A Paper For Mind

By Doug Engel

G4G16 is here and anticipation yields to minds in fascinating dialogue. What new wonders, and ideas will be created?

I versus AI

AI is a big breakthrough. It provides electronic brain power. One country made an AI its Minister, and the people approved. Everyday I ask questions using Google's Gemini. It is a much better search engine than the old Google without AI. Some of my questions are a bit trivial, such as when did a certain thing happen. With the old system you get 100's of answers to irrelevant things, and ads and no answer to the question. Gemini gives me one detailed answer, very pleasing, time saving and I still have my own mental resources. By that I mean I believe AI is not making me lazier and stupider but quicker and smarter. It answered a chemical question by finding several equations then applying its own code generation techniques to generate the answer, which I have not checked but a quick mental check tells me it is accurate.

My purpose here is to declare my own unity and mental power. AI is good but a long way away from being creative and innovatively beyond me. After all I invented Gizmo gears, first circle puzzle to generate fractals, by Bob Hearn's code and others. I do not believe any AI or quantum computer could solve a fractal puzzle since the pieces can be both microscopic and large in the same fractal. For 3D fractal puzzles the problem gets much more complex. I invented my toy physics model, the Atomihedron. The great thing about AI is it may help turn the Atomihedron into a mathematical model that finally gives me a handle on its complete digital topological properties. The central cluster of circuits for even orders exactly matches the principal quantum numbers for electron orbitals. The Neutrohedron, dual of the Atomihedron builds up twists exponentially by having all twists, circuit, E link, Circuit links, writhe as positive while the Atomihedron has a mix of these negative, thus cancelling most of the twist. The Neutrohedron (the dual) has a single circuit with negative twist, matching the Electron-Proton combination perfectly.

What I am trying to say is AI is a great, tool not a device that will make us obsolete.

Can anything be truly Infinite?

If things could happen instantly all would be over and done with in an instant. Instead some things are too fast to measure. You could design a way to estimate the smallest possible instant using an iterative method but I do not believe anyone has. Planck ticks are very fast if there is such a thing.

The 4 in math, +, -, *, /, and 4 forces in physics

In plain math there are 4 basic operations on numbers, add, subtract, multiply, divide. Similarly in basic quantum and gravitational physics there are 4 forces, gravity, electromagnetic, strong and weak.

The analogy for gravity is addition. It is a purely asymmetric, or additive force where any mass attracts any other mass with closeness and mass increasing the attracting force. Thus each agglomeration of mass has a +m sign and native force.

The analogy for addition and subtraction is electromagnetism as a signature or native property. Thus the electron has a -1 sign and the positron a +1 sign, with +1 repelling +1, and -1 repelling -1, and with +1 and -1 attracting but changing into light on contact. Annihilation in math +,-, is like 1-1=0, where 0 is the arbiter in math and 0 is energy conservation in physics, "my belief".

An analogy for multiplication is the strong force multiplying when separating two quarks until two new quarks and a gluon(*?) are created, while division of the gluon force (quark attraction) operates when pushing two quarks together.

The analogy for the weak force is mainly the same as for the electromagnetic force except it is much weaker and short range.

Admittedly these are crude analogies but seem intriguing in both being the 4 basic operations for each system.

Are numbers quantum

Math sits on a throne of purity and truth. The real world has some of this mathematical order along with random chaos, a place both messy and ordered in different degrees, still not fully equational. Nothing new happens without collision of two masses or particles. You would not exist if your parents had not orbited to create you. Addition is the collision of two numbers. Subtraction annihilates. Multiplication explodes, and division implodes. These analogies are not perfect, only an attempt to make math more a cousin of the real world and give it some clothes. Multiplication is

a power operation. Addition, 1+1=2 is simpler than multiplying since 1*1=1 and 1+1=2 while 1*0=0 and 1+0=1. Seeing that 1+100=101 while 1*100=100, at unity addition stays slightly ahead of multiplication. Note that addition and multiplication are very different ways of math 'thinking'. Addition is similar to counting and has developed a an elite math culture, with additive sequences, primes, and discrete math, and more. Multiplication goes a different way with exponentials, logarithms, and much more. You can imagine them as mental 'fields', an additive field and a multiplicative field similar to the gravitational field and the nuclear field of physics. The four are intimately entangled in both math and physics.

