Active Relativity—virtual mass: the mathematics of divinity

A crow stretches its wings and waits. The sun pours down as warmth, and each black feather becomes wet with heat and light. Held within a fold of fresh light, the bird steps into empty air, now floating, circling and looking. Ah! What spark of brightness, what creased glint of hidden treasure do I see? A beautiful thing, most unreal and perfect, a truth to scoop beneath black wings and hold me aloft, and then, to draw down toward the teasing maybe, the new light twice elusive and flickering, a teasing piece of daylight glimmers, a spark folded into shadow catches my crow's eye, a form here and gone, a bit of substance made of nothing, of vanishing light, and I am a thief, a thief for you, my friend!   Down as an arrow into the green meadow, and I snatch it up, a piece of vanishing light held fast in my beak: A jewel most beautiful and unimportant, a question holds a symmetry within its unfolding, a simple mystery spilled out to knowing—The illusion of reality and the reality of illusion—a piece of silly treasure. It may not change anything important, but every crow knows better than to judge what is beautiful. Crows are silly and wise in this way. Here, I have found something for you:

Have a new idea!—

As an atheist in search of new ideas, it was a most unexpected and happy thing to have this beautiful idea find its way into my thoughts. Perhaps I might add a new thought, a simple equation or two to name the process which is us? Can a single equation which sums the ideas of creation, of "intention," of all processes, *of "divinity" itself* be constructed? What would it be?

First, let us all too briefly consider the development of particle physics (please forgive the myriad of important names and work not mentioned): Let us remember the work of Dirac, which married the improbable pair of quantum mechanics and Einstein's relativity into QED; next, please recall the notion of the *quantum field* and QED, for which Feynman, Schwinger, and Tomonaga won the Nobel prize in 1965. The idea of renormalization is key—sheer genius and a cheat, as perturbation theory, a reverse method which works from answer to problem, and by way of measurement, side-steps the difficulties in the theory, and permits it to be used with stunning accuracy. Then, the electroweak theory was constructed by Weinberg, Salam and Glashow. And let us remember the pivotal contributions of Gell-Mann, from his descriptive genius in finding "the eight fold way," to the most amazing insight into the basic elemental particles of nuclear constitution: quarks, and QCD, quantum chromo-dynamics. Gell-Mann was said to have regretted his choice of the tongue-in-cheek label, "the eight fold way," as it confused in the public's mind, the notions of mysticism, and particle physics. After all, these scientists were merely describing and recording events and data. Perhaps, one might argue, that in this very act of scientific description and interpretation, we have uncovered the essence, the hard truth beneath mysticism. I believe we have, and in no insulting fashion either. Perhaps, mysticism, is best understood as a beautiful equation… as science.

Please go to the links below, and study the strange fact which has been proven: our mass,

our very bodies, our substantive existence itself, *is virtual*—the mass we perceive, our substance is created actively, as a function of "relativity" (meaning E=mc² in this case). Our mass, to the tune of perhaps 99 percent, is created from "virtual particles" which are formed directly from energy, of energetic fluctuations from the vacuum. It is theorized, that the remaining few percent which provide the mass of quarks themselves and some other particles such as electrons, are a product of the Higgs field, meaning: *we are entirely virtual*. All substance, all matter, gains its mass through a myriad if infinitesimal fluctuations, each of which create, if only for an instant before the energy is returned, the illusion of mass as a substantive substrate independent of continuous dynamic relativistic theoretic instantiation. We truly are instantiations of relativistic quantum theory, the theory itself, the fluctuations themselves are demonstrated in our very essence—we are quantum theoretic instantiations in the most direct and literal sense.

Please go to these links for information:

http://www.newscientist.com/article/dn16095-its-confirmed-matter-is-merely-vacuum-fluctuations.html#.UsMxZvbOnlY

http://www.redicecreations.com/article.php?id=5306

http://www.phys.utk.edu/witek/NP621/gluons.pdf

So how much energy is contained in this vacuum which is the reservoir of energy tapped to create the illusion that is us? Please read this material written by physicist Matt Strassler retrieved from:

http://profmattstrassler.com/articles-and-posts/particle-physics-basics/quantum-fluctuations-and-their-energy/

This page is an excellent resource, and an eye opener:

The Energy of These Fluctuations and the Cosmological Constant

Let's consider a box of size one meter by one meter by one meter, and ask: how much energy, roughly, do we calculate is inside the box due to the jitter in a single elementary field? (See [text from] Figure 3.)

