degree Angular Scales by BICEP2", *Physical Review Letters* 112 (24): 241101, 2) Overbye, Dennis (19 June 2014). "Astronomers Hedge on Big Bang Detection Claim". *New York Times*, 3) Amos, Jonathan (19 June 2014). "Cosmic inflation: Confidence lowered for Big Bang signal". *BBC News*). The lowered confidence expressed only a few months after the supposed detection makes me think it could well be correct to say space-time cannot expand faster than light, and there was no cosmic inflation. To condense the explanation into one sentence (a fuller explanation is in "c<sup>2</sup> and the Atom" in this essay), electromagnetic light is produced by gravitation which warps space-time (if space-time's warps make light waves, those light waves could never travel at a speed independent of space-time's expansion rate). So if space (space-time) **in the universe as a whole** is actually expanding faster, light's velocity would increase at the same rate and Variable Speed of Light theories would be correct in their main conclusion. If the speed of light is a universal constant; the 1998 conclusion of accelerating universal expansion deduced by Saul Perlmutter, Brian Schmidt and Adam Riess could not be correct (as we've seen, it is correct that our SUBuniverse has accelerating expansion while the universe as a whole isn't expanding or contracting at all).

Experiments are needed to resolve the possibilities into the truth. But I suspect Einstein's intuitions may have been correct. In 1911 / 1912, Einstein was working on a Variable Speed of Light theory. But he abandoned it in favour of the predictions of General Relativity, which proved to be accurate. The cosmological constant was originally introduced by Albert Einstein in 1917 as an addition to his theory of general relativity, to achieve a static universe. Einstein abandoned the concept as his "greatest blunder" after Edwin Hubble's 1929 discovery that all galaxies outside our own Local Group are moving away from each other, implying an overall expanding universe. But perhaps it was not his "greatest blunder" at all. Hubble's discovery of cosmic expansion applies to our subuniverse (and would no doubt be seen in other subuniverses) but, according to this article, not to the entirety of the universe – what is, in Einstein's word, "static" (what Fred Hoyle and others term a Steady State universe)?

### **Cosmic Inflation Replaced**

For the info below on Causal Sets, I thank Zeeya Merali and her article "Theoretical physics: The origins of space and time" (*Nature* 500, 516–519 - 28 August 2013).

"Pioneered by Rafael Sorkin, a physicist at the Perimeter Institute in Waterloo, Canada, the theory (causal sets) postulates that the building blocks of space-time are simple mathematical points that are connected by links, with each link pointing from past to future." This article agrees that space-time's building blocks

are mathematical (it proposes base-2 maths which consists of the binary digits of 1 and 0).

What if Digital String Theory is correct in asserting that bosons are ultimately composed of the binary digits of 1 and 0 encoding  $\pi$ ,  $e$ ,  $\sqrt{2}$  etc.; and fermions are given mass by bosons interacting in matter particles' "wave packets"? Then the 1's and 0's of computer science could be assembled into a computer simulation of space-time and the cosmos. If that simulation was not restricted to a single room and period, but filled all of space and all of time, it would no longer be just a simulation – it would become the universe itself, and the reality everyone has ever lived in or will be born into\*. As proposed at the end of the second last paragraph in this section "Cosmic Inflation Replaced", the universe is "quantum entangled (unified) by everything having the same origin of binary digits." This universe/binary digit entanglement is consistent with the cosmos being no more or less than the ultimate computer simulation – one affecting all senses and all detectors.

\* This entire universe will, being a computer simulation, be filled with advanced artificial intelligence (AI) and consciousness – and since there is no separation or distance in its unification (see other sections in this essay), also be filled with human/humanoid intelligence, personality and consciousness. Erwin Schrodinger (1887-1961), the Austrian theoretical physicist who achieved fame for his contributions to quantum mechanics and received the Nobel prize in 1933, had a lifelong interest in the Vedanta philosophy of Hinduism and this influenced Schrodinger's speculations at the close of his 1944 book "What is Life?" about the possibility of individual consciousness being only a manifestation of a unitary consciousness pervading the universe.

Here are a few thoughts concerning cosmogenesis –

**Mobius loop – This is how it might be used in building a universe:** We write down everything our species has learned (an "Encyclopedia Universalis"). Instead of using ink, we use the binary digits of 1 and 0. And we do not write on paper or with computers in a linear fashion (one line after the other ... left to right, top of page to bottom). We "write" in the warps of space-time and hyperspace and do so in Mobius fashion (everything is written so that it's comparable to being on a piece of paper that's given a twist before the ends are joined) – see **Mobius Writing, Localized Unified Field, The Matrix And The Figure-8 Klein Bottle** below. This causes curving and warping in space-time, confusion of "here" and "there" (quantum entanglement), and muddled causes and effects (retro- or backward causality). Because of this entanglement of all time and space; if the writing is done in the year 3,000 it might possibly still include the knowledge of the year 3,000,000 or 3,000,000,000 and so on.

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## MOBIUS WRITING

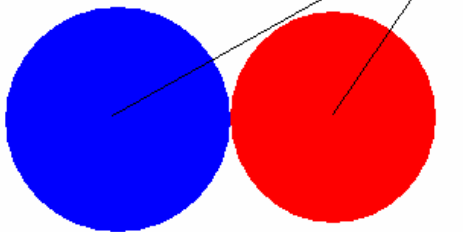
When writing with a computer, the keyboard and screen can be pointed to. If

electronically writing in a Mobius program, how is the Mobius pointed at? That's impossible, just as you can't point to 5<sup>th</sup>-dimensional hyperspace (which apparently exists, nevertheless). This is a clue that Mobius loops and programs reside in 5D. This situation is logical since, according to this article, gravitation is the warping of space-time and is the basis of the cosmos (electromagnetism, matter, etc. all proceed from gravity). Gravity (space-time) is the product of dark energy i.e. of strings of 1's and 0's, binary digits, in 5D. 5<sup>th</sup>-dimensional hyperspace (necessary for time travel, at least to the past) can exist. But is there a plausible means of entering it? Here is a more mathematical description of what is referred to in **Imaginary Numbers and Electrical Engineering** as Intergalactic/Time Travel due to the Optical Force -

### LOCALIZED UNIFIED FIELD

Instantly travelling to a planet 700 light years away and instantaneously arriving at a spot in the future which a light beam could only reach by travelling for 7 centuries can be likened to a wave which spreads out from the point of departure. This is because of quantum mechanics' wave-particle duality which can view the spaceship not as a collection of particles but as a wave, or collection of waves.

shape of waves when viewed from the centres  
where they begin spreading out is  
CONVEX

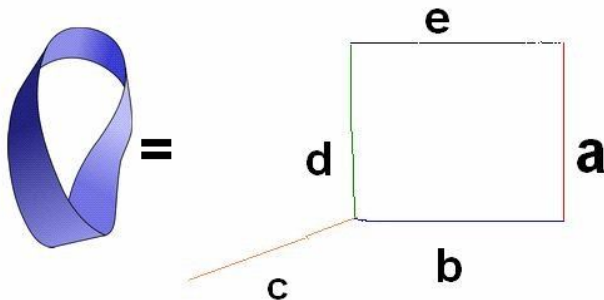


shape of waves when viewed from the planet  
where they collide is  
CONCAVE

At the destination, the convex shape of the spreading wave arrives instantly (meaning the ship and planet are quantum entangled). This situation is equivalent to space being translated (shifted) by 90 degrees so that the ship is perpendicular to length, width and height simultaneously. What if the spaceship is simultaneously quantum entangled with another wave arriving at the planet from "the other side of the universe" (actually – far, far away)? (This appears possible if the infinite cosmos is a computer simulation incorporating transcendentals and irrational numbers.) Since the waves are entangled and unified, their motions are instant and this situation is

equivalent to space being translated by 180 degrees. It's inverted and becomes 5th-dimensional hyperspace.

