

EXPLORING ASPECTS OF SCIENCE WHILE WONDERING IF THE FUTURE AND PAST EXIST RIGHT NOW

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Abstract -

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Content -

TOPOLOGICAL UNIVERSE

The beginning of this article draws on mathematics' topology, or rubber-sheet geometry. The topology takes the form of electronics' binary digits (1's and 0's) composing 2 Möbius strips which are united into a figure-8 Klein bottle constituting a "sub"universe. The encoding of infinitely-long irrational and transcendental numbers like π , e , $\sqrt{2}$ by the digits produces an infinite series of sub-universes (an infinite universe).* And other subs can naturally affect our own 13.8 billion-year-old subcosmos. ("Our Mathematical Universe" by cosmologist Max Tegmark – Random House/Knopf, January 2014 believes the universe has a mathematical foundation).

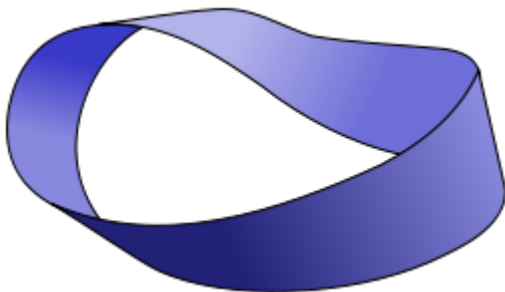
* For what I see as potential support for this maths, I thank "The origins of space and time" by Zeeya Merali ("Nature" **500**, 516–519: 28 August 2013) which supplied the info that Rafael Sorkin - a physicist at the Perimeter Institute in Waterloo, Canada - postulates that the building blocks of space-time are simple mathematical points that are connected by links. He calls his theory Causal Sets.

Binary digits are proposed to be the Hidden Variables which "are an interpretation of quantum mechanics based on the belief that the theory is incomplete and that there is an underlying layer of reality that contains additional information about the quantum world. This extra information is in the form of the hidden variables, unseen but real quantities. The identification of these hidden variables would lead to exact predictions for the outcomes of measurements and not just probabilities of obtaining certain results." ("Quantum" by Manjit Kumar - Icon Books, 2008 - p. 379)

String theory – the best known hypothesis of modern physics searching for the universe's Theory of Everything - says everything's composed of tiny, one-dimensional strings that vibrate as clockwise, standing, and counterclockwise currents (p. 84 of "Workings of the Universe" by Time-Life Books, 1991). We can visualize the tiny, one dimensional, so-called Virtual Particles that fill all space and are really pulses of energy. We can visualize them generating binary digits of 1 and 0 (base 2 mathematics) that form 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. (The curving of what we call space-time sounds very strange, but I think it can actually be explained by modelling space-time's construction on the Mobius strip that can be represented by giving a strip of paper a half-twist of 180 degrees before joining its ends.)

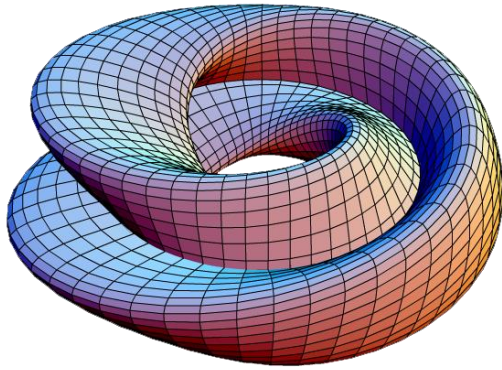
Mobius Loop (source:

http://www.polyvore.com/mobius_strip_public_domain_clip/thing?id=72360021)



Joining two Mobius strips (or Mobius bands) forms a four-dimensional Klein bottle (<http://plus.maths.org/content/os/issue26/features/mathart/index>)

Figure-8 Klein Bottle (source: <http://commons.wikimedia.org/wiki/File:KleinBottle-Figure8-01.png>)



And each Klein bottle can become an observable (or "sub") universe: figure-8 Klein bottles resemble spiral galaxies, and appear to have the most suitable shape to form subuniverses. This connection of the 2 Mobius strips can be made with the infinitely-long irrational and transcendental numbers. Such an infinite connection translates into an infinite number of TANGIBLE figure-8 Klein bottles which are subuniverses. They're tangible because the numbers result from the virtual particles making up the universal G-EM (Gravitational-ElectroMagnetic) field (in the form of virtual photons and presently theoretical gravitons), and the gravitons also help compose matter (in partnership with electromagnetism's photons – see reference below to Einstein's paper "Do gravitational fields play an essential role in the structure of elementary particles?") The infinite numbers make the cosmos as a whole* 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.

* That is: the cosmos beyond our 13.8-billion-year-old subuniverse, which is apparently expanding from the energy of virtual particles becoming spacetime or matter, and displacing parts of the universe beyond (in about the middle of last century; Fred Hoyle, Hermann Bondi and Thomas Gold calculated that maintaining a "steady state" where the universe is constantly roughly the same on the largest scales only requires the mass of one hydrogen atom to be added [from electronically-generated virtual particles, it turns out] in each quart of space every half-billion years ("The Universe" by Life Nature Library - Time Inc. 1964, p.175). In space, the energy of weak gravitational waves combines with the 10^{36} -times-stronger energy of electromagnetic waves to make mass.[^] In reference to wave packets and gravity producing electromagnetism, please see ^{^^} (the start of the next subheading). Translation into matter could be via photons of electromagnetic waves and gravitons of gravitational waves being disturbances in electromagnetic and gravitational fields. These disturbances are known as virtual particles and are equivalent to energy pulses ("The Grand Design" by Stephen Hawking and Leonard Mlodinow - Bantam Press 2010, p.113) that produce the binary digits of 1 and 0 encoding pi, e, $\sqrt{2}$ etc. Matter particles [and even bosons like the Higgs, W and Z particles] are given mass by the energy of photons and gravitons interacting in "wave

packets” (interaction within this term from quantum mechanics results in wave-particle duality).

^ Albert Einstein's “Spielen Gravitationfelder in Aufbau der Elementarteilchen eine Wesentliche Rolle?” (**Do gravitational fields play an essential role in the structure of elementary particles?**), Sitzungsberichte der Preussischen Akademie der Wissenschaften, (Math. Phys.), 349-356 (1919) Berlin.

For the note below on the figure-8 Klein bottle, I refer to – a) Bourbaki, Nicolas (2005). Lie Groups and Lie Algebras. Springer b) Conway, John (1986). Functions of One Complex Variable I. Springer c) Gamelin, Theodore (January 2001). Complex Analysis. Springer d) Joshi, Kapli (August 1983). Introduction to General Topology. New Age Publishers e) Spanier, Edwin (December 1994). Algebraic Topology. Springer

Informally - if an object in space consists of one piece and does not have any "holes" that pass all the way through it, it is called simply-connected. A doughnut (and the figure-8 Klein bottle it resembles) is “holey” and not simply connected (it’s multiply connected). The universe appears to be infinite (more info in "Infinite Universe" by Bob Berman - "Astronomy", Nov. 2012), being flat on the largest scales and curved on local scales (from far away, a scene on Earth can appear flat, yet the curves of hills become apparent up close). A flat universe that is also simply connected implies an infinite universe [Luminet, Jean-Pierre; Lachi`eze-Rey, Marc - "Cosmic Topology" - Physics Reports 254 (3): 135–214 (1995) [arXiv:gr-qc/9605010](https://arxiv.org/abs/gr-qc/9605010)]. So it seems the infinite universe cannot be composed of subunits called figure-8 Klein bottles (flat universes that are finite in extent include the torus and Klein bottle).

