

Humans And Their Universes

Or

Science Out Of The Straitjacket: Rethinking General Relativity, $E=mc^2$... and String Theory

I saw a video ("Hidden Dimensions: Exploring Hyperspace" - <http://www.worldsciencefestival.com/hidden-dimensions>) in which it was stated that mathematicians are free to imagine anything while physicists work in a very different environment constrained by experiment, and that the American physicist Richard Feynman (1918-1988) said scientists work in a straitjacket. Well, Albert Einstein (1879-1955) said "Imagination is more important than knowledge" so let's see what happens when we throw away everyday tradition and conformity, let our imaginations fly (while trying to stay grounded in science and technology), and thus release science from its straitjacket!

This little book has its beginnings in cellular automata (in mathematics and computer science, collections of cells on a grid that evolve through a number of discrete time steps according to a set of rules based on the states of neighbouring cells) and grew into a belief that the universe (electromagnetism, gravitation, space-time and, as we'll see, 5th dimensional hyperspace) is not analog in nature but has a digital (electronic) foundation. This belief can be supported by 11 steps that begin with an experiment in electrical engineering at Yale University in the USA. These steps logically lead to assertions of instant intergalactic travel, time travel into the past as well as the future (neither of which can be altered), of unification of the large-scale universe with small-scale quantum particles, that the universe is a computer-generated hologram, that everyone who ever lived can have eternal life and health, that motion is an illusion caused by the rapid display of digitally generated "frames", that the entire universe is contained in (or unified with) every one of its particles, that the terms "computer-generated" and "computer" do not necessarily refer to an actual machine sending out binary digits or qubits, that we only possess a small degree of free will, that humanity could have created our universe and ourselves though unification physics says a being called God must nevertheless exist and likewise be Creator, and that Einstein's **$E=mc^2$** equation could be modified for the 21st century, reflecting the digital nature of reality. Though these things may be unbelievable in 2011, we should not ignore the possibilities of their being true or of their showing that reality is indeed digital because they are the logical product of already demonstrated electrical engineering and trips into space, science is investigating time travel and unification, the notion of motion has been suspect to some ever since the ancient Greek philosopher Zeno of Elea (490?-420? B.C.) argued that motion is absurd, and many religions worldwide speak of God and have some concept of survival of bodily death.

1) In July 2009, electrical engineer Hong Tang and his team at Yale University in the USA demonstrated that, on silicon chip- and transistor- scales, light can attract and repel itself like electric charges/magnets (Discover magazine's "Top 100 Stories of 2009 #83: Like Magnets, Light Can Attract and Repel Itself" by Stephen Ornes, from the January-February 2010 special issue; published online December 21, 2009). This is the "optical force", a

phenomenon that theorists first predicted in 2005 (this time delay is rather confusing since James Clerk Maxwell showed that light is an electromagnetic disturbance approx. 140 years ago). In the event of the universe having an underlying electronic foundation (hopefully, my summary will make it clear that this must be so – also ... an electronic universe is a necessary precursor to scientific fulfilment of Star Trek's "magic" which becomes clear as these steps are read), it would be composed of "silicon chip- and transistor- scales" and the Optical Force would not be restricted to microscopic scales but could operate universally. Tang proposes that the optical force could be exploited in telecommunications. For example, switches based on the optical force could be used to speed up the routing of light signals in fibre-optic cables, and optical oscillators could improve cell phone signal processing.

2) If all forms of EM (electromagnetic) radiation can attract/repel, radio waves will also cause communication revolution e.g. with the Internet and mobile (cell) phones. I anticipate that there may be no more overexposure to ultraviolet or X-rays.

3) In agreement with the wave-particle duality of quantum mechanics, EM waves have particle-like properties (more noticeable at high frequencies) so cosmic rays (actually particles) are sometimes listed on the EM spectrum beyond its highest frequency of gamma rays.

4) If cosmic rays are made to repel, astronauts going to Mars or another star or galaxy would be safe from potentially deadly radiation.