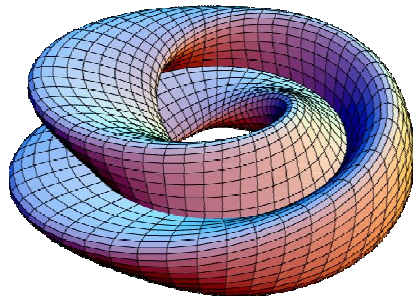
## THE MATRIX AND THE FIGURE-8 KLEIN BOTTLE



Width  $a$  is perpendicular to the length ( $b$  or  $e$ ) which is perpendicular to height  $c$ . How can a line be drawn perpendicular to  $c$  without retracing  $b$ 's path? By positioning it at  $d$ , which is then parallel to (or, it could be said, at 180 degrees to)  $a$ .  $d$  (the spaceship) is already at 90 degrees to length  $b$  and height  $c$ . To be at right angles to length, width and height simultaneously; it has to also be perpendicular to (not parallel to)  $a$ . This is accomplished by a twist, like on the right side of the Möbius loop pictured above, existing in  $a$ . Then part of  $a$  is indeed at 180 degrees to  $d$ , but part of  $a$  is at 90 degrees to  $d$ . This situation requires a little flexibility or "fuzziness" which allows the numbers to deviate slightly from their precise values of 90 and 180. The fuzziness is represented in nature by past, present, future, space, time, and hyperspace existing everywhere rather than being confined to particular locations. Thus,  $90+90$  (the degrees between  $b$  &  $c$  added to the degrees between  $c$  &  $d$ ) can equal 180, making  $a$  &  $d$  parallel. But  $90+90$  can also equal 90, making  $a$  &  $d$  perpendicular. (Saying  $90+90=90$  sounds ridiculous but it has similarities to the Matrix [of mathematics, not the action-science fiction movie] which is an array of numbers placed in rows and columns. It was worked out in the mid-nineteenth century by British mathematician Arthur Cayley, matrix mechanics is a version of quantum mechanics discovered by Werner Heisenberg in 1925, and matrices say  $X$  multiplied by  $Y$  does not always equal  $Y$  times  $X$ . In this paragraph, the first 90 plus the second 90 does not always equal the second 90 plus the first 90 because  $90+90$  can equal either 180 or 90.) If the infinite universe is composed of subuniverses shaped like figure-8 Klein bottles (diagram at end of paragraph - 2 Möbius loops are joined on their sides to form Bottle, with binary digits filling in the central hole and perfectly adjusting the outer edges to fit surrounding subuniverses [simplified, this is similar to manipulation of an image on a



computer screen]), in each subuniverse there would be 2 perpendicularities to the twist (one lot of  $90+90$ , then another  $90+90$ ).  $180+180$  could equal  $360$  – represented in physics as a subuniverse, a galaxy, or one of the spherical waves above producing quantum entanglement and translating space by 90 degrees.  $180+180$  could also equal  $180$  – represented in physics by both of the above spherical waves interacting to produce inversion (translation by 180 degrees) of space which permits the spaceship to enter hyperspace. Since a fuzzily spherical figure-8 Klein bottle is necessary to form  $(90+90) + (90+90)$ , any spherical or fuzzily spherical thing in this fractal universe (subuniverse, galaxy, black hole, asteroid, subatomic particle, or anything made of either fermions or bosons) would be an example of altered or warped space-time and must include hyperspace in its composition.



With a single extra dimension of astronomical size, gravity is expected to cause the solar system to collapse (“The hierarchy problem and new dimensions at a millimetre” by N. Arkani-Hamed, S. Dimopoulos, G. Dvali - Physics Letters B - Volume 429, Issues 3–4, 18 June 1998, Pages 263–272, and “Gravity in large extra dimensions” by U.S. Department of Energy - <http://www.eurekalert.org/features/doe/2001-10/dbnl-gil053102.php>) However, collapse never occurs if gravity accounts for repulsion as well as attraction on both subatomic and astronomical scales.

In transmission from a radio station, sound waves of voices or music are changed into electrical waves called audio-frequency waves. The audio-frequency electrical waves then piggyback on radio waves – the amplitude (various heights of the crests) of the radio waves varies in sympathy with the electrical signal – and the radio frequencies are “carrier waves” for the audio frequency electrical signals. The combination of audio frequency and radio-frequency carrier wave is called a modulated wave. Stations can use either an AM (amplitude-modulated) wave which follows the curve of the earth and can travel great distances but is susceptible to static and interference; or the more popular FM (frequency-modulated) wave which varies between different frequencies in the radio spectrum, has better (fuller) reproduction of sounds, is fairly free of static, but can only travel as far as the horizon.



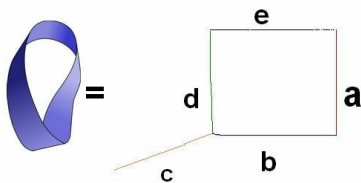
$$V = 4/3 \pi r^3$$

and the sine wave's most basic form as a function of time (t) is

$$y(t) = A \sin(2\pi ft + \varphi) = A \sin(\omega t + \varphi)$$

those two formulas must, when combined and converted into binary digits, represent wave-particle duality (they require conversion because bosons are ultimately composed of 1's and 0's encoding pi, e,  $\sqrt{2}$  etc.; and fermions are given mass by bosons interacting).

The united and digitised formula is intimately related to the diagram



which also represents wave-particle duality. The total absence of distance referred to in **Imaginary Numbers and Electrical Engineering** quantum entangles the 3+1 dimensions of space-time with 5D hyperspace and its associated time dimension (6D hypertime), meaning the 2 perpendicularities spoken of in connection with the diagram can represent either one or both of the spherical waves illustrated above (space-time's quantum entanglement, or translation to hyperspace). And the spherical waves represent a spaceship's wave-particle duality.

It's tempting to call the combination "the Hartle-Hawking state" or "the wave function of the universe", after the theory proposed in 1983 by James Hartle and Stephen Hawking. However, that theory promotes singularities and the Big Bang while this article states in various places that there are no singularities and no Big Bang. To this end, it even quotes p.139 of Hawking's "A Brief History of Time" - "In real time, the universe has a beginning and an end at singularities that form a boundary to space-time and at which the laws of science break down. But in imaginary time, there are no singularities or boundaries. So maybe what we call imaginary time is really more basic ..." But this article agrees that, to quote "The Wave Function is Real: The Holographic Quantum Model" by Noel Huntley Ph.D.

([http://www.bibliotecapleyades.net/ciencia/secret\\_projects/project419.htm](http://www.bibliotecapleyades.net/ciencia/secret_projects/project419.htm)), we can "Envision Everything Imaginable in the Universe as Being Made Up of Waves (groups of sine waves representing all phenomena, such as a particle, an atom, planet, galaxy, objects, a thought, word, concepts or ideas, mind, etc.)"

Prof. Hawking (of England's Cambridge University), working with Prof. Thomas Hertog of the Astroparticle and Cosmology Laboratory in Paris, has more recently come up with fascinating work on the wave function. In 2006, the team proposed that this means there was no unique origin to the cosmos: instead the wave function of the universe embraced a multitude of means to develop. That conclusion agrees with this article's statements that "the many, seemingly obviously separate, objects and events in our lives (are) really unified into one thing in physics' space-time" and that "(Space-time) would be quantum entangled [unified] by everything having the same origin of binary digits." If the universe

began in just about every way imaginable (and perhaps even some that are not), its origin would be consistent with absolutely everything in space and time being united into one thing and therefore with absolutely everything (including every consciousness) contributing to the proposed origin. Although, as this article says, the beginning of subuniverses can be pinpointed; the start of the universe as a whole is lost in its literal infinity of causes – it's physically and mathematically impossible to pinpoint, and must be forever indeterminate (this is equivalent to saying there was no beginning).

The term “Holographic Quantum Model” in the heading of the previous paragraph's webpage is identical to speaking of space-time's warps being gravitational fields that, in addition to forming matter, produce electromagnetic fields including visible light (are holographic) ... and is a quantum model because it proposes that every particle, whether fermion or boson, shares the same fundamental composition of strings of 1's and 0's. In a paper in Physical Review Letters with Prof. James Hartle of the USA's University of California, Santa Barbara, they found that the wave function does indeed predict a long period of inflation. Since this article doesn't accept inflation, I'll adhere to the alternative methods it suggests for expansion of space-time (displacement of “old” space-time by “new”, rather than the Big Bang and inflation) and production of the microwave background (outlined in “ $c^2$  and the Atom”) – and continue to call the combination and digitisation of the two formulas above representation of wave-particle duality, instead of the universe's wave function.