But gaps in, 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. This makes space-time relatively smooth and continuous - and gets rid of holes, making these types of Klein subunits feasible. The Klein bottle is a closed surface with no distinction between inside and outside. There cannot be other universes outside our infinite and eternal universe – there’s only one cosmos.

ELECTROMAGNETISM FROM GRAVITY (REDEFINING THE BIG BANG, COSMIC INFLATION AND APPLICATION OF INFINITY TO THE UNIVERSE)

^^ The gravitational field can create electromagnetism, and their interaction produces matter (along with its short-range strong and weak nuclear forces). Step 1 can be described this way - gravitational waves may be called quadrupole because they vibrate in 4 directions: up-down, side-to-side, forwards-backwards, and in time (the progress of the first 3 motions). Then the wave is split into a dipole electromagnetic wave - possibly by quantum gravitational lensing, whose non-subatomic-scale counterpart can split the image of an astronomical object into several images. Viewed in a snapshot of space (as stationary), the EM wave only vibrates in two directions: the up-down of one component, and the side-to-side of its other component (the components are electrical and magnetic). The smallest excitations of electromagnetic and gravitational waves - the photon and the theoretical graviton - could then interact in Erwin Schrödinger's "wave packets" to give matter Wave-particle Duality.

Another way of looking at the split is: when Einstein penned $E=mc^2$, he used c to convert between the mass units in space and the energy units of mass moving through space ie of time (c^2 refers to an observer co-moving with ... moving in a similar fashion, or along with ... a light beam and its velocity). 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 waves with a strength of 10^1 are, via quantum 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). 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). (The gluons that bind mesons would likewise be either products of gravitation or, like quarks#, replaceable by the more fundamental 1's and 0's.) After absorption by atoms, the depleted remnant of the gravity waves is re-radiated from stars, planets, interstellar gas and dust, etc. It's radiated as gravitational waves (a Gravity Wave Background, challenging the idea that Cosmic Inflation was necessary to generate gravitational waves) which have lost most of their energy or strength during formation of forces (returning to a strength of 10^1). Since gravity can produce electromagnetism, it's also radiated as all types of electromagnetic waves – including an infrared background whose heat output exceeds that of the stars alone, in addition to a microwave background. The latter challenges the idea that existence of the cosmic microwave background proves the universe began with the traditional Big Bang.

^ Remember, this is only one example: the so-called weak force's strength isn't constant and varies with distances [more info in "The Strengths of the Known Forces" by theoretical physicist Matt Strassler [May 31, 2013] -

<http://profmattstrassler.com/articles-and-posts/particle-physicsbasics/the-known-forces-of-nature/the-strength-of-the-known-forces/>

"It is certainly possible that some alien beings ... would make the same experimental observations that we do, but describe them without quarks." [Stephen Hawking, Leonard Mlodinow – “The Grand Design” – Bantam Press, 2010, p. 49]. So I’m going to turn into that book’s alien being and describe observations without quarks, but with a more basic quantum process that says space and all particles are, ultimately, composed of virtual particles and bits and maths. (Interpretation of particle tracks in a detector might cause them to be misidentified as caused by actual particles called quarks, instead of as being the result of virtual particles producing digital patterns that imitate the properties of quarks.)

Imagine a spaceship, its occupants and its computers are made of space. Or if you prefer, of the gravity (curvature of space) first spoken of in Einstein's 1919 paper "Do gravitational fields play an essential role in the structure of elementary particles?" Then the space, and time, could be gravitationally warped 90° and the ship etc would be inverted, and would enter subspace and imaginary time. But warping needn't stop there. Since the universe appears to be modelled on the Möbius strip (see "Topological Universe"), warping can continue to the extreme curvature of 180° - where it includes imaginary time but the gravitational ripples have "flipped backwards" from the horizontal axis of real time, through the vertical axis of imaginary time, and proceed in the "reverse" direction along the horizontal axis (in complex time). This causes travel along the same axis as the so-called real time we're familiar with. As will be proposed, the universe does possess on this real-time/complex-time axis a singularity from which it arose. This axis-sharing naturally leads to the singularity associated with the true Big Bang being associated with the Big Bang theory dominant in our present world. But the reversal of gravitational waves in time means the present understanding of that singularity the universe came from must be radically revised.

Later in this article, it'll be proposed that deletion of distance is possible. Gravitons are the virtual particles filling space and producing bits (binary digits) that encode transcendental and irrational numbers like pi (the infinite cosmos arises from infinitely long numbers such as pi). Deleting distances between gravitons also deletes distances between 1's and 0's. Eliminating digital distance superposes all the 1's and 0's, forming a cosmos that is referred to as a singularity or qubit (the "quantum bit" used by quantum computers). 20th-century physicist Richard Feynman once wondered if the universe contained just one electron (I think it's the unifying entity of one qubit, which may be the model of the universe developed in a thousand years). The idea of cosmic expansion is very popular today and is real (it's been measured to presently be approx. 74 kilometres

per second per megaparsec: 74 k/s when a megaparsec – 3,260,000 light years - separates two points in space). (See "Speed of Universe's Expansion Measured Better Than Ever" By Clara Moskowitz, SPACE.com Assistant Managing Editor | October 3, 2012 - <http://www.space.com/17884-universe-expansion-speed-hubble-constant.html#sthash.cKSz5cRH.dpuf>). If the universe is already infinite, it can never increase in size*. Cosmic expansion may actually mean the universe is entangled with, and a projection from, an infinitesimal qubit (this expansion might be called Big Bang 2.0). Cosmic inflation theory is redefined because it says everything used to be in contact and is now quantum entangled (wherever and whenever it is).

*This relates to a statement by "mathsmanretired" - a British teacher with a B.A. in mathematics and a M.Sc. in mathematical education – in "Can you add to infinity?" @ <https://answers.yahoo.com/question/index?qid=20090106024304AA1Rv5q>. He said, "... infinity is a concept, not a number. Therefore the process of addition is undefined in this situation. You cannot treat infinity as if it were just a number." Adapted to the present discussion, this can mean an infinite number of subuniverses can be added to the already-infinite universe-as-a-whole during the past, present and future. Their addition merely involves numbers. It never affects the concept of infinity. Addition of subuniverses can increase the rate of expansion ("Nobel physics prize honours accelerating Universe find" by Jason Palmer - Science and technology reporter, BBC News, 4 October 2011 - <http://www.bbc.com/news/science-environment-15165371>) through introduction of extra spacetime/virtual particles/mass which displaces spacetime/virtual particles/mass previously occupying that spot. But it never increases the universe's size beyond the infinite. This brings to mind the work of German mathematician Georg Cantor (1845-1918) who wrote about an infinity of infinities, with one infinity being larger than another. He rejected the idea of an absolute infinity which would, to paraphrase mathsmanretired, treat infinity as if it were just a number (the number associated with an absolute infinity would be 1).

