

Cosmology and Cancer in the Post-Star-Trek Centuries

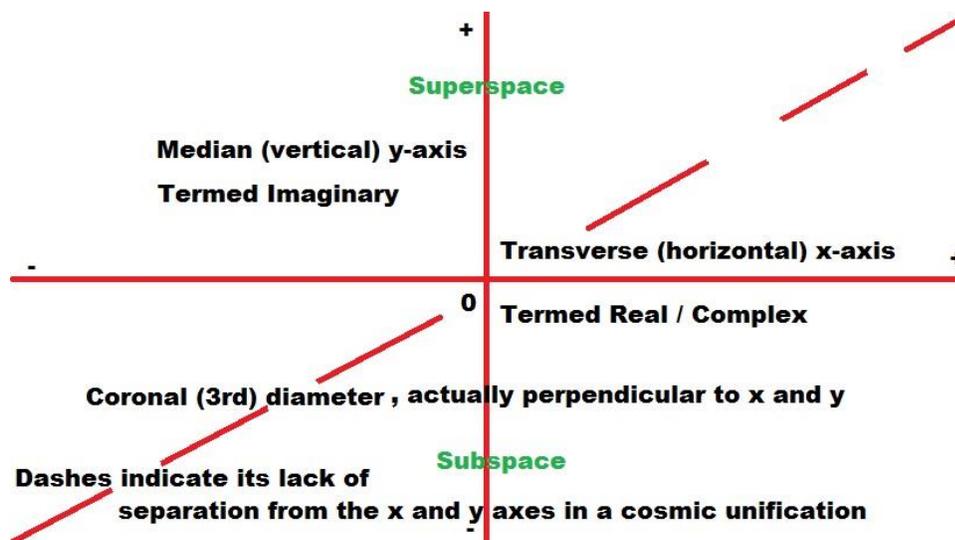
Author – Rodney Bartlett

Abstract -

This is definitely not a work of science fiction. It's a serious 9,000 words detailing what today's philosophy and science (in areas like physics, computer science, cosmology, biology and mathematics) are likely to evolve into. I've always been totally fascinated by the future – the more distant, the better! So the adventures of the Star Trek movies and TV shows, based in the 23rd and 24th centuries, are a good starting point. They're not documentaries by any stretch but are a tremendous boost to the sense of wonder about the universe. Superman and Doctor Who are also great at making a person wonder about new possibilities in other centuries and other parts of the cosmos. Putting together the marvels of science fiction and the marvels of science results in the following picture of what lies in store for humanity and the cosmos. In the end, this new science and philosophy is my opinion and only time can determine its accuracy.

Article -

Imaginary is Real and Holograms in Flatland



The Complex Number Plane and Imaginary Time

I never mean to suggest that extra time and extra space dimensions are not real. Such confusion seems possible because of my reference to the Complex Number Plane's imaginary time. When Max Planck originated the idea of quanta to solve the ultraviolet catastrophe, I'm sure that idea (like so-called "imaginary" time) was initially thought of as a mathematical trick. Albert Einstein thought differently about quanta, and developed his photoelectric effect. So it appears entirely possible that imaginary time and the Complex Number Plane will find practical application in the future, at which point they'll cease being mathematical trickery and analytic continuation. Imaginary time will be a real, large-scale thing: with the word imaginary being only a poorly chosen adjective, and a relic from history.

A crude analogy to extra dimensions being interpreted by humans on 4-dimensional (3 space/1 time) Earth is that of 2-dimensional creatures interpreting shadows from a light shining in a 3-dimensional room. It reminds me of Edwin Abbott's Flatland and also of "The Long Track of the Moon" by Stephen James O'Meara (in the column "Secret Sky" in Astronomy magazine - September 2013). That article speaks of the Moon reflecting in the multitude of wavelets over a body of wavy water (the reflection's called a glitter path). It says, "If you could separate the multitude of wavelets and look at them in detail, you would see that each and every one of them reflects a complete, though distorted, image of the Moon ..." Following Einstein's paper that asks "Do gravitational fields play an essential role in the structure of elementary particles?",* our brains and the universe could be considered holograms in the sense of being interference patterns set up by interacting gravitational and electromagnetic waves. Neuroscientist Karl Pribram and quantum physicist David Bohm said our brains are holograms. (Forsdyke, D. R. [2009] - "Samuel Butler and human long term memory: Is the cupboard bare?", Journal of Theoretical Biology. 258: 156–164. doi:10.1016/j.jtbi.2009.01.028). Bohm later said brains are smaller pieces of the larger holographic image known as the cosmos, and that they contain the whole knowledge of the universe (Geoff Haselhurst - "David Bohm and the Holographic Universe" [2005], http://www.bibliotecapleyades.net/ciencia/ciencia_holouniverse04.htm). Each mind always contains the whole picture, but with an unclear perspective i.e. its knowledge is "complete (like the moon), though distorted (like the glitter path)".

* "Spielen Gravitationfelder in Aufbau der Elementarteilchen eine Wesentliche Rolle?" ["Do gravitational fields play an essential role in the structure of elementary particles?"] by Albert Einstein - Sitzungsberichte der Preussischen Akademie der Wissenschaften, [Math. Phys.], 349-356 [1919] Berlin.

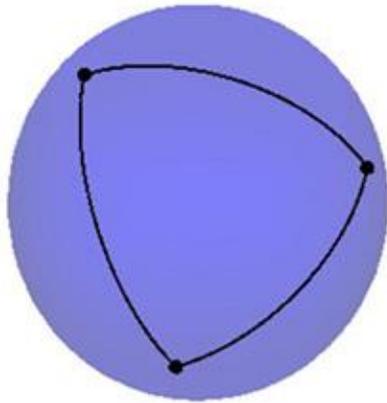
Unifying Phenomena

Professor Itzhak Bars from the University of Southern California has written, "the role of 2T-physics (two-time physics, an extra dimension to the time we know) is to unify various physical phenomena into a more comprehensive and more predictive theory." This sentence can be taken back to the Complex Number Plane if the plane's so-called imaginary time is oneday accepted as the real two-time. And referring to John Cramer's Transactional Interpretation of Quantum Mechanics/the Wheeler-Feynman absorber theory, the Plane could unify various phenomena in the following way – electromagnetic waves could travel forwards in time along the right-hand direction of its x-axis, and they could travel back in time in the left-hand direction. Albert 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 James Clerk Maxwell to be restated in terms of these gravitational fields. This was discovered in 1925 by the mathematical physicist George Yuri Rainich.