(additional info about Hawking / Hertog / Hartle from “Stephen Hawking's explosive new theory” by Roger Highfield, Science Editor - 26 Jun 2008 (<http://www.telegraph.co.uk/science/science-news/3345641/Stephen-Hawkings-explosive-new-theory.html>))

## Conclusion

From “Digital String Theory” and “Cosmic Inflation Replaced”, it seems that all space-time is perpetually quantum entangled. So photons of the “cosmic Bell test” ^ will not be unentangled. This doesn't prove inflation, though. This article provides an alternative, which needs to be considered in light of the latest results from the Planck satellite.

^ This test is a proposed scheme to use photons from causally disconnected cosmic sources (e.g. ancient quasars or patches of the cosmic microwave background) to set the detectors in an experimental test of Bell's theorem aka Bell's inequality – a mathematical proof discovered by John Bell in 1964, the theorem states that any Hidden Variables theory (see <sup>1</sup>) whose predictions agree with quantum mechanics must be instantaneous or “non-local” (see “Testing Bell's Inequality with Cosmic Photons: Closing the Setting-Independence Loophole” by Jason Gallicchio, Andrew S. Friedman, David I. Kaiser [submitted on 11 Oct 2013, last revised 21 Feb 2014]).

Reporting these results in “Breaking Down a Big Bang Breakthrough” (<http://astrokatie.blogspot.com.au/2014/09/breaking-down-big-bang-breakthrough.html>)

- September 24, 2014), theoretical astrophysicist Katherine J. Mack says –

“Two papers came out (not long after BICEP2’s initial announcement of inflationary gravitational-wave imprints in the cosmic microwave background) showing that the BICEP2 signal – the one that was supposed to be a beautiful picture of gravitational waves – could have been entirely due to dust in our Galaxy mimicking the primordial signal.”

“Two days ago, Planck released their dust polarization results. They specifically addressed the BICEP2 study, and while they were very measured in their statements (pointing to an upcoming joint analysis), the upshot of the work was that the dust polarization signal was so high that it could easily account for everything BICEP2 saw. Maybe the gravitational waves are there, but if Planck is right about the amount of dust in the way, there’s really no way to say that BICEP2 actually discovered them.”

David Parkinson, a research fellow at the University of Queensland, with his colleagues Marina Cortes and Andrew Liddle. “...find a tilt that is utterly incompatible with standard models of inflation. Basically, if BICEP2 and Planck’s previous measurements are correct, and the dust is at a manageable level, BICEP2 not only doesn’t prove inflation – it just about rules it out!”

## **SUPPLEMENTARY MATERIAL – DARK ENERGY, GRAVITATION, BLACK HOLES, AND DARK MATTER**

### **Dark Energy and the Big Rip**

The Klein bottle in “Digital String Theory” could possibly be a figure-8 Klein bottle because its similarities to a doughnut’s shape describes an idea suggested by mathematics’ “Poincare conjecture”. The conjecture has implications for the universe’s shape and says you cannot transform a doughnut shape into a sphere without ripping it. One interpretation follows: This can be viewed as subuniverses shaped like Figure-8 Klein Bottles gaining rips called wormholes when extended into the spherical spacetime that goes on forever (forming one infinite superuniverse which is often called the multiverse when subuniverses - which share the same set of physics’ laws - are incorrectly called parallel universes which are wrongly claimed to each possess different laws). Picture spacetime existing on the surface of this doughnut which has rips in it. These rips provide shortcuts between points in space and time – and belong in a 5<sup>th</sup>-dimensional hyperspace.

It has been shown that the space and time of the cosmos could result from electronics’ ones and zeros. Gravitation (space-time’s warps) can then also be viewed as the effect of the cause known as binary digits. A possible interpretation

of dark energy would be to consider it as radiation of binary digits from hyperspace because this radiation of digits creates space-time. Gravitation, produced by emitted 1's and 0's, would then be the product of dark energy. Dark energy would continuously form new space-time which would displace the existing galaxies and other parts of the universe, pushing galaxy clusters apart and making a subuniverse (not the universe as a whole) expand. Subcosmic (on a subuniverse scale) expansion sped up about 5 billion years ago because the subuniverse had then reached the threshold of having enough space-time, and enough gravity, and enough of dark energy's/gravity's anti-gravitational effect\*, to start expansion's speed-up. The greater the amount of space-time made by binary digits, the more dark energy will increase.

\* The Big Rip can never tear space and time apart because dark energy is the hypothesized cause of such a Rip. The previous paragraph shows that gravity (and thus space-time, matter, electromagnetism ...) is the product of dark energy i.e. binary digits in what another part of this article calls the computer simulation that becomes the cosmos. Like a bone continually being built up by osteoblast cells then broken down and repaired by osteoclasts, the universe is with us constantly and its space-time can't be shredded into oblivion. The simulation constantly "refreshes" or "reloads" itself, with the Big Rip being essential in the maintenance and repair preceding refreshing.

Fred Hoyle, Hermann Bondi and Thomas Gold calculated (in the middle of the 20<sup>th</sup> century) that matter or energy has to be created at a rate equal to one hydrogen atom in each quart of space ever half-billion years to keep the universe in a "steady state" ("The Universe" by David Bergamini and Life Nature Library – 1964, p.175). In accord with the Law of Conservation of Energy and Mass, "new" space-time isn't really formed but is simply the computer simulation that becomes the universe. This conservation can also be viewed as positive space-time (that means gravity is positive too, contradicting modern theories of the entire universe's alleged beginning that say gravity is negative) being balanced by an equal quantity of negative hyperspace (see "What Is Dark Matter?").

### **What Is The Relation Between Gravitation and Black Holes?**

Of course, relating gravitation to radiating dark energy means gravity must be a repelling force. If space-time (whose warping is gravity) forms mass, there could be "currents" of space-time flowing in the "oceans" between the galaxies. Space-time would form the matter in the galaxies, and it would form the Earth/objects on this planet. How? By some of the currents of space-time or gravity which pass the solar system's outer boundary being diverted towards the massive Sun's centre (just as some of the waves passing an island are refracted toward the shore by the island's mass). Along their course, the refracted gravitational waves are concentrated  $10^{24}$  times in the intense warping we call matter (see " $c^2$  and the Atom").



The more mass a body possesses, the more gravitation is diverted to play a part in that body's formation. Agreeing with Einstein's theory that gravitation is a push created by the hills and valleys of curved space, gravitational waves are a repelling force (this aspect of gravity is normally referred to as Dark Energy) refracted towards the Sun's centre. The waves ultimately originate far out in deep space where they have the potential to assist displacement of "old" space by "new" to push galaxy clusters apart. Having given the planets pushes which help keep them in their orbits and prevent them flying off into space (in conjunction with planetary orbital speed and momentum, gravitational waves from the opposite direction stop planets spiralling into the Sun), the waves arrive at the Sun where they interact with electromagnetism to form the masses of subatomic particles ^ (mass being produced by G-EM interaction was proposed by Einstein in a 1919 paper to the Prussian Academy of Sciences - "Do Gravitational Fields Play An Essential Part In The Structure Of The Elementary Particles Of Matter?"). They also form the strong and weak nuclear forces associated with those particles (nuclear forces are a by-product of G-EM interaction). The rotating Sun bulges at its equator and therefore has a larger equatorial than polar diameter, and more mass at its equator. This means more gravitation has been diverted to that region. Planets are also made from G and EM interacting #, and must consequently lie in the path gravity waves took from the outer solar system to the solar equator (more gravitation was diverted here - so if planets are created by G and EM, it follows that they'd be created where the gravitational "current" is greatest). For simplicity, we say the Sun's gravitation is strongest at its equator and planets are compelled to orbit in the ecliptic plane.

^ The Sun (and other bodies) can also radiate gravitational waves, according to "c^ and the Atom". 99% of the solar system's mass/gravity/gravitational waves are associated with our star, so the gravitational push on Earth from its sphere may be slightly greater than the push resulting from the waves originating in deep space. Though the expanse of space opposite the Sun from Earth's viewpoint is tremendously larger, it's also tremendously less dense and the waves from any solar-size region are far less numerous. Because of the great number of solar-size areas, the strength of the gravitational waves affecting Earth could still be almost as great as the effect of our star's gravity waves. In the end, our planet's orbit would be growing slowly larger. According to "Secular Increase of Astronomical Unit from Analysis of the Major Planet Motions, and Its Interpretation" in "Celestial Mechanics & Dynamical Astronomy", Volume 90, Issue 3-4, 2004, pp. 267-288 by Krasinsky, G. A. and Brumberg, V. A.; the distance between Sun and Earth is growing by approx. 15 centimetres per century. The two authors attribute this increase of the Astronomical Unit to dark energy which is, as noted above, a term describing the repelling force of gravity.