A reasonable objection to the "infinity of infinities" concept is that a smaller infinity is limited in size compared to a larger one. The idea of limits to infinity - which is an idea of limitlessness - is a contradiction. In the case of the universe and its subuniverses, think of the matter and energy composing them. The traditional view of matter necessarily forces the cosmos into smaller and larger sizes at various stages. Regard particles of matter as composed of interacting gravitational and electromagnetic energy (an idea first hinted at by Albert Einstein's "Spielen Gravitationfelder in Aufbau der Elementarteilchen eine Wesentliche Rolle?" [Do gravitational fields play an essential role in the structure of elementary particles?], *Sitzungsberichte der Preussischen Akademie der Wissenschaften*, [Math. Phys.], 349-356 [1919] Berlin). Then the cosmos could be one absolute infinity of energy going on and on forever both in space and time. Sometimes the gravitation and electromagnetism interact (perhaps because of

temperature) to form matter. Sometimes the energies don't interact, possibly forming black holes. In these ways, infinity's energy content is absolute but its content of matter and mass can vary and allow an "infinity of infinities". Such a proposal conforms to the Law of Conservation which says neither matter nor energy can ever be created or destroyed - they only change form, including into each other - and the total energy/mass content of the cosmos is constant.

WAVE PACKETS

There are two problems with wave-packet theory, according to "Quantum" by Manjit Kumar (Icon Books, 2008, pp.215-217). The solution to both appears to reside in the unification of space-time and its contents by gravitation. That is - by the gravitational field creating electromagnetism, their interaction producing matter and the 2 nuclear forces, and the motions of particles being what we call time. First, waves would spread out to such a degree that they'd have to travel faster than light in order for experiments to connect them with detection of a particle-like electron. Possible solution - this is only a problem if things are actually separate. Modern understanding of quantum entanglement suggests that distance and travel faster than light are inconsequential in a universe where gravitation unites electromagnetism, matter and time into one thing. Second, applying Schrödinger's wave equation to helium and other atoms led to an abstract multidimensional space that was impossible to visualize. Possible solution - "Physics of the Impossible" by Michio Kaku (Penguin Books, 2009) states on p.276, "When we solve (19th-century Scottish physicist James Clerk) Maxwell's equations for light, we find not one but two solutions: a 'retarded' wave, which represents the standard motion of light from one point to another; but also an 'advanced' wave, where the light beam goes backward in time. Engineers have simply dismissed the advanced wave as a mathematical curiosity since the retarded waves so accurately predicted the behavior of radio, microwaves, TV, radar, and X-rays. But for physicists, the advanced wave has been a nagging problem for the past century." Albert Einstein's equations say gravitational fields carry enough information about electromagnetism to allow Maxwell's equations to be restated in terms of these gravitational fields. Therefore, gravitational waves also have a "retarded" wave and an "advanced" wave. They can travel forward or backward not only in space, but in time too. Believing matter results from gravitational-electromagnetic interaction means matter can also go back and forth in time. In 3 dimensions; an object has length, width and height at right angles to each other. To enter the 4th dimension and go back or forward in time; we must travel perpendicular to length, width and height - all at once. Going forward in time has always been a reality - by simply living, we go forward one day every day. So reality and the universe are multidimensional, even though only 3 dimensions can be visualized.

Extra questions -

1) How could a wave packet possess electric charge? By quadrupole gravitational waves that vibrate in 4 directions being split into dipole electromagnetic waves that vibrate in 2 directions, and one component of the latter wave being electrical.

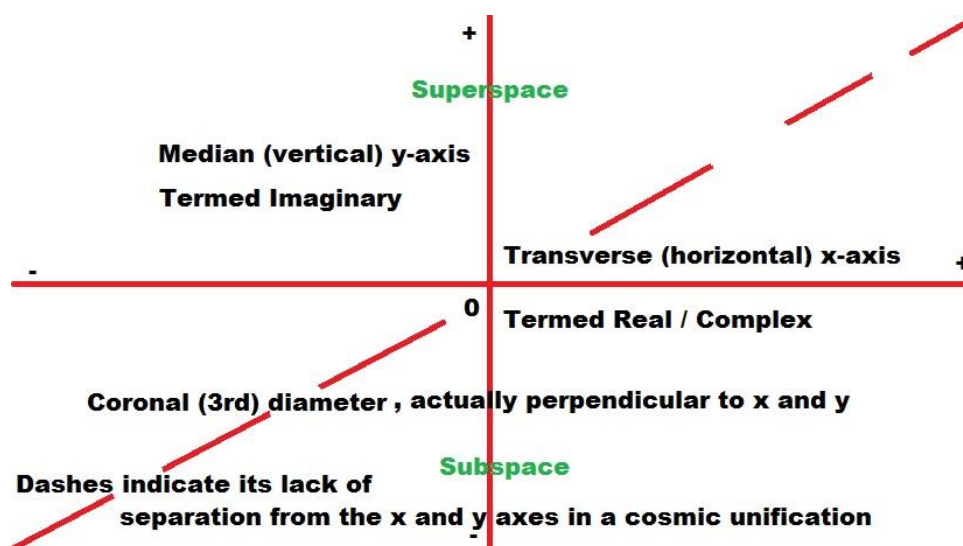
2) Could wave mechanics incorporate quantum spin? There are 2 forms of spin - classical (e.g. a rotating top) and quantum. The latter can't be explained classically but may possibly be explained by particles and space mutually affecting each other. According to General Relativity, matter causes a gravity field by its mass creating depressions in space that can be pictured as a flexible rubber sheet. Space could affect particles through its curvature (gravity) infiltrating particles, thus giving them quantum spin.

3) If the wave function doesn't represent real waves in 3-dimensional space, what does it represent? Not the probability of a particle being in a certain position, but complex waves in 5-dimensional space. For more than a hundred and ten years, science has accepted the concept of space-time which was formulated by Russian-German mathematician Hermann Minkowski and unites one time dimension with three space dimensions. So-called imaginary time is a concept derived from special relativity and quantum mechanics. It is suggested here that imaginary time should be joined with an imaginary space, and complex space with complex time. To introduce you to the idea of extra dimensions, consider this - Itzhak Bars of the University of Southern California in Los Angeles says, "one whole dimension of time and another of space have until now gone entirely unnoticed by us". ("Are we missing a dimension of time?" By Roger Highfield, 10 Oct 2007, <http://www.telegraph.co.uk/news/science/large-hadroncollider/3309999/Are-we-missing-a-dimension-of-time.html>). Following the suggestion in this article you're reading means the universe would be comprised of 3 time dimensions and 5 space dimensions.

