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Philosophical Quantum Gravity

The Searchers/Philosophers/Scientists

The young philosopher, born in a cave, remains nameless, for I'm making her up, but she duly represents us all. She feels the dirt on the warm floor and thereby infers the existence of the Earth and its beginning as two pieces of dust sticking together, as well as the sun and all of the universe that must be out there to back it up, unto the basic something having to be 'ever'.

Well, it might not have been that easy, but answers do come to those who seek, braving the devouring flames consuming their myths from the solutions to the perilous ponderings. The side-quests along the way taking them to many daring adventures, through dimly lit avenues, dark-alleys, dead-ends, one-way streets, and even one-way dead-ends, on which journey they risk never feeling the same again, after the unexpected truth is cornered.

We are the universe come to life, made in its image, of multiplicity within unity, with one holistic brain hemisphere operating in parallel, it joined to the other hemisphere of sequential detail, the holistic side as a floodlight of attention illuminating the whole scene at once, connected to the the detail side which is a spotlight of attention moving linearly through the scene, the two alternating their cyclic reign, as the yin in the yang and the yang in the yin, making for a rounded life.

And now it seems the philosophical universe, as us, has slain blame and shame, those evil stepchildren of the notion of totally free will, for we dared to fight the dragon in its den, where fixed will emerged as pretty much victorious, minimizing, evening out, or crushing 'randomness', but we are still delighted to have found another of the great revelations sought, never fearing, as seekers, the universal acid that must ever escape from Pandora'a Box of Truths and eat through our folk wisdom, wishes, and hopes.

We, too, have banished the possibility of Nothing's existence, as in 'it' giving rise to anything, leaving in its wake

the Eternal 'IS' that has no more choice in being here than we do, for the whole and the parts are in the same boat; yet, 'tis more than that, for we are a part of the 'IS' come to life as the ship that sails on the winds of time.

Gone, as well, 'God', the Imaginary Fellow cursed for nought, as it turns out, as well as the exposed imposter, 'Infinity', who pretended to be an uncapped extent extant all at once, plus, most likely, 'Stillness' squashed, which can never conquer change, and so, rather ironically, finally rests in peace, and, finally, the non 'Beginning' and 'End' of what IS—and its stuff shown to be uncreateable and unbreakable.

And long since have we learned of the greatest thought that anyone ever had, that of Evolution working via natural selection, resulting in endless forms most beautiful, their changes slowly accumulated from one stable platform to the next, sifting out the best from the rest, the wise from the silly, and the pointed from the pointless.

And another notions quashed, too, that of the brain process of consciousness being claimed to suddenly become something in itself floating free around the Cosmos as standalone Consciousness, as if a word taken alone from its definition could grant this power such as was also attempted as 'infinity'. Consciousness helps to visualize action scenarios before committing to them, it extending all the way from the brain to the nerve spindles.

Ah, philosophers, thinkers, and scientists, you are the triad of wise men who heralded the birth of the Age of Revelations and the Downfall of Fantasy, this done whether you like or not what's being shown to be true.

What, though, is the pleasure to this universal play that we must act out, ever thrust onto the stage, blind to the script, living joyfully through the ups of the highest peaks and painfully in the downs of the lowest valleys?

It is experience, perhaps, that is the reward, for now we as the Cosmos have gained it, be it though we are ever as

tourists along for the ride, since we we see is always the past, yet the view is awesome.

What to do? Well, we don't ever 'do'; it's the reverse, the Cosmos does us. We don't come into the Cosmos; we are of it.

So, the time is ever the present now, with neither a past imperfect nor a future tense, and the place is always right here, right now.

Something Ever; Nothing Never!

'Nothing' is the lack of anything at all, which cannot have being, since it cannot be. Can two things at least be separated by some small amount of Nothing? No, for then they would be adjacent, since Nothing cannot be (as a spacer). 'Something' then, is all in touch with itself, as a whole at large, as might be called continuous (as a further interpretation), even though the apparently lowest Planck sizes within it are discrete (a paradox?).

'Something' is of the one thing as it nature of which it can only be, given nothing else beyond it to prescribe its nature. The expression of the basic 'Something', which we might call 'Existence', is, as we can see, of all kinds of emergences of composite complexities, from quarks and leptons on up through protons to stars to atomic elements to molecules to cells to life to higher life with brains and consciousness.

Method?

Is the Existence from Something there all at once, as in the timeless eternalism of the block universe, with extant future and past, or is it as in presentism as progressing in time as made anew at every basic 'now' from the inputs of the 'previous now' that get wholly consumed, with the past all gone and the future not there yet?

In light of the above, how would we classify an information process of qubits that compute Existence?

Information as Basic?

Noting a recent article about the proof of non-locality, one can figure that information has primacy over space.

The information stored in a highly entangled quantum system cannot be accessed/known by interacting with but its individual parts because that information is not stored in the individual parts at all, but only in the correlations among the parts, as relational.

Thus, a quantum bit becomes entangled with its neighbors, and then this grouping gets entangled with another such grouping, and so on, this becoming the stitching/sewing of reality into a fabric as an informational process that serves as a spatial continuity.

Structural Realism

I derive that there must be a close structural realism between the phenomena we form in the brain and the noumena 'out there', due, at first, to what our senses do, mainly because we have receptors for the information, we then mostly faithfully connecting what we note as existing internally in the brain's re-presentation to a fair idea of the true essence; so, then, we can go on to know about reality, and can forget about 'consciousness' is All and that kind of thing.

For the visual system, photons and our receptors make for information, e/m wave frequencies give rise to the colors, photon numbers for intensity, photon angles for object orientations, and so forth.

Taste is, perhaps, simplistically, a four-way matrix of something like sweet. sour, bitter, and salt, or such.

For the odor system, molecule shapes, mostly (with something added to distinguish similar molecule shapes, fit our nasal receptors.

Further up, facial recognition is perhaps some 20+matrix of features.

More universally stated, secondary, composite structures reveal that there is something more primary, as well as its essence behind existences. Items which are somewhat alike must have the same fundamentals, therefore things are built from fundamentals which are the end, as basic, infinite regression not being possible.

Being or becoming: that is the question
That haunts existence's investigation:
Whether 'tis simpler for the All to offer
The slings and vectors of a told fortune
All at once, as a marble monument,
Or to perform in the sea of actions,
And by disposing ever create them?

The Constraints Upon What Exists and the Implications

We as life are close to the midpoint of the largest and the smallest that we can surmise, though a bit more so, with a mote of dust being right at the midpoint, and bacteria a bit less so; thus, it appears that the largest-smallest range was conducive to all living entities (and near living ones, without considering bio nano-machines), making it seem to be a necessity.

The material that forms the universe in its massive range is more than just abundant but has an incredibly extravagant amount, to us, making it that there's no shortage to this stuff, as if even that it's so easy to come by that any amount of it can be, yet the power/energy behind our amount is what it is now, which isn't to say that it couldn't increase, such as that which allows the expansions of the universe as the fuel that ever seems to keep on giving, all this amount of stuff appearing to be of necessity, granting life to at least appear in some places such as our solar system's Earth. We can conclude that the potential for life was inherent all along.

We wonder about the nature of the basic, minuscule, elementary material, and surely we have gotten down through a few levels of it, if not the bottom, unto quarks and leptons.

It suffices for now, though, as enough to know that the complex composites form from the simpler and simpler, so, it isn't justified to look in the completely opposite direction to posit as a template that some much higher complexities make for the lessor ones, on and and on, and up and up, infinitum.

Nor could there be infinite levels downward; so, there must a basic simple-as-can-get physical, material something. this is not to say that it is solid in the sense we think it is, as it may still be 'solid' in the way that energy/forces make it as such, effectively.

Some people may want one last, bottom something that forms material from whatnot, as if it is a 'what' that is not a 'what', thus having material be secondary, but then the 'whatnot' can make only the tiniest of things, which is fine, though it seems to be an extra step. Either way, this ultimate basic is still the simplest something, since it can't be composite, and so I'd still count it as physical, so there goes the 'whatnot' of it.

It's likely that the 'whatnot' is by human nature seen to be some ultimate Mind of an infinite, all powerful, all-seeing system of the utmost complexity and intelligence. I don't see the sense in claiming that a much lesser thing can't just be, as some kind of a 'problem', while a much larger thing suddenly has no problem at all in being (and makes for the lesser, as if this sequence is some kind of a rule, but then the great rule is discarded after only one use).

That it has some simple, brute force way of forming an upward cascade of composites is not to be denied, though, and the presumption is sustained that it has no ready-made, instant prescription for making life because billions upon billions of years have gone by before it could do so. Thus, it is also a necessity for suns as stars to have enough of this long time to form, as well as for some of them to last long enough for life to arrive in its numbingly slow way (to us).

Take a certain, massive cloud of stardust that has potential to make a solar system such as ours and then about nine billion years later human life on it can come about on a planet, given perhaps millions of the right conditions to coincide.

Life is what it is, then, as it is, and on Earth there are 50-80 million species, in one whole tree of life, all of these going ons of all the varied forms of life seemingly necessary, with one of them wondering "what exists" at a basic level.

So, what exists at the lowest level needs be the ultimate simplicity, and so that's all there was way, way back. What complexities come to be as arrangements in our future ought to be much higher than now, and there might even

become some leaps and bounds, now and then, over the old glacial pace, due either to "gathering enough steam" for more emergences or us making improvements to nature ourselves, or both. So, look to the future for the more fantastic, not the past.

I've sketched a universe evolving in time, as opposed to Relativity's all-done, timeless, static universe of ultimate precision of full and complete pre-determination made instantaneously based on the exact initial conditions at the Big Bang.

If I can truly demolish a part of Relativity, and borrow from Quantum Mechanics, there will not only still be an evolution in time, but a slight amount of indefiniteness to add to cause determining effect, which will still 'determine' a future very much correlated to the past, but as a future that could have been a bit different, according to how the probabilities are, overall.

Note that neither our own consistency nor that of the universe at large is in any way made more as being 'free will' by 'random' happenings, but that these harm both the notions of fixed will and free will, plus I still don't fathom how outputs can arrive from Nothing, as 'random', for what made them not appear versus when and where they did appear.