Calculation 1: Suppose, as our experimental measurements at the Large Hadron Collider [LHC] suggest, that the Standard Model is a valid description of all processes that occur at distances of larger a millionth of a millionth of a millionth of a meter — let's call this the "LHC-ish distance", about 1/1000 the radius of a proton, because that's roughly the scale the experiments at the LHC can probe — and processes involving elementary particle collisions with energies smaller than about 1000 times the proton's mass-energy [i.e. it's E=mc² energy]. This energy is the typical mass-energy of the heaviest particle that we could hope to discover in the LHC's proton-proton collisions, so let's call it the "LHC-ish energy". Then the amount of energy in the fluctuations of each field in the Standard Model (say,

for example, the electric field) is this: in every cube whose sides are an LHC-ish distance, there's something like an LHC-ish energy inside. In other words, the energy density is about one LHC-ish energy per LHC-ish volume. Compare this with ordinary matter, whose energy density is a few proton or neutron mass-energies (an atomic nucleus worth of mass-energy) for every atom, whose volume, since a proton or neutron is 100,000 times smaller in radius than an atom, is about 1,000,000,000,000,000 (a thousand million million) times larger than a proton's volume. (Remember the atom is emptier, relatively speaking, than the solar system.) That means the energy density of quantum fluctuations of the electric field is roughly a million million million times more than ordinary matter, and so the mass-energy in fluctuations of the electric field inside a cube one meter on a side is about a million million million times larger than the mass-energy stored in a cube of solid brick, one meter on each side. How much energy is that? Easily enough to blow up a planet, or even a star! In fact, it's comparable to the total mass-energy of the sun. (Egad!) Now, one can't release this energy from the vacuum of space, for good or evil — so don't worry about its presence, it's not directly dangerous. But this is already enough to raise the specter of the cosmological constant problem.

Calculation 2: Suppose, as is relevant for the question of the hierarchy problem and the naturalness of the universe, that the Standard Model describes all particle physics processes down to the length scale where gravity becomes a strong force — the so-called Planck length, which is another thousand million million times smaller than the distance considered in Calculation 1. Then the amount of energy from fluctuations of the electric field inside a cube a meter on all sides is larger than in Calculation 1 by

- $(1,000,000,000,000,000)^4 = 1$ with 60 zeroes after it.

If you take this number and multiply by the number given in Calculation 1, you get easily enough energy to blow up every star in every galaxy in the visible part of the universe... many many many many times over. And that's how much energy there is in every single cubic meter — if the Standard Model is correct for physical processes of size all the way down to the Planck length.

[Text from] Fig. 3: The amount of energy due to quantum fluctuations of any field is enormous. In the Standard Model, the total energy in a meter of empty space is vastly more (Calculation 1) than in a cubic meter of ordinary matter; and there's even unimaginably more (Calculation 2) if the Standard Model is valid all the way down to the Planck length. But the universe's slow expansion (Measurement 0) suggests the total energy of a cube empty space (often called the `dark energy') is much much less than that stored in a cube of ordinary matter. This is the cosmological constant problem: a profound apparent failure of the otherwise highly successful equations used in particle physics and gravity.

More generally, if the Standard Model (or any typical quantum field theory without special symmetries) is valid down to a distance scale L, the energy of the

fluctuations in a cube of size L^3 is approximately hc/L (for each field), where h is Planck's quantum mechanics constant and c is the universal speed limit, known usually as "the speed of light". That means the energy density is roughly hc/L^4 — if L decreases by a factor of 10, the energy density goes up by a factor of 10,000! That's why these numbers in Calculations 1 and 2 are so darn big.

These statements must really seem bizarre to you. They *are* bizarre, but hey — quantum physics is bizarre in many ways. Moreover, neither quantum mechanics in general, nor quantum field theory in particular, have previously led us astray. As I mentioned earlier, we have plenty of evidence that the very basic calculations like the ones required here work beautifully in quantum field theory. The fact that there are quantum fluctuations, with associated energy, is so deeply built into quantum mechanics that to declare it simply to be false requires you to explain a whole library of experimental results for which quantum mechanics gave correct predictions. So as scientists we have no choice but to take our calculation very seriously, and to try to understand it.

Now for the fun part!

First, you must remember that we are all created each moment as a function of an infinite number of tiny vacuum fluctuations, that is, our mass, is mostly a product of active relativity, the gluonic field and the virtual particles created from it, in the main, actively create our mass out of energy.

Next—let us imagine the traditional concept of God as the *creator of all things*, is reducible to manifest "intention," which means: *processes, form and organization*. Now rather than anthropomorphizing the matter into a thinking universe, or ascribing to a typical religious interpretation, let us simply say that the vacuum contains energy, and that means the potential for matter. We are all active demonstrations of relativity: the vacuum fluctuations, each so tiny, and together, so multitudinous, comprise nearly the complete sum of all mass! So we can deduce:

the infinitesimal x the infinite = everything

Now, in a descriptive sense we can divine the equation for the divine, for God.

Where M = submicroscopic vacuum fluctuation yielding mass, and, E = Quantum Energy Field, and, U = Universe—we can deduce—creation, "intention," processes and resultant form, and so, God, is represented by the equation:

E[M x infinity] = U

Isn't that elegant? *All which has, or ever will be created, is subsumed under that equation.* A beautiful "God." Experimentally validated, *no faith required*. I hope this thought pleases you. A virtual truth for you, my virtual friend.