5) And if all particles in the body can be made to attract or repel as necessary, doctors will have new ways of restoring patients to health.

6) From 1929 til his death in 1955, Einstein worked on his Unified Field Theory with the aim of uniting electromagnetism and gravitation. Future achievement of this means warps of space (gravity, according to General Relativity) between spaceships/stars could be attracted together, thereby eliminating distance. And "warp drive" would not only come to life in future science/technology ... it would be improved tremendously, almost beyond imagination. This reminds me of the 1994 proposal by Mexican physicist Miguel Alcubierre of a method of stretching space in a wave which would in theory cause the fabric of space ahead of a spacecraft to contract and the space behind it to expand. Therefore, the ship would be carried along in a warp bubble like a person being transported on an escalator, reaching its destination faster than a light beam restricted to travelling outside the warp bubble. There are no practical known methods to warp space – however, this extension of the Yale demonstration in electrical engineering may provide one.

7) Since Relativity says space and time can never exist separately, warps in space are actually warps in space-time. Eliminating distances in space also means "distances" between both future and past times are eliminated - and time travel becomes reality. This is foreseen by the Enterprise time-travelling back to 20th-century Earth in the 1986 movie "Star Trek IV: The Voyage Home" and by Star Trek's "subspace communications". Doing away with distances in space and time also opens the door to Star Trek-like teleportation. Teleportation wouldn't involve reproducing the original and there would be no need to destroy the original body – we would "simply" be here one moment, and there the next

(wherever and whenever our destination is).

8) Another step might be to think of "... the grand design of the universe, a single theory that explains everything" (words used by Stephen Hawking on the American version of Amazon, when promoting his latest book "The Grand Design") in a different way than physicists who are presently working on science's holy grail of unification. Recalling the manmade Genesis Planet in the 1982 movie "Star Trek II: The Wrath of Khan", we might anticipate that the future will actually see a manmade planet (literally forming a planet is merely an advancement of terraforming, where a planet is engineered to be Earth-like and habitable). We might even free our minds from all restrictions and imagine science and technology creating every planet in the universe. The universe's underlying electronic foundation (which makes our cosmos into a partially-complete unification, similar to 2 objects which appear billions of years or billions of light-years apart on a huge computer screen actually being unified by the strings of ones and zeros making up the computer code which is all in one small place) would make our cosmos into physics' holy grail of a complete unification if it enabled not only elimination of all distances in space and time, but also elimination of distance between (and including) the different sides of objects and particles. This last point requires the universe to not merely be a vast collection of the countless photons, electrons and other quantum particles within it; but to be a unified whole that has "particles" and "waves" built into its union of digital 1's and 0's (or its union of qubits – quantum binary digits). If we use the example of CGH (computer generated holography, which is reminiscent of the holographic simulation called the Holodeck in "Star Trek: The Next Generation"), these "particles" and "waves" would either be elements in a Touchable Hologram - demonstrated by Japanese researchers in August 2009 (search for "Touchable Holography" in Google or You Tube) - or elements produced by the interaction of electromagnetic and presently undiscovered gravitational waves, producing what we know as mass (in September 2008, renowned British astrophysicist Professor Stephen Hawking bet US\$100 that the Large Hadron Collider would not find the Higgs boson, a theoretical particle supposed to explain how other particles acquire mass) and forming what we know as space-time. Einstein predicted the existence of gravitational waves, and measurements on the Hulse-Taylor binary-star system resulted in Russell Hulse and Joe Taylor being awarded the Nobel Prize in Physics in 1993 for their work, which was the first indirect evidence for gravitational waves. The feedback of the past and future universes into the unified cosmos's electronic foundation would ensure that both past and future could not be altered. (I'm disagreeing with Einstein's view of weights [mass] causing indentations in a malleable "rubber sheet" called space-time, but the system I'm proposing can yield exactly the same measurements as his and I think Einstein would welcome the chance to consider a different interpretation.) (Our brains and minds are part of this unification too, which must mean extrasensory perception and telekinetic independence from technology are possible.)