## **Newtonian and Relativistic Gravity**

# Matter would, in this case, be the concentrated form of gravitational waves. There's a stronger gravitational force on the surface of, and within, the Earth than in orbit because gravity is concentrated in the Earth's matter. So, like in a black hole<sup>^</sup>, time is slowed down (by much less and at lower altitudes, in the case of Earth). The high velocities experienced by orbiting astronauts also slows time at their extreme altitudes. The article "Gravitation" by Robert F. Paton - The World Book Encyclopedia (Field Enterprises Educational Corporation, 1967) –states, "... when one object is inside another, gravitation decreases the closer their centers are to each other" and also states that Isaac Newton's 1687 Law of Gravitation explains why an object at the center of the earth would weigh nothing<sup>1</sup>. Objects in space or an orbiting spaceship are similarly free from the earth's (or any planet's or star's) concentrated gravity/mass which is below, instead of above, them and makes them relatively weightless. Gravity's repulsive<sup>2</sup> force (which propagates from all directions) is UNconcentrated and, as Penguin Encyclopedia tells us, FAR less than Earth gravity. The concentrated gravity forming the spaceship is insignificant compared to the gravity forming a planet or star, and causes no noticeable reduction of weightlessness.

<sup>1</sup> The interpretation in this article says the concentrated gravity, which we call mass, above the object pushes equally on it from every direction and renders it weightless since it isn't attracted to any portion of the overlying mass.

<sup>2</sup> Einstein showed that attraction of two bodies of matter actually results from space-time's curvature pushing bodies.

<sup>^</sup> Black holes may be thought of as meeting-places and "sinks" for the gravitational currents flowing in and between galaxies. Though they aren't composed of matter, they do have mass because they are "gravity sinks" and gravity is capable of producing matter and mass. In black holes, the mass falling into them is relativistically converted into the energy of binary digits i.e. there is no interacting of bosons in wave packets to produce the fermions or forces we identify as matter, and the bosons – which are ultimately composed of the binary digits encoding pi, e,  $\sqrt{2}$  etc. (see "Digital String Theory") – register as 1's and 0's. The holes possess charge because the universe's mathematical foundation unites gravity/spacetime with electricity/magnetism (see the paragraph about Digital String Theory). Since it has mass, a black hole can naturally possess the 3rd property of holes viz. spin. Far from the hole becoming infinitely dense, infinitely curved and infinitely massive, there is no singularity but the matter is "shred" into binary digits by the black hole's fantastic pressure.

### **What Is Dark Matter?**

Imaginary numbers give negative results when multiplied by themselves e.g.  $i$  multiplied by itself gives  $-1$ . Imaginary time can be equated with dark matter in this way - it's already known that calculating time using imaginary numbers makes distinctions between time and space disappear. A negative 5th-



dimension (translated 180 degrees from positive space-time) is described by imaginary numbers so imaginary numbers eliminate distinctions between space-time and the 5th dimension, permitting dark matter to exist as "ordinary" matter's scaffold.

Our initial reaction is that this is wrong because it implies that the total amount of dark matter is equal to the total amount of ordinary, visible matter. As stated by Kim Griest from the University of California in San Diego -

"We know the total amount of material made of atoms is around one-fifth of the total amount of dark matter, the invisible mass of the universe. So nothing that is made of atoms, or that ever was made of atoms, can be a significant portion of dark matter."

But the simple fact is that the total amounts of matter and dark matter can indeed be equal i.e. dark matter can be ordinary matter's scaffold. We merely have to stop assuming that we can perceive, or that our scientific instruments can detect ALL of the matter in any region of space-time. Time travel could account for a portion of the invisibility. This subject is addressed elsewhere in this article.

The remainder of the invisible matter in any region of space-time could be accounted for by the following - The past can never be changed from what occurred, and the future can never be altered from what it will be. Both are programmed by the 1's and 0's. These 1's and 0's correspond to the 1's and 0's of the pits and land (or pits and bumps) of a DVD or CD. Science's Law of Conservation has known since the 19th century that neither matter nor energy can ever be destroyed or created - they only change form. If nothing in any time can be destroyed (it only changes form at a different point on the DVD), all time might be like a DVD. All of the "cosmic" DVD always exists even though a very limited set of sights and sounds can be perceived at any point during its playing (this means, as the abstract mentioned, that all the pieces of the puzzle - of comprehending the universe - already exist). In different parts of the cosmic DVD; people are forever being born, forever taking their first step (are they in perpetual motion in an eternal present?), forever resting in peace. I believe English physicist Julian Barbour has the same understanding of time which this sentence speaks of ("From Here to Eternity" by Tim Folger - <http://discovermagazine.com/2000/dec/20-cover#.UtedHdIW2bs>). And I think medical science will someday advance so much (and in such unexpected ways) that we'll be able to say they're forever being resurrected ^ . How could the time travel loved by theoretical physicists come to pass without this "cosmic DVD"?

## **SPECULATIONS CONCERNING FUTURE HUMANITY**

^ Everything in the universe and on earth (in all space-time) has an electronic nature at its most basic level. It's fundamentally mathematical, being composed of 1's and 0's. The electronics enables a mind to be downloaded and recorded from the brain it's a product of. Then it can be inserted into a clone of a person's original body, where it functions dynamically and not as a static "snapshot" from

an unchanging brain. This process can be repeated over and over, or genetic engineering – or entanglement with every quantum sized bit of spacetime (see **Trillions of Millennia in the Future?**) - might make the clone immortal. ^^

^^ Mathematician Benoit Mandelbrot developed fractal geometry, and coined the word fractal in 1975 (a fractal is a shape such that, if you look at a small piece of the shape, then it looks the same as the original, just on a smaller scale – it is used to describe coastlines, mountain ranges, etc). The diminishing size of spheres may be seen as representing cosmic, galactic, human, quantum scales. Since the universe as a whole has no beginning or end, how can any small piece of that universe (such as a human life) have a beginning or end? Certainly, parts of the universe appear to cease to exist e.g. individual stars can become supernovas. But think of time as a “cosmic DVD” with all of the past and future always existing though the present is considered to be only the extremely tiny portion of the disk illuminated by the “cosmic laser”. Then the DVD can be rewound (fast backwarded) and the star will once more be fusing hydrogen into helium. Intelligences with advanced technology like downloading and time travel could learn to use the technologies so they could attain immortality in their physical bodies. However, the concept of possessing a soul is not automatically supported. The idea of having a reincarnating soul would be an easy way of explaining immortality thousands of years ago when people were completely unfamiliar with the scientific facts of an eternal universe, Einstein’s Unified Field, and fractal geometry (like topology or “rubber-sheet geometry”; fractal geometry complements Einstein’s geometric description of space-time and gravitation in General Relativity). Existence is change – from being a baby, to being a young person, to being an old person. Death isn’t the end but simply another change. That change may be to the state we were in prior to birth. It was seen that immortality **(in a physical body)** actually results from downloading + cloning (this could be called uniting the spiritual body with the physical body, which could be genetically engineered for perfect physical and mental health). If the mind is downloaded into a clone after death, that’s resurrection (and that mind – being quantum entangled with all spacetime [see below] - can time travel to make its presence felt centuries or millennia in the past, even immediately after death). If the mind is downloaded into a fetus, it’s born and will develop into its mature state as the brain develops.

## **TRILLIONS OF MILLENNIA IN THE FUTURE?**

Perhaps, in the distant future, we can all have an immaterial body designed in the far future to overcome physical limitations (and that body might be quantum entangled with all space and time). The portion of that sentence referring to the body anticipates possible developments from the concept of an immortal, immaterial soul advocated by ancient Greek philosopher Plato and his followers; as well as from the belief of the Mormons that God has a glorified body of flesh and bone (“Mormons” by Mark E. Petersen – The World Book Encyclopedia (1967) which I hypothesize would be quantum entangled with all space and time.

