Title –

CONNECTING BIOSCIENCE, ATOMS, GRAVITATION, BLACK HOLES, AND STRINGS

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Abstract –
I'm studying Bioscience externally with Charles Darwin University in Australia, and the textbook for this unit is "Essentials of Human Anatomy and Physiology" (Tenth Edition) by Elaine N. Marieb - Pearson Education Limited, 2014. In the textbook on p.35, Review Question 3 asks "Which is not essential to survival? (Water, Oxygen, Gravity, Atmospheric pressure, Nutrients)" Of course, the answer is supposed to be "gravity". For years, I've firmly believed (based on neglected theories of Einstein's, that I've built on) that gravity is as essential as any of the other items (without gravity, there would be no atoms and no water, oxygen, atmosphere etc.) My question is - If I'm asked this as a multiple choice in a test (meaning there'e no space for lengthy explanation), what should I do? Stick to the beliefs I've spent years developing, and get marked "wrong"? Or conform to tradition, answer "gravity" even though I don't want to, and get marked "right"?

Content –
The basis of my reasoning is a paper by Albert Einstein - “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 (Prussian Academy of Sciences), (Math. Phys.), 349-356 (1919) Berlin). Using Einstein's E=mc^2, my fqxi.org article ("New Physics Suggests Darwin's Origin of Species is Incomplete ..." http://fqxi.org/community/forum/topic/1977) shows that Einstein's "Do Gravitational Fields ..." can be extended to explain the origin of electromagnetism and the atom's 2 nuclear forces. This interprtation appears to contradict the theory of electroweak interaction which won the 1979 Nobel Prize in Physics for Steven Weinberg, Sheldon Glashow and Abdus Salam: see “A Model of Leptons” by Steven Weinberg - Phys.Rev.Lett.19:1264-1266 (1967).

As background to Einstein's 1919 paper, please see "How Einstein Discovered Dark Energy" by Alex Harvey (http://arxiv.org/pdf/1211.6338v1.pdf). This paper says "Recall that in 1918 the only elementary particles known were the electron and the proton. Physicists were attempting to understand why these were stable despite their internal electromagnetic repulsion. Most attempts were based solely on electromagnetic theory. For a review of these efforts see Pauli [12]. Einstein’s effort was to construct a model in which stability was achieved through the use of gravitational forces. In particular, he used modified gravitational field equations which included the cosmological constant [13]. The attempt was not successful and this was the last time he mentioned the cosmological constant other than to denounce it." (Physicists today attribute stability to the nuclear forces, which were unknown nearly a century ago – I acknowledge the nuclear forces but maintain Einstein was on the right track because gravitation can explain the origin of all other forces.)

Of course, it could always be argued that “Life can exist in a zero-gravity environment provided other conditions (water, oxygen, nutrients etc.) are met”. These other conditions are indeed essential to life but so is gravity because there could be no body, and no life, to sustain without gravity’s formation of atoms. By the way, zero-gravity is not actually zero but is microgravity –“due to gravitational effects of the (orbiting) spacecraft itself and accelerations produced by spacecraft attitude control, it is difficult to obtain less than one-millionth Earth gravity for experimentation.” (Penguin Encyclopedia [edited by David Crystal] – Penguin Reference Library, 2006) So what is gravity and why do spacecraft experience microgravity?

If space-time (whose warping is gravity) forms mass, there could be "currents" of space-time flowing in the "oceans" between the galaxies. Space-time would form the matter in the galaxies, and it would form the Earth/objects on this planet. How? By some of the currents of space-time or gravity which pass the solar system's outer boundary being diverted towards the massive Sun's centre (just as some of the waves passing an island are refracted toward the shore by the island’s mass). Along their course, the refracted gravitational waves are concentrated 10^24 times # in the intense warping we call matter.

 # WHY IS GRAVITY WEAK? (C^2 AND THE ATOM)

When gravity waves concentrate to form matter, gravity travels from external to matter: it pushes against matter (repels). Repulsive gravity is dark energy*. Successive waves are re-radiated at unconcentrated strength from matter to external (opposite action to repelling wave) and attract – it must be remembered that attraction is merely a matter of perspective, since Einstein showed that attraction of two bodies of matter actually results from space-time’s curvature pushing bodies. The space-time we live in is described by ordinary [or “real”] numbers which, when multiplied by themselves, result in positive numbers e.g. 2x2=4, and -2x-2 also equals 4. Inverted positive space-time becomes negative hyperspace which is described by so-called imaginary numbers that give negative results when multiplied by themselves e.g. i multiplied by itself gives
-1. Calculating time using imaginary numbers makes distinctions between time and space disappear. A hypothetical negative 5th-dimension is described by imaginary numbers and motions of its negative particles (dark matter) are time, since time can be calculated using imaginary numbers. So imaginary numbers eliminate distinctions between space-time and the 5th dimension, permitting dark matter to exist as “ordinary” matter’s scaffold.

