Science for the 21st century

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Abstract -
Since writing the first version of this article, several more parts have been found which require further explanation. These new parts have taken days to conceive and type, and have caused much concern and sleeplessness. It's all been worthwhile though, for they make the article MUCH clearer!

Originally, the content of this article was more limited, and it was entitled "Relativity means Evolution must adapt". Its abstract was -

When contemplating the theory of evolution, many people assume evolution belongs exclusively to the biological sciences. I maintain complete comprehension also requires physics. Without a conviction that time travel to the past is possible, I'd have to totally agree with the evolutionary concepts Charles Darwin proposed. But I have no doubt that time doesn't exclusively operate in a straight line.

I found that one thing needed more explanation, then another thing needed explaining, then another thing ... This would have turned into a book if I went into every detail at great length. It ended up as an overview that combines Einstein's two Relativity theories and Unified Field Theory with quantum physics and tomorrow's quantum computers. It also uses the concepts of "real", imaginary and complex time to bring cosmology's Big Bang theory, the Steady State's infinity and eternity, and the Inflationary theory into the 21st century.

I would have preferred to write an article with no additional paragraphs that begin with *, ^, #, etc. It might be easier to read. If I figure out how to write such an article, there'll be an updated version. In the meantime, I hope this first version will be satisfactory.

Content -
The Virtual Particles composing space-time are not actually particles but are fluctuations in an energy field and therefore are pulses of energy ("The Grand Design" by Stephen Hawking and Leonard Mlodinow - Bantam Press 2010, p.113). It will be seen that these fluctuations can occur exclusively in the gravitational field. Using Einstein's writings; it will be shown how gravity is responsible for mass and matter*, plus all forms of the nuclear forces and electromagnetism**. Thus, the great scientist's Unified Field^^ manifests itself, uniting all space-time (the entire universe and all its particles' motions in the past, present and future). ***THIS MAKES TIME TRAVEL TO THE PAST POSSIBLE***. Comparing the universe to the "moving curtains of light" known as auroras, the cosmos might be called a rippling curtain of gravitation or gravitational waves.

* Albert Einstein's "Speilen Gravitationfelder in Aufbau der Elementarteilchen eine Wesentliche Rolle?" (Do gravitational fields play an essential role in the structure of

elementary particles?), Sitzungsberichte der Preussischen Akademie der Wissenschaften, (Math. Phys.), 349-356 (1919) Berlin.

The proposal of this article is that photons which can never be directly detected (virtual photons), and other virtual particles like gravitons, produce the binary digits of 1 and 0 which encode pi, e, √2 etc.; and matter particles [and even bosons like the Higgs, W and Z particles] are given mass by photons/gravitons interacting in matter particles' "wave packets" (a term from quantum mechanics).

** When Einstein penned E=mc^2, he used c (c^2) to convert between energy units and mass units. The conversion number is 90,000,000,000 (light's velocity of 300,000 km/s x 300,000 km/s) which approx. equals 10^11. Gravity waves with a strength of 10^1 are, via quantum gravitational lensing, concentrated 10^24 times after they're focused to form matter (to 10^25, weak nuclear force's strength - giving the illusion that a weak nuclear force^ that is not the product of gravitation exists). Waves are magnified by the matter's density to achieve electromagnetism's strength (10^36 times gravity's strength) i.e. 10^25 is multiplied by Einstein's conversion factor [10^11] and gives 10^36 (this gives the illusion of the existence of electric and magnetic fields that are not a product of gravitation). (The gluons that bind mesons would likewise be either products of gravitation or, like quarks#, replaceable by the more fundamental 1's and 0's.) After absorption by atoms, the depleted remnant of the gravity waves is re-radiated from stars, interstellar gas and dust, etc. It's radiated as gravitational waves (a Gravity Wave Background, challenging the idea that Cosmic Inflation was necessary to generate gravitational waves) which have lost most of their energy or strength during formation of forces (returning to a strength of 10^1). Since gravity can produce electromagnetism, it's also radiated as electromagnetic waves – including an infrared background whose heat output exceeds that of the stars alone, in addition to a microwave background. The latter challenges the idea that existence of the cosmic microwave background proves the universe began with the traditional Big Bang (see the box immediately below for a nontraditional perspective - the top and bottom are enclosed by ----------)

The space we live in is described by ordinary [or "real"] numbers which, when multiplied by themselves, result in positive numbers e.g. 2x2=4, and -2 x-2 also equals 4. Inverted positive space becomes negative hyperspace* which is described by so-called imaginary numbers that give negative results when multiplied by themselves e.g. i multiplied by itself gives -1. Space exists in an indissoluble union with time known as space-time. So imaginary numbers were naturally also applied to time, creating an entity called imaginary time.