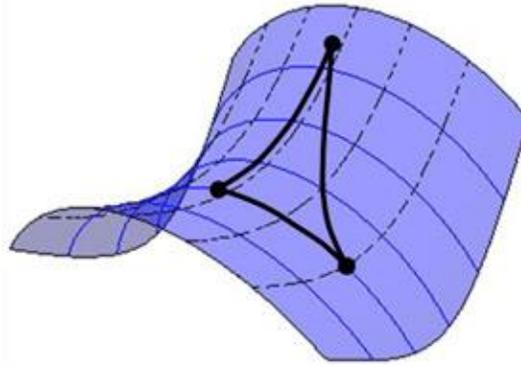
[^] Einstein's paper titled "Do gravitational fields play an essential role in the structure of elementary particles?" was written prior to the discovery of the nuclear forces. However, it seems to imply to modern science that the 2 nuclear forces are not fundamental but, like the matter they're associated with, are products of gravitational - electromagnetic interaction (a coupling which produces the mass of W and Z particles – as well as the Higgs particle). This agrees with theories in which the role of the mass-bestowing Higgs field is played by various couplings (see M. Tanabashi; M. Harada; K. Yamawaki. Nagoya 2006: "The Origin of Mass and Strong Coupling Gauge Theories". International Workshop on Strongly Coupled Gauge Theories. pp. 227–241).

So there are 'advanced' gravitational waves going back in time ... these could be called antigravity. Antigravity has been equated with dark energy and, if real gravity is involved in ordinary matter's mass-production, antigravity would conceivably be involved in the mass-production of other matter called "dark" (which would not be WIMPs, sterile neutrinos, axions or any particles that travel forwards in time). Does dark matter belong to a higher dimension where antigravity - gravitational waves going back in time - exists on the "complex axis".

M-sigma, Gravity, Dark Matter



positively curved space
sphere



negatively curved space
saddle

The M-sigma relationship was only discovered in 2000 and is observational, meaning scientists noticed it first and are now trying to understand the cause. M refers to the mass of a galaxy's central black hole, and sigma stands for the speed at which stars fly about in the galaxy's bulge. The bigger the black hole, the faster the stars move - the greater is their velocity dispersion. ("The M-sigma relationship": Astronomy, October 2016).

Gravitational waves would explain the cause. Some of the ocean waves passing an island are refracted - when they enter shallow water, they're refracted by friction with the mass of the seabed. They change direction and head towards the island, breaking onto its beaches. Similarly, gravitational waves are refracted and focus on the centre of a mass. In this case, the mass the waves are headed toward is the black hole, where they help form its composition. Some waves passing a star near the black hole strike the left side of the star and would set it spinning in a certain direction (say clockwise, as seen from above). But this motion is countered by waves striking the star's right side at the same time and producing counterclockwise movement. The result is that there's no change in rotation. But the energy from the waves striking the star has to have an effect. It probably cannot push the star closer to the black hole since gravitational waves from the opposite direction are balancing that effect by trying to push it further away - there may be a tiny imbalance eg in regard to the Astronomical Unit (see "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. - first paragraph after "Ocean Tides" diagram). The tiny imbalance could naturally affect rotation, too.

If the energy from the waves impacting the star has little influence on stars' rotation or distance from the black hole, it's likely that it speeds up the stellar orbital movements. If

the waves play a role in the black hole's mass and gravitational field, it appears their influence would not be limited there, and that they'd also play a role in forming those properties in any other body they encounter.* The bigger the black hole, the more gravitational waves would be entering it, and the greater would be the effect on the orbits of nearby stars.

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

Let's apply this aspect of gravity to a few more instances -

Saturn's moon Enceladus and Gravitational Waves

"Surprising geysers on Saturn moon Enceladus hint at plumbing mystery" by Elizabeth Howell, Space.com Contributor · Published May 12, 2016 (<http://www.foxnews.com/science/2016/05/12/surprising-geysers-on-saturn-moon-enceladus-hint-at-plumbing-mystery.html>) says:

"A small water jet on Enceladus, an icy moon of Saturn, spews its fiercest eruptions when the moon is farthest from the planet, a new study suggests, but the overall gas output doesn't increase much during that time. The study points to a mystery in Enceladus' plumbing."

Basically, the problem seems to be that humans haven't caught up with Einstein's ideas about gravity yet. In 1919, he submitted a paper to the Prussian Academy of Sciences asking "Do gravitational fields play an essential role in the structure of elementary particles?" If so, gravitational waves from deep space would focus on the centre of a planet's mass. When Enceladus is near Saturn, it would also be close to increased activity of the waves. The increased push from them would suppress emission of dust-sized water-ice grains, which is 3 times greater at the moon's farthest point because suppression is reduced there. Gas emission is also increased. Since this is not 3 times more, but only 20% more, a plumbing problem would be causing the discrepancy.

Earth's Tides

How, then, can repelling or pushing gravity account for the apparent attraction of ocean tides towards the Moon? Suppression is the key.