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"There is the 'vacuum'", replied the other,
"A base state, one pervading all of space,
There being no signposts within it,
Or anywhere, since it is of no direction."

"We must regard it the stuff of which things are made;
For just as all living creatures inhale the air,
So do all the real natures inhale the vacuum."

"This intimation is the mark of manifestation,
A demonstration that's the token of the evidence;
The aetheric and heavenly sign of things to become,
Both the portent and the omen of so much possibility."

"It is both the warning and the present notice,
Presaging both the promise and the threat."

"Aft this sign, that the vacuum 'indirects',
Then the real gestures ever beckon"
They of an the unsignal faint,
The wave and gesticulation of you."

"We read the noise of the quantum theater—no marquee;
All is daubed without symbols, to mark no cipher, bare,
No letters, characters, figures, or hieroglyphs there,
No ideogram of the rune of order,
No emblem of the Divine."

Onto the Minuscule of the Quantum Realm...

Quantum entanglement informs us that space is not a good foundation to lean on, that information is more fundamental. An entangled thing is not really separate from its other entangled thing(s); a global activity is taking place in what must be a whole of the basic something. Although a pair of particles may seem to be far apart in spacetime, in their underlying 0D singular, holistic domain they are evidently overlapped.

The basic something, or Something, is proposed as that which is the only possible nature of what we call the quantum foam, that 'ever is'. Our universe emerged from it, it seems, in some kind of bang whether central or all over, as a continuation or transformation of it, and yet the foam is still about, as 'ever', in its necessarily spaceless, timeless, entangled, holistic, and singular basis of zero dimensions in zero time, pervading the more secondary, emergent spacetime at every Planck quantum.

The quantum foam appears to be the jittery and ceaseless popping in and out of so-called virtuals, as if it could neither be completely full nor totally empty, neither all ones nor all zeros, as if fullness and emptiness, as solidity and nothingness, exhaust all possibility and so must form a kind of duality in which neither of the two nonexistent absolutes can 100% dominate, since neither can be, anyway but yet still serve as boundaries that cannot be reached, forcing a kind of average or in-between here and not here or between full and empty.

Of course, the quantum fluctuations are all as touching one another in this spaceless arena, but it's hard to picture it that way, so our drawings usually portray it as spread out spikes of ups and downs, but with many wormholes to indicates the all-connectedness of all things superimposed, where different events can happen simultaneously.

Existence might be better defined be that which goes on to compute as a process, over and above the Something of just the fluctuations. The subsequent existents are emergences

but just as real, since they don't come from anywhere else, plus that some may be painted in the brain to reflect what is useful toward survival rather than as total faithful representations of noumena.

Ervin László, the famous Hungarian philosopher of science, postulated the quantum vacuum as a universal field that interacts with matter.

He asserts that the field:

"…acts as a holographic medium, registering and conserving the scalar wave-transform of the 3-dimensional configuration spaces assumed by matter in space. This universal fifth field is not inferred from space-time interactions like gravitational, electromagnetic, the strong and weak nuclear forces. In this new type of field, space and time become implicate, enfolded, as described mathematically by Bohm. The fifth field is spectrally (holographically) organized, and is made of the energy present in the interference patterns of the waveforms. The transformations from space-time order to this spectrum dimension are described by holographic mathematical formulations."

Since spacetime is not a continuum, but a discrete fabric, its origin would not then be at any a central point of some tremendous density bang but holistically everywhere, in every minuscule quantum, but note that this, too, is as a kind of 0D, timeless 'singularity', and so perhaps we should not ignore that kind of so quickly dismissed solution of Einstein's equation.

Also, since space is not continuous, it can't stretch itself to provide for expansion, but since it is discrete, then the building blocks must come from within, as really without, as created and injected space-time grains from the whole that is more or less 'outside' spacetime, as the fuel that keeps on giving, as also called dark energy.

Some might even see quantum arena as the nebulous zone between the space-time universe and the singular domain, where space-time and the singular intermingle. This is similar to an objective reality mixed with a subjective and imag-

inary realm in the mind, which might be modeled in kind, such as the objective brain action popping out of a whole scenario of imaginations/consequences.

sponge: *Onward and upward.*

Or downward and sideward and then upward to the great Upward of complexity. Something strange is afoot, Sherlock, and it all has to do with nature's axe that chops everything up into discrete quantums due to infinity being impossible, here as in no infinite divisibility.

The imaginations of one's pondering mind toward an thought or action outcome would be as a dipping into the whole a lot of superimposed scenarios of what one's brain has become, this ability somehow of a quantum nature that can have a lot in one place for consideration all at once, just as the universe at large and as a whole might do, although it would have total information, even at every point, as in a hologram.

Meaning?

Is there any meaning to the basic something? Well, only in the necessary nature that it has to have, whatever that gives, by default, which seems to leave out other purposes that we ourselves might dream up, such as that life is a test.

The existentialists take the non prescribed, non-direction as being akin to that of it having no meaning, they thus promoting existence as the most primary, in importance, and what should be ever attended to, albeit that one is forced to ever attend to it. They too thought that man has great freedom, as if he were a kind of mini first cause, but then again they didn't get very deep into how reality has to work, as to why it has consistency, but maybe humans leapfrog onto the Something's no cause and whatever comes of that.

Someone may have stumbled on the answer by accident, but there's a lot to read on the internet, much of it just

amusing rather than truly informative, but computed universes are the big thing now.

Punshhh: *Can information exist on its own, without a medium in which to be expressed?*

The physical quantum bits equivalence to information due to their relationships would also serve as the penultimate and ongoing medium for a an existence process in which they compute more and higher complexities, which in turn do things at that emergent level, and so on, upward, although often very slowly, given possible no preprogramming, but the ultimate medium would be that which makes for these bits to appear, it being the basic something. Since events/experiences happen we know there is information behind the occurrences, and that's good enough for now for our analysis here, leaving it to others to make models and theories in particular, such as for quantum gravity.

The simpler to the more complex information process is kind of like how how evolution works, in that what gets reached as a stable platform, more or less, that can then be the base for more arrangements that can become the next level of a stable platform, and so forth via such slow accumulation, but we're not considering organisms here but electrons/quarks, protons, a few basic atoms, stars, the rest of the atoms as higher atomic elements, and molecules, in about that order.

And, of course, that which doesn't reach any stability at all crumbles away, though remaining as a kind of noise, this instability effectively shutting down those attempts/paths, leaving only what lasts to be able to go on to form more complexity.

Electrons and quarks are formed more directly as the elemental particles and so they are very stable to the point of staying as they are for a very long time, whereas molecules vary in their stability, although they already have a base degree due to their tendency to form, in that some of them are neither inclined to stay together for a long time nor to break apart instantly.

Philosophical Relativity - QM Marriage

The engagement of Relativity and Quantum Mechanics for marriage has been announced by the quest for Quantum Gravity as the offspring, forcing a new look at the seeming incompatibilities.

I only deal with the philosophical here, leaving the details to physicists, which may also allow us to finish long before they do, they having to prove our truths with loads of math models, probably taking fifty years to do it, which I can't really wait around for.

Both Relativity and QM are confirmed in their own realms of the large and the small, definite versus fuzzy or 'random', eternalism versus presentism, respectively, and more, but for a Final Theory they need to converge, each giving something up, it would seem, or we have to formulate a new, deeper theory underlying both.

I will head toward a plan that the basic something (Something) that has to be is a process of 'becoming' rather than the whole done deal as 'being' of reality already all laid out, my model child being of a combination of the parents, as QM processing the future's development, but having the past becoming frozen in stone, as in the Relativity block universe, because I don't know what else to do, and so we're headed to a a kind of a growing block model, which I never thought I'd have to do, since it still has the tough presentism to overcome, but the search for quantum gravity forces us to try things.

First, though, what is the philosophy behind each parent, which no one really seems to get that deeply into?

Einstein used both philosophy and science in his all-at-once, instantaneous past-future of Relativity that stems from the relativity of simultaneity due to the constant speed of light causing time and distance to change to accommodate light's speed, making for a timeless representation of reality as 4D distances, at large, time being spatialized as one of them, but internally converted and sensed as

change/time to us through some magic of our consciousness being able to move through our world lines.

The whole block is a a 4D hypersphere with the special-time dimension as a distance being radial from the center, as where the initial conditions of the Big Bang were/are, which leads to all paths thereby derived from, as only what they can be, but I'll be darned as to how this arrangement can just be all there instantaneously, plus why it only begins at the big bang, and how its concrete extent can go to a 4D infinity on the future side. Also, what could foresee it?

But, more philosophically, as in deeper and not using prior science, there is the basis of the sense of "what is, is, and what is not, is not", as Parmenides put it, indicating that what exists has to, since Not can't even be meant, as so as such, What IS must be causeless, whole, ever continuous, unchanging, and timeless, just as the block universe turned out to be, as a consequence/implication of Relativity.

Again though, what if the Something described above was a process, its nature still remaining unchanging, whole, continuous, timeless, ever, and causeless? We only need add that it is indefinite, a la QM, as would be any basic something with nothing before or outside of it to give it a mission statement, this being a philosophy for QM having to be indefinite (unless there is only one, default, definite way).

OK, now I am stuck, or at least haven't written down any further thoughts yet. Of course, there are all sorts of ongoing approaches and schemes by noted thinkers going on to try to resolve the mismatches that one can dig into.

…

After consideration in my warm bath on a cold night, the Relativity-QM marriage may not be so rocky after all.

0. I cannot go too far with Quantum Mechanics (QM) indefiniteness, for it would lead to the unworkable conclusion that the future would be almost completely uncorrelated with the past, contradicting our observations. Thus, while

some indefiniteness as potentials must exist, many of them get canceled or swamped out for reasons unknown that are not yet dealt with herein, but somehow the probability of potentials result in a great consistency in what goes forward as 'future', this even if 'indefiniteness' is the bedrock of reality, to put it ironically. Quantum fluctuations are the quantum 'creation' and 'annihilation' of the grains of spacetime.