The portion referring to quantum entanglement says entanglement exists not merely in the present but also reaches into the past (“Experimental delayed-choice entanglement swapping” by Xiao-song Ma, Stefan Zotter, Johannes Kofler, Rupert Ursin, Thomas Jennewein, Časlav Brukner & Anton Zeilinger - Nature Physics 8, 479–484 (2012), and “Weird! Quantum Entanglement Can Reach into the Past” by Clara Moskowitz, LiveScience Senior Writer | April 30, 2012 - <http://www.livescience.com/19975-spooky-quantum-entanglement.html>) ... and the Unified Field extrapolates this entanglement to perception of the future (which could never be perceived unless it already exists – and that would permit time travel).

## **CARL SAGAN AND THE GODS**

Do you know what all this means when it's condensed into a few sentences? It means mathematics is united with the physical world, and miracles can occur. Computer programs are written with the binary digits of 0 and 1 - and these digits compose a form of maths. So anything you see on a computer screen can happen in real life. You have the potential to do anything you can imagine, as long as the laws of physics don't forbid it (we may not completely understand what those laws actually forbid for at least another thousand years).

You don't even need to be a mathematician or computer programmer. All things (matter, energy, space, time, etc.) are part of Einstein's Unified Field. Your mind is already entangled and united with all maths and all computers. Performing miracles is no more difficult than pressing a button to switch your computer on. All you need (at least in theory) is FAITH - an absolute, unshakeable knowledge that you can do what the early 21st century says is impossible.

Speaking of faith, consider what American astronomer and author Carl Sagan (1934-1996) had to say in “Pale Blue Dot – A Vision of the Human Future in Space” - Headline Book (1995, p. 382): “Many religions, from Hinduism to Gnostic Christianity to Mormon doctrine, teach that – as impious as it may sound – it is the goal of humans to become gods.” Humans becoming God brings to mind “A Man Named Armstrong” (a reference to Australian country singer Reg Lindsay’s inspiring tribute to Neil Armstrong's 1969 walk on the Moon, with the lines “But the world all stopped to watch, on a July afternoon, watched a man named Armstrong walk upon the moon ...and I wonder if a long time ago, somewhere in the universe, they watched a man named Adam walk upon the Earth”) (“A Man Named Armstrong” – sung by Reg Lindsay in 1971, written by John Stewart - <http://www.youtube.com/watch?v=X-1VtFKiBzo>). The “other Armstrong” - religious writer and broadcaster Herbert Armstrong (1892-1986) - may well have been correct when he said “God is reproducing himself through mankind.” (“The Essential Teachings of Herbert W. Armstrong”. by Boston, Stephen W. - Writers Club Press (2002)

We saw, 4 paragraphs ago, that the human body and brain might become immaterial and quantum entangled with all space and time (no doubt many people, even today, would call such invisible, endlessly powerful, entangled beings “supernatural”). This means eternal God and humanity of the far future are not separate in any sense but are the same thing. The “union with humans” refers to the ability of these beings to affect the past and thus have a relationship with people living in earlier times. A name used for God in the Old Testament is Elohim, which means the “plural majesty of the one god” i.e. the billions of earth’s inhabitants entangled with, and dispersed throughout, the united infinity of the universe and eternity of time. Such entanglement suggests extrasensory perception and telekinetic independence from technology is possible, despite modern science’s objections which appear to be based on non-unification.

## **QUANTUM GRAVITY PERSONALIZED**

This addresses the unification of the theory that describes the large-scale structure of the universe (Albert Einstein’s theory of space-time and gravity known as General Relativity) and the theory that describes the subatomic structure of the universe (Quantum Mechanics). These theories from the early 20<sup>th</sup> century, though scientists have failed to successfully combine them, have each proved to be of spectacular value in the modern world and have both been experimentally verified many times.

Relativity tells us time and space (space-time) are warped and curved. Quantum mechanics says consciousness affects measurements (is quantum entangled with space, time, matter, electromagnetism etc. regardless of distance). The Unified Field \* proposed by Einstein supports the concept of entanglement by uniting all things into one thing (permitting what he once called “spooky action at a distance”), and would unite it with Relativity. I think another “missing link” combining these relativistic and quantum predictions is that space-time (warped into gravity) creates a living being i.e. the matter, electromagnetism etc. composing the brain and body – and consciousness is a product of that brain. Consciousness is unified with everything in time and space – meaning the mind affects space-time, space-time influences the mind - since all things (space-time, brains) result from the programming of the binary digits spoken of in “Digital String Theory” and elsewhere.

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\* In the 19th century, Scottish mathematician and physicist James Clerk Maxwell unified electricity and magnetism into electromagnetism (“A Treatise on Electricity and Magnetism” by James Clerk Maxwell – Oxford: Clarendon Press (1873). Einstein's equations say that in a universe possessing only gravitation and electromagnetism, the gravitational fields carry enough information about electromagnetism to allow the equations of Maxwell to be restated in terms of these gravitational fields. This was discovered by the mathematical physicist George Yuri Rainich (Transactions of the American Mathematical Society 27, 106

- Rainich, G. Y. (1925). England's Penrose has argued that the gravitational fields, if known everywhere but only for a limited time, do not contain enough information about their electromagnetism to allow the future to be determined, so Einstein's unified theory fails (Mathematical Physics 3, 566 - Newman, E. T., Penrose, R. J. (1962).

Let's slightly adapt a 1919 paper by Einstein ("Do Gravitational Fields Play An Essential Part In The Structure Of The Elementary Particles Of Matter?" by A. Einstein - submission to the Prussian Academy of Sciences (1919) to conclude gravitation actually forms particles of matter. If he was also correct about gravitation being the warping of space-time, it is logical that both gravitation and the warping of space-time that produces gravity would form elementary particles, their masses and the forces (nuclear and electromagnetic) associated with those particles. Therefore, time is unified with the gravitational field, which produces electricity and magnetism (the electromagnetic field – see  $c^2$  and the Atom). If time is unified with the gravitational and electromagnetic fields, the gravitational fields are not known for only a limited time but do contain enough information and Einstein succeeded, just as John Wheeler and Charles Misner claimed ("Geometrodynamics" or "Classical physics as geometry" by Charles W. Misner/J. A. Wheeler – Annals of Physics 2, 525 (1957).

This overcomes the 50-year-old objection to Einstein's Unified Field which was put forth by Penrose. Physicists also argue that a unified theory must now address the strong and weak nuclear forces in the atom, as well as dark matter and dark energy. I think all of these subjects have been dealt with in this article.

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A few of the space-time events the mind is unified with include – hair growth, gender, rate of ageing, becoming younger, ESP / telekinesis. Animals and plants are also united with the universe in all times through what may be called the Unified Field – in animals, this is referred to as instinct and in plants, the unification producing intelligent-like behaviours and responses could result from the entire universe being a computer simulation filled with advanced artificial intelligence (referred to earlier when speaking of Erwin Schrodinger and his 1944 book "What Is Life?") More "cosmic" connections with the mind include – creation of subuniverses, all of Earth's history and future, the Sun's progression to a red giant (and possible programming back to the Main Sequence where it would resume fusing hydrogen into helium), infinity and eternity (the universe as a whole).

It isn't the nature of science to accept quantum-gravity applications at this time. Despite knowing that time is warped and curved, scientists act as though time is a straight line that invariably and exclusively operates in a straight line from the past, through the present, and to the future. Science must spend lifetimes

(potentially) proving the theory of quantum gravity – this automatically requires much scientific language, serious mathematics (equations are a must, according to scientists), and (apparently) many complicated experiments requiring vast amounts of money and time.

They must spend ages overcoming prejudices of the present and past so the new information is acceptable (this is why Max Planck [1858-1947], considered to be the founder of quantum theory, said –

“A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.”

Wissenschaftliche Selbstbiographie. Mit einem Bildnis und der von Max von Laue gehaltenen Traueransprache. Johann Ambrosius Barth Verlag (Leipzig 1948), p. 22, as translated in *Scientific Autobiography and Other Papers*, trans. F. Gaynor (New York, 1949), pp. 33–34 (as cited in T. S. Kuhn, *The Structure of Scientific Revolutions*).