The four operations get massaged into the fabulous power of modern math with integration('addition'), differentiation('division'), and much more. Whole new fields, topology, set theory, complex numbers, and more, have made math a vast place of beauty and adventure. Quantum particles are independent and do not use our basic math, giving philosophers and others some "How can that be? It ignores normal logic". With quantum computers and AI our world has become a new jungle of both danger and treasure. To thrive in this new world we will need to proceed with care to employ these power tools as 'eager' working partners.

Numbers as characters (math humor)

A Mathematician Edwin Beckenbach(1945) stated the interesting number paradox that every natural number is interesting. Assume a set of uninteresting numbers then the smallest number is interesting! Here we report about some of them.

Number 1 is the creator of all things. It replicates the entire universe by multiplying everything to make the next instant. One uses the memory of the present instant to do this. This is a real magical thing. Every particle has motion properties, temperature, mass, vector speed, spin, ... We write 1(p(a,b,c...))= new 1(p() (a,b,c... are the properties)) One is primary. One is unity. One builds 2, 3, ... For the universe write 1(U)=1(Unext). You are one. I am one. God is one and all. One is the Bose Einstein condensate of all whole numbers. You can't have one without the other. Do things one at a time. You have one life. One will be here after you are gone.

The cons of 1 are it is not a prime number. You get obsessed with it. You cannot list all its uses. ...

Number 2 is the first even number and first prime number. Two is a double, a twin. ... Two is the basis of Boolean logic. Two is a pair concept number. Many math proofs use pair definitions. A Hopf fibration is a linkage of circles where all pairs are linked. Mirror images are a split, reflective, pair. Mating is a pair process. Without pairs we

would be desolate. Wake and sleep Is a pair. A conversation is two talking and listening in turns. Most collisions are in pairs. If you write a book about pairs write two books to make a pair. The first will entice buying the second. A particle can exist in a pair of locations. A con of pairs is some break up. Another con is you cannot list 2's infinite properties, and many new ones that will forever remain beyond our finite comprehension. Two generates lines by pairs of points, beginnings of geometry.

Bits Versus Qubits

Bits imply a classical code, qubits a quantum computer code. Question 1, what are the minimum number of bits versus the minimum number of qubits required to solve a given problem? The time required to solve is not relevant. I have not researched work done on this but I do not think the answer is a lot less qubits in 'search' type cases. Having automated many different processes, natural gas, an electronic warehouse, water plants, brick plants, oil fracture, salt mine, distillation process, several gold mines,... I cannot see QC's being great at these things which are dependent on a variety of strictly digital decisions from true(on) or false(off) inputs (a motor running, a valve closed, a temperature too high). Most of our world will continue to be like that. AI could certainly be used for automation decisions and is being used that way for many complex tasks. Even so it will still be necessary for human input to prompt the AI agents in their job to make changes as technology and economics dictate. We are not obsolete!! A coder should have plenty to do guiding and checking AI.

Question 2, what kinds of problems can crash or stump a quantum computer? Perhaps there are fractal problems such as (mentioned elsewhere) like trying to solve a fractal circle puzzle? Anything requiring a timing delay, such as waiting for an internet response, where a security delay is necessary, will have a severe slowing effect on the QC.

The first Quantum computer

John Wheeler proposed a delayed choice experiment. His idea was to move the photon detector past the double slit so that the photon has already passed thru the slit. Then you can choose when to activate the detector. Finally when this was done some years later the same interference patterns resulted even if you did not activate the detector until the photon passed thru the slit but not yet past the detector. A single qubit computer?

