The God Equation

$$e^{i\pi} + 1 = 0$$

Mike Hockney

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by

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Quotations

"Physical Laws should have mathematical beauty." – Paul Dirac

"Whatever may be the truth about the universe, it is bound to be astonishing."
– Bertrand Russell

"The connection between mathematics and reality is a miracle, but it works."
– Professor Frank Wilczek

"It's actually unreasonable how well mathematics works. Why should the world behave according to mathematical laws?" – Professor Anton Zeilinger

"It's not only that it becomes easier to describe with mathematics, as you go deeper and deeper into reality; mathematics becomes the only way to describe reality." – Professor Leonard Susskind

"Euler's equation reaches down into the very depths of existence." – Keith Devlin

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The Illuminati

THIS IS ONE OF A SERIES OF BOOKS outlining the cosmology, philosophy, politics and religion of the ancient and controversial secret society known as the Illuminati, of which the Greek polymath Pythagoras was the first official Grand Master. The society exists to this day.

Introduction

This is the incredible story of how mathematics' most beautiful, elegant, economic and powerful equation controls the entire universe. If there were such a thing as a Creator, he would be a mathematician, and the "God Equation" would be the equation he invoked to make the world. He would in fact have no choice because this is the only equation that can do the job.

When, according to the Bible, God declared, "Let there be light!", all he was doing was unleashing the God Equation in all of its transcendent, soulful glory. The God Equation is also the Soul Equation. *As above, so below*.

The universe is the "World Soul" – the collection of all souls – and the

individual soul is the microcosm of that glittering, living macrocosm. The individual soul and the collective soul are united mathematically via a single, divine equation.

One Equation to rule them all, One Equation to find them,

One Equation to bring them all and in the darkness bind them.

In the Beginning

"God" – the cosmic mathematical mind – gazed upon an infinite collection of dimensionless points ("monads"), each modelled by the number *zero*. An infinity of zeros is *nothing*. God did indeed make the world out of "nothing", but a very special type of nothing.

Each monad contains infinite energy, but this energy is perfectly balanced between negative and positive energy, so that everything cancels perfectly to zero.

Initially, all monads were perfectly symmetrical; indistinguishable from each other. To make anything happen, symmetry must be broken and "individuation" must take place, i.e. things have to become unique.

The first act of God was to break symmetry and apply an "Exclusion Principle" to all monads – which amounted to giving each monad a "fingerprint" (a unique set of mathematical coordinates).

An infinite collection of mathematical points with unique coordinates is nothing other than a perfect Cartesian arena, except this is *cosmological* and *ontological* rather than an abstract set of Cartesian axes drawn on a piece of paper in a school exercise book.

God looked upon the Cartesian grid – extending infinitely in all directions – and saw that it was good. He now had the ideal mathematical framework in which to work. He allowed the monads to release the energy locked inside them, and instantaneously it flooded out into the Cartesian arena – in the Creation event known as the Big Bang! Every single point in infinite space exploded. The Big Bang wasn't about the explosion of one point; it was about the explosion of ALL points.

Yet the energy didn't flood out in any old way. All of it obeyed a single cosmic Law – the God Equation.

And thus the universe of our experience was mathematically brought into being.

By the end of this book, we hope to convince you that this is exactly what happened, although there was no Creator involved in the process. Or, rather, mathematics itself was the Creator.

Mathematics is eternal, perfect, necessary, immutable, infallible, necessary, analytic, complete and Platonic. It has all the qualities you would expect of "God", but it does not expect anyone to get on their knees to worship it, and, unlike the God of the Jews, Christians and Muslims, it does not order fathers to make human sacrifices of their own children to show how loyal and obedient they are.

Humanity made a catastrophic mistake, born of irrationality and ignorance, when it failed to recognise mathematics as the True Creator and instead invented an anthropomorphic, supernatural exaggeration of a narcissistic human being as the "Creator".

The highest truth of all – understood by only a tiny number of people – is that mathematics itself is the source of life. Mathematics is ALIVE. We are living beings precisely because our soul is one of the dimensionless mathematical monads that comprise existence. We are all immortal and indestructible. We have infinite energy that can never run down. We are *perpetual motion* machines, and we all have the capacity to become mathematically perfect – to BECOME GODS!