I believe such an idea of 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 idea that the Earth's movements slosh its water. According to "Galileo's Big Mistake" by

Peter Tyson - Posted 10.29.02

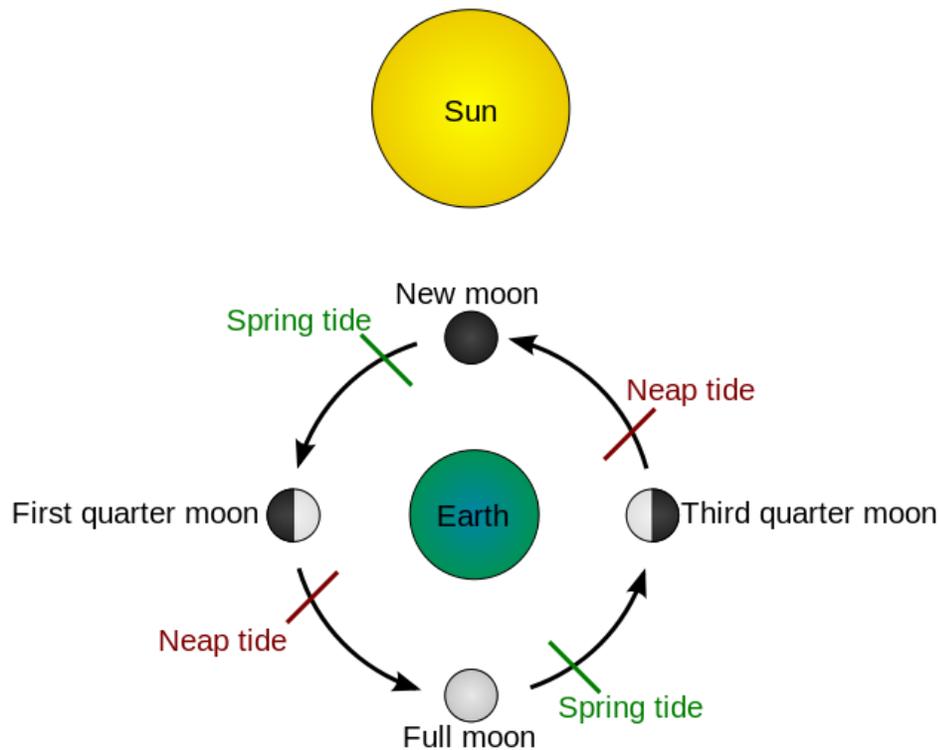
(<http://www.pbs.org/wgbh/nova/earth/galileo-big-mistake.html>) -

"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 - some 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 to 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 greater suppression causes neap tides which are much lower than spring tides.



OCEAN TIDES

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. The increase may actually be gravitational.

Gravity's a push and the reverse motion of complex gravity causes complex gravity to act in the reverse manner - as a pull. In real space-time, the Sun lies in a depression or valley, and the Earth rolls towards it. We could say gravity pushes ... gravitational waves push ... Earth to the Sun. But in complex space-time, the Sun instead sits on a high hill, and the Earth rolls away from it. We could say complex gravity pulls ... complex gravitational waves pull ... Earth away from the Sun (like science fiction's tractor beam). The depression of real gravity and the hill of complex gravity fit together like closed, positive curvature of a spherical portion of space-time neatly fits into the open, negative curvature of a saddle-shaped (hyperboloid) part of space-time. Like the

pommel protruding from the front of a saddle, negative curvature can cause an "imaginary" space and imaginary time to extend/be extruded 90 degrees from the "surface" of real, flat space-time. This makes imaginary time a real phenomenon, and no longer purely mathematical. Through their union, positive and negative curvature ultimately cancel each other on the largest scales to produce the flatness of infinity/eternity.

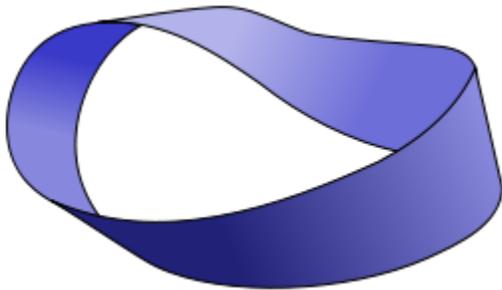
When Isaac Newton described gravitation as a pull attracting objects, was his genius unconsciously reaching into the 21st century and anticipating complex gravity? Newton's idea of gravity acting instantly across the universe could be explained by complex gravity's ability to travel back in time, and thereby reach a point billions of light years away not in billions of years, but apparently instantly. It could even arrive at that point sooner than instantly. However, that is not a violation of cause and effect. The complex gravitational wave cannot affect a spot at any distance until it begins its journey ... until it begins travelling back in time.

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 $1/16$. 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 5th space dimension of complex space-time). Therefore, real gravity is perpetually amplified by complex gravity. Using Professor Hawking's figures, the amplification equals $1/4 \times 1/4$ ie doubling the distance in 5 space dimensions causes gravity to become $1/16$ as powerful. It is not $1/4 \times -1/4$ since numbers have the same property regardless of direction on the Complex Number Plane (they increase in value). To conserve this sameness, the second one must be $+1/4$ if the first one is $+1/4$. Alternatively, the gravity's strength is reduced 4 times and this number is multiplied by another 4 to reduce it 16 times overall. In the 4th space dimension/2nd time dimension 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 $1/8$. Only 5 space dimensions can exist – along with real time, imaginary time and complex time.

By the way - if matter's composition is a gravitational-electromagnetic coupling, and if both gravitational and electromagnetic waves can travel forwards and backwards in

time, then all matter has the innate ability to defy modern physics and journey into the past. Wouldn't gravity go a long way to producing cosmic unification – the idea behind Einstein's Unified Field Theory - if it can instantly affect any point in the universe, and also helps form matter and any other form of mass? All that remains is to develop a revised theory of supersymmetry that unites matter's fermions with light's photons – and to remember that a Unified Field must inevitably give scientific support to things like astrology, extrasensory perception, telekinesis, and the concept of every human being united with every other human.