This scientific truth has to be peer-reviewed by the proposer's intellectual equals in a modern science journal (any of them would be unlikely to publish Einstein's Special Relativity Theory – as “Coming of Age in the Milky Way” by Professor Timothy Ferris [The Bodley Head, London – 1988] says on page 191, “The 1905 paper that first enunciated the theory [of Special Relativity] resembles the work of a crank; it contains no citations whatever from the scientific literature, and mentions the aid of but one individual, [Einstein's friend Michele Angelo] Besso, who was not a scientist.”)

Nor would the early papers in quantum mechanics (along with relativity, this is one of the greatest scientific achievements of the last hundred years) be likely to get published today. When his paper regarding mathematical formulas creating reality (the most recent example of this work is “Our Mathematical Universe: My Quest for the Ultimate Nature of Reality” by Max Tegmark – published by Knopf on January 7, 2014) was submitted to a scientific journal and rejected as being too speculative, U.S. cosmologist Max Tegmark showed the rejection letter to his friend John Wheeler (1911-2008), a Princeton theoretical physicist. Wheeler said, “Extremely speculative? Bah!” Then he reminded Tegmark that some of the original papers on quantum mechanics were also considered extremely speculative (“Is the universe actually made of math?” by Adam Frank - <http://discovermagazine.com/2008/jul/16-is-the-universe-actually-made-of-math#.UZsHDalwebs>)

This article, to quote from page 33 of “Quantum” by Manjit Kumar (Icon Books – 2008), imitates Special Relativity in the sense that it is “offering physicists a way to explain the unexplained” and is “not a fully worked-out theory”. This paper is a “signpost towards such a theory” but “even that (may) prove too much for those unprepared to travel to a destination” outlined in its pages.

Finally, after hundreds (perhaps thousands) of years; science will reach a point where it's willing to admit that quantum gravity exists and that it does have practical applications. But I suppose a few thousand years are nothing – after all, quantum gravity in this subuniverse has already waited billions and billions of years for Earth to even suspect it might be out there (and in here, too).

## **CONFIRMATIONS FROM SPECIAL AND GENERAL RELATIVITY**

### **Speed and Division by Zero**

In World Science U's online course "Space, Time and Einstein"; Professor Brian Greene wrote  $\text{Speed} = \text{Distance} / \text{Duration} = \text{Space} / \text{Time}$ . Referring (in this article) to the Optical Force and a spaceship travelling 700 light years in literally no time,  $\text{distance/duration} = 700/0$ . Mathematics books say division by zero is undefined and you should never divide by zero (the special case of  $0/0$  is termed "indeterminate"). According to "Einstein's Only Mistake: Division by Zero" (<http://refully.blogspot.com.au/2012/05/einsteins-only-mistake-division-by-zero.html>), "When Astronomers today say they are following Einsteins theory of relatively" (Einstein's theory of relativity), "they are actually not. Partially because Einstein said the Big Bang theory made no sense. He never in his lifetime accepted the Big Bang as the way our universe came into being or Black Holes. He always looked for another explanation. (And partly because) Einstein made a school boy error in algebra. What Einstein did was divide by zero during his calculations, a no, no, in math."

"Basic Technical Mathematics with Calculus, SI Version Ninth Edition" by Allyn J. Washington (Pearson Education, 2010) states on p.9, "If  $0/0 = b$ , then  $0 = 0 \times b$ , which is true for any value of  $b$ . Therefore, no specific value of  $b$  can be determined." My aim is to show that Einstein was correct to divide by zero, that doing so enabled him to introduce his Hidden Variables theory into quantum mechanics, and that zero is not nothing but actually something (zero would be something if it's paired with one to form the binary digits which are used in computers and electronics, and the digits bring determinism (an exact cause) to probabilistic quantum theory. The aim is also to show that zero redefines the term infinity\*, and that there really is another explanation for the Big Bang ("displacement", in various places above) as well as black holes ("gravitational", in various places above). By the way, we may have to rebuild all those sophisticated calculators that produce an error message when you try to divide by zero.

\* The inverse-square law states that the force between two particles becomes infinite if the distance of separation between them goes to zero. Remembering that gravitation (associated with particles) partly depends on the distance between their centres, the distance of separation only goes to zero when those particles' centres occupy the same space-time coordinates (not merely when the particles' or objects' sides are touching i.e. infinity equals the total elimination of

distance, both in space and time). The infinite cosmos could possess this absence of distance in space and time via the electronic mechanism of binary digits (making it as malleable as any image on a computer screen).

If General Relativity is acknowledged to be our best theory for describing the large-scale structure of the universe, why don't we also recognize that division by zero is valid? Either astronomers aren't actually following the theory, Einstein didn't really perform the operation, or scientists have taken a century or longer to fully realize what general relativity means.

## **Motion**

Movement is ultimately mathematical (the mathematical foundations of the universe could perform "packet switching" - switching of 1's and 0's in interacting bosons, which takes place in matter's wave packets). I believe the maths involved belongs to base 2 i.e. the binary digits of 1 and 0 are the cause of matter, gravity, electromagnetism, the nuclear forces, black holes, space, and time. Time is warped, and possibly an electronic "clock" measuring the motions of matter i.e. producing frames as in a movie. If the universe is made of frames, the word "travel" would refer to one state or position (such as in a planet's or moon's orbit) being electronically represented in a "cosmic movie frame", with possibly billions of billions of frames displayed every second so that its "movement" would appear continuous. Time travel into the past or future would be like going to different points in the cosmic movie instantly. Were ancient Greek philosophers Parmenides and Zeno of Elea at least partly correct to speak of the absurdity of reality being made up of many changing things? Zeno also said motion is absurd. Motion and change would be composed of series of unchanging frames (like cartoon cels) but would, in the end, merely be the switching of 1's to 0's and vice versa. Remember this – the appearance of a stream of photons can be duplicated using a single photon. If it's presented in position A, then B, then C, and so on; it can deceive an observer or detector into believing it's in motion. If displayed simultaneously at A and B and C, it appears to be a number of particles streaming through space and time (see "Digital String Theory").

## **After 1955 - Before 1879 – After 1452 – Before 1727**

"Quantum" by Manjit Kumar (Icon Books 2008) says on p.327, "Shortly after 1 am on 18 April (1955), (Einstein's aortic aneurysm, a bulge in the body's main artery) burst. After saying a few words in German that the night nurse could not understand, Einstein died." In life, the great man denied being a genius – he said he had no special talent but was only passionately curious. And he was unorthodox – how many people do you know who would be rebellious enough to claim, 100 years ago, that things like space and time are curved? There is, at present, no way to know what he said in his last moments. But we can wonder if he was rebellious enough to defy the understanding of death and tell the nurse



that he was going to continue being curious, and to bring his work to a more fulfilling level of completion – after all, at the time of the funeral of his engineer friend Michele Angelo Besso (1873 – 1955), he said: "Now Besso has departed from this strange world a little ahead of me. That means nothing. People like us, who believe in physics, know that the distinction between past, present and future is only a stubbornly persistent illusion". Not being alive, he'd have to find some unorthodox method of revealing that work-after-death to others, and the nature of that method is a bit mysterious to you and me.

(See the paragraph about Benoit Mandelbrot and fractals, with the statement "Death isn't the end but simply another change. That change may be to the state we were in prior to birth.") Before his birth in 1879, was Albert Einstein using his mental abilities to physically stimulate other great minds like Leonardo da Vinci (1452-1519) and Isaac Newton (1642-1727)? Or were Leonardo and Newton using their abilities after their deaths – to alter the brain of Einstein? Before you decide I'm ruining the memories we have of great men, remember that Newton's view of the world was not entirely a mechanistic one dealing with laws of motion, optics, mathematics and gravity. It was also largely what could be called mystical and devoted to things like alchemy and the Bible (reflecting this worldview, Einstein's nature was also deeply religious and spiritual) –

Isaac Newton (1643 – 1727), the noted British scientist and mathematician, wrote many works that would now be classified as occult studies. These occult works explored alchemy (both a philosophy and a practice with an aim of achieving ultimate wisdom as well as immortality, involving the improvement of the alchemist as well as the basics of modern chemistry) and Biblical interpretation (especially of the Apocalypse – translated from Greek, this actually means "unveiling or revelation at the end of the age or eon"). Newton's scientific work may have been of lesser personal importance to him, as he placed emphasis on rediscovering the occult wisdom of the ancients. In this sense, some have commented that the common reference a "Newtonian Worldview" as being purely mechanistic is somewhat inaccurate. After purchasing and studying Newton's alchemical works in 1942, economist John Maynard Keynes, for example, opined that "Newton was not the first of the age of reason, he was the last of the magicians."