Did an Angel Create the Earth?

A central teaching of the ancient religion of Gnosticism was that Satan created, or controls, the world we inhabit. In this day and age, this seems an absurd assertion, yet scientists have started to take seriously the notion that super-intelligent, angelic beings may be our creators.

In an article entitled *Children of an Alien God*, science writer Marcus Chown presented a picture that lends credence to the Gnostic vision of Creation. Chown analysed the hypothesis that superior beings in another universe created *this* universe.

Albert Einstein was intrigued by the fact that our universe is comprehensible (he thought that was the most incomprehensible thing about it), but there would be no mystery if it were designed by other intelligences according to rational design principles that we ourselves might eventually

discern. Of course, the question would remain of how the prototype universe first came into existence and gave birth to the first superior beings (gods).

It's well known scientifically that the fundamental constants of nature are astoundingly fine-tuned for the emergence of life. The universe where everything is just right for our existence is labelled the "Goldilocks" universe. Is it just right by chance or design? Your answer to that question will shape your approach to life. Did we get here randomly or by conscious or (unconscious) design?

Edward Harrison of the University of Massachusetts cited the example of the gravitational constant, which governs the strength of gravity: "If it were slightly smaller, stars like the sun would not shine. However, if it were slightly stronger, stars would burn their fuel and go out before there was time for biological evolution on any planets. ... Conventional physics completely fails to explain this example of fine-tuning or many other such examples. However, it's possible to explain them if the universe has actually been designed at a fundamental level for the benefit of life."

Harrison speculated that each universe evolves superior beings (of the type that the ancients might have labelled "angels" or "gods") who then use their intelligence and creative powers to generate bespoke universes according to their particular design tastes. Conditions are, by definition, always just right for life.

In these offspring universes, intelligent life eventually evolves to a state where the inhabitants are themselves now angels or gods and can create their own worlds. Thus, intelligent life spreads through the universe in the fashion of a virus. The universe keeps becoming more intelligent. Just as entropy increases, so does intelligence. The universe as a whole is always becoming more alive, more intelligent, more angelic and divine.

"We already have a mathematical blueprint for how to make new universes," Harrison observed; that blueprint being our own universe.

Marcus Chown wrote in his article, "According to grand unified theories, which attempt to show that the fundamental forces of nature are merely facets of a single 'superforce', the universe was created when a super-dense 'seed' of matter triggered a runaway expansion of space. During this split-second phase of 'inflation', the matter to make countless stars and galaxies was conjured out of the empty vacuum itself. The universe, as proponents of inflation are fond of saying, was 'the ultimate free lunch'."

If we could recreate the precise conditions that triggered inflation, why

should we not be able to spawn a new universe? Chown wrote, "Alan Guth of the Massachusetts Institute of Technology has suggested a way to do it using a 10kg mini black hole. Its super-dense interior would be the seed that would immediately inflate, not in our universe, but in a space-time connected to our own by the 'umbilical cord' of the black hole. The cord would snap when the black hole 'evaporated' and a new baby universe would be born."

Scientists such as Guth now openly talk about the possibility that we could create new universes in a laboratory: "I in fact have worked with several other people for some period of time on the question of whether or not it's in principle possible to create a new universe in the laboratory. Whether or not it really works, we don't know for sure. It looks like it probably would work. It's actually safe to create a universe in your basement. It would not displace the universe around it even though it would grow tremendously. It would actually create its own space as it grows and in fact in a very short fraction of a second it would splice itself off completely from our Universe and evolve as an isolated closed universe growing to cosmic proportions without displacing any of the territory that we currently lay claim to."

It doesn't matter, as Edward Harrison observed, if such plans for building universes are absurd – much smarter beings than us will be able to turn them into viable plans. Harrison remarked, "The important thing is that if beings of our limited intelligence can dream up wild yet seemingly plausible schemes for making universes then beings of much higher intelligence might know exactly how to do it."