* Feeble gravity might push galaxy clusters apart in the same way that feeble sunlight propels a solar sail. In the 1970s, Robert Forward proposed two beam-powered propulsion schemes using either lasers or masers to push giant sails to a significant fraction of the speed of light. These vastly magnify the power of sunlight via Light (or Microwave) Amplfication by Stimulated Emission of Radiation. How is gravity’s power boosted? 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 (300,000 km/s x 300,000 km/s) which approx. equals 10^11. After gravity forms matter, successive gravity waves are, via gravitational lensing, concentrated 10^24 times within the matter (to 10^25, weak nuclear force’s

strength). Then they're further 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. Successive gravity waves are absorbed by the matter and radiated as longer-wavelength waves (both as electromagnetic waves - possibly gamma rays, or a microwave background – and as gravitational waves which have lost 10^24 of their energy or strength (and are labelled "10^1".)** If space comes from bits (the BInary digiTS of 1 and 0 - specifically, the energy responsible for the bits is converted into space), then so does gravity (warping of space). So as more and more energy is invested in bit production, more and more space and repelling gravity result. This causes accelerating expansion within the universe; as discovered in 1998 by Saul Perlmutter, Brian Schmidt, and Adam Riess.

** During absorption, something occurs with gravitational waves besides interactions producing electromagnetic and nuclear forces. Does this picture of the atom conflict with the theories of electroweak interaction (electromagnetism combined with the weak nuclear force) which won the 1979 Nobel Prize in Physics for Steven Weinberg, Sheldon Glashow and Abdus Salam? The warping of space-time in General Relativity is not separate from matter but gives an electron a mass of 0.511 MeV (mega electron volts) – technically, physicists say "0.511 Mev/c^2" because an electron volt is actually a measurement of energy, and mass units equal energy units divided by c^2, or m = E/c^2 (which is E=mc^2 when both sides are multiplied by c^2). (E=mc^2 means a tiny amount of mass can be converted into a very large amount of energy. Similarly, m=E/c^2 means a very large amount of energy is converted into a tiny amount of mass.) E (energy) is measured in joules (J), m is the mass in kilograms (kg; 1 kg = approx. 2.2 pounds), and c is the speed of light (about 186,282 miles/299,792.458 kilometres per second) measured in metres per second (m/s or ms^-1).

NEWTONIAN AND RELATIVISTIC GRAVITATION

There's a stronger gravitational force on the surface of the Earth because gravity is concentrated in the matter there. So, like in a black hole, time is slowed down (by much less and at lower altitudes, in the case of Earth). The high velocities experienced by orbiting astronauts also slows time at their extreme altitudes. The article "Gravitation" by Robert F. Paton - The World Book Encyclopedia (Field Enterprises Educational Corporation, 1967) – states, "… when one object is inside another, gravitation decreases the closer their centers are to each other" and Isaac Newton's 1687 Law of Gravitation explains why an object at the center of the earth would weigh nothing (it isn't affected by the concentrated gravity, which we call mass, above it). Objects in space or an orbiting spaceship are similarly free from the earth's (or any planet's or star's) concentrated gravity/mass which is below, instead of above, them and makes them relatively weightless. Gravity's pan-directional repulsive force * is UNconcentrated and, as Penguin Encyclopedia tells us, only about a millionth of Earth gravity. The concentrated gravity forming the spaceship is insignificant compared to the gravity forming a planet or star, and causes no reduction of weightlessness.

* Dr. Paton says, "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 objects are pushed

toward the earth by (the curvature of space-time around the earth)."

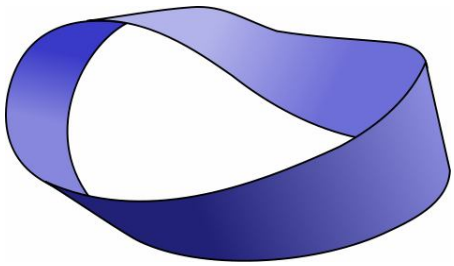
Recalling the "if space comes from bits" sentence from two paragraphs ago, black holes may be thought of as meeting-places and "sinks" for the gravitational currents flowing in and between galaxies. Though they aren't composed of matter, they do have mass because they are "gravity sinks" and gravity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