9) Elimination of diseased matter and/or eliminating the distance in time between a patient and recovery from any adverse medical condition – even death – would also be a valuable way of restoring health. With time travel in an electronic universe, people who have long since died could have their minds downloaded into clones of their bodies - a modification of ideas published by robotics/artificial intelligence pioneer Hans Moravec, inventor/futurist Ray Kurzweil and others - allowing them to "recover" from death (establishing colonies

throughout space and time would prevent overpopulation). Or if the distance between recovery and a patient is reduced to zero before illness or accident occurs (we might call this “eVaccination” – electronic vaccination); prevention of any adverse medical condition, including that of a second death for those resurrected, can occur. Science's real-life conquering of all disease, and even death, would certainly make the technology employed by Leonard "Bones" McCoy, the Enterprise's doctor, appear non-futuristic and “resurrection to eternal life” reminds us of Jesus Christ.

If we think of the existence of the universe as frames in a movie, displaying the successive frames in an incredibly tiny and undetectable fraction of a second would produce what we call motion. This display requires computer power undreamt of today. Unification of the universe with each of the subatomic particles composing it (via its hyperspatial computer being united with every particle's hyperspace computer) allows not just a single program resulting in our visible universe's large-scale structures (galaxies, superclusters) but many programs that manifest as the many smaller-scale things made of quantum particles e.g. stars, planets, roses, people, atoms as well as temporally differentiated structures like other universes.

Another way of stating the previous sentence is: just as $E=mc^2$ means energy must contain particles e.g. electromagnetic energy is composed of photons, $E=m^1+0$ (see #12) means a computer in the universe's hyperspace which is projected onto space-time must also be contained in each particle's hyperspace and projected onto the immaterial particle's space-time i.e. the entire universe is contained in (or unified with) every one of its particles (and if strings exist, cosmic strings might too).

This reminds me of something - American astronomer Carl Sagan (1934-1996) wrote these lines for his award-winning television series and accompanying book, “Cosmos”:
“There is an idea – strange, haunting, evocative – one of the most exquisite conjectures in science or religion. It is entirely undemonstrated; it may never be proved. But it stirs the blood. There is, we are told, an infinite hierarchy of universes, so that an elementary particle, such as an electron, in our universe would, if penetrated, reveal itself to be an entire closed universe.” Well, this article doesn't support the idea of a hierarchy of universes. I believe there is one static megauniverse (one Cosmos) existing forever and made up of an infinite number of expanding subuniverses (more about this below). But I do believe – it stirs my blood! – in the “exquisite conjectures” of the universe (and the infinite Cosmos) behaving like an elementary particle, and of these two combining to form one unified field.

$E=m^1+0$ also means, since energy equals mass, that the terms “computer-generated” and “computer” do not necessarily refer to an actual machine sending out the binary digits of 1 and 0 but could refer to binary digits that are sent forth by “telekinetic independence from technology” (see #8). Such telekinetic independence from technology wouldn't even require conscious knowledge of any programming language because all languages are already contained in, or unified with, your brain. In fact, all technology (even from the distant future) would already be contained in, or unified with, your unconscious and might be manifested when the subconscious becomes uninhibited during sleep. So the universe might literally be a dream – be careful what you dream about when you go to sleep tonight

or you might create the universe and yourself! Regarding roses and people, inanimate living ones look exactly the same as dead ones (even microscopically). The difference between those conditions would, according to this book, be that displaying slightly different frames from one fraction of a second to the next is life. Totally blocking a major cardiac artery may be incompatible with a beating heart, transmission of nerve signals, etc. and may produce death (not displaying slightly different frames from one fraction of a second to the next ... at least until decomposition begins).