Naturally, each new universe is likely to exhibit the same fundamental constants as its parent – why tamper with a successful formula? This immediately explains why our universe, or any other offspring universe, is fine-tuned for life. Unfortunately, it tells us nothing of the nature of the first universe. Was it created by God (in which case how did HE come into existence), or did it evolve life without the benefit of fundamental constants fine-tuned by intelligences. If so, how? If fine-tuning can appear without angelic influences, who needs any angels?

Some scientists invoke the concept of the "Multiverse" in which there are countless universes reflecting different combinations of fundamental constants. Most lead to no interesting outcomes, but one or two turn out to be perfectly suited for the emergence of life. However, scientists like Harrison consider it grotesquely wasteful to have endless sterile universes. Why would nature be so inefficient, so profligate? According to Harrison, while it was

indeed possible that there was an initial "ensemble" of universes, in which the fundamental constants were randomly assembled, all that was needed was for life to emerge in one to create a chain-reaction of productive, living universes. "Thereafter," Harrison said, "intelligent universes dominate by reproduction, and the original unintelligent members then form a vanishingly small fraction of the whole."

Harrison's hypothesis amounts to a "natural selection of universes." Intelligent universes become self-reproducing universes, while unintelligent universes have no offspring and fade into irrelevance.

Another idea of Harrison's was that angels might be motivated to escape from dying universes. They would create new universes – "heavens", as we might say – and then use some means to transfer into them.

But what if there were "bad" angels? What type of universe would they create? – *hells*? Do malevolent gods create worlds where they can dominate the life forms that evolve there and then narcissistically demand worship from them? Such universes would provide the ultimate ego trip for the most conceited and tyrannical of "gods".

Doesn't a cursory glance at the track record of the Abrahamic "God" seem entirely consistent with this picture? No sane person could imagine Abraham's God to be any kind of force for good.

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Chown's article illustrates that the Gnostic idea that Satan(el), the second highest angel (after Lucifer), might have created the universe we see around us, is far from far-fetched. In the future, it might come to be viewed as orthodox science that we owe our existence to higher intelligences – "angels". Why not just a single higher intelligence? – Satan, the Jehovah of the Old Testament, known to his followers as the Creator.

The particular universe we inhabit is not, it seems, random; it is designed. The fundamental constants that permit our existence did not appear out of thin air: they were specifically chosen. Our universe was constructed by a super-intelligence precisely with us in mind. The fact that the universe is perfectly suited to the evolution of humanity is in no way accidental.

Gnosticism says that Satanel is the Creator, the craftsman, the *demiourgos* – maker of material existence. He is the *omniarch* – the ruler of all – and the *cosmocrator* – the one possessing cosmic power.

Our task, as souls trapped in Satan's realm, is to find the means to escape

from this hell and reach the realm of light of the True God; a different universe entirely.

Atheists might reject such a characterisation as ludicrous, but none can deny that there is persuasive evidence that the universe we see around us is too well tailored for us to be anything other than the product of design of some sort or another. If the fundamental constants of nature were marginally different, we wouldn't be here.

Unlike evolutionary theory, where apparent design can arise from a long process of natural selection, fundamental constants are, by definition, not amenable to evolution and change (they wouldn't be constants if they could change!).

There are two obvious possibilities. Either there's an infinite number of universes in a Multiverse where all conceivable values of fundamental constants can be found (in which case we inhabit a random universe where chance supplied the fundamental constants that underpin our existence), or fundamental constants are specially chosen for universes (in which case we inhabit a unique, designed universe, created by a super-intelligence that knew how to assemble the correct set of fundamental constants). Which alternative do you prefer?

Actually, although we say "super-intelligence", it need not be a conscious intelligence at all. Non-conscious minds are capable of performing intelligent actions. Sleepwalkers can perform sophisticated tasks, even to the extent of holding conversations, while having no conscious awareness. Imagine a sleepwalking, intelligent universe. Of what is such a cosmos capable?

Of course, there's another way to explain why the universe is so well suited to life – it's *inherently* alive. It's made of "living mathematics" and is on a mission to optimize itself. The ultimate expression of life is consciousness, so the universe is intent on generating as much consciousness as possible, culminating in "God consciousness".