THE COMPLEX & THE IMAGINARY REDEFINE COSMOGENESIS & BIOGENESIS

Geometrically, imaginary numbers are found on the vertical axis of the Complex Number Plane, allowing them to be presented perpendicular to the real axis. One way of viewing imaginary numbers is to consider a standard number line, positively increasing in magnitude to the right, and negatively increasing in magnitude to the left. At 0 on this x-axis (the so-called 'real' axis), a y-axis (the so-called imaginary axis) can be drawn with "positive" direction going up - "positive" imaginary numbers then increase

in magnitude upwards, and "negative" imaginary numbers increase in magnitude downwards. ("Positive" numbers increasing upwards correspond to superspace and imaginary time, while "negative" numbers increasing downwards describe subspace and imaginary time.) Visualize space-time as a sphere defined by a horizontal diameter, a vertical diameter, and a third diameter that's perpendicular to both of these. These represent the cardinal directions gravitational waves can travel. One direction along the horizontal axis corresponds to going forwards in time and is called "real". The reverse direction along the horizontal axis corresponds to going backwards in time and is called "complex". The vertical axis represents the "imaginary time" described by the imaginary numbers of physics. The terms real, imaginary and complex come from the corresponding numbers in maths. And the 3rd diameter may allow sideways movement in time - to complement forward motion in time, backward motion, and up-down movement in imaginary time.



Even if a computer operated continuously for billions of years in either imaginary or sideways time, its final calculations would be retrieved instantly after the problems were entered into the computer because no period at all could elapse in our "real" time - a computer working in complex time delivers results at any desired point in the past. And a spacecraft using imaginary or sideways time, but "real" space, could fly to Mars or a galaxy many billions of light-years distant without any time elapsing in real time [see " $E=mc^2$ transforms into $(E=0) + (m=c^2)$ "]. The craft (though macroscopic) is in 2 places at once viz the beginning and end of its journey. It would necessarily also be at every point between the start and finish. Suppose all the mass, electromagnetism, gravitation etc in space, and time, forms a Unification. Then, what could prevent the craft from being at - being quantum entangled with - every point in space (actually, spacetime) at once?

'Physicists now believe that entanglement between particles exists everywhere, all the time, and have recently found shocking evidence that it affects the wider, "macroscopic" world that we inhabit.' - "The Weirdest Link" (New Scientist, vol. 181, issue 2440 - 27 March 2004, page 32 - online at <http://www.biophysica.com/QUANTUM.HTM>). The same article says that Caslav Brukner, working with Vlatko Vedral and two other Imperial College researchers, has uncovered a radical twist. They have shown that moments of time can become entangled too (www.arxiv.org/abs/quantph/0402127).

Spacecraft using complex time could travel into different periods in the past – carrying experts in required disciplines like **cosmogenesis**# (generation of subuniverses), **terraforming** (making planets Earthlike), **genetic engineering** (artificially manipulating genes and evolution ##). Or the experts could stay home, and send robots and computers (or cybernetic signals) to do their work. Since space-time includes infinitely-long numbers like Π (pi), the sphere of space-time must be extended infinitely, meaning the universe as a whole (not merely any subuniverse) would literally go on and on forever - not merely in terms of space but also into the past and the future. Human computer science's binary digits of 1 and 0 can be "recycled" from their advanced development in centuries to come back to 13.8 billion years ago[^]. There; they could bring into being this observable portion of what seems to be an infinite, eternal cosmos. The beginnings of the infinite number of observable-size universes would, of course, be literally infinite. There was no beginning to the universe as a whole but it had (and will continue to have) an infinite number of creations* of its "sub"universes. Creation of the universe as a whole is therefore forever lost in infinity and it's accurate to say it had no beginning.

[^] The knowledge we gain throughout history, and into future centuries, gradually builds into godlike abilities which transcend the barrier of time apparently only moving forwards. In the TV program "Custom Universe – Finetuned For Us?" (Australian Broadcasting Corporation's "Catalyst", August 29 2013), Dr. Graham Phillips reported that "the physicist and writer Paul Davies thinks the universe is indeed fine-tuned for minds like ours. And who fine-tuned it? Not God but minds from the future, perhaps even our distant descendants, that have reached back through time ... and selected the very laws of physics" (as well as, this author thinks, the electronic energy pulses known as virtual particles) "that allow for the existence of minds in the first place. Sounds bizarre, but quantum physics actually allows that kind of thing."

Subuniverses are collections of binary digits (bits), Mobius strips and figure-8 Klein bottles. You have to go around a Mobius twice to reach the start - and as Stephen Hawking writes in "A Brief History of Time", particles of matter need to be turned

through 2 revolutions to look the same. This relates the Mobius and particles, and puts them on the subatomic level. Consistency demands that both bits and the bottles also belong to the quantum scale. Their expansion to the cosmic scale need not be the time-intensive task of creating a few atoms here, and a few there, until you eventually have enough atoms to make something filled with astronomical objects. The expansion could be done in imaginary time – and when the final result is transferred to real time, it would appear to manifest instantly after manipulation of virtual particles to produce atoms was begun.

Even though Einstein told us space and time are curved and warped, we insist on limiting ourselves to a purely straight-line concept of time. Such a concept means Darwinian evolution is the only possible explanation for the origin of species (unless you believe in God). But to stick to science - Einstein's nonlinear time allows evolution to be restricted to adaptations and relatively minor modifications within species. Their origin is plausibly explained by human biotechnology from centuries in the future finding its way into the distant past when no humans existed. In relation to biogenesis, consider the Miller-Urey Experiment of 1952. Here, amino acids (which are relatively simple, and are the building blocks of protein) were made from inorganic material and by natural causes in a lab. Any large lifeform is far more advanced than any amino acid. Consider what Wikipedia – the free encyclopedia on the Internet – says in its article "Infinite monkey theorem": "The infinite monkey theorem states that a monkey hitting keys at random on a typewriter keyboard for an infinite amount of time will almost surely type a given text, such as the complete works of William Shakespeare." "However ... if there were as many monkeys as there are atoms in the observable universe typing extremely fast for trillions of times the life of the universe, the probability of the monkeys replicating even a single page of Shakespeare is unfathomably minute. Ignoring punctuation, spacing, and capitalization, a monkey typing letters uniformly at random has a chance of one in 26 of correctly typing the first letter of Hamlet. It has a chance of one in 676 (26×26) of typing the first two letters. Because the probability shrinks exponentially, at 20 letters it already has only a chance of one in ... 19,928,148,895,209,409,152,340,197,376."

The largest known proteins are the titins, a component of muscle, with a total length of almost 27,000 amino acids (*Fulton A, Isaacs W [1991]. "Titin, a huge, elastic sarcomeric protein with a probable role in morphogenesis". BioEssays 13 [4]: 157–61*). The total number of proteins in the human body is estimated to be around 50,000 ("How many Proteins exist in human body?" - <http://www.innovateus.net/health/how-many-proteins-exist-human-body>). Now compare one letter typed by a monkey to one amino-acid position. If there's only one chance in nearly 20 octillion of typing 20 letters correctly, what would be the chances of randomness getting a billion letters right (the positions of 20,000 amino acids multiplied by 50,000 proteins)? Biology's evolution isn't entirely random but also uses natural selection - a rigorous testing process that filters out what

works from what doesn't, driving organisms to evolve in particular directions ("16 April 2008 "Evolution myths: Evolution is random" by Michael Le Page -

<https://www.newscientist.com/article/dn13698-evolution-myths-evolution-is-random/>).