* Since the time associated with the 3 dimensions of up-down, back-front and side-to-side is often called the 4th dimension, should negative time in a 5th dimensional hyperspace be called the 6th dimension of hypertime? Imagine a spaceship, its occupants and its computers are made of space. Or if you prefer, of the gravity (curvature of space) first

spoken of in Einstein's 1919 paper "Do gravitational fields play an essential role in the structure of elementary particles?" To indulge myself by looking forward 2 to 4 paragraphs - then the space, and time, could be gravitationally warped 90° and the ship etc would be inverted, and would enter hyperspace and hypertime (or if you like words with extra syllables, imaginary time). But warping wouldn't stop there. It continues to the extreme curvature of 180° - where it includes imaginary time but the gravitational ripples have "flipped backwards" from the horizontal axis of real time, through the vertical axis of imaginary time, and proceed in the reverse direction along the horizontal axis (in complex time). This causes travel along the same axis as the so-called real time we're familiar with (real time, like imaginary time, is only part of the true nature of the 3-dimensional gravitational rippling constituting the motion of particles ie of complex time). As will be seen, this axis-sharing means it's correct to believe in the singularity associated with the Big Bang. But the reversal of gravitational waves means the present understanding of that singularity the universe came from must be radically revised.

Imaginary time is a concept derived from special relativity and quantum mechanics. Physicists use a mathematical technique called Wick rotation - named after Italian theoretical physicist Gian Carlo Wick (1909-1992) – to transfer solutions from the 2 dimensional planes and 3 dimensional geometry of Euclidean space to the 4 dimensions (3 of space, 1 of time) of Minkowski space.

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

"This has an interesting effect on space-time: the distinction between time and space disappears completely." ("A Brief History of Time" by Stephen Hawking - Bantam Press, 1988, p.134). 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). But there's no need to choose between real and imaginary time.

It was shown early in this article that space-time is unified into "a rippling curtain of gravitation or gravitational waves". Therefore, just as real and imaginary numbers form a union called complex numbers, real and imaginary time would be unified into complex time. Complex time has the properties of imaginary time (there are no singularities or boundaries), making the universe eternal and infinite. It also has the properties of real time - there are singularities that form a boundary to space-time and at which the laws of science break down eg quantum physics and general relativity are irreconcilable. This is how

complex time can create a singularity (also referred to as the qubit) in an infinite and eternal universe, thus overcoming the singularity/no singularity contradiction and merging quantum physics with general relativity.

First - I've heard that if all the space was removed between atoms making up our bodies, the entire human race would be compressed to the size of a sugar cube. And this is before the proposal that distance is deleted between the virtual particles called gravitons (and thus between binary digits) composing those atoms.^ How tiny would the observable universe become if there was no space between its gravitons? It would occupy the infinitesimal volume of the singularity the Big Bang is alleged to have started from.

^ A 2009 electrical-engineering experiment at America's Yale University, together with the ideas of Albert Einstein, tells us how we could travel to other stars and galaxies in literally no time. Electrical engineer Hong Tang and his team at Yale demonstrated that, on silicon-chip and transistor scales, light can attract and repel itself like electric charges or magnets ["Tunable bipolar optical interactions between guided lightwaves" by Mo Li, W. H. P. Pernice & H. X. Tang - Nature Photonics 3, 464 - 468 (2009)]. This is the "optical force". For 30 years until his death in 1955, Einstein worked on his Unified Field Theory with the aim of uniting electromagnetism (light is one form of this) and gravitation. Achievement of this^^means the microscopic components (gravitons) of warps of space (gravity, according to General Relativity) between spaceships and stars could mimic the Optical Effect and be attracted together, thereby totally eliminating distance (this is similar to traversing a wormhole, or shortcut, between two folds in space-time). If the existence of matter requires constant refreshing by gravitational input [see Einstein's 1919 paper], collisions are avoided because gravity between the spaceship and its destination would, during the timeless period of the ship's passage, be unable to function normally and refresh matter. Distance is not only deleted in space. There would no longer be any "distance" in time. Just as we can journey to particular stars, we could take trips to particular years in the past or future. Instantly traversing 700 light years in space enables a spaceship to arrive at a spot which a light beam could only reach by travelling for 7 centuries, putting the ship 7 centuries in the future. Instantly traversing 700 light years in space enables a spaceship to arrive at a spot which a light beam could only reach by travelling for 7 centuries, putting the ship 7 centuries in the future. Entering hyperspace with its negatives (energy, matter, distance, time) permits travel to the past since it would be impossible to travel 700 lightyears there, and only possible to travel minus 700 lightyears. Doing so instantly would enable a spaceship to arrive at a spot in the past which a light beam could only reach by traversing negative distance for 7 centuries. Though negative distance or time is totally alien to us, it must exist as surely as positive distance or time if the universe is mathematical.