You and I would not merely possess a rigidly preprogrammed life in the universal hologram, but would be capable of a degree of free will because the universe possesses a "randomness factor" – also called a "mutation factor". (In computer art, randomness is introduced into the chain of repetitive calculations producing a mountain range so a convincingly rugged image will result.) I'd like to suggest that Charles Darwin's evolution has far greater consequences than either he or any scientist has realized. I believe the theory is not limited to biology, but is absolutely fundamental to the very existence of our universe and everything in it i.e. to cosmology, space-time, physics, mathematics, etc. In a vital way, Darwin's ideas even go beyond Albert Einstein's ideas since these paragraphs conclude that a "mutation factor" (a "randomness factor") is fundamental to the universe.

10) These paragraphs imply the possibility of humans time-travelling to the distant past and using electronics to create this particular subuniverse's computer-generated Big Bang (but there's still room for God because God would be a pantheistic union of the megauniverse's material **and mental** parts, forming a union with humans in a cosmic unification). We've seen several examples of how science fact could equal, or surpass, science fiction. A final example of surpassing is that, in Star Trek, there are many military conflicts with Klingons, Romulans, the Borg, etc. In a real-life cosmic unification, there are no wars between the stars but peace is normal - even on Earth - since nobody can attack anyone in any way without knowing they're attacking themselves. The realisation that every person is contained in, or unified with, every other person would not only usher in worldwide peace but also paradise on Earth (via the global financial "crisis"). The worldwide economic crisis has the potential for many political benefits, since cooperation will be the only way to maintain and improve our living standard if monetary systems fail. The crisis would encourage domestic and international peace and sharing - perhaps even paradise on earth ...

The present global financial crisis may indicate that the world we live in today has lost stability and is on the brink of changing. Therefore, this "crisis" might be necessary to awaken us to the potential of tomorrow. Just because money has been making the world go round for thousands of years doesn't mean money will be the way of the world forever. We should start looking for an alternative system to preserve, and increase, standards of living now in case we need it tomorrow (I imagine politicians are the ones with the resources and organizational ability needed to implement such a system). This scheme should not use any form of monetary organisation nor be based on gold, silver etc. It should, idealistic and naive as it appears at first, be based on mutual cooperation and the goal of ushering in a paradise on earth. We can say there can never be paradise on earth; but the human instinct to survive is much stronger than our tendency for other types of self-interest, and greed, and to not cooperate with each other. If money ceases to be an

option; most people will gladly cooperate with those we would have previously regarded as competition, or even as an enemy, if it's the only way to maintain and improve our living standard.

11) $E=m^{1+0}$ IS $E=mc^2$ FOR THE 21ST CENTURY

Does the simple modification of $E=mc^2$ ($E=mc^2$) to $E=m^{1+0}$ ($E=m^{1+0}$) extend Albert Einstein's genius, which he claimed was not genius but intense curiosity and imagination, infinitely beyond the 20th century?

Removing $E=mc^2$ from both equations means c^2 (to be precise, $c^2 = m^{1+0}$)

Multiplying each side by base n (any number) gives us

$$nc^2 = n^{1+0} \text{ i.e. } nc^2 = n$$

Dividing both sides by n gives $c^2 = 1$, therefore c also equals 1

Tradition says c is the speed of light. If c has the same value as c^2 then the velocity of light in a vacuum must be a universal constant and since it cannot change, space-time has to warp: producing things like gravity, gravitational lenses, black holes and time travel.

Solving $E=mc^2$ for mass (m) results in $m=E/c^2$

Since $c^2 = m^{1+0}$

$$m = E/m^{1+0}$$

Multiplying each part of each element by base n : $nm = nE/n^{1+0}$

$$nm = nE/n$$

$$m = E/1 = E$$

Therefore, the mass of the expanding universe can be thought of as pure energy.