Recall that randomness required the monkeys to type for "trillions of times the life of the universe" (at least 30 billion trillion years, according to Wikipedia's author). The "Evolution Myths" article says "chance events play a big role" in evolution. So it seems highly unlikely that the introduction of natural selection could reduce that randomness by a factor of 6 trillion – to 5 billion years, approximately 10% more than Earth's age. It seems to be impossible for a collection of amino acids and other molecules to spontaneously develop into a large lifeform. So ultimately, life (whether Earthly or extraterrestrial) had to originate with supremely advanced biotechnology forming a less advanced life-form which gradually became more civilized. The Theory of Evolution certainly explains adaptations and modifications. But believing it also explains origins is unwarranted extrapolation. That takes an idea which accounts for some parts of life and, since it's the only scientific explanation we currently have, assumes it accounts for all facets of life.

POSITIVE GRAVITY/BLACK HOLES BALANCED BY NEGATIVE HYPERSPACE

* The Law of Conservation of Mass-Energy says neither matter nor energy can ever be created or destroyed. "New" space-time isn't really formed but is simply the arrangement of binary digits into what we call the universe. This conservation can also be viewed as equal quantities of positive and negative space-time existing within the universe, with changes adding up to zero. 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×-2 also equals 4. Inverted positive spacetime 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 . Many scientists say gravity is negative and balances the matter in space-time which is labelled positive ["The Grand Design" by Stephen Hawking and Leonard Mlodinow – Bantam Press, 2010, p.180]. Einstein's 1919 paper wondered if space-time's warps (which General Relativity says are gravity) play a role in the composition of the elementary particles. If so, both gravity and matter would be positive. This agrees with Professors Hawking and Mlodinow that black holes are positive^{***} (because the holes would be made of gravitational and electromagnetic waves), and claims the negative balance to space-time is an equal quantity of mass in a higher dimension. They say gravity is negative because it's attractive. This article aims to show that gravity repels and is indeed positive (the section in my essay about the Sun and Moon affecting Earth's tides is perhaps the best explanation of gravity's apparent attraction – see [REPELLING GRAVITY, OCEAN TIDES AND THE GROWING AU](#)).

DARK MATTER AND INVERSE SQUARE RESULT FROM HYPERSPACE

^ This unreal, negative hyperspace may be home to what is called Dark Matter, which is invisible and can only be detected gravitationally. One way of determining if dark matter belongs to a higher dimension would be to measure its gravitational effects in space dimensions (see "A Brief History of Time" by Stephen Hawking – Bantam Press 1988, pp. 164-165). In three dimensions, the gravitational force drops to 1/4 if one doubles the distance. In four dimensions (4th-dimensional hyperspace), it would drop to 1/8 and in five dimensions (5th-dimensional hyperspace) to 1/16. With more than three space dimensions, the electrical forces that cause electrons to orbit round the nucleus of an atom would behave in the same way as gravitational forces. The electrons would either escape from the atom or spiral into its nucleus. In either case, atoms as we know them could not exist – and there would only be subatomic particles in hyperspace. However, it seems that this limitation can be overcome. To be consistent, hyperspace and hypertime must form a union as surely as the space and time we're familiar with are united into science's accepted space-time. Recall number 3 above of the Extra Questions concerning wave packets. If the universe is a Cosmic Unification, a spacecraft or computer (many, many atoms) is not restricted to the hyperspace-hypertime union but can use imaginary or sideways time while using "real" space.

^ continued - How can electrical force behave in the same way as gravitational force? 1) The strength has to be reduced a trillion trillion trillion times because an electromagnetic wave is 10^{36} times more powerful than a gravitational wave. Referring to the diagram on p.11 – when an electric wave is diverted from the x-axis to the y-axis representing the 4th spatial dimension, there is no wave motion in real time. This means there can be no amplitude or frequency except at the point marked 0, and the electric wave has lost virtually all power, 2) Having lost its nature, the electric wave is now a gravitational wave (has reverted to the waveform it possessed prior to the split mentioned on p.6) because gravitation is the most fundamental force in the cosmos, composing its entirety. All other forces, and mass, result from it: time is the result of the motions of entangled mass, making all space-time entangled. The positive direction on the x-axis (representing the 3 space dimensions of real space-time) is in continuous contact with the negative direction on x (the 5 space dimensions of complex space-time). Therefore, real gravity is perpetually amplified by complex gravity. Using Professor Hawking's figures from the previous paragraph, the amplification equals $\frac{1}{4} \times \frac{1}{4}$ ie doubling the distance in 5 space dimensions causes gravity to become 1/16 as powerful. Alternatively, the gravity's strength is reduced 4 times and this number is multiplied by another 4 to reduce it 16 times overall. It is not $\frac{1}{4} \times -\frac{1}{4}$ since numbers have the same property regardless of direction on the Complex Number Plane (they increase in value). To conserve this

property, the second one must be $+1/4$ if the first one is $+1/4$. In the 4 space dimensions represented by the imaginary axis, this y-axis is half the distance (90 degrees) from the real x-axis that the complex x-axis is (it's removed 180 degrees). So gravitational weakening from doubling distance in 4 space dimensions = (reduction of 4 times multiplied by another reduction of 4 times) / 2, for an overall reduction of 8 times to a strength of 1/8. Visualize the page-11 diagram as a 3-D horizontally-oriented crystal block interlocking with a vertical block of equal volume. Then "sideways" time is not separate from, but unified with, the x and y axes. It does not represent a 6th space dimension but is merely extension of space-time's axis, as well as of the imaginary and complex hyper-spacetimes. Only 5 space dimensions can exist – along with real time, imaginary time and complex time.

SUPERNOVAS, BLACK HOLES AND DARK ENERGY

***A supernova blows off gaseous material before exploding - forming a slower moving, cooler shell[^]. Travelling at light speed, gravitational and electromagnetic radiation from the blast slams into that material. The temperature allows the gravitons' energy to interact with the photons', producing mass in the form of dust i.e. dust particles condense in the shell. Waves from deep space produce graviton-photon interaction, forming collapsing clouds from which stars form. If there's no interaction (possibly as a result of temperatures), no matter is created and there is no cloud of gas and dust. A black hole – formed of gravitational waves and electromagnetic waves - could result.

[^] Gall, C.; Hjorth, J.; Watson, D.; Dwek, E.; Maund, J. R.; Fox, O.; Leloudas, G.; Malesani D.; DayJones, A. C. "Rapid formation of large dust grains in the luminous supernova 2010jl". - Nature, Volume **511**, Issue 7509, pp. 326329 (17 July 2014). It was published online on July 9, 2014 (<http://www.nature.com/nature/journal/vaop/ncurrent/full/nature13558.html>)

Gravitational waves radiating from a supernova to its shell would push against the shell and be repulsive. Similarly, waves originating from warps far out in space and condensing into star-forming clouds would be repelling waves that conceivably account for expansion within portions of the infinite universe (the 1's and 0's forming the waves would be candidates for explaining dark energy).

REPELLING GRAVITY, OCEAN TIDES AND THE GROWING AU

I believe an idea of partly revised gravity requires the idea of 17th-century scientists Isaac Newton and Johannes Kepler that the moon causes the tides, to be joined with Galileo's partly correct idea that the Earth's movements slosh its water. According to "Galileo's Big Mistake" by Peter Tyson - Posted 10.29.02 (<http://www.pbs.org/wgbh/nova/earth/galileo-big-mistake.html>) -

"If a barge (carrying a cargo of freshwater) suddenly ground to a halt on a sandbar, for instance, the water pushed up towards the bow then bounced back toward the stern, doing this several times with ever decreasing agitation until it returned to a level state. Galileo realized that the Earth's dual motion—its daily one around its axis and its annual one around the sun—might have the same effect on oceans and other great bodies of water as the barge had on its freshwater cargo."