Note 0: *Quantum field theory is one of the most successful theories ever formulated. All matter fields, together with the electromagnetic and nuclear forces, have been successfully embodied in the quantum framework. They form the much celebrated standard model of elementary particles, which not only has been confirmed in all advanced accelerator facilities, but has also become an essential ingredient for the description of the universe and its evolution.*

1. I can't get rid of Relativity, but I can get rid of the near metaphysical derivations from it, especially if I can do this on many counts. So, let say farewell to the 'future' portion of the block universe as being static and predetermined; only the 'past' portion will become solid, as determined by the present, with the past not gone but kept around.

1a. 'Infinite' is not allowed for an extant extent because such an extent cannot be all there at once because it cannot be capped. The block universe is infinite in its future extent, in both its three space dimensions and in its time dimension (which is a distance dimension in the block), and so that is my first disqualification of the block universe 'future'. Strike one, in the series of the World.

1aa. The future ain't what it used to be, Yogi, for now there are the potentials of many world-lines getting considered, not just one already in cement.

1b. Quantum mechanics indicates that futures can be indefinite, thus there cannot be the block universe's fixed future. Strike two.

1ba. The change from indefinite to definite takes place at the ever changing present, where the uncertain future becomes the determined past. As time evolves along each world line, at different rates, as we will see, spacetime grows by subsuming events and solidifies as the concrete of the past.

1baa. The past must be kept; ex: many parts of the Earth are of the past but they still affect the present. ('Presentism' would have to make them all over again in every now.)

1c. The block universe is complete, all at once, in all its connections, which is a complexity, as First, and so it cannot be Fundamental. Strike three.

1ca. Keep it simple. The complex is in the future, not in the past.

1d. Claiming the block universe to be metaphysical and idealistic doesn't make it a sacred cow. Strike four. Didn't really need this one, but we can also say it doesn't match our experience, such as being time-reversible, which is important, so, really another strike.

1e. All that sets itself instantly as an already existent future could not have been foreseen, regardless of the point about QM having indefinite/random outcomes.

1f. The initial conditions of the universe don't make for its future, since the quantum fluctuations that were amplified to galactic scale by inflation were unpredictable. The outcome is only determined as it happens.

2. I cannot have an absolute 'now', nor can I have the 'no time' of a timeless block universe (since I just demolished the block universe, at least of the future). What's left, then, is an undulating or piecemeal wavefront of different 'nows' at different places, these 'places' being anywhere from bits to the Planck size and up. No need, then, for all process to somehow get in perfect sync. Some take longer or shorter.

2a. Thus, not everything happens at a universal, absolute 'now', which avoids pure presentism, plus presentism is also gone due to my keeping of the past.

3. Time passes, in our nows, as we are the nows of the various wavefronts, sort of as surfers building on the past at the very points where the possible and probable future takes form and becomes the past reality cast into stone, the wave always carrying us and everything else into the future of the great unknown.

4. I, then, have allowed most of QM, with all change taking place in a variable present, preserving Einstein's relativity of simultaneity. How QM really and truly works is left out as 'mysterious'.

5. In summary, time progresses, events happen, and history is shaped. History could have been different, but instant by instant, one and only one specific evolutionary history out of all the possibilities/potentialities is chosen, takes place, and then gets cast in stone.

note 1: *It is a fundamental aspect of most quantum theory that the uncertainty is unresolvable: it is not even in principle possible to obtain enough data to determine a unique outcome of quantum events. This unpredictability is not a result of a lack of information: it is the very nature of the underlying physics.*

note 2: *Despite connections between information/knowledge and quantum states, there has been little progress towards answering the deeply related "quantum reality problem": What is the underlying reality that quantum states represent knowledge about? If quantum states are information, what is the "informata"? Most research in quantum information has ducked this question, or denied the very possibility of hidden variables, likely due to strong no-go theorems. Indeed some have rejected the basic notion that information needs to be about anything at all, taking the "It from Bit" view that information can somehow be more fundamental than reality.*

I have adopted QM's indefiniteness as a basis for a workable reality, although its background dependence will probably have to be removed in favor of pure relationalism.

So, how does something definite and workable towards making future arise from an indefinite that seems to be as a bunch of monkeys typing randomly to make a coherent book?

The "monkeys" are not about typing something complete as all at once, sequentially, in a row, but about slow accumulations upon a stable platform, as in evolution.

When something stable arises, like, say, a quark, it may then continue at its emergent level to combine into something higher as stable, such as a proton, everything else just remaining as 'noise'. So, then, only those paths that can go on can amount to anything further.

This is as a kind of brute force 'exploration' of all paths, this being sure to get to something workable over 'foreseeing', which it can't have, anyway.

In quantum mechanics, one has particles with indefinite properties. In quantum field theory, one again has particles, but these are secondary to the fields with indefinite properties. Spacetime itself then becomes a kind of quantum field, and so becomes indefinite. There would be no more individuating objects and their properties, just an evolving block universe going on in real time.

In review, and with perhaps some expansion, why are general relativity and quantum mechanics not compatible towards a theory of quantum gravity by their unification?

QM has quantization, thus observables are not just numbers, as in the opposite, classical theories, but operators that act on quantum states and then take expectation values. There are also quantum phenomena, such as uncertainty and entanglement, which are not part of any classical system that one wishes to quantize.

The quantization works extremely well when the classical system is not relativistic, that is, that there isn't too much energy involved and everything moves at speeds much less than the speed of light; otherwise, it fails miserably, with infinite that can't be gotten rid of through renormalization.

The Standard Model (SM) uses Quantum Field Theory (QFT) to describe the three fundamental interactions: electromagnetism, the strong interaction and the weak interaction. These interactions are described by gauge theory, and the SM explains the fundamental interactions as couplings/ interactions between the different fields.

GR describes the 4th fundamental interaction, which is gravity, and fortunately, GR is also a field theory, describing the 'metric' that is responsible for the spacetime curvature, which is interpreted as gravity.

It seemed to be a simple matter to just quantize the metric field of GR, which was indeed done, but it completely breaks down at high energies, which is just where we needed it to work for unification. We didn't know all the parameters, because there are an infinite number of them, meaning gravity is non-renormalizable. (For quantizing the electromagnetic field, there were only a small number of such parameters, and so we could accomplish a very useful approximation.)

There are many different approaches. Most of them involve modifying QM and/or GR in some way such that gravity will be renormalizable. There is also a conceptual problem of how to treat spacetime itself.

We only really understand QM and QFT as theories in which particles or fields interact on a given fixed background spacetime. flat or curved, but the background must be unchanging, and so the background cannot interact in any way with the fields in the foreground.

Yet, the idea behind GR is that spacetime is a dynamical, ever-changing physical entity, which not only influences the motion of particles or fields that move inside it, but is also

influenced back by them. Spacetime is no longer just a background. Gravity in GR is what decides whether there even is an empty backdrop and so QM doesn't have anything stable and static to perturb on top of!

QM allows for Special Relativity but not for General Relativity. It deals with mass and energy, but it makes no allowance for mass and energy distorting spacetime. We don't know what it means quantize spacetime itself, but that's not my concern in physics but only philosophically. So, GR is consistent and QM is consistent, but when you put them together, a mess results.

Another contradiction is that GR says that when you dump something into a black hole, the information disappears. QM says that information can't disappear. Another problem has to do with the uncertainty theorem. If you reduce the uncertainty in distance to zero, the uncertainty in momentum goes to infinity.

In GR, curvature of space = energy and momentum of matter, but we know that "energy and momentum of matter" can be calculated only by using quantum operators on the matter's wave functions, so, absolute, GR's certain classical description of the curvature of space must equals GM's fuzzy, quantum description of matter, making for a badly broken equation.

(A faint hope is that the fundamental reality could be a continuum and what appears as discrete may result from convergence and condensation of the continuum.)

Non-local quantum entanglement has been shown, so, then, space cannot be a set of dimensionless mathematical points, meaning what appears as two different locations from the "dimensionless point perspective" would really be the same location. A new 'point', then, would have to be something that is out of focus and diffused, having a dimension.

A microstructure of spacetime is needed at the Planck scale, at which all fundamental constants of the ingredient theories, c (the velocity of light), $\hbar$ (the reduced Planck's

constant), and G (Newton's constant), come together to form units of mass, length, and time.

Some physicists speak of spacetime emerging, as in the context of the AdS/CFT duality in which a ten dimensional string theory is found to be observationally equivalent to a four dimensional gauge theory, called a 'gauge/gravity' duality since the string theory contains gravity while the gauge theory does not.

Since there is an equivalence between these descriptions, it makes sense to say that neither is fundamental, and so (elements of) the spacetimes they apparently describe are also not fundamental; thus implying that the spacetime we observe at low-energies is an emergent phenomenon — Vistarini 2013

There is no single, generally agreed-upon body of theory in quantum gravity. I'm practically done, philosophically, while the physicist provers of truth have only just scratched the surface. Now I get to go out and play.

Regarding 'becoming' as the successive occurring of events in time might accommodates the block-view, depending on whether we insist on the fact that events are tenselessly located in spacetime, or on the fact that they occur at their spacetime location.

In order to have spacetime, we need to distinguish spatial from temporal intervals. Dimensionality alone, provided by the topological structure of the manifold, does not suffice.

In GTR, spacetime is also a physical entity, its role in the theory can always be redescribed by claiming that it is the manifestation of the gravitational field (its structural quality), rather than the other way around (the gravitational field being a manifestation of spacetime). This suggests that the dispute between substantivalism and relationism in GTR is a matter of words, or possibly of a conventional choice about two ways of explaining phenomena that are empirically equivalent.

The metric field is spacetime, and it is a real entity, but the additional, metaphysical question whether it is a substance-like or relation-like is much less important than establishing its existence as exemplified structure, in the sense specified by structural spacetime realism. But structural spacetime realism turns into relationism only if we presuppose that the distinction between substantivalism and relationism has some utility in the philosophy of space and time.

The shift from static time to a process is a decisive step in the attempt to get rid of spatialized time in relativity.

Space becomes just a convenient name for labeling relationships between entities. Position and motion of a entity then have no absolute stage but are considered relative to other physical entities. Space is no more than the "touch", the "contiguity" or the "adjacency" relation between objects.