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There's no mystery at all about why life exists in our universe: the universe is alive. Mathematics, from which the universe is made, is alive. It's alive because it's constructed from dimensionless, unextended points called monads. As Descartes so brilliantly realised, anything unextended is mental, and anything mental is alive.

Each monad is an eternal, indestructible information system, but because

it's a subject rather than an object, it's an *experiencing* system – a life form, a SOUL.

Each monad contains infinite information capacity in a perfect balance of positive and negative energy and real and imaginary energy. It is this same energy that leaves the monads and enters the "objective" monadic arena (Cartesian grid) comprised of all the monads. As soon as energy leaves the dimensionless monad and enters the dimensional Cartesian grid, it is transformed from dimensionless to dimensional. It becomes objective and "physical", i.e. it becomes scientific energy amenable to scientific study. All energy waves relay information back to their originating monads.

The universe is simply one vast, evolving information organism, becoming more and more informationally perfect all the time, until it reaches divine informational perfection.

Each monad (soul) becomes a perfect monad (God) when it has actualised all of its potential, when it has become a perfect information system.

Each monad – and the universe as a whole – is a self-solving equation, and, through dialectical mathematics, it reaches its optimal solution: its *omega point*.

Mathematics itself is the source of a designed, living universe. There's no absurd Abrahamic Creator. Mathematics is a God Factory: it creates Gods beyond count.

Yet in order for Gods to come into being, they must overcome a Satanic dialectical stage. It is this stage in which "gods" such as Jehovah/Allah/Christ reign supreme. These are the devils that must be overcome by souls if they want to be become divine.

Identical Particles

At the heart of quantum mechanics is the concept of "identical" particles. In classical physics, particles can be identical in terms of their basic properties, but are nevertheless distinguishable. In particular, they are individuated by space and time and we could in principle follow the exact trajectory of any classical particle. But what of quantum particles according to the Copenhagen Interpretation of where particles do not formally exist until observed and inhabit some fuzzy, twilight world of probability? According to this interpretation, it's impossible to track two identical particles and distinguish between them because they are enveloped by fuzziness and uncertainty and you could never be sure which one you were looking at, even in principle.

Thus, these particles are identical *and* indistinguishable.

With an alternative quantum interpretation such as that of de Broglie and Bohm, particles are in principle distinguishable but in practice the distinguishability is inescapably hidden experimentally (this is therefore a "hidden variables" system).

According to the rules of quantum mechanics, it's not good enough to write $\Psi(1,2)$ to describe the wavefunction, Ψ, of two identical and indistinguishable particles, labelled 1 and 2. $\Psi(2,1)$ is every bit as valid as $\Psi(1,2)$ so we must combine both possibilities and write:

1) $\Psi = \Psi(1,2) + \Psi(2,1)$

But what about an alternative possibility?

2) $\Psi = \Psi(1,2) - \Psi(2,1)$

Since there is no sufficient reason for nature to exclude the second possibility (with the negative sign), it must be present in nature too. It turns out that these two possibilities (positive and negative combinations) are the foundation of the universe! Particles that obey equation 1) are *symmetric* with respect to the interchange of the two particles while those that obey equation 2) are *antisymmetric*.

Particles of type 1 are named *bosons* and obey *Bose-Einstein* statistics while particles of type 2 are named *fermions* and obey *Fermi-Dirac* statistics (the two situations generate two radically different types of statistical behaviour). All particles in the universe are either bosons or fermions, meaning that they behave either symmetrically or antisymmetrically.

If you want a rather inadequate human analogy of what this means, consider a hundred freethinking, independent human beings versus a hundred Muslims who have memorised every word of the Koran, and slavishly obey it in all circumstances.

If you swap around the freethinkers in a variety of situations, you get different behaviour each time because the freethinkers are individuals who do their own thing. If, on the other hand, you swap around the Muslims, it makes no difference since they all automatically parrot the Koran.

Individuals are "antisymmetric" with regard to exchange (i.e. it matters which one you're dealing with), while conformist, group thinkers are symmetric (i.e. it doesn't matter which one you're dealing with since they're all the same).

Just as all particles are either bosons or fermions, all human beings are either conformist or non-conformist.