If we interpret $m=E$ ($1m=1E$) as meaning all the mass and energy in the universe forms a unit, we won't be able to think of any of the masses and energies composing the universe as separate. Every planet, star, magnet, beam of light, etc. would be part of a unification comparable to a hologram (but a very special hologram, including all forms of electromagnetism as well as gravitational waves which give objects mass. In September 2008, renowned British astrophysicist Professor Stephen Hawking bet US\$100 that the Large Hadron Collider would not find the Higgs boson, a theoretical particle supposed to explain how other particles acquire mass. Einstein predicted the existence of gravitational waves, and measurements on the Hulse-Taylor binary-star system resulted in Russell Hulse and Joe Taylor being awarded the Nobel Prize in Physics in 1993 for their work, which was the first indirect evidence for gravitational waves).

The seeming fact that particles can communicate instantly over billions of light years (are entangled - a process that appears to have operated in the entire universe forever) also seems to support the holographic principle and makes these lines relevant - another effect of the universe being a unification having zero separation is that experiments in quantum mechanics would show that subatomic particles instantly share information even if physically separated by many light years (experiments conducted since the 1980s repeatedly confirm this strange finding). This is explicable as 2 objects or particles only

appearing to be 2 things in an objective, “out there” universe (Austrian physicist Wolfgang Pauli’s exclusion principle – which was discovered in 1925 and says 2 matter particles cannot have both the same position and the same velocity – only applies in an objective universe and therefore allows past and future versions of the universe to exist simultaneously with the present one ... though programming in the “cosmic computer” does include it as applicable to the reality we perceive since that appears objective). They’d actually be 1 thing in a unified, “everything is everywhere and everywhen” universe. If the universe is a hologram with each part containing information about the whole, the instant sharing of information over many light-years loses its mystery.

On p. 179 of “The Grand Design” by Stephen Hawking and Leonard Mlodinow (Bantam Press, 2010) it’s stated

“One requirement any law of nature must satisfy is that it dictates that the energy of an isolated body surrounded by empty space is positive ...”

and “... if the energy of an isolated body were negative ... there would be no reason that bodies could not appear anywhere and everywhere.”

The only problem with those sentences, in an “everything is everywhere and everywhen” universe, is the word isolated. There can be no such thing as isolated in our cosmic-quantum unification. Does this mean you and I (plus all things in time and space) are a union of both positive and negative energy, able to display both separateness/solidity (isolation) as well as the potential to appear anywhere and everywhere?

Page 179 also says “(the positive energy of a body) means that one has to do work to assemble the body.” Does this mean the positive component of the Cosmic-Quantum Union refers to an actual computer performing work by sending out the binary digits of 1 and 0 (in hyperspace) while its negative component refers to the universe being like a dream, and to binary digits that are transmitted by “telekinetic independence from technology” (see the end of #9). In 1928 English physicist Paul Dirac (1902-84) proposed that all negative energy states are already occupied by (then) hypothetical antiparticles (particles of antimatter) – “Workings of the Universe”, a book in the series “Voyage Through The Universe”, by Time-Life Books 1992. This has ramifications for the subatomic particles called mesons which bind protons and neutrons together to form the atomic nucleus, in much the same way that gluons are said to bind together quarks which are said to be the constituents of protons and neutrons. Mesons are always composed of a quark-antiquark pair i.e. of a positive energy-negative energy pair. So when we’re dreaming and our brains are using negative energy, they’re not merely using a much lower degree of positive energy to do work but the antiparticles in them are receiving greater expression, allowing us to do work literally effortlessly and to accomplish feats, like appearing “anywhere and everywhere”, that would be thought of as miracles while we’re awake.

Perhaps it also solves the “computer paradox” at the finish of my article by telling us how there could be more than one hyperspatial computer – there would only be one since it’s a union of those in each instant of the universe’s time periods (possibly, at a minimum, 10^{500}) with those in the hyperspace of each of the universe’s subatomic particles. Different hyperspace computers could be formed in each subuniverse by dreamlike independence from technology.