Both GR and QM are characterized by a form of relationalism. Is there a connection between these two forms of relationalism?" (Rovelli, 2004, p. 157). He proposes that there might be a connection between on one hand GR's relationalism, depending on contiguity, and on the other QM relationalism, depending on interaction. There is a connection between contiguity and interaction since systems can interact only if they are contiguous. This is locality. Carlo Rovelli therefore suggests that locality ties together GR's relationalism and QM relationalism and that it might be interesting to develop the idea that contiguity derives from the existence of quantum interaction.

Absolute Never

Given Something (the basic something), since we know there is something, due to our experiencing, we note that it could have no birth from Nothing, and thus there's no beginning to it, given no other source such as a Home Depot warehouse, making it 'ever' in a timeless way, as being always.

This, is a truth, and so one doesn't need a proof, although we can try to make a proof, out of which we hope to gain more insight on the necessity of there having to be something, instead of a lack of anything at all, including any ability or capability for it to produce something.

So, we admit, tentatively, that there could have been a lack of anything, however silly that is, since there still wouldn't be anything, which is a kind of a near proof, but is really still more like a truth, since we don't just want to use how things turned out as a basis over why there couldn't have been a lack of anything.

Perhaps I have already gone too far, here, but, still, right or wrong, we gain more comfort even from proofs that we don't even need, as in just to be sure, not that the known truth can ever be dented.

So, one is looking to add more to the necessity of there having to be something, such as if that has to be something outside of time because beginnings can only be in time, and so this could be why, yet, still we wonder.

We probably shouldn't have gone beyond having the brute truth, because we are perhaps only rewording what led us to that truth.

Let us rather look for confirmation/proof from science of philosophical truth, which is usually how it goes.

The quantum capability for so-called virtual entities to pop in and out is the basic something, no matter that it is said that the virtual entities 'exist' only briefly since they don't

remain for long (of course inflation can be so quick that it separates them from their paired counter parts to make them exist longer as no longer virtual but real).

Well, I guess we still don't know All about why there has to be this quantum foam, especially in its nature, over a lack of anything, but, as said, who needs that when we already have the truth.

Except that we are curious. Could it be that there are two non-existent absolutes that can never be reached ('close' doesn't count), the first, as we know, of Nothing, and the second being total fullness, or Fullness, as defined such that not any perturbation can get through it.

How come? Well, I really have to go off of the deep end here and that's why we really needn't be at this point.

Suppose that Fullness and Nothingness exhaust all possibility at the metaphysical level, forcing them to act as a special kind of duality in which neither can be so, but only the in-between.

So, the spikes, anti-spikes, and worm-holes, and whatnot as what goes on as a quantum foam can never be as all ones or as all zeros, or all ups or all downs, or all there or all not, but must jitter about between the impossible emptiness and fullness.

Ah, crap, I give up on more detail, for we don't need it (leaving it to physicists), for we've already derived 'What exists' in that thread from the Something having no beginning and from that and more deductions we've gone up to a great understanding in figuring out most everything.

OK, after some pondering, it all gets down to the apparent paradox of how the basic something can ever be (already there) without a making of it, but this isn't a true paradox, given that there is something. So I have to accept it as a feat accomplished, as a truth, but not fully knowing the why as the proof. The Something that exists that didn't and couldn't come from anything else has to be a brute fact.

Given no point for a pre-direction or pre-design, it either has to be definite in the only way it can be, or indefinite, as in every way possible, whatever that means. Is the quantum foam the Something and does it tell us the way?

Comments

Punshhh: *I am happy to accept that all is material, provided that we include all materials which exist, rather than dogmatically confining ourselves to the physical material known to science as though it is all there is that exists.*

Science is open, but humans often get stuck, even after the karma runs over their dogma.

Punshhh: *So what exists is material, how come there is (it comes to pass) some material, in the first place? And how come it had those properties it had?*

This is a gargantuan conundrum wrapped in the greatest enigma of all times, to say the least.

If there is a "first place" in which it "comes to pass" then it has a beginning and thus it is secondary, or more, and can have certain properties put into it by its making, Protons have quarks and gluon forces and collect into stars and solar systems via gravity. The atomic elements are made by stars. So, no real problem or riddle about these non primary happenings, but for, say, whence the good luck of carbon being able to form, and such.

The above "second place" or more cases pale in comparison to the base existent(s) necessarily being 'ever' and 'always', for then they have no start at which specific properties can be directed.

There would be no deciding point for the total amount, nor their individual size, mass, energy, charge, spin, and more.

What are we to make of this? What modes can there be for the base existent(s)? Pick one.

1. Forced to have the default properties of necessity.

2. No properties, but only those secondary ones arising in relations.

3. Different properties in different universes.

4. Indefinite properties somehow representing all possible properties, for lack of any one direction to be supplied.

5. All is of information processes.

In our universe, we've gotten down to quarks and leptons, some varieties of which find little or no usage in the three main stable entities in free space at the next level, as the electron(-), proton(+), as matter particles, and the photon (no charge), as an energy particle, which, I might add, is a very curious symmetry that needs more looking into. (Free neutrons decay.)

I should count the positron(+) and the anti-proton(-) too, which reminds me that the two things of a something and and anti-something constitute some basic divide.

If the one basic something is the ubiquitous simple, continuous function of a 'wave', as a field quantum, then the positive and negative amplitudes are the opposite 'charges', the wave frequency is the 'energy', and the wave length and width is extension into 'dimension' (and maybe something to do with 'mass').

Now suppose that some gigantic neutron was the cosmic egg of our universe, as about the size of our universe, with quite a huge wave length, with more such smaller and smaller waves forming within it, the whole shebang getting denser and denser, making for about 2x10**85 parts (as the number of particles in the universe now, which is really 2x10**76, less annihilations, since there are one billion photons for every proton), this huge number due to the fact that faces are lightweights, until the impossible infinite density couldn't be reached and it banged all over, into centers of oscillation, the electrons becoming of the simpler wave envelopes and the protons from the more complex waves within waves, along with positrons and anti-protons. Photons would be electrons and positrons combined and living in peace because the waves are 180 degrees out of phase.

So then, there are only those ways above to make the stable entities as the electron/positron, proton/anti-proton, and photon, by necessity.

Or, as another way to get a 'bang', one might have the basic particles whirling round and round until there was no inward left, and then kaboom.

Anyway, if there was a big bang, then something had to bang.

BENEATH, BELOW, AND FURTHER

In succession due does the large give way and rule
To the ever smaller, the tiny, the minuscule,
And onto the negligibly insufficient 'awol'
Of not really much of anything there at all.

Yet it was at this bottom here-from that the all
Of the upward progression began its call,
And so here the answer lies to the sprawl,
At the boundary where nature wrote its scrawl
Of existence upon the foam, and back and forth,
A place not necessarily like that we think it is,
A lawless, formless realm that's ever been the quiz.

Stability too has decreased woefully,
Melting within our descending journey,
And so we must meet the perfect instability
Of the potentially perfect symmetry that cannot be,
For not only is it that everything must leak
But that there can be not even one more antique
Of a controlling factor lurking about,
For of anything else we've totally run out.

Here then the pulsations and the throbbings
Of the so-called vacuum that must ever swing
Between here and there, ever averaging to not much
In its rise and fall, alternating here and varying.

Here Eternity and his elemental fellow rhymes
Of Anything and Everything bide their times,
Of which they have and always had continually
All of the time of everlasting perpetuity,
And so then if one waits long enough,
Which is but an instant in Forever's trough,
Say for a months of Sundays in donkey's years,
Then not only do the rarest of events come to pass,
But eventually so do all things possible that can last.

The Discrete Information Process

Fyi:

There isn't anything outside of Totality (or it wouldn't be Totality), such as clocks, rulers, gods, or directions; thus, Totality is wholly relative and relational to its internals. that is, all its properties are described in terms of relationships between its events, such as causality, in the main, as the most important. An 'event' is defined as the smallest possible change, as a part of a process.

There cannot be an infinite number of relationships between events, as in a smooth, continuous space; thus, Totality is discrete. Events are discrete entities that can be enumerated, thus space and time themselves are not continuous. One cannot divide time indefinitely, for there are elementary events, as the simplest possible things that can happen.

The Bekenstein bound shows that the amount of information that can be contained in any region is not only finite, it is proportional to the area of the boundary of the region, in Planck units, thus all must be discrete on the Planck scale, for were it continuous any region could contain an infinite amount of information.

If Totality really were continuous, then every volume of space would contain an infinite amount of information. In a continuous reality it takes an infinite amount of information to specify the position of even one electron, much less particles divided infinitely. This is because the position is given by a real number that requires an infinite number of digits to describe. Further, we would see variations in our supposed elementals as much as we do for the planets, but all our elementals are the same.

That something just 'is' there is not true, this being an illusion, for it is ever changing. Process is more important than, and comes before, any apparent equilibrium or seemingly static object.

Change is not optional. No particle can sit exactly still, for this would violate the uncertainty principle, for a particle has no precise position, nor could this never moving particle have a precise momentum (zero). We cannot know both position and momentum to some precision. Even if we could remove all the energy from a particle, there would remain some intrinsic zero point motion. Stillness is prohibited; change and process are in.

So, there must be action, and thus Totality is composed of processes. Time, then, is the same as causality. A set of events caused the past and a set of events will cause the future.

There are not a collection of independent entities living in some fixed, static background of space and time, but instead, there is a connection of relationships the properties of every part of which are determined by its relationships to the other parts, which would be a lot of connections.

The universe is not made of material things of stuff in stasis, but of processes by which things happen. Even the elementary particles are not static objects just sitting around here and there, but are processes carrying little bits of information between events at which they interact, giving rise to new processes, in a way like the elementary operations in a computer do. Banish the image of an eternal atom as a completed thing.

All that one ever views is the inside of the brain. We only imagine we are seeing into an infinite three-dimensional space, but this is only an inside construct, for the brain paints a face upon reality. One does not reach out and probe objects, but rather, their photons come to you. Each object you see is from a process by which information travelled to you in the form of photons and the farther away the object is, the longer it takes the photons to get to you. So, you do not see space, but instead you are looking at history, as information from a process.