Gravity's apparent attraction can be summarized by the following - gravitation is absorbed into wave packets and the inertia of the gravitons (united with far more energetic photons) carries objects towards Earth's centre at 9.8 m/s or 32 ft/s. The mass of the oceans on Earth is estimated at nearly 1.5 billion cubic kilometres ["Ocean Volume and Depth" – Van Nostrand's Scientific Encyclopedia, 10th edition 2008]. All this water is being pushed towards Earth's centre at 32 feet per second every second. But the seafloor prevents its descent. So there is a recoil, noticeable offshore (it is only where oceans and continents meet that tides are great enough to be noticed). This recoil is larger during the spring tides seen at full and new moon because sun, Earth and moon are aligned at these times.

The previous paragraph's alignment of Sun, Earth and moon therefore refers to their being lined up where the gravitational current is greatest (in the plane where planets and moons are created) and more of the gravitational waves travelling from the outer solar system being captured by solar and lunar wave packets, and less of them being available on Earth to suppress oceanic recoil (there are still enough to maintain the falling-bodies rate of 32 feet per second per second). At the neap tides of 1st and 3rd quarter; the sun, earth and moon aren't lined up but form a right angle and our planet has access to more gravity waves, which suppress oceanic recoil to a greater degree. We can imagine the sun and moon pulling earth's water in different directions at neap tide. If variables like wind/atmospheric pressure/storms are deleted, this causes neap tides which are much lower than spring tides.

If a star only received the input of gravitational waves from deep space entering it, there would be no limit to its potential growth. Since it also radiates mass-forming gravitational waves, there is a limit to the growth. 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 from the waves originating in deep space. **The waves from deep space are a possible unrecognized contributing factor to the Pioneer anomaly, where the Pioneer spacecraft near the solar system's edge are a few thousand kilometres closer to the Sun than predicted.** 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 (AU – the average distance between Earth and the Sun) to dark energy.

RELATIVISTIC MUSINGS

The effects in the Theory of Special Relativity which Albert Einstein published in 1905 can be viewed as changes in the ratio of perspective. For the sake of what is to come in the second-last paragraph of this section, I'll deliberately fail maths by ignoring the topic of differing units in ratios.

The inverse-square law followed by gravity and light (and every other form of electromagnetism – such as radio waves, microwaves, infrared rays, ultraviolet rays, X-rays and gamma rays) states that the forces' effect on observers varies inversely as the square of the distance. This means that when distance doubles, light from an object appears the inverse of 2×2 ie $\frac{1}{4}$ as bright. The idea of "mass from gravity" says gravitational waves converge where objects are seen and react with vastly more powerful electromagnetic waves in wave packets to produce apparent solidity that possesses wave-particle duality. More waves push observers toward the object's centre and account for so-called gravitational pull. Gravity's effects likewise vary inversely as the square of the distance. If a source of light and gravity moves to a third of its former distance, it becomes the inverse of $\frac{1}{3} \times \frac{1}{3}$ or $\frac{9}{1}$ (9) times brighter/more "attractive". If the sun were half as far away, it would have twice the apparent radius and 4 times the apparent area (these perspective ratios may be called 0.5 : 2 and 0.5 : 4).

In the case of **Special Relativity's length contraction**, "a vehicle traveling at half the speed of light will appear to stationary outside spectators to be about seven-eighths the length its passengers measure; a vehicle reaching 90% of light-speed will seem to be less than half as long as its rest length." ("The Cosmos": a book in the series "Voyage Through the Universe" - Time-Life Books 1988, pp. 44-45) Disregarding the enormous changes between 90% light speed and more than 99% light speed, let's focus on this

single quoted sentence. It hints at half the speed approximately equalling twice the apparent contraction. Like the Sun at half the distance, the perspective ratio is 0.5 : 2.

Special Relativity's mass increase - "The mass of a hypothetical vehicle traveling at even half the velocity of light ... increases only 5%. At greater than 90% of the speed of light, mass has more than doubled." ("The Cosmos", p. 46) Once again roughly approximating, this is more like a twenty-fold increase (perspective ratio 0.5 : 20).

Relativistic speeds and time – at 99.9% of light speed, 3.7 years pass in a spaceship while 21.6 years go by on Earth. At 99.999999% of light speed, 9 years pass in the ship while Earth experiences 6,847 years (from reporting of the English physicist Eric Sheldon's computer model named STELLA, in the 1991 book "Starbound" in the "Voyage Through the Universe" series, pp. 131-133). The speeds are ~ and are labelled 1 while 21.6/3.7 ~ 6 and 6,847/9 ~ 761. This represents ratios of 1:6 and 1:761.

If gravity composes everything in the cosmos (in all times), the universal constant is gravity (G). And if gravity produces light, the velocity of light within this constant shares the property of being constant. Light's, and electromagnetism's, velocity (c) in the near-perfect vacuum of space would be invariant; and would never change unless the density of matter encountered in space changed. Also, the velocities of gravitational and electromagnetic waves would be equal – and light would follow gravity's inverse-square law.

Speed equals distance over time. If a car travels 300 miles in 3 hours, its speed was 100 miles per hour. Instead of using the word distance, the concept of space-time can be used. Then the speed of light is space over time. In "Topological Universe", it was proposed that space is infinite and time is eternal. Therefore, $c = \infty/\infty = 1$. What can it mean for the speed of light to equal 1? The speed of gravity equals 1, too. Is the equation another way of saying there is only one thing in the universe? Is that one thing gravity*? Is gravity the universal constant responsible for everything in the cosmos (in all times)? If space over time equals 1, space and time have a ratio of 1:1. Maybe this means the motions of (entangled) particles are indeed what we call time. Actually, as the American physicist and mathematician Brian Greene pointed out in a lecture, it isn't precisely correct to say "space over time". These two are forever linked in the union of space-time. So we should say "space-time over space-time". Like ∞/∞ , the answer is one and again hints at all the forces and mass in every past, present and future state of the universe being joined in a quantum-cosmic unification.

*The universe is the things in space and time and, since General Relativity says gravitation is the warping of space-time, the universe is a giant gravity field. Gravity does not need to travel – the gravitational field already exists everywhere. Nevertheless, any disturbance (from the waving of your hand to explosion of a supernova) will send ripples called gravitational waves through the universe. Since gravity makes electromagnetism, the universe is also a giant electromagnetic field. Electromagnetism is ubiquitous and doesn't need to travel, but any disturbance sends out electromagnetic waves.