Page 180 of "The Grand Design" says "Because gravity is attractive, gravitational energy is negative." Since there was no gravitation in our universe prior to the Big Bang (we didn't even have a universe), this sentence can be combined with the "backward causality" (effects influencing causes) promoted by Yakir Aharonov, John Cramer and others to explain that gravity's negative energy gives us no reason to think that bodies could not appear anywhere and everywhere – as Professors Hawking and Mlodinow put it "Bodies such as stars or black holes* cannot just appear out of nothing. But a whole universe can." Maybe it's only playing with words, but I'd regard gravity as repulsive instead of attractive (its energy would then be positive like matter's and the universe could be more than a vast collection of the countless photons, electrons and other quantum particles within it; it could, as #8 proposes, be a unified whole that has particles and waves built into its union of digital 1's and 0's (or its union of qubits – quantum binary digits). And the article "Gravitation" by Robert F. Paton in World Book Encyclopedia 1967 agrees that gravity is repulsive – "Einstein says that bodies do not attract each other at a distance. Objects that fall to the earth, for example, are not 'pulled' by the earth. The curvature of space time around the earth forces the objects to take the direction on toward the earth. The objects are pushed toward the earth by the gravitational field rather than pulled by the earth." Repelling gravity would cause the universe to expand – as astronomer Edwin Hubble (1889-1953) confirmed in 1929 – and adding repelling gravity by continual "creation" (actually, recycling) of matter via the small amount from a preceding universe which is used to initiate expansion of its successor (or by dreaming and our brains using negative energy and antiparticles in them to do work effortlessly and to accomplish feats that would be thought of as miracles while we're awake) would cause it to expand at an accelerated rate – this acceleration was discovered in 1998 by observations carried out by the High-z Supernova Search Team and the Supernova Cosmology Project, has been confirmed several times and is claimed to be caused by mysterious "dark energy".

* On the subject of black holes, I'd like to write a couple of paragraphs showing how zero separation can physically link sunspots and black holes (regions of space that can be formed by collapse of massive stars and have such a powerful gravitational field that nothing inside the event horizon or boundary, including light and other radiation, can escape), making comparison of the two by no means a superficial one. Why do young stars form around a black hole when they should be torn apart? Compare the black hole to a sunspot. Sunspots form because the sun's equator rotates more quickly than its poles (25 days at the equator, 34 days at the poles). Being "frozen" into its gases, the magnetic field lines of the sun stretch, twist, are drawn out into loops and erupt through the sun's surface, forming sunspots. Since the intense magnetism of the spots prevents heat from rising to the surface and radiating into space, the Maunder Minimum of observations of extremely low sunspot activity from 1645 to 1715 (named after the solar astronomer Edward W. Maunder [1851-1928]) could actually be attributed to a period of intense sunspot activity. Why? Because a great number of sunspots would stop the

Earth receiving as much warmth from the Sun, and the Maunder Minimum coincided with the middle – and coldest part – of the Little Ice Age during which Europe and North America and perhaps much of the rest of the world saw glaciers advance and rivers freeze – even the Baltic Sea froze over, allowing sledge rides from Poland to Sweden with inns built along the way. It would be termed a period of minimum activity coz the sunspots would not have been visible. The distorted magnetic loops don't have to break through the sun's surface or photosphere but can remain within, forming a rotating vortex that concentrates field lines and can create intense, heat trapping magnetism (from recent observations by the satellite SOHO, the Solar and Heliospheric Observatory.)