There isn't anything static at all; it is something created and recreated by an unbelievable number of processes per second. A scene is the collective result of all the various

processes. We cannot believe in any principle which expresses the world in terms of things. There isn't anything but processes by which information is transported from one part of the universe to another.

If matter were infinitely divisible, there would be an infinite number of structural possibilities regardless of the scale. At the scale of our quarks, there would be at least as much variation as we see at the scale of our planets. In fact, to see any two things exactly alike anywhere would be very surprising if infinite divisibility were true.

Doesn't the small number of unique structures observed at the scale of atoms and subatomic particles suggest we aren't terribly far from the bottom at this scale? If elementary particles did in fact have complex structure and were made up of gazillions of smaller things, it would be astronomically unlikely that you'd ever find two of them with the same mass, the same size, or anything of the sort.

Farewell to the Block Universe

There is the proposed instantaneous all-at-once timeless block universe of four distances, derived from Relativity, which I say cannot be since it is infinite at least in distance in its 'time direction, and also because QM indicates that the future is not definite, plus I don't see how it could already be there, which is no problem generally, since 'from Nothing' is impossible, but, specifically, in the certain and only way that it is there and fixed, is a problem since there's nothing outside of it to give it any certain design, laws, and so forth. We can't say it's made in the 5th dimension because that lead to regress.

Here's a different disproof by Lee Smolin:

Time and Qualia

Now I would like to turn to a new subject, which is the implications of our conception of time for the philosophy of mind. Strawson and Nagel write of the need for naturalism to accommodate qualia, or conscious experience, as a natural part of the physical world. Here I would like to argue that this is much easier to do in temporal naturalism than in timeless naturalism.

I can begin with two basic observations. First, every instance of a qualia occurs at a unique moment of time. Being conscious means being conscious of a moment. Being ordered and "drenched" in time is a fundamental attribute of conscious experience.

Second, facts about qualia being experienced now are not contingent. There are no facts of the form, "If there is a chicken in the road then I am now experiencing a brilliant red."

It follows that qualia cannot be real properties of a timelessly natural world, because all references to now in such a world are contingent and relational. Nor can qualia be real properties of a pluralistic simultaneity of moments because what distinguishes those moments from each other are relational and contingent facts.

Qualia can only be real properties of a world where "now" is has an intrinsic meaning so that statements about now are true non-relationally and without contingency. These are the case only in a temporal natural world.

It has been objected that eternalists can see the history of the universe having 'temporal parts' with intrinsic qualities. This misses the key point which is that any reference to one of those timeless parts in a block universe framework must be contingent and relational, whereas our knowledge of qualia are unqualified by either contingency or relation to any other fact.

That was the short version of the argument. Here is a longer version:

We have direct experience of the world in the present moment. Just as the fact that we experience is an undeniable feature of the natural world, it is also an undeniable feature of the natural world that qualia are experienced in moments which are experienced one at a time. This gives a privileged status to each moment of time, associated to each experience: this is the moment that is being experienced now. This means that we have direct access to a feature of the presently present moment that does not require relational and contingent addressing to define it. We can define and give truth values to statements about now which are not contingent on any further knowledge of the world.

How can these facts about nature: that each qualia is an aspect of a presently privileged present moment, that does not require contingent relational addressing to define or evaluate, be incorporated into our conception of the natural world? This fact fits comfortably in a temporal naturalist viewpoint, because in that viewpoint all facts about nature are situated in, or in the past of, presently privileged present moments and no relational and contingent addressing is required to define those that refer to the present.

This fact cannot fit into a timeless version of naturalism according to which there are no facts situated in presently privileged present moments, except when that can be defined

timelessly through relational addressing. The same is the case for Barbour's moment pluralism.

We can draw a stronger conclusion from this. There is no physical observable in a block universe interpretation of general relativity that corresponds to my ability to evaluate truth values of statements about now, without any need for further contingent and relational facts. The block universe cannot represent now because now is an intrinsic property and the block universe can only speak of relational properties. Hence the block universe is an incomplete description of the natural world.

That is, because qualia are undeniably real aspects of the natural world, and because an essential feature of them is their existing only in the present moment, qualia allow the presently present moment to be distinguished intrinsically without regard to relational addressing. Any description of nature that does not allow Now to be intrinsically defined is an incomplete description of nature because it leaves out some undeniable facts about nature. Hence the block universe and timeless naturalism are incomplete, and hence they are wrong.

See 'Timeless Naturalism', which has more great stuff in it: http://arxiv.org/pdf/1310.8539.pdf

Quantum Probability Necessity Explained

See 'Non-local Beables' http://arxiv.org/pdf/1507.08576.pdf

Lee Smolin has it that space, locality, and quantum theory emerge at the same time, and that non-locality is behind quantum probabilities.

1 Taking non-locality seriously

I would like to begin with a remark of John Bell on the possibility that the beables are non-local.

"Of course, we may be obliged to develop theories in which there are no strictly local beables. That possibility will not be considered here."

When I read that, I was astounded because it made me realize that ever since encountering Bell's theorem as a first year undergraduate I have assumed that there are non-local beables; indeed most of my work in quantum foundations has been a search for them. The reasons to expect the beables are non-local are easy to state.

- *Non-locality in quantum gravity. If the metric of space-time is a quantum operator subject to quantum fluctuations then locality must be only a feature of the classical approximation. Non-locality must arise as a consequence of quantum fluctuations of the metric. And these cannot be limited to the Planck scale; there are several arguments that show that non-locality must be present in quantum gravity at large scales. Some of these come from attempts to solve the black hole information paradox (black hole complementarity, EPR/ERB duality), others come from the ubiquity of defects in locality in non-perturbative treatments of quantum gravity.*

• Relationalism. Basic to the thinking of many of us in quantum gravity is the thesis of relationalism, that holds that the fundamental beables describe relationships among elementary events or particles. That is, the hidden variables do not give a more detailed description of the inner workings of an

electron, they describe details of relations between the diverse electrons in the universe that are ignored under the coarse graining that gives rise to the emergence of space. These can be called relational hidden variables.

- *Space is emergent. One thing the diverse approaches to quantum gravity agree with is that space is not fundamental, but emergent. More fundamental than space is a network of relations, which constitute the basic ontology of the theory. This more fundamental and relational network of relations has been described as a graph (loop quantum gravity, quantum graphity), a matrix (string theory), a partial order (causal set theory), a dual triangulation (causal dynamical triangulations and spin foams), but what all these have in common is the hypothesis that space is not part of the basic ontology of the world. But if space is emergent, so is locality. This suggests that the non-locality of quantum theory is described by beables that are ordinary beables at the non-local (or better: a-local) level that become part of the quantum state when space emerges. In other words, space and the quantum state emerge together, each carrying part of the information in the fundamental non-local ontology.*

This leads to a hypothesis.

The fundamental beables are relational and a-local, having their fundamental description in a phase from which emerge at the same time. The stochasticity of quantum theory arises from our lacking control over beables that describe relationships between a system and other, distant systems in the universe.

(We can't take into account the non-local influences in our 'isolated' quantum experiments!)

2 A non-local hidden variables theory

Can the hypothesis just stated be expressed in a detailed dynamical theory of relational hidden variables, from which quantum mechanics can be derived? Yes, and it has been done several different ways.

(Many pages of math)

3 Implications

The model I have sketched shows that quantum mechanics can be recovered from an explicit hidden variables model whose beables are non-local. This is in accord with the reasons I stressed that the beables of quantum theory should be taken as non-local. I would thus propose that the ultimate legacy of Bell's fundamental work will be the discovery that quantum theory is a description of an a-local world, which we happen to see in a phase where space has emerged. When we try to describe the physics of local subsystems of the universe, delineated by the emergent and approximate concept of locality, we are forced to neglect interactions which are really there between the subsystem's microscopic degrees of freedom and other degrees of freedom now emerged in distant parts of the universe. These non-local interactions are mediated by relational degrees of freedom that are non-local, in the sense that they are shared between subsystems that are distant from each other in the emergent concept of locality.

Because of the neglect of these non-local degrees of freedom, the quantum physics of local subsystems is stochastic and subject to a persistent and universal Brownian motion, which is the cheshire cat smile of the fundamental a-locality of the world. In this sense is a measure of the resistance of the world to a local description.

Macro versus Micro, plus Leibniz, and Macro Uniqueness

When I'm not carousing on a river bank with a lovely djinni, I dredge out unsolved matters from the back of my mind.

The macro and the micro realms seem to different and of course this why physicists try to get at some underlying unity. Or maybe it is that they are different for some reason. We can thank Leibniz for his principle of sufficient reason, which we too ever look to, over "that's just how it is".

Likewise, his adjoining principle that all causes and laws must come from within Totality, which we too deduce since Totality is all there is, which gets us away from pre-existing, fixed laws.

I also like his principle that no things are identical, which I take to mean that this includes a 'where' and a 'when' or the same gotten out of their different relations to everything else, although I usually don't find this extension to the principle, normally, although I recall that I did somewhere once; however, this makes for everything to be unique, and so events don't get stuck in loops, which would be quite a glitch. So, then, even two seemingly identical quarks would have differences.

Finally, there is the principle that what is natural can't just sit there as inert, but must act in some reciprocal way when acted upon, this getting rid of fixed backgrounds that don't do anything, such as Newton's space. Note that Einstein's general relativity spacetime is relational, not fixed, in that it tells matter how to move and matter tells spacetime how to curve (which is as gravity).

The micro and the macro have to meet at some boundary, and Penrose thinks this is where gravity becomes non-neglible, such as perhaps the size of a very tiny mote of dust, whatever his reasons.

I proposed to Congress that we spend many billions of dollars to build a test of Penrose's theory out in space where there would be as much to disturb the piece of dust, but

they shot down the proposal, noting that cruise missiles and drones had eaten up all of the budget.

I even gave my own reason (that took me many years to find out since I can't do much math) that a mote of dust turns out to be the exact midpoint between the largest and smallest in the universe. They still said, "No, and take your dust with you" so I broomed it up and left dejected, dumping it back on the floor of my room when I got home.

I was aware of decoherence, especially in large objects, which is part of the story. Lee Smolin came to the rescue again, noting that large objects such as trees and people are unique arrangements, which, of course, can have no copies, and so that's why there can be no indefinite quantum analysis to them. Of course, the larger something is drives it toward the uniqueness that makes it definite.