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In the case of equation 2), $\Psi(1,2) - \Psi(2,1)$ must equal *zero* since $\Psi(1,2) = \Psi(2,1)$. What this means is that if two fermions are completely identical and indistinguishable, they will cancel each other out if they are in the same location. Therefore, two fermions can *never* have the same set of quantum numbers to describe them (they are forced to be individuals). They must be *distinguishable* via their quantum numbers. They will *never* be found together. It's as if there's a repelling force keeping them apart. This is the mathematical origin of the Pauli Exclusion Principle, which is the basis of the whole of chemistry because it dictates how electrons (which are fermions) arrange themselves around atomic nuclei. They all have to avoid each other and they do so by going into different electron shells. Two electrons can be fitted into each shell thanks to a quantum property called "spin" – one electron has a spin of +1/2 and the other has a spin of -1/2 (thus ensuring that they have different quantum numbers).

In fact, all electrons in the *whole universe* must have different quantum numbers because if any two had the same numbers they would cancel each other. Extraordinarily, this means that if there are infinite electrons in the universe, they must all be avoiding each other and they MUST ALL BE AWARE OF EACH OTHER (since they have to ensure that their quantum numbers never become identical).

Ask yourself this. How is it PHYSICALLY possible for an infinite number of particles to be keeping track of each other, especially if they are separated by infinite distances? The Pauli Exclusion Principle smashes every conceivable rule of the physical universe to smithereens.

There is only one plausible way to understand the Pauli phenomenon. All electrons are *mentally* connected, exactly like the correlated particles in the Einstein Podolsky Rosen (EPR) paradox. In fact, there was never really any point to the EPR paradox because all of its essential features were already present in the Pauli Exclusion Principle. The Einsteinian mantra that nothing can travel faster than the speed of light is absolutely false, or has to be completely recast and understood in a radically different sense. In the mental domain, everything is connected, everything is aware of everything else and everything is adjusting to everything else – and all of this is happening

instantaneously. In the mental domain, unlike the physical domain, to travel at the speed of light is to be everywhere at once.

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Unlike fermions, bosons don't avoid each other. In fact, they congregate. They're *social* particles.

Fermions usually have mass and bosons usually do not. Fermions are the basis of the *physical* world while bosons are essential to *mental* interaction. We might even say that bosons are the mental glue for the physical (fermionic) world. Fermions are *matter particles* and bosons are *force-carrying particles*. Is force actually mind; are *thoughts* what hold atoms together?

Fermions and bosons are spectacularly mathematical. They are defined entirely mathematically by symmetry considerations. How could such particles be anything other than mathematical ontologically? How could they be defined in any other way than mathematically? How could they exist if they were non-mathematical?

Hasn't the penny dropped? All particles are mathematical and any particle that isn't mathematical cannot exist. Mathematics is the basis of *everything*. Anyone who attempts to explain the universe *must* explain its mathematical nature. Abrahamism does not contain a single mathematical equation. Abrahamism therefore contains *zero* truth content. Only people who despise truth and reason are attracted to Abrahamism. There has never been a falser religion. The Jews, Christians and Muslims do not have a truthful bone in their bodies.

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"[Richard Feynman] said that he thought of a point in spacetime as being like a computer with an input and output connecting neighbouring points. The point would have a memory for all the fields and particles that are possible and would actually act like a computer. So he has each point in spacetime acting like a computer." – Basil Hiley

We have a similar view to Feynman, except we don't regard a point in spacetime as a computer but as a mind. All great thinkers understand that points are not dumb and passive, mere mathematical computing machines. On the contrary, they are smart and active. A materialist will choose to think

of the universe as a cosmic computer (a mechanism), and an idealist as a cosmic organism (it's alive).

Correlation Between Brain and Mind States

The brain should be considered the physicalisation of the mind, and the mind the mentalisation of the brain. Brain states reflect mental states. When the mind takes a decision (i.e. collapses the wavefunction of superposition states), the outcome is reflected in a brain state. Materialists will of course claim that brain states CAUSE mental states rather than the other way around, but there is actually a feedback loop between the two. Mind causes brain states, but brain states inform the mind and cause changes in mental states, and so on.