SUSY 2



Möbius Strip

A plausible theory of supersymmetry is to code electronics' binary digits into programs arranged in the shape of Möbius strips, then combine the strips to form 4-dimensional figure-8 Klein bottles [Polthier K, "Imaging maths - Inside the Klein bottle" - <https://plus.maths.org/content/os/issue26/features/mathart/index>]. The figure-8 Kleins compose all particles, fermionic as well as bosonic: and the figure-8 version is implied because it resembles spiral galaxies and cosmology's hypothetical doughnut model of the universe ("What Shape is the Universe?" by Vanessa Janek: (May 11, 2015) http://www.universetoday.com/120157/what-shape-is-the-universe/#google_vignette). Figure-8 Kleins include positive curvature in their shape which creates the curvature of space around Jupiter that refracts quasar signals*. This combines with the negative curvature in other Klein bottles to ultimately create the large scale flatness of space-time).

* "About once every decade, Jupiter crosses nearly in front of a quasar, a bright radio beacon in the distant universe. Jupiter's gravity ... deflect(s) the quasar's radio waves ..." ("Confirmation of Gravity's Speed? Not So Fast" by Robert Irion - Science 17 Jan 2003: Vol. 299, Issue 5605, pp. 323a-324a - DOI: [10.1126/science.299.5605.323a](https://doi.org/10.1126/science.299.5605.323a))

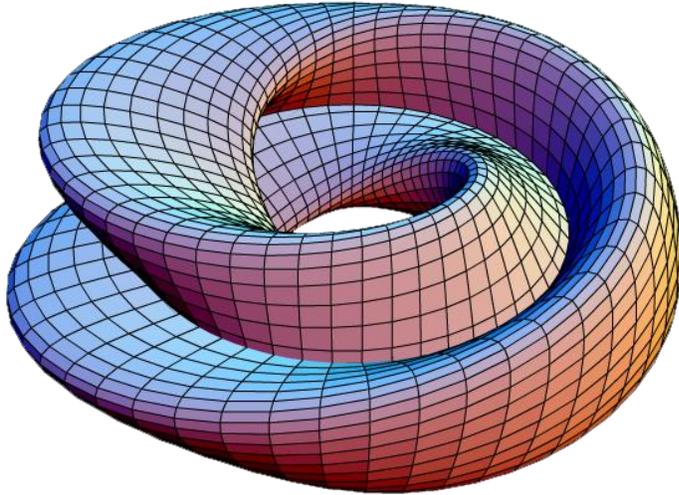


figure-8 Klein Bottle

If figure-8 Klein bottles curve space positively around Jupiter, it would be because they make up particles of gravity ie the presently hypothetical gravitons. The deflection caused to light or radio waves is positive because of the law associated with electric charges and magnetic poles - likes repel and unlikes attract. Light and radio are forms of electromagnetism, so the likes-unlikes principle naturally applies to them too. Since figure-8 Kleins compose every particle, particles must initially contact each other with either a positive or negative surface belonging to the Klein. Two likes - such as the)) shape of a couple of positive surfaces, or the ((of 2 negatives, nearing a central point - will not fit together when they meet. They remain separate - those particular gravitons stay near Jupiter while photons are repelled and deflected (reflected), possibly towards Earth. Two unlikes - such as the)) of positive and negative Klein parts approaching, or the ((of negative and positive parts approaching - do complement one another's shape like lock and key, or a protein and its receptor. Attraction occurs and the photon and graviton are absorbed into each other, producing a GEM (GravitoElectroMagnetic particle). This GEM is the end product of a revised hypothesis of supersymmetry and fulfills the concept of cosmic unification.

Topological Insulators, More SUSY 2

Symmetry Protected Topological (SPT) Order is a kind of order in topological insulators where, if symmetry is preserved during the deformation undergone in topology ("rubber-sheet geometry"), a phase transition from one state of matter to another must occur. In other words, if the shape of a Möbius strip - or the union of two strips into a four dimensional Klein bottle - is preserved, phase transition must occur just as orientation-reversing curves occur in the Möbius and Klein.^ The above works in both bosonic and

fermionic systems - respectively, systems of force-carrying and matter particles. (Zheng-Cheng Gu, Xiao-Gang Wen, "Tensor-Entanglement-Filtering Renormalization Approach and Symmetry Protected Topological Order", Phys. Rev. B80, 155131 [2009], and Frank Pollmann, Erez Berg, Ari M. Turner, Masaki Oshikawa, "Symmetry protection of topological order in one-dimensional quantum spin systems", Phys. Rev. B85, 075125 [2012]).

^ "The Shape of the Universe" by Stacy Hoehn, formerly of Vanderbilt University's Mathematics Department (<https://my.vanderbilt.edu/stacyfonstad/files/2011/10/ShapeOfSpaceVandy.pdf>)

In Band Theory, bands describe the range of energies that an electron within the solid may have (the ranges it may not have are called band gaps or forbidden bands). See "Energy levels and energy bands" (ecee.colorado.edu/~bart/book/eband2.htm), and "The energy band diagram of the Metal-Oxide-Silicon (MOS) Capacitor" (ecee.colorado.edu/~bart/book/moseb.htm), and "Band diagram" (https://en.m.wikipedia.org/wiki/Band_diagram). Since bands and band gaps describe an electron's wave function, they are compatible with the following description: matter particles are described as spin 1/2 and need to be turned through two complete revolutions to look the same*, plus it's necessary to travel around a Möbius strip twice to reach your starting point.

* "A Brief History of Time" by Stephen Hawking (Bantam Press, 1988): pp.66-67

It therefore appears that electrons and all particles of matter could possibly be composed of Möbius strips. A step up from the Möbius would see the strips combine into figure-8 Klein bottles before reaching the scale of subatomic particles, and a step down could see the strips becoming programs consisting of electronics' binary digits 1 and 0 ordered (organized) in the shape of the Möbius (please see the section on topological cosmology). Let's borrow a few ideas from string theory's ideas of everything being ultimately composed of tiny, one-dimensional strings that vibrate as clockwise, standing, and counterclockwise currents - "Workings of the Universe" by Time-Life Books (1991, p.84). One Möbius-strip program could be coded clockwise, another anticlockwise, and their interaction would produce a Möbius possessing a standing current of streaming binary digits.