"DIGITAL" STRING THEORY AND RENORMALIZATION

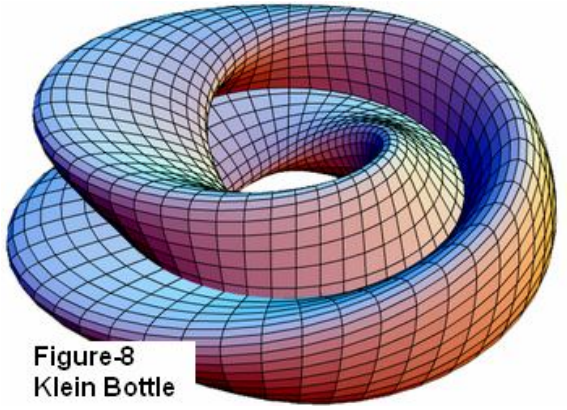
Let's borrow a few ideas from string theory's ideas of everything being ultimately composed of tiny, one-dimensional strings that vibrate as clockwise, standing, and counterclockwise currents in a four-dimensional looped superstring. We can visualize tiny, one dimensional binary digits of 1 and 0 (base 2 mathematics) forming currents in a two-dimensional program called a Mobius loop – or in 2 Mobius loops, clockwise currents in one loop combining with counterclockwise currents in the other to form a standing current. Combination of the 2 loops' currents requires connection of the two as a four-dimensional Klein bottle. This connection can be made with the infinitely-long irrational and transcendental numbers. Such an infinite connection* translates - via bosons being ultimately composed of the binary digits of 1 and 0 depicting pi, e, √2 etc.; and fermions being given mass by bosons interacting in matter particles' "wave packets" – into an infinite number of Figure-8 Klein bottles which are, in fact, "subuniverses" (binary digits fill in gaps and adjust edges to fit surrounding subuniverses [similar to manipulation of images by computers]). Slight "imperfections" in the way the Mobius loops fit together determine the precise nature of the binary-digit currents (the producers of space-time-hyperspace, gravitational waves, electromagnetic waves, the nuclear strong force and the nuclear weak force) and thus of exact mass, charge, quantum spin. They would also produce black holes - whose binary digits could, in the case of the sun, come from our star being compressed to 2.95 kms, in which case the pressure increase "shreds" the sun into its binary digits (its mass is relativistically converted into the energy of binary digits). Referring to a Bose-Einstein condensate, the slightest change in the binary-digit flow (Mobius loop orientation) would alter the way gravitation and electromagnetism interact, and the BEC could become a gas (experiments confirm that it does).

* If the material and immaterial universe consists of an infinite connection of transcendentals and irrationals, renormalization might be unnecessary in certain circumstances. This mathematical procedure is regarded as prerequisite for a useful theory and is used in attempts to unite general relativity with quantum mechanics to produce Quantum Gravity

and the Theory of Everything. Renormalization seeks to cancel infinities – but in a literally infinite universe, retaining the infinite values might point the way to deeper understanding of the cosmos.



Mobius Loop



STEADY STATE UNIVERSE, BIG BANG SUBUNIVERSES AND DNA'S DOUBLE HELIX

Each "subuniverse" (bubble or pocket universe) is one of a series (extending infinitely in every direction) composing the physically infinite and eternal space-time of the universe. The infinite numbers make the cosmos physically infinite, the union of space and time makes it eternal, and it's in a static or steady state because it's already infinite and has no room for expansion. Our own subuniverse has a limited size (and age of 13.8 billion years), is expanding from a big bang, and has warped space-time because it's modelled on the Mobius loop, which can be fashioned by giving a strip of paper a 180-degree twist before joining the ends. (It may have DOUBLE STRANDED, spiralling DNA because the universe is modelled on TWO twisted Mobius loops. Bob Berman's article "Infinite Universe" ("Astronomy magazine" - Nov. 2012) says, "The evidence keeps flooding in. It now truly appears that the universe is infinite" and "Many separate areas of investigation – like baryon acoustic oscillations (sound waves propagating through the denser early universe), the way type 1a supernovae compare with redshift, the Hubble constant, studies of cosmic large-scale structure, and the flat topology of space – all point the same way." Support for the article – a) after examining recent measurements by the Wilkinson Microwave Anisotropy Probe, NASA declared "We now know that the universe is flat with only a 0.4% margin of error." ("WMAP's Universe" - http://map.gsfc.nasa.gov/universe/uni_shape.html) and b) according to "The Early Universe and the Cosmic Microwave Background: Theory and Observations" by Norma G. Sànchez, Yuri N. Parijskij -

published by Springer, (31/12/2003), the shape of the Universe found to best fit observational data is the infinite flat model).