^^ Deleting external and internal distance between photons and gravitons allows them to exist simultaneously i.e. in "quantum superposition". This unites electromagnetism with gravitation.

The subject of imaginary time is being discussed, and space-time is a unity that's united with

another unity called hyperspace-hypertime. So in preference to saying warps of space are attracted together to eliminate distance, the focus can be placed on the temporal aspect - and we travel at 90 degrees to time as it's known. Movement forwards through hypertime is always in the "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). And the journey is thus instant. Another way of viewing this phenomenon would be to say the object (though macroscopic) is in 2 widely-separated places at once (the start and end of its trip). So we can produce the effect of faster-than-light travel for both matter and information, without engaging in actual faster-than-light travel (that is impossible). The above shows that deletion of distance is possible. Gravitons are the virtual particles filling space and producing bits (binary digits) that encode transcendental and irrational numbers like pi (the infinite cosmos arises from infinitely long numbers such as pi). Deleting distances between gravitons also deletes distances between 1's and 0's. Eliminating digital distance superposes all the 1's and 0's, forming a cosmos that is one qubit (the "quantum bit" used by quantum computers). 20th-century physicist Richard Feynman once wondered if the universe contained just one electron (I think it's the unifying entity of one qubit, which is also referred to as the singularity). If the universe is a projection from an infinitesimal qubit, it redefines cosmic inflation theory because it says everything used to be in contact and is now quantum entangled (wherever and whenever it is). Creation of the infinite universe doesn't require even the tiniest increase in the qubit's volume because the qubit producing our observable cosmos already contains infinite numbers like pi, which generate the never-ending and eternal cosmos as a whole. Specifically, they generate the infinite number of subuniverses comprising the cosmos as a whole.* While each subuniverse has a beginning and eventual end, the literally infinite number of starts and finishes means the universe as a whole does not have a beginning or end.Mathematician Benoit Mandelbrot coined the word fractal in 1975 (a fractal is a shape such that, if you look at a small piece of the shape, then it looks the same as the original, just on a smaller scale – it is used in computer paintings to depict coastlines, mountain ranges, etc). The qubit is space and, obeying the rules of fractal geometry, its curvature (gravity) manifests as innumerable things - mass; electromagnetism and other forces; matter in the form of seemingly separate computers, people, animals, plants, objects and particles.

* To read an explanation in plain English of subuniverses using topology (rubber-sheet geometry), go to my article "Topological monoverse" at http://vixra.org/abs/1511.0154 This says there is no multiverse (universes existing alongside ours). But remember, it regards the 13.8 billion year old structure we live in as merely a subuniverse within an infinite universe. It's saying there are no other universes beyond our infinite universe. Each subuniverse or observable universe could be viewed as the entire universe, in which case the multiverse does exist.

'Physicists now believe that entanglement between particles exists everywhere, all the time, and have recently found shocking evidence that it affects the wider, "macroscopic" world that we inhabit.' - "The Weirdest Link" (New Scientist, vol. 181, issue 2440 - 27 March 2004,

page 32 - online at http://www.biophysica.com/QUANTUM.HTM). The same article says that Caslav Brukner, working with Vlatko Vedral and two other Imperial College researchers, has uncovered a radical twist. They have shown that moments of time can become entangled too (www.arxiv.org/abs/quant-ph/0402127).

Second - the universe (which I believe to be infinite) is commonly portrayed as coming into existence from nothing. If the singularity began in a part of the infinite universe outside our observable portion, that would be "creation" from something. We can rule that out if we believe scientists must be displaying intelligent insight when they claim the cosmos came from nothing. The only way it could come from nothing without violating the Law of Conservation of Matter and Energy* is to originate in hyperspace and hyper/imaginary time (somethings which have absolutely no existence in the practicalities of our current perspective).

* Neither matter nor energy can be created or destroyed, but only change form (including into each other).