On the other hand, in the micro quantum realm, an entity can be considered to have many variant copies, in that there is superposition of all the possible states. There may also be exact copies of quantum systems somehow referring to each other, but that is another matter.

Further, the concept of an 'infinite' fails again…

This proposal also implicitly addresses speculation by some theoretical cosmologists that the universe comes in an infinite number of copies which contain many exact and inexact copies of the Earth and each one of us. Within the present proposal, the fact that macroscopic bodies do not appear to satisfy the superposition principle can be taken as evidence that the universe is finite so that we and other macroscopic bodies have no copies. On the other hand, testing the limits of the applicability of quantum mechanics to mesoscopic systems like quantum circuits may make it possible to do local measurements which could determine whether there are any copies of them in the universe.

Faradave: *Thanks for the prod, I've been busy but this seems like a thread I'll enjoy.*

It's the most intellectual fun I've had since Galileo held secret meetings with my illuminati ancestors.

As I'm late to the party, I'm replying with quotes from the OP going forward. These will be naive of what you posted later. Otherwise, I'd probably never begin.

This party just got underway, we all drinking in the quantum foam that fills our cups to the brim, and it doesn't matter that we're all more than 50 years late to the quantum gravity party because all their varied approaches aren't close to any final result.

You're right to expect, even demand, seamless compatibility from a single coherent model. Settle for nothing less, Reality didn't.

Yes, we can't let reality stay ahead of us, so I humbly ask for insight from the lower powers at the Planck scale.

Reminder: I'm not a philosopher, so I may misunderstand or misuse jargon. Correct me as needed.

We philosophers derive truth through logic, and so then we don't even need proof. It's an easy job but has no pay.

Yup. I accomplish this with a 'native field'. That's no invention of mine. It's the idea that the field of a particle, such as an electron, originates at a central point and extends indefinitely from there. That's how I was originally taught to think of fields and I consider it to be quite workable. It lends quite intuitively to our own self-centered consciousness. An origin from which relationships can be established. A particle's field, at any given instant, coincides quite simply with its future light cone.

A particle field extending all over matches the QM notion of that such as an electron cloud, and a particle as a spigot of its fields at least localizes something rather than some av-

erage of just a huge spread-out field amounting to a particle lump somewhere.

This is different from a more recent field concept. For example, a universal 'electron field' from which electrons, wherever they are found, are merely perturbations and positrons may be perturbations of opposite phase.

A condensation of a kind of knot from the fields… well, we hereby abandoned that idea for now.

Are there discrete field quanta (field explains the 2-slit outcome)?

I won't, at this point, deny the existence or potential utility of such a 'field'. As I see it, at any given time, this is a 'composite field' constructed as a spatial cut across native fields.

By analogy, in a crowded room, each person is a source of a personal 'vocal field' or native field. However, one might consider the air in the room as a more universal field, providing at any instant, a composite cross section of every voice in the room.

No wonder I can't hear on the phone.

All this, to say that a native field provides a seamless link between quantum mechanics (QM) and relativity (R) by virtue of the point location of its origin and the cosmic extent of the field respectively.

QFT did well on this but for omitting gravity.

More narrowly, a particle worldline is a fiber knitting together spacetime, as well as QM & R. An event on the worldline is an instance of a 'particle', while it's worldline extends indefinitely.

Yes, I've heard about the weave of spacetime, plus it's cold in spacetime and so it can use a sweater.

Clear enough, and intuitive, as it is the orientation of consciousness. But it treats the 'future' differently than the 'past', which I think must be justified.

I may have to change the growing block to a thick present, unless the past is like a memory or the actual casual tree that sticks around (but not all its potentials that didn't become definite.)

I also have to save myself from remaking all the metals within the Earth made in the past. I'm not a 'God', so I can't create the universe, much less make it completely anew at every instant of presentism.

I model consciousness as the result of playing a worldline (a process), in much the same way as music arises from a needle following the grove in a vinyl LP. There is a penalty in understanding, if we look too closely at the groove. We won't find consciousness in QM. What we do find there is indeterminism. That makes the future [unknowable but it does not deny the (pre) existence of that future.

So, QM is really deterministic if we knew everything and weren't partly ignorant?

The groove idea is good for the BU in that the record already exists. At the end of our lives, it plays over again at a zillion rpm.

Funny note: When we ask someone how many grooves there are on a record, they start calculating the playing width and such, expecting the answer to be in the hundreds. Even if they're smart and answer "one", we can say, "Wrong; two; one on each side."

Strongly agree that this is the simplest interpretation of the balloon analogy. However, you'll find the 'keepers' of that model, vehemently deny radial time. They don't bother to place time in the diagram at all! Instead the inside of the balloon requires an additional 4th spatial dimension (otherwise the balloon is a point not a sphere). Extra dimensions are costly in terms of complexity.

Well, I meant the special 4D distance converted to our 'time' by the speed of light, for indeed the BU is timeless. How do they show the space-expanding direction?

I don't understand the struggle. Look at your own existence. It has a beginning and an indefinite future.

That's fine for me because the atoms I came from were available, so I guess I'll have to extend the start of the BU to go back to black holes in pre-existing universes or to the quantum foam as the start.

To cover cases that include the universe coming from something else that banged, I usually refer to absolutely everything as 'Totality', so then it is that Totality has no 'outside', and, so, like Leibniz, I say that cause can only come from within Totality.

As far as modeling physics, I find 4D sufficient. But I'll be the first to admit, I can't fit God or a human spirit (soul?) in that box. And I often need to take a "God's eye view" from outside 4D to explain things.

Rovelli tells us that a regress ensues if we try to have 'change' in the 4D block by having it to be made in the 5th dimension, so, 4D is a good stop, and as such, as Totality, it has law to it, and much more as a specific frozen path, both of which it can't have, given no outside to impart any definite direction. So, adding n levels would just beg and enlarge the question n times over without even giving an answer.

Getting the 'time problem' (three possible modes) right will get one on the right track to quantum gravity by telling us what has to go in Relativity or QM to recover each from the other.

For once, we get in near the ground floor of the next theory.

Oysteroid,: *Why does its infinity rule out its existence? Is the existence of the infinite more mysterious than something finite? I like Spinoza's arguments for his one substance that is infinite. Something extra is needed to place limits on this substance.*

Infinity never completes, and it's not a number, anyway. If we claim infinity, then some wise guy aways comes along and adds '1' to it, or "Something extra".

If reality is restricted to a finite particular, it seems arbitrary.

Yes, this is a problem of what specified the total amount, since given a Totality of everything with no outside for any laws or direction to be imparted, and the same plus more for infinity (since it also never ends).

It is simpler if everything possible exists. It is easy to write a short computer program that systematically generates all possible strings of characters, but difficult to write one that by itself writes something specific like Poe's The Raven. Any such program would be longer than the story. Also, if you were to map a character from the ASCII set to each 3 digits of pi, it might contain every possible text, including your biography and a complete description of every possible state of every possible universe.

Everything possible probably does exist, as per QM, or at least potentially.

The never-ending expansion of Pi would not be exhaustive, I once read somewhere, such as it producing every text.

My Totality would be generative as some indefinite scattering of elementals forming stable configurations, such as quarks, that then go on on their own to some further stable level such as protons, and so forth, with more accumulations upon previous stable platforms, such as in evolution, this not being at all like moneys trying to type out a play with the right words all in a row.

I am not suggesting that there is a computer that is running a program. Rather, I am suggesting something not terribly un-

like what Max Tegmark argues for in his book Our Mathematical Universe.

Mass/energy is equivalent to information, so quantum qubits could be the generator, kind of as in Conway's Game of Life.

That all depends on the interpretation. In Everett Many Worlds, the future is definite: all states are realized.

A lot, but never infinite, as noted.

And the passage of time might be illusory. Each observer-moment might be experienced eternally.

Yet something still changes, and so that is 'time'.

Interpretations like Copenhagen force us to abandon the principle of sufficient reason, as there is no reason why one thing rather than another happens! That's a big price!

'Random' seems impossible, too, for then one has outputs with no inputs, at some when and where, yet not always (so how come the when and where?).

As long as there is something rather than nothing, infinite or finite, you have this problem.

Yes, the basic something has to be ever and always, unmakeable and unbreakable.

Maybe there is more to nothingness than we think. Nothing might be what everything looks like all taken together, seen sub specie aeternitatis. All polarities cancel and all counterfactuals combine in a formless superposition. Something might be what nothing looks like from the inside, when you see it partially. What does the superposition of all possible states look like?

Nah, for if the Nothing has some capability to do something then wasn't truly Nothing, and a superposition is still something, with everything vibrating from here to there and all over.

The physicists' versions of 'Nothing' are not really nothing. The 'vacuum' is not empty, 'zero-point energy' still has energy, etc.

How about the Wheeler-DeWitt equation? In inflation theory, the quantity that is conserved is zero. The total energy of the universe is zero. Zero is the most natural quantity of matter/energy to be conserved. Any other amount besides infinity is arbitrary and unexplainable. And how would you conserve an infinitely positive amount of matter/energy?

There is a curious symmetry in nature, such as matter and antimatter, the three stable particles in free space, kinetic energy of stuff matching the potential energy of gravity, and more, but those positives and negatives could not have come from not anything.

We also have to figure which of the three modes of time is the right one.

Faraday: *The last I checked, QM does not quantize space or time. They're considered continuous. Energy (and mass), momentum, angular momentum, and I think, information are among the quantum phenomena. I also believe charge is supposed to be quantized (with some embarrassment relating to fractional quark charges).*

The flat, fixed but continuous spacetime background of SR that QM uses will have to go away in the new QM or Quantum Gravity to make the continuum just be approximate, at large numbers, to make it discrete at the Planck scale. GR is already mostly just a relational type background free theory but gravity/spacetime seems to need to become more jittery, which is a big problem since it eludes renormalization.

Faradave: *Honestly, I think capping time is more of a problem. What's beyond that? "More of the same" (i.e. infinite time) is a simpler answer because it requires nothing more than what we already have accounted for in the past.*

Yes, what do I do with eternity of duration now that I disallow infinity of extent? QG is going to have to show how time emerges from no time. QG already seems to have no space, if we go relational. What if I have the quantum foam to be ever and always as timeless in its structure/nature, it now and then making a universe in which time emerges?