The theory of supersymmetry (SUSY) relates the two classes of elementary particles – bosons (force-carrying particles) and fermions (particles of matter). This commentary relates fermions (matter particles) to binary digits and the Möbius strip via Professor Hawking's book "A Brief History of Time". 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: www.arXiv:1504.03654). So the commentary doesn't relate fermions to bosons through SUSY but through the Möbius, which means the structure of e.g. light's photons is also nonorientable - each of them includes the orientation-reversing curve of the Möbius strip and the Klein bottle (topological cosmology advocates the figure-8 version of Klein bottle).

Topological Cosmology

While the expansion of space appeared to be confirmed by Edwin Hubble's 1929 observations, Hubble always disagreed with the expanding-universe interpretation of the data:

"... if redshift are not primarily due to velocity shift ... there is no evidence of expansion, no trace of curvature ... and we find ourselves in the presence of one of the principles of nature that is still unknown to us today ... whereas, if redshifts are velocity shifts which measure the rate of expansion, the expanding models are definitely inconsistent with the observations that have been made ... expanding models are a forced interpretation of the observational results." ("Effects of Red Shifts on the Distribution of Nebulae" by E. Hubble, Ap. J., 84, 517, 1936)

It seems to me that the universe is not physically expanding from a Big Bang at all. It appears to be undergoing topological extension in a Steady State. Computers' binary digits could be encoded by the quantum fluctuations / energy pulses called Virtual Particles which fill space-time. This is possible because the motions of virtual particles may not be random but may obey Chaos theory's principle of "order within apparent disorder" (chaos theory is sometimes called the third most important discovery of recent science, after Relativity and quantum mechanics). The digits are coded into the form of two-dimensional programs shaped as Mobius strips which are joined as four-dimensional figure-8 Klein bottles (this process accounts for General Relativity's curvature of space-time). The bottles are extended from math form to structures in space-time that the energy of gravitational - electromagnetic interaction gives tangible form to. The above would only necessitate a God if time was exclusively a straight line. Since Einstein showed that space and time are curved, it's within the potential of future humanity to be responsible for the universe's creation. Including the poorly-named imaginary time of physics and mathematics in humanity's electronic creation makes the universe free of boundaries and literally infinite. Stephen Hawking writes, "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 ..." ("A Brief History of Time" by Stephen Hawking - Bantam Press, 1988, p.139).

Is it possible that the extension by mathematical topology's figure-8 Klein bottles is, in Edwin Hubble's words, "one of the principles of nature that is still unknown to us today"? It would replace the expanding-universe model which Hubble always disagreed with and be the cause of measurements of redshift and the Hubble constant. This constant would, in reality, measure topological extension rather than physical expansion. Regarding photons (e.g. microwave photons) alleged to be leftover from the Big Bang - they could be weakened by collisions with dust, gas and stars etc; and wavelengths would be redshifted by (perceived) distance to microwave wavelength from a higher, possibly gamma-ray, wavelength).

A diagram of many figure-8 Klein bottles would show that their positive curvature (on the spherical parts) fits together with their negative curvature (on saddle-shaped parts) to cancel and produce the flatness of space-time's infinity/eternity (Hubble's "no trace of curvature"). Referring to mathematics' Complex Number Plane: like the pommel protruding from the front of a saddle, negative curvature can cause an "imaginary" space and - thanks to the indissoluble union of spatial plus temporal phenomena - the well established "imaginary" time; to extend 90 degrees from the "surface" of real, flat space-time. In this way, imaginary time gains reality and is no longer a mere mathematical trick.

For the note below on the figure-8 Klein bottle, I refer to – (11), (12), (13), (14), (15).

(11) Bourbaki, Nicolas (2005). "Lie Groups and Lie Algebras". Springer

(12) Conway, John (1986). "Functions of One Complex Variable I". Springer

(13) Gamelin, Theodore (January 2001). "Complex Analysis". Springer

(14) Joshi, Kapli (August 1983). "Introduction to

General Topology". New Age Publishers

(15) 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). "Some scientists believe that large warm and cool spots in the Cosmic Microwave Background could actually be evidence for this kind of ... (doughnut/figure-8 Klein bottle) ... topology" ("What Shape is the Universe?" by Vanessa Janek: (May 11, 2015) <http://www.universetoday.com/120157/what-shape-is-the-universe/> - see later (in next paragraph) where figure-8 Klein bottles can be made into plausible subunits of a flat and infinite universe.

A flat universe that is also simply connected implies an infinite universe. (Luminet, Jean-Pierre; Lachièze-Rey, Marc - "Cosmic Topology" - Physics Reports 254 (3): 135–214 (1995) www.arXiv:gr-qc/9605010) So it seems the infinite universe cannot be composed

of subunits called figure-8 Klein bottles. But positive and negative curvatures can complement each other's shape, and digitised images can morph to perfect the complementarity if necessary (perhaps by binary digits filling in gaps and irregularities 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.

On the subject of feasibility:

"If the universe was nonorientable ie if it contained orientation-reversing curves such as the Möbius and Klein, there would be strange physical consequences that have not yet been observed. While they could be happening outside of our field of vision, it is unlikely that our universe is nonorientable." ("The Shape of the Universe" by Stacy Hoehn, formerly of Vanderbilt University's Mathematics Department: <https://my.vanderbilt.edu/stacyfonstad/files/2011/10/ShapeOfSpaceVandy.pdf> - October 13, 2009)

[My comment: It can indeed be nonorientable if these strange physical consequences are happening outside of our field of vision i.e. if the universe is infinite*. What I regard as the strangest physical consequence would be that of the universe violating the Copernican ideal – this ideal makes man's view as typical and ordinary throughout the course of time as it is throughout the extent of space. Violating that ideal means our little corner of space-time really is different, in non-fundamental ways, from particular portions of the rest of spacetime (those different parts would still have binary digits / Mobius strips / figure-8 Klein bottles as their basis). Another strange consequence is the extra dimensions of time and space.