INTERGALACTIC AND TIME TRAVEL VIA BLACK HOLES POSSIBLE BECAUSE $E=mc^2$ CAN TRANSFORM INTO $(E=0) + (m=c^2)$

I think $E=mc^2$ supports this idea of deleting distance. The formula is, of course, Albert Einstein's famous equation relating energy, mass and the speed of light [Einstein, A. (1905) - "Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig?" ("Does the inertia of an object depend upon its energy content?" - Annalen der Physik 18 (13): 639-643]:

Let's represent the masslessness of photons, and also the masslessness of the theoretical gravitons, by zero. Should theories developed from Einstein's 1919 paper regarding mass be proven correct one day ie that mass results from photon-graviton interaction, we can replace the m with zero. This results in $E=0 \cdot c^2$ ie outside familiar circumstances, it is possible for E to equal 0. Having reduced the equation to nothing but E , $m=0$ and $c^2=0$ which means $m=c^2$. At first glance, $m=c^2$ seems to be saying mass exists at light speed. But the absence of E (energy) refers to there being no interaction of electromagnetic energy and gravitational energy, and therefore no mass. If mass cannot be produced, mass-producing space-time/gravity must be described by zero.

The zeroness of space-time/gravity does not mean they don't exist. They obviously do. It means we can appear to relocate matter and information superluminally, or travel into the past and future, because distance equals zero and can be eliminated from both space and time. Recall this statement on p.12 - "Waves from deep space produce graviton-photon interaction, forming collapsing clouds from which stars form. If there's no interaction as a result of temperatures, no matter is created and there is no cloud of gas and dust. A black hole – formed of gravitational waves and electromagnetic waves - could result." In the preceding paragraph, it's shown that $m=c^2$ when $E=0$: that is, when no interaction of electromagnetic energy and gravitational energy exists eg in the temperatures of black holes. This means space-time/gravity equals zero, which doesn't

mean that black holes' gravitational effects are diminished but that distance equals zero. The absence of distance inside black holes makes them potential tools for time travel [Morris, Michael; Thorne, Kip; Yurtsever, Ulvi (1988). "Wormholes, Time Machines, and the Weak Energy Condition". *Physical Review Letters* **61** (13): 1446–1449]. Now I refer to the previous statements about using imaginary time and real space simultaneously, when discussing wave packets and also when discussing how the inverse square results from hyperspace. Remember these words in "The Complex and the Imaginary" - "Suppose all the mass, electromagnetism, gravitation etc in space, and time, forms a Unification. Then, what could prevent the (spacecraft that can fly unlimited billions of light years instantly, and be in many places at once) from being at every point in space and time at once?" One of those places would be inside any specified black hole, making it unnecessary to try and enter the hole in the traditional manner of a spacecraft flying into it.

In this particular case, the entanglement with every point in time – a variation on time travel – is used to enter a black hole and utilize it for time travel. It appears that being in the black hole means real space is used – and the lack of distance in time means imaginary time is employed. It also appears that entanglement with every point in space (time's permanent partner) might be used to enter black holes and utilize them for intergalactic travel. Being in the hole means real space is used, and also means there's no distance. Maybe this lack of distance (in space-time, both in space and time) means imaginary time can be used with the coordinates of navigation to instantly arrive in the Virgo cluster of galaxies (the centre of the cluster is 54 million light years away), or anywhere else in the universe. Maybe the no-distance principle can be extended from the black hole to Virgo via cosmic unification/entanglement, just as entanglement is capable of deleting distance between explorers on Earth and the black hole.

Perhaps the real space/imaginary time combination is, to borrow a word from science fiction, known as subspace. This could be interpreted by the diagram on p.11 as subspace having a definite position (represented in the sketch by a line). Superspace has a location too. Superspace is regarded in particle physics as the outcome of the theory of supersymmetry (SUSY) which relates the two classes of elementary particles – **bosons** (force-carrying particles) and **fermions** (particles of matter). This article relates bosons to fermions through binary digits and the Mobius strip. You have to go around this strip twice to arrive at your starting point - and matter particles have quantum spin described as $\frac{1}{2}$, which means they must be turned through two complete revolutions to look the same ("A Brief History of Time" by Stephen Hawking – Bantam Press, 1988, pp.66-67). In this article, superspace is the aggregate of all the spaces and includes sub-, real, and complex space. The world's largest and most powerful particle collider, the Large Hadron Collider (LHC) on the France-Switzerland border, has found no evidence for supersymmetry thus far and some physicists have decided to explore

other ideas (Ellis, John: "The Physics Landscape after the Higgs Discovery at the LHC": 14 April 2015: [arXiv:1504.03654](https://arxiv.org/abs/1504.03654))

Even without entanglement, it may be possible to enter a black hole without being shredded into long, thin pieces – a process called spaghettification, and caused by the black hole's tidal forces. The relatively insignificant gravitational forces associated with Earth push your head and feet down without any noticeable difference, though the difference does exist. Experimenters have shown that a clock on the ground floor of a building 25 metres tall runs more slowly than one near its top, and attributed the difference to gravitational effects ("The Cosmos", a 1988 book in the series "Voyage Through the Universe": Time-Life Books Inc., p.50). Assuming you fall feet first - the extreme gravitational waves associated with a black hole pushes your head towards the hole with tremendous force but are vastly magnified in the 5 or 6 feet between one end of you and the other. This results in your feet being much, much closer to the black hole's centre and you become a long, thin strand of "space-ghetti" ☺

At http://www.huffingtonpost.com.au/entry/neil-degrasse-tyson-black-holes-video_n_5480837.html?section=australia, astrophysicist and cosmologist Neil deGrasse Tyson says on November 6th 2014, "We think there are ways where you can survive your trip through a black hole on a very special pathway into it," he said. "The equation of the black hole that comes to us from Einstein, the general relativity equations, tell us that a whole new space-time opens up inside that black hole -- in the future history of your life." So we might be able to fly into black holes and use their "whole new space-time" (things like subspace and imaginary time?*) for intergalactic and time travel.

*Imaginary time partly developed from Relativity. From Special Relativity, actually - but General Relativity developed from the Special Theory, as Albert Einstein's ideas about uniform motion grew into ones about accelerating motion. And if this article is correct; subspace is connected to, and part of, imaginary time.

When distance is eliminated, more than the space between objects is deleted (this allows intergalactic travel). Space within objects can be deleted, too (permitting a singularity to have zero size). Therefore, removing distance easily unifies everything in space-time into one thing: a product of the gravitational field. All past and future universes are unified with the present universe (is this the real meaning of the word "multiverse"?)

$E=mc^2$ may have led Einstein to his General Relativity and Unified Field theories, to give physical meaning (in the form of gravitation) to the mathematics. As far as I know, he never mentioned such a specific connection. Was Einstein as ignorant of the

magnitude of his famous formula as the rest of the world?

$E=mc^2$, when viewed as $E=0$ and $m=c^2$, also supports this article's earlier statement that gravitational ripples can proceed in the 'reverse' direction along the horizontal axis (not in so-called 'real' time, but in 'complex' time)." This is because $m=c^2$ can only create 0 if either m or c^2 represents a retarded wave travelling forward in time – and the other (again, either m or c^2) represents an advanced wave travelling backward in time.

WORLD PEACE AND IMMORTALITY

If humans are entangled with the whole universe, we'd have to be entangled with each other. On a mundane level, this gives us the potential for extrasensory and telekinetic abilities. On a higher level, it will eventually totally eliminate crime and war and domestic violence since nobody could harm anyone else without hurting themselves, and people don't normally desire to harm themselves in any way. Quantum entanglement of humans with every point in space-time would be a surreal experience. But we may already have some familiarity with another dreamlike experience that connects people in a strange way - hypnosis. A hypnotized subject seems to retain ultimate control and cannot be forced to do anything he or she is absolutely opposed to. Similarly, a person who's entangled with everyone else would be in final control of herself/himself, even able to preserve privacy.