Faradave: *It's not as formidable as it sounds. Remember, this is accomplished routinely by brainless point particles. It has to be that simple!*

We can't let simple pointy heads do what we can't fathom; so, there are points moving around that form some stabilizations onward and upward, and so forth, and that's it.

Consciousness

sponge: *Heard of Stuart Hameroff?*

Thanks again, sponge. I know of his work, from long ago, but not so much on how it's progressed. I think that if they can see where anesthesia operates then that will tell.

Microtubules are protein lattice polymers which organize neuronal interiors and regulate synapses. Several theories including the Penrose-Hameroff 'Orch OR' theory suggest consciousness depends on microtubules acting as quantum computers whose quantum bits ('qubits' involve coherent dipole couplings among pi electron resonance clouds.

…

anesthesia may disperse dipoles to dampen terahertz vibrations in the quantum underground of brain microtubules. Fortunately, many non-polar regions of the quantum underground in living systems are too small for anesthetic molecules, and so non-conscious quantum coherence continues during anesthesia. Life goes on.

The brain is looking like a scale-invariant hierarchy, with clocking frequencies at different spatio-temporal scales – clocks within clocks within clocks…. Anesthetics act at the deepest level, the fastest clock, the inner apex, in the microtubule quantum underground.

I can see how memory might require a holographic quantum-based form in order for it to be a very fast operation, and 'thinking', too, for the same reason.

Seems like we have the organizing principle, which is good enough for me, in that the consciousness situation is surrounded, leaving but the details to be worked out.

Survival is what evolution is all about and intelligence enhances survivability, and so consciousness evolved to enhance intelligence by monitoring and modeling it, plus to globalize experiences, to feed back in as a whole that then

could be better referenced in the future (the brain is all about 'making future').

Of course, consciousness wasn't going to appear right off the bat, information having to come first and then intelligence of how to relate and use the information, and this is about where our computers like Watson are at now, they having a database and a way to relate the information across the database as well as some primitive language way to relate the questions asked to providing a response.

Consciousness, then, is different from intelligence because it has an internal focus, it adding the ability to analyze the intelligence system, and as such is a feedback of a self-referential loop through which any intelligent entity monitors its goings on, this being akin to the brain receiving itself, as a kind of sixth sense.

Of course, the conscious mind ever trots along behind, post rationalizing actions (by the time 'we' know or sense anything, it is in the past, the processing of it already a done deal), yet it still consolidates intelligence and experiences in some way that makes for the brain to work better, even if only at the next instant and not during the present, which I shouldn't really fully say about the present, since the non conscious correlate of what became conscious preceded and may have already begun some subconscious rumination.

Hey, well, what do I know, but it seems that eventually we could add something analogous to a computer, and of course it may lose a lot in the translation.

What is consciousness?

It's that annoying time between naps.

Let's make consciousness from scratch.

OK, I got a lot of plain, vanilla scratch for cheap, from the LHC, even though they tried to steer me at first to buy anti-

scratch for eighty billion dollars an ounce; however, I have some anti-itch cream at home.

…there must be a capability of imagining the result of an action…

Consciousness mediates thoughts versus outcomes
And is distributed all over the body,
From the nerve spindles to the spine to the brain,
A way to actionize before committing.

…cultivating one's own internal image of the self…

Self-reality comes from other people,
Since they bring out all that is within you.
Strangely, one cannot be a self alone;
It's friendships that make you individual!

…think of how many efforts we waste in facing incredibly stupid challenges, such as solving puzzles, studying mathematics, jumping higher, running faster, climbing higher. This - solving problems for the sake of solving them - is another motivational force (reward mechanism) that must be present if an entity (living or mechanical / electronic) is to be motivated to interpret reality, find better explanations, explore alternative possibilities and strategies, possibly play, joke, desire and dream.

Seeing who can pee the furthest, studying even more math, learning a foreign language, beer chugging, going bowling, figuring out the universe…

The Will

The will is free and able to operate, as a subconscious brain process/analysis that takes some time, after which the outcome appears in consciousness, this ever continuing. The will is what one has become and so it and nothing else direct our actions. as in the case of the person who killed someone.

We might think that our will could have willed differently than it did at some moment, that the "differently" could have won out, except, well, it didn't, and so what the will actually did indeed will was signed, sealed, and delivered instead, as the winning scenario, meaning that actuality trumps "could have".

The above does not exclude any kind of cause contributing as not counting, such as one had low serotonin at the time, a tiny degree of depression, being reactive, or that one picked up brainwaves from another through the air, QM random fluctuations, or anything, for they are there, as just another input cause to the output effect determined from all the circumstances, and the output that happens, due to whatever reasons, becomes history, and it is the final history, since it's done and the events can't rerun themselves, for the will is dynamic and ever changing in its range, due to learning and experience.

If there are any true 'random's, though, as in an output from Nothing, as not connected to anything at all whatsoever, then the pre-determined block universe of 'being' (already timelessly laid out) as eternalism seeming to stem from Relativity is untrue, and so we have reconsider the supposedly impossible presentism that QM already adopts as 'becoming' (a process in the 'now').

Actuality also trumps "if's", as in "What if Hitler had won the war?", as if he could have, but he didn't and so couldn't have, as it turned out, and so there is no true "if" that can go back and do anything, but only such wonderings as to consider what the world might have been like in our imagination if he did win in our imagination.

I used to study consciousness and read the Journal of Consciousness Studies, but… it wasn't conclusive, so now I just ponder.

Consciousness/mind requires a certain arrangement of matter and a specific mechanism, such as the brain has, in order to generate experiences in a conscious way, via some cause/effect power of its own, again as in a brain, not being dependent on outside causes and effects. Oh, sure, we can use the internet for help, but this is after the fact of being conscious.

Since we have consciousness now, but not long ago, it evolved, becoming of an emergence that is not necessarily reducible to its parts, but, of course, it couldn't exist at all without its parts, but that's still why it must be intrinsic, yet it has a causal power beyond its parts, suggesting that there isn't some little bit of conscious in every elementary particle that just adds up when there are a whole lot of particles in a system.

We feel consciousness as a singular, global happening of content at one speed and one representation, with no more or less to it suddenly fluctuating, or two consciousness being on top of each other. Below this, as informed by science, we feel confident that there is a conceptual structure, but consciousness needs be identical to it, the qualia of quales being both the quantity and the quality, this being the true implication and meaning of the irreducibility of what is emergent.

The above emergent, although as secondary-or-more 'effect', and not primary, is similar to how 'mass' could come to be from the Higgs, this 'mass' going on to have higher effects such as making for attraction or bending space, but the point is that 'mass' cannot be reduced to less. The same for something like 'charge' that particles come to have.

So, anyway, as in that I don't know diddly-squat of more, consciousness seems to play a role in shaping a possibility space toward making future for the organism, perhaps

through the actionizing of scenarios of consequences beforehand, instead of just straight out doing them (and failing). So, going on again to not say very much, we have complexes of mechanisms, our causal systems generating trillions of varieties of experience, and that's overwhelming enough to make me want to give up right here.

What really goes on, mechanically? No one knows, but in general it is that something gets processed and results come out. Maybe the neurons work between short and long term memories, voting for what seems true or false, to put it in a kind of simplistic qubit way, with all kinds of feedback going on until the best candidate for an output appears as rather final or at least best-can-do. Who knows?

A quale, such as a sound, is an internal observer's experiential perspective materially co-extensive with the physical state itself; that the quale, perspective included, is really nothing over and above that physical state an entirely physical thing. We no longer have two realities too different to be one thing, or be causally related, but two very different perspectives on a single physical state whose underlying cause is the physical state itself.

In this position, there is no barrier to a brain state and a quale being a single physical state. The fact that they each appear too different to be the same thing is not a problem. The differences are in our perspectives (the reality as known), not in the underlying reality (the reality in the raw). Nor is there a need to explain how a brain state (an external observers experience of a physical state in another organism) gives rise to a quale (the other organisms own experience of it).

If, as is claimed, the inner (quale) perspective is integral to, and materially co-extensive with, a physical state known to an external observer as a brain state, we have a single reality with one set of properties.

Experience does not sit outside of the physical continuum as presently understood in some irreducibly disconnected fashion.

IN-BETWEEN SOMETHING AND NOTHINGNESS

At some point, matter and radiation may not differ from the so-called vacuum, at the high Planck or banging energies. Our present theories are incomplete; we don't know why many quantities are the way they are, such as mass, the dimensions, and why the protons 1834 the mass of the electron. The ideas of particles and of spacetime are each defined with the help of the other, which is circular, like Escher's two hands each drawing the other.

Down, down,
Beyond all death, despair, love, and sorrow,
Past yesterday, today, and tomorrow—
The seer's guide but the logic of the 'know'.

Down through the fog, the not, and the void,
Where life and everything fail; Oh, zoids!

The essence beckons us back home,
As the contained-container is the poem.

The quantum fluctuations waver, where Nothing cannot ever form, where we walk the mysterious Planck into the abyss.

To the deep,
Through the cloudy strife
Of this hazy life,
Through the equations of eternity—
Their non-paternity nor maternity,

Past the realm of the things which seem or are,
Even o'er the steps to the remotest bar.

Thanks to the Planck scale, we can say "so long" to the instants of time and the points of space there, dooming the ultimate clocks, the continuous spacetime manifold, and the notions of dimensions, as well as all observables as now being imprecise quantities defined versus space or time or mass.

Down,
Past the night's reigns where the air is thin,
Where the sky and stars are not, but within,
Where the complex have not their throne,
Where there is one presiding, all alone.

All composite, non-elementary objects have a simple property: they have a finite, non-vanishing size, which is fine, but the elementaries can't be points.

When a deep truth is known so intensely
That all of its clothing falls away,
Then one has learned the beauty of truth,
For the reality of meaning is beauty.

At Planck scales, nature closes up, and we cannot determine whether a particle is real or virtual, nor can matter and antimatter be distinguished, nor can spin be defined, nor can fermions be distinguished from bosons, or, in other words, matter cannot be distinguished from radiation.