* "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 largescale structure, and the flat topology of space – all point the same way." ("Infinite Universe" by Bob Berman: "Astronomy" – Nov. 2012)

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. To be fair, it could be called a multiverse since it's composed of multiple - even infinite - figure 8 Klein bottles.

The above paragraphs seem to explain astronomer Alex Filippenko's statement, "there's something important missing in our physical understanding of the universe." ("Universe

expanding faster than expected" by Korey Haynes - Astronomy Magazine's October 2016 issue, p.11)

Radioactive Dating

Every type of radioactive dating (eg potassium-argon or uranium-lead etc to date rocks, carbon-14 to date organic material) produces erroneous results since it does not include gravitation playing a role in matter, nor the travelling back in time of gravitational waves. If all the radiation and emitted particles from a radioactive meteorite used to date the solar system were going forward in time, the result certainly could approximate 4.5 billion years old. If 100% of the rays and particles were going back in time, the solar system's age would be calculated to be zero. In reality, some waves/particles are going forward and some are travelling backwards. So the truth is that our Sun, planets, prehistoric ancestors etc are aged somewhere between zero any-kind-of-units and 5 billion years.

Earlier, it was stated that "... our Sun and planets etc are aged somewhere between zero any-kind-of-units and 5 billion years." Space-time has been proposed as infinite - a concept which includes both the numbers 5 billion and 0. So strangely, there really can be zero time between events. What does it mean if there is 0 time between what is observed in the present fraction of a second and the events infinitely distant in the future or past? It must mean everything is occurring at once. We're unaware of practically all of it because human brains reach perspective's vanishing point (a visual example is that of railway lines converging in the distance – a multisensory example may be inability to perceive anything beyond a particular location on a DVD's long spiral track of data). And the scientific instruments/spaceprobes designed by those brains eventually reach their vanishing point too – though science's devices are less limited since they see further into space and the subatomic world, and they detect in more wavelengths. Even though it might be impossible to sense or detect anything beyond a particular spot on a DVD's track, the entire disk nevertheless exists. A finite DVD is a poor analogy to the infinite universe (where the entirety of space and time exists at once), but the correct change in perspective allows complete information to be obtained from either (to see everything happening at once).

In the case of the DVD, thousands of people could view a different second of the movie. Then a variation of astronomy's interferometry could be used – interferometry is the process of combining the waves detected by multiple instruments (say, radio telescopes) to learn more than a single radio telescope can reveal. The gravitational

and electromagnetic waves composing each person's brain are combined so one brain (yours) can access all info on the disk.

In the case of the cosmos, everything in space-time could be unified by those waves. Causes and effects would be restricted to communicating at the velocity of light – identical to the velocity of gravitational and other electromagnetic waves – if time only moved forwards ie if only "real" time existed. But time also moves backwards ie "complex" time exists. So waves from a cause can travel back in time to an effect, thus creating its effect instantly in a process called entanglement (entanglement can be quantum or macroscopic[^]). If your brain and body is entangled with all time and all space, you'll be able to learn and do things considered impossible. The binary states of on-off, or of increased energy-decreased energy, in pulsations of the virtual particles filling space-time can be represented by the electronic binary digits (bits) of 1 and 0. Just as "bit" is an abbreviation for "binary digit" in ordinary computers, "qubit" stands for "quantum bit" in quantum computers. Whereas the state of a bit is either 0 or 1, the state of a qubit can be a superposition (0 and 1 at the same time). The qubit is perpetually realized inside black holes because their gravitational and electromagnetic waves - made of bits - possess both forward and backward motion in time, cancelling and superposing to produce the zero time/zero distance called entanglement. Entanglement and the qubit dispose of Cosmic Inflation's idea that the uniformity in the cosmos means particles in the universe must have once been in such a tiny space that they were in physical contact (all particles in space and time are interconnecting and entangled parts of one computer program). '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>). 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 entanglement exists everywhere in space and time, the zero time/zero distance within black holes is accessible from anywhere in space-time and they're portals to other regions of time and space within the infinite, eternal universe – see the article "Soft Hair on Black Holes" by Stephen W. Hawking, Malcolm J. Perry, and Andrew Strominger (Phys. Rev. Lett. 116, 231301 – Published 6 June 2016) which speaks of black holes being portals to other universes. Time travel into the remote future or past, or instant teleportation to spots in space that seem to be many billions of light years away, must be achievable – even without any kind of spaceship or time machine.

[^] Entropy suggests that systems naturally progress from order to disorder. How do biological systems develop and maintain such a high degree of order? If you add energy

to a negative-temperature object, it will decrease in entropy ("Negative Absolute Temperature for Motional Degrees of Freedom" by S. Braun *et al* - Science 04 Jan 2013: Vol. 339, Issue 6115, pp. 52-55). Could this high degree of order result from living things being negative, as well as positive, temperature systems that - as implied by a 1919 paper by Einstein - have gravitational and electromagnetic energy constantly added to them? ("Spielen Gravitationsfelder in Aufbau der Elementarteilchen eine Wesentliche Rolle?" ["Do gravitational fields play an essential role in the structure of elementary particles?"] by Albert Einstein - Sitzungsberichte der Preussischen Akademie der Wissenschaften, [Math. Phys.], 349-356 [1919] Berlin). S. Braun *et al* say only very small things discussed in quantum mechanics can supposedly reach this negative-temperature state. We've seen how living things could share the function of being renewed by gravitational / electromagnetic energy. In other words, the quantum and macroscopic worlds are united. Then planets and constellations could also disregard distance and light-speed restrictions, behaving as if time doesn't exist. Astrology would have scientific support in a new science based on cosmic unification, it would contain truth, and the planets could never avoid influencing our lives astrologically. We'd affect the planets and everything else, too. This makes possible things which present-day science regards as absurd and superstitious nonsense. Unification naturally and inevitably allows things like extrasensory perception, telekinetic independence from technology, elimination of death - as well as the Real Reality of bypassing the vast distances in space/"distances" between past, present and future to make this a very, very tiny universe.^

^ A reference to the Real Reality Shows – a series of videos by Astronomy magazine's editor David J. Eicher (<http://www.astronomy.com/search?q=real+reality>). The one titled "Let's Cut the UFO Crap" (March 4, 2015) says, "Face it, folks - it's a very, very big universe."