'Physicists now believe that entanglement between particles exists everywhere, all the time, and have recently found shocking evidence that it affects the wider, "macroscopic" world that we inhabit.' - "The Weirdest Link" (New Scientist, vol. 181, issue 2440 - 27 March 2004, page 32 - online at <http://www.biophysica.com/QUANTUM.HTM>). The same article says that Caslav Brukner, working with Vlatko Vedral and two other Imperial College researchers, has uncovered a radical twist. They have shown that moments of time can become entangled too. (<http://www.arxiv.org/abs/quant-ph/0402127>).

If we become entangled with every point in time, it seems that we'd then be connected forever to the entire past and future besides the present. We've all learned that our lives are confined to the lifespan of our bodies. But entanglement with every point in time makes it inevitable that every one of us continues living after the death of our body. We will learn so very much when we're conscious of everything in space-time, and liberated from a life limited to earthly experience lasting maybe a century. Every person will learn

from their mistakes – even criminals and dictators – but we have infinite time. So we lose nothing by staying in this world as long as we can. Consistency says we have always been alive. I guess we forgot everything we knew prior to birth because we're presently enjoying having a material brain* that didn't exist before birth.

ENTANGLEMENT IN THE G-EM FIELD

*To phrase quantum entanglement in human terms - Independence from a physical body may be possible via an immaterial body designed in the far future. This necessarily involves much speculation and involves 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, for the purpose of overcoming the limits of biological bodies – or biological bodies incorporating computer and robotic systems.

In 1925, the Austrian physicist Wolfgang Pauli discovered the exclusion principle. [Hawking, S. W. – “A Brief History of Time” – Bantam Press, 1988, pp. 68-69] 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 (or significantly slowed, since stopping them may destroy them)** before they're collected and substituted for the body's particles. The beginnings of this technology may be underway [Palus, S. - “Turning Light into Matter: Physicists have created a device that binds photons together to form “light molecules.” - Thursday, March 13, 2014 (<http://discovermagazine.com/2014/april/6-how-to-make-light-matter>)]. Referring to this reference, two photons end up sticking together and move forward just like a two-atom molecule.

** "Understanding the Universe: An Introduction to Astronomy, 2nd Edition" by Professor Alex Filippenko - video from The Great Courses, 2007 - says in Lecture 20 ("The Wave-Particle Duality of Light") that a photon is a massless particle when at rest, and would cease to exist if stopped. This sounds like an insurmountable barrier to development of immaterial bodies and brains. Let's try looking at it a different way. The universe is the things in space and time and, since General Relativity says gravitation is the warping of space-time, the universe is a giant gravity field. Gravity does not need to travel – the gravitational field already exists everywhere. Nevertheless, any disturbance (from the waving of your hand to explosion of a supernova) will send ripples called

gravitational waves through the universe. Since gravity makes electromagnetism, the universe is also a giant electromagnetic field. Electromagnetism is ubiquitous and doesn't need to travel, but any disturbance sends out electromagnetic waves. In this way, photons in the giant electromagnetic field which aren't travelling because of disturbances might be regarded as "already stopped" though they still exist.

If this immaterial body is entangled with all space-time, it could provide a new concept of who God is. "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." ["Pale Blue Dot – A Vision of the Human Future in Space" by Carl Sagan - Headline Book (1995, p. 382)].

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 are possible (and that there is truth in practices like astrology), despite modern science's objections which appear to be based on non-unification.

** Plus the inhabitants of countless billions of other worlds that will be colonized by humans as they explore the universe of not only the future, but also of what we call the present and of what we term the past.

Refer to these lines in "Pale Blue Dot – A Vision of the Human Future in Space" by Carl Sagan - Headline Book (1995, p. 382):

"Or consider a story in the Jewish Talmud left out of the Book of Genesis. In the Garden (of Eden), God tells Eve and Adam that He has intentionally left the Universe unfinished. It is the responsibility of humans, over countless generations, to participate with God in a 'glorious' experiment - 'completing the Creation'."

Instead of humans colonizing the other worlds, one or more of them may have colonized Earth. In his 1944 book "What is Life?", physicist Erwin Schrödinger - who had strong interest in Eastern religions like Hinduism's school Vedanta - speculated on the possibility of individual consciousness being a manifestation of a unitary consciousness that pervades the universe. Could this unitary consciousness that

pervades the universe be combined with humanity and with aliens or extraterrestrials (ETs) to produce the God Trinity (known as Brahman by Hindus)? In the Christian religion, the universal consciousness would be the Holy Spirit, humans would be the Son Jesus Christ (because both have lives on Earth), and ETs are equated with the Father who is the remainder of the Trinity.

In Hinduism, ETs are the Creator Brahma while humans are Vishnu (the Preserver or Renewer who has come to Earth a number of times - as Rama, Krishna etc), and the universal consciousness would be Siva the Destroyer (by destroying, Siva makes room for the new). ["Hindus" by George Noel Mayhew - The World Book Encyclopedia, 1967]

DVD-TIME, REALITY WAVES AND BRAIN FOG

There are two approaches here -

1) 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 composing the universe. These 1's and 0's correspond to the pits and land (or pits and bumps) of a DVD or CD. If you gaze at the horizon, you're viewing things in space – on the surface of Earth, which is floating in space. But you know the world doesn't end at the horizon even though you can't see any further. You can't see anything that happened yesterday or tomorrow ie in space's indissoluble partnership with time. So why assume nothing presently exists beyond your time's horizon? Every fraction of a second in the universe's infinite history and infinite future exists right now just as surely as an entire DVD exists even though we only perceive sights and sounds from an extremely tiny portion of the disk at any interval. The consequence is that Einstein is formulating $E=mc^2$ somewhere – or Somewhere in Time – right now: and physics' hoped-for Unification is already an established fact somewhere. Our perceptions from a tiny fraction of the Cosmic DVD are called "the present". How could the time travel loved by theoretical physicists come to pass without this cosmic DVD, which would constitute an eternal present?

2) Another way of validating what might be called fate or destiny is via reality waves. Reality is wavelike (has a wave function) because of the universal gravitational and electromagnetic fields, and because matter is composed of interacting gravitational and electromagnetic waves. Some of the ocean waves passing an island are refracted - when they enter shallow water ie they're refracted by the mass of the seabed. They change direction and head towards the island, breaking onto its beaches. Similarly,

reality waves should be refracted by masses residing at appropriate positions in the future and would converge on that future state. Therefore, the immense future in front of us is influencing our very limited present. So though the past and present help build the future, the convergence of reality waves on the future means we're **not** completely free to make the future what we want it to be.

I don't know if we have no free will as in the paragraph about the cosmic DVD, or very little free will as in the paragraph about reality waves. I suspect the answer is "very little". Even if we live in a cosmic DVD, DVD's don't spontaneously appear out of nothing – people have to produce, direct, write, compose music, and act in them. Either way, though I'm responsible for writing this article (and its mistakes, as well as good points). I had to write it. It's my destiny. If I didn't write it for some reason; anybody else with enough curiosity and imagination regarding its topics – plus sufficient persistence and spare time - could have typed it.

THE END, FOR NOW