Quantum versus Real or Observer versus disturber

Many believe that you create the moon when you look at it. That is a kind of cultural hype of quantum theory. First of all, quantum particles take many paths according to their wave nature. Yet none of these paths are 'real' unless you disturb them into existence. Use disturb in place of observe and a lot of the 'awe' becomes more like standard science. Use self-re-organization in place of entanglement, if you prefer less hype there, as well. Our brains are the culmination of quantum particles nature to be both precise and random. This is not unlike the brain's neurons learning to recognize signals that are more common thus getting a greater output probability by the neuron. Random signals can eventually be remembered if seen more often. Thus our brains are the result of quanta having this property of tending to be self organizing. They need no more than that to create our living world on the earth.

We can conclude that our brains compute the likelihood that the moon will be there when we look, not because we created it, (that would require tremendous energy and the earth's orbit would have been disturbed when the moon wasn't there) but because classical reality, also created by quanta, is also real. This way is more like the standard Copenhagen interpretation. I am not poo pooing quanta. But I believe many physicists have a similar view.

What percent of U is known

Quote by Subhash Kak in Medium

"1. The most famous theologian and philosopher of medieval times, Thomas Aquinas, who is still adored by millions, asked if two angels could be at the same place at the same time.

2. Given that interstellar dust constitutes an additional 3.5 percent, this means that our theories about the cosmos are based on the understanding of merely 5 percent of the universe.

Number 1 quote above is similar to Bose Einstein condensate where all particles are indistinguishable. This is also similar to a Hopf fibration, all fibers the same in principle. Many regular things are like that such as numbers 1, etc. (all ones in all minds the same in principle) Number 2 quote, you have to first believe cosmological theory. In fact, you could posit any number percent we understand (since BB started from a singularity). perhaps we understand only 0.00000000000000001 percent of the universe or, instead, close to 50 percent. If Heisenberg is correct it is possible the BB had a different H uncertainty, even negative or some fractal/complex probability.

The Dead End of the False

Most people will probably agree that they believe in freedom of speech but not in fake news that purports to be factual and gives no vetted link. Most of this happens on the internet, but since time began, telling lies has been a common practice. A lie could be a good thing, perhaps told to avoid hurting a person's feelings or keep a group or community from panicking. Commenters on social media are becoming quick to point out fake stuff, usually expressing rage at a post wasting a person's time.

Posting fake news will, over time, turn away users that are reliable and trustworthy. Users that are less reliable will become the main clients.

Some possible remedies: Use AI to block a post with no valid link for a post of something new. New could be simple social news, new tech, new physics, etcetera. Use AI to block fake graphics such as an actor, architecture or art represented in a known fake way, etcetera. It wastes millions of hours of time, forcing people to read fake, worthless news. People want social media to either delete or point out when the posted news is probably fake.

An Information Paradox

Quantum theory states that information can never be lost. QT uses a deterministic mathematical definition of information. Also classical physics encodes the complete path of a planet's orbit with math equations. Thus, you can predict the planet's position in the future or in the past, given precise information. However, chaos theory throws a monkey wrench at this by showing that the slightest error in the inputs will produce unpredictable paths when calculating far enough away from the present. QT has its own monkey wrench called the uncertainty principle. Yet in both cases many scientists still believe that things are ultimately determined, thus information is never truly lost. Another monkey wrench is the second law of thermodynamics which states that entropy or disorder always increases. The classic example is a broken egg. You cannot reverse it back to an unbroken egg. The instant the liquid of the egg spreads out on a surface chemical activity will start. Indeed, how will you remove every sticky molecule from the surface?

There is also a paradox no one talks about. What happens if some information is truly lost? How could you prove it? Being lost there cannot be a single clue that it ever existed.

What happens to the information of a photon falling into a black hole? Stephan Hawking brought this to light and to this day it is not fully resolved, although several hypotheses exist on how the information can be saved.

When a small rock falls past the event horizon of a black hole tidal effects will rip it up by stretching it. Is it possible that these effects completely destroy matter turning it into a random foam? Unknown, since a singularity is not mathematical.

The largest permanent loss of information happens at the edge of the expanding universe (our now!) where galaxies disappear, receding away from us faster than light speed.