### **Quantum (and Macroscopic) Entanglement**

What I'm saying is not merely that Leonardo, Newton and Einstein affected each other; but that everyone in the past, present and future is capable of inspiring everyone else. This can be completely unconscious and refers not only to reading history books or dreaming of the future but to directly influencing the mind or brain. This is the logical result of a sentence in "Universe as a Whole is Infinite and Eternal" – "The "pairing up" of bits (binary digits) by e-infinity i.e. of the electronic binary digits of 1 and 0 in the largest and the smallest scales, means this: quantum effects are not distinct from macroscopic events, and

become apparent on a large (even astronomical) scale.” It would also result from “Trillions of Millennia in the Future” stating that people in the future may be quantum entangled with everything in space and time. The entanglement would extend to every point in the past or future, ensuring that not only future people can intuitively understand relativity but also that someone named Albert Einstein did.

### **Attracting and Repelling Gravity + Higgs field/boson**

Why are the Andromeda and Milky Way galaxies going to eventually merge into an elliptical popularly being called Milkomeda?

Gravitational waves converge on Andromeda giving it huge mass and causing a large depression in space-time’s “rubber sheet” geometry. Andromeda is twice as massive as the Milky Way according to “A dynamical model of the local cosmic expansion” by Jorge Peñarrubia, Yin-Zhe Ma, Matthew G. Walker and Alan McConnachie – Monthly Notices of the Royal Astronomical Society – published online July 29, 2014 (<http://mnras.oxfordjournals.org/content/443/3/2204>). Picture this as the Milky Way rolling around Andromeda’s depression like a marble taking many billions of years to complete an orbit. In approx. 4 billion years, our galaxy is predicted to collide with Andromeda (though the vast distances between stars means all stars may drift past other stars, without actually colliding) – to continue with the visualization, the Milky Way falls into Andromeda’s depression in space-time’s rubber sheet.

This exemplifies gravitation attracting despite its repelling nature, which means gravitational waves are focused into the increased warping that is matter (the greater the amount of matter and mass, the greater is the number of gravitational waves converging there - and the greater is the gravitation associated with the body, and the deeper the body depresses space-time that’s pictured as a rubber sheet). The famous 17<sup>th</sup>-century scientist Sir Isaac Newton once said the entire universe would instantly feel the loss of the sun’s gravity if our star disappeared suddenly – I think modern science doubts this but zero separation (the Unified Field created by everything in the universe being quantum entangled) forces me to agree with him.

This unified field is the gravitational field which produces everything in space-time. The unified/gravitational field could even be termed the Higgs field – because the Higgs field is supposed to be responsible for the existence of mass, and this article says gravitation produces mass. The mass of the Higgs boson ( $126 \text{ GeV}/c^2$ ) is proposed to be the product of the gravitational field. Or since the Higgs field talks of smallest possible excitations, perhaps we could reserve “Higgs field” for the binary digits that are the fundamental constituents of the entire universe (including gravity). The Higgs field is used to explain why the weak force has a much shorter range than the electromagnetic force. “This

article's "c<sup>2</sup> and the Atom" showed that gravity can account for differences between the weak and electromagnetic forces.

\* Scientists use  $E=mc^2$  to measure a particle's mass. The equation's solved for mass, giving  $m=E/c^2$ . So the Higgs boson's mass is equal to 126 GeV or giga-electron volts (its energy) divided by  $c^2$  (the velocity of light squared). The highest speed possible is Lightspeed. Physically speaking, it cannot be multiplied. Einstein himself proved this. The equation  $E=mc^2$  can be considered a degenerate form of the mass-energy-momentum relation for vanishing momentum. Einstein was very well aware of this, and in later papers repetitively stressed that his mass-energy equation is strictly limited to observers co-moving with the object under study (I think he was referring to the time in the 1890s when he was imagining what it would be like to move along beside a beam of light).

### **Light's Optical Effect and Time Dilation**

This section refers to the Optical Effect in **Imaginary Numbers and Electrical Engineering**. Implementing the Optical Effect means travelling to any spot in an infinite universe that goes on and on forever in absolutely no time. That's obviously pure fantasy, right? Not at all!

My approach regarding the nature of time - it's impossible to point to the 4<sup>th</sup> dimension of time, so this cannot be physical. Since the union of space-time is well established in modern science, we can assume the 4th dimension is actually measurement of the motions of the particles occurring in the 3 dimensions of length, width, and height.

The basic standard of time in the universe is comparable to the 1960's adoption on Earth of the measurement of time as the vibration rate of cesium atoms. Continuing from the earlier conclusion that humans must have used time travel to the past as well as our computer science to create this subuniverse 13.8 billion years ago, we could borrow the conclusions of Special Relativity and set the standard for time measurement as the measuring of the motions of photons i.e. of the speed of light. At lightspeed, time = 0 (it is stopped). Below 300,000 km/sec, acceleration or gravitation causes time dilation (slowing of time as the speed of light is approached). We can take the Optical Effect's approach and say distance is totally eliminated, or we can say its effect of exceeding the speed of light means time is totally eliminated. Either way, implementing the Optical Effect means travelling to any spot in an infinite universe in literally no time is no fantasy.

**So we can produce the effect of faster-than-light travel for both matter and information, without engaging in actual faster-than-light travel (that is impossible). We only appear to re-locate matter and information superluminally because distance is eliminated (or, if you prefer, time is**

**stopped) by attracting together the folds in space-time that are called gravity.**

### **Mass and Infinity**

Since all things need time to travel distances, the stopping of time at light speed means no distance greater than that covered by light's speed of 186,282 miles/second can be traversed. (This also means space cannot expand faster than the speed of light. See the chapter **Space-time Cannot Expand Faster Than Light** for a complementary explanation.) The stopping of time at light speed has the same effect as increasing the mass of an object to an infinite amount at light speed. Light's velocity could never be exceeded because an infinite push would be needed to make the object go faster, and an infinite push doesn't exist.

If time's 0, space is also 0 because space and time coexist as space-time whose warping (gravity) is necessarily 0 too. Spacetime/gravity form matter/mass, so the latter pair can't exist at lightspeed and photons are massless (even when not at rest). Relativistic mass increase at increasing accelerations is inevitable\* because the object is encountering more spacetime and gravity (the producers of mass). But mass increase cannot become infinitely large since mass doesn't exist at Lightspeed. Matter always has mass so it can't exist at light speed, but energy can as long as photons are massless. This means mass and energy must be related to the speed of light ( $E=mc^2$ , in the words of Albert Einstein).

\* In 1911 Vladimir Varičak asserted that length contraction is "real" according to Lorentz, while it is "apparent or subjective" according to Einstein (Miller, A.I. [1981], "Varičak and Einstein", *Albert Einstein's special theory of relativity. Emergence (1905) and early interpretation [1905–1911]*, Reading: Addison–Wesley, pp. 249–253. Einstein replied: "The author unjustifiably stated a difference of Lorentz's view and that of mine concerning the physical facts. The question as to whether length contraction really exists or not is misleading. It doesn't "really" exist, in so far as it doesn't exist for a comoving observer; though it "really" exists, *i.e.* in such a way that it could be demonstrated in principle by physical means by a non-comoving observer." (Einstein, Albert [1911]. "Zum Ehrenfest'schen Paradoxon. Eine Bemerkung zu V. Varičaks Aufsatz". *Physikalische Zeitschrift* **12**: 509–510). In the same way, mass increase doesn't really exist for a co-moving observer (who's moving in a correlated or similar manner) but it is real for a non-comoving observer whose movement is not correlated or similar.

The former pair (spacetime/gravity) also "lose existence" at the speed of light. Since the universe is based on mathematics, it's possible to progress in number-line fashion from the positive acceleration in space-time to the state of zero spacetime at lightspeed ... and go beyond that to negative 5th-dimensional hyperspace described by imaginary numbers (the particles

there may be called either tachyons or dark matter). Earlier parts of this article show that this hyperspace beyond the speed of light allows a particular kind of time travel (to the past - various interpretations of Einstein's theories have suggested superluminal velocity permits time travel). We couldn't reach this hyperspace by travelling faster-than-light because nothing can exceed light's speed. But we can access hyperspace at subluminal speeds by "inverting" space (see **THE MATRIX AND THE FIGURE-8 KLEIN BOTTLE**).