The singularity in hyperspace is the perfect model of the universe that humanity will develop by deletion of distance between gravitons (and between binary digits) in, say, a thousand years. Of course, it can't result from knowledge about - or provide comprehensive data about - every specific part of the cosmos in a universe that's literally infinite and eternal. It would be like the zygote resulting from the joining of a sperm cell with an egg cell. The zygote contains information about the whole body it will develop into though it doesn't contain detailed info exclusive to each type of tissue. Similarly, the singularity-model contains information about the nature of the infinite universe extrapolated from study and exploration of our subuniverse or observable universe. However, it doesn't contain detailed info exclusive to the other subuniverses. From the singularity, binary digits would follow the programming we give them in the far future and project, or teleport, to form the universe we see and touch. This is reminiscent of the holographic principle, which says our four-dimensional world may be encoded on (projected or teleported from) a five-dimensional space-time called hyperspace/imaginary time. Since all time is linked in the qubit, its input could originate a thousand years in the future while its output (the projection that forms our subuniverse) could be 13.8 billion years in the past.

So an imaginary or hyper-computer using the vertical axis of imaginary time (also referred to as the 6th-dimensional hypertime associated with hyperspace*) can perform calculations at the familiar rate of time's passing while the horizontal axis of "real" time sees absolutely no change (no time passes in the normal sense).

"It is certainly possible that some alien beings ... would make the same experimental observations that we do, but describe them without quarks." [Stephen Hawking, Leonard Mlodinow – "The Grand Design" – Bantam Press, 2010, p. 49]. So I'm going to turn into that

book's alien being and describe observations without quarks, but with a more basic quantum process that says space and all particles are, ultimately, composed of virtual particles and bits and maths. (Interpretation of particle tracks in a detector might cause them to be misidentified as caused by actual particles called quarks, instead of as being the result of virtual particles producing digital patterns that imitate the properties of quarks.)

^ Remember, this is only one example: the so-called weak force's strength isn't constant and varies with distances [more info in "The Strengths of the Known Forces" by theoretical physicist Matt Strassler [May 31, 2013] - http://profmattstrassler.com/articles-and-posts/particle-physics-basics/the-known-forces-of-nature/the-strength-of-the-known-forces/

^^ The suggestion of matter being composed of space-time answers a 50-year-old objection to Einstein's Unified Field Theory which was put forth by Professors Newman and Penrose [Newman, E. T., Penrose, R. J. - Mathematical Physics 3, 566 (1962)]. In the 19th century, Scottish mathematician and physicist James Clerk Maxwell unified electricity and magnetism into electromagnetism. 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 Maxwell to be restated in terms of these gravitational fields. This was discovered by the mathematical physicist George Yuri Rainich (1886-1968). The objection by Newman and Penrose was that the gravitational fields, if known everywhere but only for a limited time, do not contain enough information about their electromagnetism to allow the future to be determined, so Einstein's unified theory fails.

Modern science adds the nuclear weak and strong interactions, for a total of 4 fundamental forces. However, it's proposed here that these are no more than byproducts of gravitational-electromagnetic interaction. Virtual particles "cannot be directly detected by a particle detector (but) also exist in some circumstances as real particles" (eg the real photons detected as light waves). ["A Brief History of Time" by Stephen Hawking - Bantam Press 1988, p.69]. The proposal is that virtual photons, and other virtual particles like gravitons, produce the binary digits of 1 and 0 which encode pi, e, √2 etc.; and matter particles [and even bosons like the Higgs, W and Z particles] are given mass by photons/gravitons interacting in matter particles' "wave packets" (a term from quantum mechanics).

If time (referred to as "motion of particles in space") is unified with the gravitational and electromagnetic fields which this comment proposes to be the creators of particles, the gravitational fields are not known for only a limited time but do contain enough information. And Einstein succeeded, just as John Wheeler and Charles Misner claimed ["Classical physics as geometry" by Charles Misner and John Wheeler - the "Annals of Physics" - Volume 2, Issue 6, December 1957, Pages 525–603)].

Even though Einstein told us space and time are curved and warped, we insist on limiting

ourselves to a purely straight-line concept of time. Such a concept means Darwinian evolution is the only possible explanation for the origin of species (unless you believe in God). But to stick to science - Einstein's nonlinear time allows evolution to be restricted to adaptations and relatively minor modifications within species. Their origin is plausibly explained by human biotechnology from centuries in the future finding its way into the distant past. In a biological sense, the Theory of Evolution certainly explains adaptations and modifications. But believing it also explains origins is unwarranted extrapolation. That takes an idea which accounts for some parts of life and, since it's the only scientific explanation we currently have, assumes it accounts for all parts of life.

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

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