E=mc² Supports Deletion of Distance

I think E=mc² supports this idea of deleting distance – eliminating distance between hypothetical multiple universes deletes the multiverse. To be fair, this article does propose multiple (indeed, infinite) subuniverses or observable universes – and some people could legitimately call each one of these a complete universe that's part of a multiverse. 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 by 0 (zero), 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 $E=0*c^2$ ie outside familiar circumstances (in black holes), 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 light 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. 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.

In the preceding paragraph, it's shown that $m=c^2$ when $E=0$ ie when no interaction of light energy and gravitational energy exists. In a Black Hole, these energies reside together but temperature within a black hole is extraordinarily close to absolute zero. The coldness prevents gravitons and photons interacting to form matter – in this case, clouds of dust and gas that can condense into stars. Describing spacetime by zero gives the impression that it doesn't exist. It obviously does, so the conclusion that zero means distance can be eliminated is accurate. Distance obviously exists, too. It is merely suggested that it's possible to delete it.

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 topological cosmology and the gravitational field. All past and future universes are unified with the present cosmos (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 specifically mentioned such a connection. Was Einstein as ignorant of the magnitude of his accomplishment as the rest of us?

"Physics of the Impossible" by Michio Kaku (Penguin Books, 2009) states on pp. 276-277, "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." Suppose Einstein was correct about the gravitational fields carrying enough information about electromagnetism to allow Maxwell's equations to be restated in terms of these gravitational fields. Then gravitational waves would also have an "advanced" solution.

$E=mc^2$, when viewed as $E=0$ and $m=c^2$, also supports this article's statement that gravitational ripples proceed in the "reverse" direction along the horizontal axis (not in so-called 'real' time, but in 'complex' time. This is because $m=c^2$, and those two can only create 0^* if, purely for example, m represents the retarded wave of light travelling forward in time - and, again purely for example, c^2 represents the advanced wave of gravitation travelling backward in time. If mass and matter are products of gravitational-electromagnetic interaction, matter can also travel into the past.

* $E=0$ means there's no distance between: electromagnetic and gravitational energy (because of rearrangement of binary digits composing photons and gravitons); resultant mass including matter (along with its nuclear forces); space and time (their warps are gravity ... and also because of imaginary time's removal of boundaries); any dimensions (because of the multi-directionality of gravitational waves in both space contexts and time contexts).

In the Complex Number Plane, warping or bending vertical imaginary time towards horizontal "real" time means imaginary time's lack of boundaries unites it with real time and the no-ending component of that lack of boundaries translates into an infinite future: bending it toward horizontal "complex" time means its no-beginning component translates into an infinite past (conclusions from "A Brief History of Time" by Stephen Hawking – Bantam Press 1988, p.139).

Some Consequences for Science and Medicine

The erroneous results mentioned in the first paragraph of this section must refer not only to radioactive meteorites but to any form of matter or radiation - including light and all other electromagnetic waves, sonic waves, gravitational waves, CT scans - even blood tests and doses of medicine fail to take into account the gravitational composition of matter or the travel back in time of some of those waves.

What does this mean for scientists and medical doctors? Scientists need to become theoreticians who can see beyond what their eyes reveal. They need to be able to see more than the traditional, accepted frame of reference because all those observations - all those scientific detectors and instruments - simply aren't good enough at present to give the needed results.

Doctors aren't getting satisfactory results, either. Sure, they can do wondrous treatments and keep disease - even cancer - at bay. But their labs need to differentiate between those "retarded" and "advanced" waves, then apply that difference to their clinical practices, instead of assuming pathology tests reveal everything. The wave-particle duality discovered by physics means that blood tests are just as susceptible to "erroneous results" as X-rays in a CT scan. With the proper results, doctors might well cure or prevent cancers, and eliminate death from any cause.

The wave function of diseased or injured cells in a body could either 1) be transported along the right-hand direction of the Number Plane to a point in the future when the malfunction has been corrected (in this case, it's conceivable that the cells could acquire some information about the future), or 2) be transported in the Plane's left-hand direction to a position in the past and be reverted to their younger, healthy state.* Whichever method is used, the cancer-free cells are then returned to their original location and this temporal therapy – in which your brain and body are entangled with all time and all space[^] - succeeds where surgery, immunotherapy, chemotherapy, and radiotherapy may have failed.

* Ironically, this reversion may also require future techniques for fighting cancer. Why do oncologists try to kill every last cancer cell? I believe a very limited number of malignant cells are normal in every body, even a baby's. Throughout life, normal cell division invariably goes wrong occasionally and results in a few mutated or cancerous cells. This only becomes a problem when the immune system is unable to eliminate them, allowing them to accumulate and form a cancerous tumour. One or two cells by themselves are not a cause of worry. As for treating solid tumours (or their non-solid counterparts, such as in leukemia), consider this possibility for future decades - Cancer cells are incredibly difficult to eradicate completely. So let's take a lesson from the martial arts and use their own strength against them. Let them live - but only after they've been bioengineered to mutate back into healthy, functional cells and tissues that reproduce at a normal rate. This possibility occurred to me because a) while most mutations are harmful, a tiny number are not harmful; and b) researchers are already able to change cells and tissues into different cells and tissues e.g. skin into sperm; or artificial gametes (eggs and sperm) ["Artificial gametes: new paths to parenthood?"

[PDF]. Journal of Medical Ethics 31: 184–186.

<http://m.jme.bmj.com/content/31/3/184.full>] into a totipotent, fertilized cell that has the potential to give rise to any and all human cells; such as brain, liver, blood or heart cells (as well as giving rise to the complete embryo and fetus).