When a black hole is rotating; it might also stretch, twist and loop its magnetic field lines. The lines may penetrate into the hole and be lost, but in the case of star formation they'd be drawn out beyond the hole's event horizon (boundary) and compress clouds of dust and gas into new suns (a supermassive black hole's magnetic field is so strong that it can focus particles into jets ejected far out into space so, provided the star is a safe distance from the black hole, it should be able to stop the hole's gravity from shredding a star and making its gases spiral inwards). To condense the paragraphs on zero separation into a few words, the 2 objects which appear distant from each other could be a sunspot and a black hole. On the subject of sunspots and the sun, the famous 17th-century scientist Sir Isaac Newton once said the entire universe would instantly feel the loss of the sun's gravity if our star disappeared suddenly – I think modern science doubts this but zero separation forces me to agree with him. And on the subject of black holes, a massive star truly can collapse and explode as a supernova while a gravitational singularity (the place all matter falling into the black hole gathers) would be produced from the collapsing core. What if that singularity is disintegrated by the fantastic pressure? It would become "BITS of space-time" (this book's proposed building blocks of all matter and spacetime that are the Binary digiTS – strings of ones and zeros – from which space and time emerge). In this way, nature would protect us from black holes (as Einstein believed it would) and eliminate their assumed and perplexing properties of infinite density, infinite gravity and infinite spacetime curvature.

(Demonstrating zero separation to be relevant to the universe astronomers study requires a bit of research to get the astronomical facts right, so thanks go to the May 2009 interview in "Discover" science magazine with professor of astronomy and physics Andrea Ghez; the 2006? TV documentary "The Sun"; Wikipedia, the free Internet encyclopedia; "The Sun", a 1989 volume in Time-Life's series "Voyage Through The Universe", Stephen Hawking's 1988 book "A Brief History of Time" and Patrick Moore's 1986 book "A-Z of Astronomy")

Light can attract and repel itself like electric charges and magnets (according to Discover magazine's "Top 100 Stories of 2009 #83: Like Magnets, Light Can Attract and Repel Itself" by Stephen Ornes, from the January-February 2010 special issue; published online December 21, 2009 - in July 2009, electrical engineer Hong Tang and his team at Yale University in the USA demonstrated that, on silicon chip- and transistor- scales, light can attract and repel itself like electric charges/magnets). Therefore, it must be true to say electrically charged particles and magnets can attract and repel like light (electric/magnetic attraction/repulsion would, similarly to light, occur only on microscopic scales if the universe did not have an electronic foundation in which it was composed of silicon chip- and transistor- scales: more will be said about this later). We have known for ages they attract/repel – but now we know they do it “like light”, can we extend this phenomenon from quantum mechanics’ wave-particle duality (in the case of electric charges and light) to universe-wide wave-particle duality (in the case of magnets and light)? If the magnets we can see and touch behave like light, is it not possible that every object in the universe (from a small magnet to an enormous planet or star) behaves like light – making the universe a hologram.

Since $m=E$, we can think of c as not merely representing the speed of light (energy) but as symbolic of mass and the speed of universal expansion (c =Hubble Constant or 299,792.458 kilometres per second = approx. 70 km/sec/megaparsec). What can it mean if c and c^2 both equal 1 in the context of cosmic holographic expansion? Answering this is impossible unless we look back at the work of Albert Einstein. That work leads to the conclusion - if c has the same value as c^2 then the velocity of light in a vacuum must be a universal constant and since it cannot change, space-time has to warp: producing things like gravity, gravitational lenses, black holes and time travel. Applied to cosmic holographic expansion, the conclusion is – if c has the same value as c^2 then expansion (whether positive, zero or negative) obviously always exists and space-time’s warping produces the weird phenomena modern science proposes, like higher dimensions and hyperspace and time travel and parallel universes. Let’s see where things lead if we assume c and c^2 both equalling 1 means that the future universe, whose rate of expansion is the square of today’s, is existing at the same time as today’s – and if we think of present expansion as c^2 , that the present universe whose rate of expansion is the square of one in the past is unified with the past one. For a start, such an assumption would be consistent with "dark energy" causing expansion to accelerate.

We can, of course, write that c^2 equals a number, any number ($c^2 = n$)

Then $c = \text{square root } n$ ($n^{1/2}$)

But $c = 1$

Therefore $n^{1/2} = 1$

$n = 1^2$

$n = 1$

$n = c$

and $1 = c^2$

$n = c^2$

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