Inside a Black Hole

A singularity in a Black Hole is a point of infinite density. Singularity in physics is a place where math fails. For instance, a solution requiring division by zero is a failure. Singularity can also be a signal to try some new ideas. One possibility is to imagine a quantum system that allows particles to occupy the same space and time such as a Bose-Einstein Condensate, BEC. If the inside of a Black Hole is a BEC the number of particles can be unlimited. These condensates have super properties such as super conductivity, super fluidity, super solidity. Imagine the inside of a BH being a single super solid BEC time crystal!

Tides of time

The universe is filled with local clocks. Every repeating cyclic orbit is a tick of a local clock. On earth we have days, years, and human divisions of days and years such as hours, minutes, seconds, and more, such as attoseconds. Every orbiting body experiences gravitational tidal forces. The moon's orbit grows over time due to tidal drag of earths rotation. The same is true of our days by the moon's tidal drag and true of the earth's tidal drag on the sun. These tidal drags happen even for solid bodies. Taking TD, tidal drag, into account for the trillions of orbiting bodies in our universe, can it be possible that this has a gravitational field effect similar to dark energy? While it may not be much it could still contribute to the overall effect of causing the expansion of space. These calculations have probably been done but may not have been seen as a contributor in any way to dark energy.

A global clock

The quantum entanglement effect that causes non-locality can only be explained if Newton's perfect instantaneous time exists, connecting the universe as a holistic entity. But many questions about this remain unanswered. An entanglement can be seen as a random but organized machine or wave system. Collapse then must conserve several properties. If the two particles did not follow these conservation rules there would be no entanglement. Thus non-locality is more like a law of conservation. Not quite as mysterious when you think of it like that. Thus a global clock is a real possibility as well, or maybe un-necessary if the universe is a conservation machine.

Why does the universe obey math so well?

In fact the small amount of math that works is a tiny fraction of math theory. The universe may not care about set theory and many other parts of higher math. The universe does not need math because it is already all physically connected. It has built in complexity and self-organizing properties as well as a large amount of the random as prescribed by quantum collapse. In fact random may be ½ of the whole principle of the universe where each instant of time has both a random and a non random solution. Orbital mechanics is no different as it is based on both predictable precision and random collision.

Math can never fully describe nature. This follows from various different ways of thinking about a system describing itself. One of these is Godel's incompleteness proof of mathematical rule systems that it will always be possible in a sufficiently rich rule system to devise some combination of the rules that are not provable with those same rules..

Many equations of physics are statistical predictions. For quantum mechanics there is the Heisenberg uncertainty principle, collapse, collision, fission, and explosion, and for classical theory there is temperature and many other statistical variables. Thus, having a precise detailed description of any microscopic part of nature is far beyond any classical computer. For a quantum computer some answers are possible but still subject to a check of the results making it necessary for a hybrid-classical-quantum computer system. Mathematicians and physicists can trust their machines when not doing tedious checking of calculations, or constant rerunning of a calculation. Nevertheless, these systems give power to create great and wonderful things and remain intellectually creative.

A reason for 3D with Time

A simple reason why we live in a 3D space has to do with topology. For 4 dimensions knots can no longer be one dimensional loops but must be spherical knots which can also exist embedded in 3D. This being the case the most efficient path is to stop at 3D. Just as a mass moves according to the shortest path or least energy 3D is the most efficient way to produce our universe of field-topologies and topological self organizing particles, elements, chemistry and life and gravitationally self organizing large cosmological processes. In this system time is primarily a state process giving the illusion of many dimensions beyond 3.

Big Bang Ideas from JWST

JWST is finding fully formed galaxies too soon after the Big Bang. Alternative scenarios to the standard BB are possible: 1. The BB is a continuous process happening to exist at a center of dark energy. Matter forms spontaneously and fly's away from the center continuously. Equations would need to be found that give dark energy, of a certain density, this property. 2. The BB formed in a location where many galaxies already existed, very speculative. 3. We do not know where the center of the universe is. It could be light years farther than we think it is. A red shift of infinity does not mean that is the precise center of the universe. Calculations put it where it is. A red shift of infinity is a singularity and we may have to take another look at the calculations, considering the findings of JWST.