^ This unification is compatible with the earlier statement, "The figure-8 Kleins compose all particles, fermionic and bosonic, as well as the Virtual Particles filling space-time". Another viewpoint is: distance may not be perceived correctly by our senses. Referring here only to the sense of sight – think of optical illusions or the way parallel lines appear to meet when they're visually farther away. The distances between bodies in space and time would actually be zero (time and space must have the same property regarding distance if they're permanently linked as space-time). Sharing the same property means the distinction between space and time is eliminated (such deletion is a property of imaginary time). Motion is individual computer images, or the individual frames called cells, being rapidly displayed in order to give the impression of movement. Motion's the same as time since displaying frames in one direction is going forwards in time while displaying in the reverse direction is going back in time. Frames = space and motion = time, so frames in motion = living in science's space-time. Movement builds the still images (more precisely: gravitational-electromagnetic interactions which quantum physicist David Bohm called holograms) into a universe that's dynamic and flexible. And the interaction known as the brain (neuroscientist Karl Pribram called the brain a hologram) assembles a picture of that cosmos.

The Gods, Extraterrestrials and Evolution

Waves aren't compelled to affect each other as the energy of hypothetical gravitons and undetectable virtual photons combining in the Wave Packets of particles of matter. They can interact in another way – to form interference patterns and holograms of a multispectral nature. That is, the holograms use multiple parts of the spectrum to stimulate the nervous system as well as every bodily sense. In a twist to science's Holographic Universe theory; there would also be the radio and ultraviolet waves, X-ray and gamma rays, sound waves and gravitational waves associated with various Earthly and cosmic phenomena. Way back near the end of the 1980s, the magazine "Scientific American" reported that holograms have been made not only with visible light and X-rays, but also with microwaves and sound waves. There has been much progress since then, and infinitely more progress lies ahead. With multispectral holograms, working computers* will eventually be simulated. So shall the nutritious vitamins, minerals, proteins, fats, carbohydrates and water of foods. Even the neurons and glial cells of the brain and nervous system – as well as all other bodily cells – will oneday be capable of being simulated, thus forming an immaterial "spirit body".

* The problems of chips generating too much heat - and of quantum uncertainties making transistors hopelessly unreliable at the scale of atoms - demand a new approach. I'm proposing that the successor to today's silicon technology is not quantum computers or spintronics, but lies in new concepts of time. Suppose engineers warp space-time so the functioning of the computer's processor takes place in the so-called imaginary time spoken of in Complex Number Plane. If warping is looped so results emerge in so-called real time, its calculations would be retrieved instantly after they were entered into the computer because billions of years might pass in imaginary time yet no period at all could elapse in our real time - and a presently unbelievably long value for pi could be obtained instantaneously. Diverting the processor's working to the Number Plane's complex time means results are available at any desired point in the past.

"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 entangled with all space and time[^] (no doubt many people, even today, would call such invisible, endlessly powerful, entangled beings “supernatural”). In its article "Elohim", World Book Encyclopedia states that a name used for God in the Old Testament is Elohim, which means the “plural majesty of the one god”. That word could refer to the billions of earth’s inhabitants** entangled with, and dispersed throughout, the united infinity of the universe and eternity of time.

[^] This reminds me of the episode on TV of "Star Trek: Voyager" where Lieutenant Tom Paris became the first person to fly at Warp 10 - at infinite speed, where the traveller's at every point in space at once. Lieutenant Paris said that when he reached Warp 10; he could see Voyager and at the same time he could see the shuttle he piloted away from Voyager. The following may be regarded as a first step toward Star Trek's infinite speed. The Complex Number Plane has a leftward direction on the horizontal X axis which is called the "complex axis" and corresponds to backwards motion in time. The direction to the right on X is called the "real axis" and corresponds to forward motion in time, while the vertical Y axis intersecting the X axis represents the so-called Imaginary Time derived from Special Relativity and quantum mechanics. Movement forwards through hypertime's imaginary time is always in the Complex Number Plane's “up” direction and, whether the trip is a relatively short one to Mars or one of countless

billions of light years, absolutely no motion occurs in ordinary time's horizontal direction (Relativity's time dilation implies time might be stopped, making travel instant). By travelling in the up (or down) direction in hypertime - one form of which is what physicists and mathematicians call "imaginary time" - the object (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 object from being, like Lieutenant Paris, entangled with every point in space (actually, spacetime) at once?

** Plus the inhabitants of countless billions of other worlds that will be colonized in the past and far future as well as the present and near future by humans who use time travel and have adapted to, or been genetically engineered to fit, other worlds as they explore the universe. Any complicated form of life – humanoid, animal or plant – anywhere in space would have to evolve into existence, unless human biotechnology and genetic engineering of future centuries produced it. The evolution proposed by Charles Darwin is indeed wonderful, and the Miller-Urey Experiment of 1952 made amino acids (which are relatively simple, and are the building blocks of protein) from inorganic material and by natural causes in a lab. Indeed, many molecules – including sugars and amino acids – have been found in space. But evolution appears limited. In a biological sense, the Theory of Evolution certainly explains adaptations and modifications in large forms of life. But believing it also explains their origins is unwarranted extrapolation. It takes an idea that accounts for some parts of life and, since it's the only scientific explanation we currently have, assumes it accounts for all parts of life. Any large lifeform is far, far more advanced than any amino acid. The consistent conclusion is that it must 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 transported into a past when humans with material bodies did not exist, and gradually become more civilized.

"The biological process which lead to intelligent life on earth was a fluke that is unlikely to have been repeated anywhere else in the universe, claims Professor Brian Cox."

Read more: <http://www.dailymail.co.uk/sciencetech/article-2809183/We-universe-Professor-Brian-Cox-says-alien-life-impossible-humanity-unique.html#ixzz4Jm4HkZQD>

Prof. Cox may be correct about intelligent life originating on Earth only. However, saying the biological process leading to that was a fluke suggests he believes evolution was the originator. Advanced genetic engineering/biotechnology would result from centuries of careful theorizing and experimenting – it could never be a fluke if it originates

intelligent life. On one hand, he's right – on the other (about evolution producing humans), he's wrong as far as I can tell.