Since there is zero, or no, spacetime at light speed<sup>^</sup>; all distances – between here and there, past and future – are totally eliminated (again permitting the Optical Effect's Intergalactic/Time travel). It was stated in **Universe as a Whole is Infinite and Eternal** that the laws of gravity and the inverse-square combine to say "infinity equals the total elimination of distance". So infinity exists at light speed. In "Physics of the Impossible" by Michio Kaku (Penguin Books 2008, p.227), "... whenever we naively try to marry these two theories (general relativity and quantum theory), the resulting theory makes no sense: it yields a series of infinite answers that are meaningless." We see that infinite answers are supposed to be arrived at because infinity (in the sense of total elimination of distance) exists at light speed, and because the universe is infinite in both time and space. Infinity and infinite answers are not barriers to uniting general relativity and quantum theory. When we realize that infinity exists (in more than one way), those infinite answers can yield not nonsense but real meaning.

<sup>^</sup> Space-time being zero (previously referred to as "not existing" – actually, a state of masslessness and stopped time) really means there's zero separation in space-time. It merely seems to not exist because the folds caused by warping, and known as gravity, have been attracted together.

Omnispacial (existing everywhere in space) and omnitemporal (in all time) quantum entanglement means there could be ME (macro-entanglement) and IT (independence from technology – see **CARL SAGAN AND THE GODS**). With IT, spaceships wouldn't be necessary for instant space-time travel to anywhere/anywhen. People are capable of teleporting to any destination using only their body/brain. Partial independence from a physical body may also be possible via “an immaterial body designed in the far future to overcome physical limitations (and that body might be quantum entangled with all space and time)” – see **Trillions of Millennia in the Future?**

On June 28 2009, Stephen Hawking held a party for time travellers in Cambridge, England. When the things in this article have come to pass, you and I will be able to attend that party without anyone knowing (immortality and resurrection of the long dead – using science and medical doctors – will be here then, as **SPECULATIONS CONCERNING FUTURE HUMANITY** suggests. Professor Hawking needs to think no-one went to his party. The spectacular future waiting for us can only happen if we all strive hard and make it happen (p.25 says space-time is programmed by 1's and 0's, and the future [or past] can never be changed – but these correspond to the 1's and 0's in the pits and bumps of a “cosmic DVD” – no DVD is produced without a lot of work). Becoming aware of that future before we're ready would make us tend to be complacent. We wouldn't think it necessary to work quite as hard as we do when we think today is the only day that presently exists. Time travellers who introduce themselves prematurely would be committing the worst kind of interference. Possibly, they could interact with ancient civilisations - not by calling themselves time travellers; but by saying they came from a place called, for example, Heaven. People living in those ancient times would then produce writings combining the future glories with their own customs and limited understanding of their limited encounters with the future.

### **The immaterial body**

This necessarily involves much speculation – the development of an all-powerful, all-knowing, omnipresent human body composed of photons and gravitons, and quantum entangled with every point in space-time is going to be proposed, for the purpose of overcoming the limits of biological bodies – or biological bodies incorporating computer and robotic systems (see **Trillions of Millennia in the Future?**). This is not incompatible with my original view of science. I used to think science was the pursuit of knowledge about anything and everything, no matter what – hardships were to be overcome, speculation was welcomed. Over the years, I've learned that isn't what science is all about (not today, anyway). Science's apparent fear of speculation is fine if you're happy to dedicate your life to a self-correcting process that moves relatively slowly. But if you dare to wonder how an immaterial body might be built, fear of speculation will bind you in a prison of your own making and your tunnel vision will have no idea that anything substantially different from today's science can exist even a million years from now.

Light is slowed down when it's not travelling in a vacuum – it's slowed progressively more by gases, liquids and solids (light's speed in vacuum is  $3 \times 10^8$  metres/second,  $2.26 \times 10^8$  m/s in water and  $1.97 \times 10^8$  m/s in glass. Also, scientific experiments have been conducted to slow or stop photons ("Stopped Light and Image Storage by Electromagnetically Induced Transparency up to the Regime of One Minute" by Georg Heinze, Christian Hubrich, and Thomas Halfmann: Phys. Rev. Lett. 111, 033601 – Published 15 July 2013). Once stopped, they can be collected and substituted for the body's particles\*. Then they can be programmed (**see Digital String Theory**) to duplicate the processes that occur during metabolism. It was shown that gravitational waves are radiated from the Sun and all bodies (**What Is The Relation Between Gravitation and Black Holes?**) and can produce electromagnetism. Therefore, it should be possible to start with gravitons when building an immaterial body. The sequence of 1's and 0's composing the gravitons could become the sequence composing photons of electromagnetism, intermediate vector bosons (W and Z particles) of the nuclear weak force, gluons of the strong nuclear force, and mass. The human genome was sequenced (the exact sequence of all the genes in a human was determined) only half a century after identification of DNA's structure (by Francis Crick and James Watson in 1953). Maybe the rapidity of medical and scientific advances means the immaterial body is only a century or two away. Maybe that's being a little optimistic ... but it sure sounds better to me than waiting a million years.

\* In 1925, the Austrian physicist Wolfgang Pauli discovered the exclusion principle. This says two similar particles cannot have both the same position and velocity. If two electrons could have identical positions and velocities, they could all collapse into a roughly uniform, dense "soup". Protons and neutrons would do the same, and there would be no well-defined atoms. So we need the exclusion principle. Force-carrying particles like photons and gravitons do not obey the exclusion principle so we might assume the immaterial body wouldn't be well-defined and would collapse into a ghostly soup. But perhaps a well-defined structure can be built if the photons are first stopped (the potential for photons to possess mass by having their digital sequence altered and being converted to other particles – or the potential for programming the photons - may make this definition possible).

## **$E = mc^2$**

What does the "mass of photon" subject mean for  $E=mc^2$ ? The first step is - In space-time's 3+1 dimensions (for non-comovers who aren't travelling alongside a light beam at the speed of light: see final paragraph),  $m=E/c^2$ .

Since this discussion is about the masslessness of photons travelling at light speed, it can be said  $E=0 \cdot c^2$  ( $E=0$ , the number zero i.e. photons are massless

as stated in the 2<sup>nd</sup> paragraph of **Mass and Infinity**). Special Relativity says there's no change for co-moving observers and the photon is therefore massless at rest, too. But for a stationary observer taking measurements in a lab, the mass increase would appear to be infinite and nothing would be able to exceed light's velocity in a vacuum.

Obtaining E by itself means both sides of the equation (E and 0) must be divided by 0, and division by zero is only possible if binary digits combine to make the cosmos – then 0 is “something” as surely as 1 is. When E exists in isolation,  $m=0$  and  $c^2=0$  (meaning  $m=c^2$ ).

Back to  $E=mc^2$ .

$c^2=E/m$  and (using  $m=c^2$ )  $c^2=E/c^2$  which means  $E=c^4$ . Graviton/photon interaction produces mass, so E (mass-energy of photon) =  $c^2$  (light's photon) multiplied by  $c^2$  (gravity's graviton) ( $c^2 * c^2 = c^4$ ).

Because it's also true that  $E=0$ , the graviton is massless like the photon. The speed of light is c and  $c^2$  refers to observers and light co-moving. So the other  $c^2$  refers to observers and gravity co-moving. The speed of gravitational waves is c too and the speed of light is equal to the speed of gravity (Einstein says it is and this article agreed in **Space-time Cannot Expand Faster Than Light**). Of course, this ignores the quantum entanglement of the whole universe and all time – this implies that if the sun suddenly stopped shining or having a gravitational influence, those effects would be instantly detectable everywhere and everywhen.

In space-time's 3+1 dimensions,  $m=E/c^2$ . Therefore,  $m=c^2$  is restricted to the speed of light. At first glance, we might assume this means mass does exist at light speed. But the absence of E says there's no interaction of light energy and gravitational energy (no mass) at light speed; verifying that at c, time=0 and space=0 and gravity=0 (without spacetime/gravity, there's no creation of mass).

END