Down, down!
Truth and beauty must be inseparable,
Although this is seemingly imponderable.

Nor can inertial and gravitational mass be told apart. The margin of error for anything is as large as the Planck scale. In short, the vacuum cannot distinguished from matter.

Down, down, ever down—
Through the antiquity, past all of the known—
Arriving at the lowest, remotest throne,
One of the lowest perfection,
For it is of the two contrasting directions.

Vacuum and particles mix at Planck scales, empty space and particles are made of fluctuating common constituents. All properties emerge from certain configurations of the fundamental broth and so all things are made of the same cloth, of a single entity that defines both particles and spacetime.

Opposite twins rule the causing call,

The positives and negatives constituting All.

It seems that the fires of the basis have destroyed every pillar and concept we've used for the description of motion, and thus made the description of the heart of nature impossible, kicking most of the legs out from under us, leaving us mostly in darkness.

Here the enigma of the ever immortal
Is undone and unloosed through its portal:
The Theory of Everything mortal—
The Idea for which we've opened the door to.

We have but few cards left to play: the fundamental constituents are extended, and it seems that whatever angles they make still apply, and we still have c, $\hbar$ and $c^4/4G$ *(the maximum force).*

Down, down,
To the end at last!

Here be the lawless and the formless
Of the unordered, uncreated scene.

Loop quantum gravity models use relational-only triangles, with sides of the Planck length, our main and perhaps our only grasp toward the vague indefinite bedrock of the All.

Here the causeless reigns supreme.

A Road Trip through the Universe

Well, now that I know everything about the boring fundamental causeless something down at the level of the quantum foam, there was nothing much left to do there, or there was, but I was lazy, and so I took a vacation trip to the edge of our necessarily finite Universe to see all the great emergences other than the greatest one that is us (our brains are the greatest complexity ever), who we can see everyday in the mirror or on TV, and now I'm back, thankfully.

Really, though, I couldn't afford the trip, and since I can only see the inside of my head anyway, I just looked at some videos of space and pretended to be on a space journey in my imagination.

To make it seem like a fun road trip, I smoked some pot, played the radio loud, drank wine, and had two ladies with me; however, nearly all of the universe turned out to be worse than the middle of nowhere that constitutes just about all of Texas, and, in fact, outer space was a very uncongenial place. all around, with millions of miles between exits. I'd much rather even have been in Australia.

96% of it all was useless dark energy and dark matter. The rest was mostly rocks, gases, dust, with a whole lot of not very much in between, such as in Indiana and Ohio.

Dangerous radiation zapped all over the place. And it was fricken freezing! Oh, what I would have given just to be in Canada.

Whatever or whoever designed the universe surely didn't have life in mind, as a top priority, and I noted that it even took evolution billions of years to fine-tune us to the Earth, and then of course we nearly got wiped out by huge disasters and near extinctions right and left, even once going back down to a population of just 2000 at marine isotope stage six.

So, anyway, I saw the graveyards of stars but also some stellar nurseries, telling me the there's life and death at large, too. Yes, I went through many galaxies, with all their

hundred billions of stars, but it was just really all an endless repetition of the same old, same old.

In other places, all kinds of energy swirled about, seemingly aimlessly, that is, when it wasn't exploding and wreaking havoc, making black holes or lighting me up like a skeleton.

I stopped to eat at the Restaurant at the End of the Universe, but, alas, it had no atmosphere, plus all the food was microwaved (by the CMB).

Afterward, I stuck my hand through the edge of the universe, and my fields made the universe a little larger.

In sum, though, it was mostly a wasteland of a wilderness of wilds of a whole bunch of crapola that nearly goes on and on and on much the same in every direction for 95 billion light years, even getting larger all the time, as if we really need more of it.

I sent out a postcard saying, "Wish I wasn't here."

There were a few near highlights: On GLIESE 876D, with an orbit tighter than Mercury's, I waited an Earth-year for the sun to come up, since the planet rotates so slowly. I noted its moon, its atmosphere shredded by solar winds. Sunrise released a fiery Hell, so I stepped back into the twilight dawn of a blood red sky.

On Tres-4, there was an airy feeling, it having the density of balsa wood, and could literally float on water. No one can explain why it is so large. It is perhaps but a toy in Someone's swimming pool.

TW Hya b is a hulking baby, only 10 million years old, and it's ten times the mass of Jupiter. Thank God for my GPS. Cripes, I put on a lot of weight there.

55 Cancri is ever bountiful, its binary-star systems hosting five known planets within the habitable zone, as conducive to life; however, there was no one home.

I didn't encounter any planets at all with life, though, but that's probably because 92% of all the planets are yet to form, which makes us to be the true pioneers of the wagon train to the stars.

Back in our own solar system, I knew my way around much better since "Martha visits every Monday and just stays until noon" (the 'a' of 'and' is for the asteroid belt and the 'period', for Pluto, isn't there any more).

I noted that Uranus is quite pleasant but only compared to Pluto. If you've ever had a dog, you know what I mean; however, the under-worlded canine has been banished from the house of Astro, to reign as the under-world in the Underworld, for it's better to reign in Hell than to be an unwelcome guest in the heavens.

I visited the gas giant planets whose breadth and width is staggering, but their mooning around is getting out of hand.

Then I was down on Venus, and the sulfurous emanations were so repulsive that any gases from Uranus would have been to me as a breath of fresh air.

I landed on the sun and didn't get burned, although it wasn't because of the anti-light suit I'd learned, nor was it through mind control that dimmed the light; it was because I went at night!

I'm back, thanks to my lucky stars, perhaps having taken the Earth too much for granted, noting that 14 billion years after the initial chaos, here we are, having beaten the odds. Well, someone had to! We won the first prize of universal lottery jackpot! (The second place award was receiving another lifetime here.)

And so what if the hottest year in history is spewing category 5 typhoon hurricanes, for it's way worse out there.

Well, then, it's back to the great mundane grindstone that I didn't fully appreciate enough before, for I'm now cleaning my house, vacuuming, and doing the dishes and the laun-

dry, because the two ladies stayed out in space to chat with the other heavenly bodies about their relationships.

I take a break now and go out to look at the stars…

Oh cripes, here comes a humongous asteroid! Darn, all that anthrocentric luck for nothing. Double ‘00’ has come up. It was only a matter of time.

The Simple Basis of Reality,
With Implications for Myths

1. The ultimate basis of reality is the simplest state. We might consider it boring; there is nothing fancy or complicated about it. Brainless nature easily accomplishes reality. Only the simplest can be First. This is devastating to such concepts as gods or block universes. Composites can only be secondary or more, and complexities are much further off, some of them, even the last, currently, such as humans, we having taken 13 billion years to be able to form. We were not made in an instant.

2. We propose the ultimate basis to be the quantum foam, which is totally of virtual pairs appearing and then disappearing, with all these in sum being called the 'foam'. This capability is the basic something, although just as it stands, we probably wouldn't qualify its jittery, fluctuating bits as being as a true existence, but just a pale shade of existence, until they come to persist as what we might call a real and ongoing existence, they having become involved in some process in which they could continue, such as through their relations to others and/or inflation driving them apart before they could annihilate. These are dim times to us and our science, but necessarily there.

3. The processes continue, necessarily increasing the types and variety of entities—such as quarks (all identical) forming protons (a bit less similar, perhaps) and then protons forming stars (different), and so on, as stable platforms emerging at higher and higher levels, and so forth, although less and less the same and less unchangeable, such at even the molecule level where there is neither an inclination for molecules to stay frozen nor to instantly break apart.

4. The small number of unique structures observed at the scale of atoms and subatomic particles suggests we aren't very far from the bottom of the ultimate scale, and that we may well be there. If matter were infinitely divisible, there would be an infinite number of structural possibilities regardless of the scale. At the scale of our quarks, there could

be at least as much variation as we see at the scale of our planets.

5. Causes ever determine effects, even if one thinks some 'random' outputs occur from noting and nowhere, now and then, these going on as any other type of cause would do, as just another cause inputting to an effect. This is devastating to concepts of the the will not being tied to the will or to cause and effect, as some kind of undefined but great sounding 'free will' notion that we are mini first causes. Nature is consistent and that's not a bad thing, compared to the opposite.

6. We know how solar systems form, and much of cosmic evolution, and how the evolution of life goes, and this is devastating to the concept of a mature Earth appearing as is, with creatures and humans soon appearing, also as is, immutable, a few thousand years ago.

7. Since one universe came to be from whatever arrangement banged it, then so can others, ever and ever. None would be any more special than any other, although some would be able to go further in their simplexes to their complexes. And, for all we know, many could be big fat flops, inert, even, or… it could be that any tiny, simple starting things can get somewhere.

8. The wide ranging spectrum of human behavior, from the evilest to the most angelic is what it is, along with the gradations in between, as a result of evolution's recipe, which must express itself accordingly, and so it would be useless to blame evolution as a Maker, for anything, or blame a scapegoat 'God' as a Maker who in turn wishes to blame us for how we were made by Him as intended. Myth-takes plague the human race, due to the wonderings of why we exist.

9. The basis of reality is ever and always; it has no choice but to be, and no possible preset direction, which is why it must be so indefinite and fuzzy, as that which QM indicates. It was never created. Now and then a universe springs forth, with no real purpose. Ours will last one to two trillion years. Our sun will last five billion more years.

We are among the pioneers. Only eight percent of all the planets that will form are here now, or were. Most are waste, though some may have life, which life seems to be circumstantial rather than existential, it requiring millions of the right conditions to coincide, but the universe is vast beyond measure.

10. One is thrust into life, and so one has to deal with it. It's easier in these modern days than it was in the past. Life and times are not equal. There is no fairness principle. We had no more choice than the basis had, which is none.

11. Look to the future to higher and more advanced beings, as that's where they will be if they can make it. We might be among them if growing old and dying can be tamed.

12. What ever will be, will be. Marking '666' as a means to have sinners to be tortured for six months without them being able to die is rather a pipe dream from a zealot's imagination, those we should accept as being not able to not do what they do, for there is also the necessity of diversity, all of us subjected to cause and effect.