The Pauli Exclusion Principle – the Sequel

"Atoms are vast and they are empty. Actually, they are about 99.9999999999999% empty. … Since everything is made of atoms [including *you*], that means you are vast and empty too. … If I squeezed all of the space out of all the atoms in all of the people on the planet, you would be able to fit the whole of humanity into a diamond [the size of a sugar cube]. … Electrons behave like waves and this is the key to understanding the emptiness of atoms." – Brian Cox

The importance of the Pauli Exclusion Principle cannot be overestimated because it literally gives rise to the solid, material world around us. On the face of it, electrons can't exist in a Singularity since that would seem to mean that they were all in the same place with the same energy levels and quantum numbers, thus contravening the Exclusion Principle. The very existence of this Principle implies that SPACE must come into existence to accommodate it. Putting it another way, the Exclusion Principle is what *creates* space. It is the real *Creator*, unlike the Abrahamic God.

Having created space, the Exclusion Principle then pulls off another astounding trick. Since it prevents any two identical particles from occupying the same energy state, this gives rise to the existence of a hierarchy of electron shells, with the lowest being the "ground state" (the lowest energy state). A maximum of two electrons can reside in a shell since one electron can have a spin of $+1/2$ and the other a spin of $-1/2$ (in stable atoms, they, like

Noah's animals, go into the Ark two by two). As a direct consequence of the Pauli Principle, these are the only two spin values an electron can have, meaning that they both have different energy signatures, so can co-exist in the same shell. No other electron can get in because it would necessarily have the same spin number as one of the existing electrons, hence violate the Exclusion Principle.

Electrons populate a hierarchy of electron shells and it's the particular ways in which electrons are arranged that accounts for the WHOLE of chemistry, i.e. chemistry is a necessary consequence of the Pauli Principle. Stable, inert elements such as the noble gases have full, outer electron shells, hence are chemically rather unreactive. It's as if they are full of happily married couples, not remotely interested in swinging. Atoms with only a single electron in any of the outer shells are like singletons eager to pair up and out on the dating scene every night. They are highly reactive; always looking to pair off and settle down.

Biology – i.e. LIFE as we know it – is totally dependent on chemistry, hence on the Exclusion Principle. Once again, the Principle performs the function of the Abrahamic God. It creates life itself (life in the material world, to be more exact, since life per se belongs to the dimensionless, immaterial world – but it needs an outlet in the dimensional domain).

What stops gravity pushing you down into the ground? Well, it's the Exclusion Principle again. In 1967, Freeman Dyson and Andrew Lenard calculated the effects of attractive (electron-nucleus) and repulsive (electron-electron and nucleus-nucleus) forces and showed that the Pauli principle was playing the primary role in resisting gravity. (You might have thought that the repulsion of the negatively charged electrons of the ground, and the negatively charged electrons of your feet were the key to the situation, but it was in fact proved that the repulsive effect of the Pauli Principle is radically more important.)

We can all consider ourselves to be *levitating* on an electron cloud. In fact, all atoms and molecules are levitating, with the bulk of that force coming not from electrostatic repulsion but from the repulsion associated with the Exclusion Principle. A human being with the mind control of a God could locally alter the strength of the Exclusion Principle and float into the air – or fly!

Think of the task of "touching" something. What does it mean? All that's ever happening is that the electron clouds in our skin (our fingers, for

example) are making contact with the electron clouds of the objects we are seeking to touch.

"When you press your finger against a rock, the only actual contact is between clouds of electrons in the atoms in your fingertips, pushing against clouds of electrons in the atoms in the surface of the rock." – John Gribbin

No authentic "touching" is actually happening. It's all an illusion. We're actually detecting changes in the repulsive effects of electron clouds. That's all that "touch" is. When you bear in mind that atoms are almost wholly empty space, we're actually touching "nothing". We have extreme sensitivity to the local strength of electron repulsion compared with our default state. What we feel is the repulsive force, not the object itself.

Fascinatingly, when the Exclusion Principle is overwhelmed – as in the formation of black holes – fermions are converted into bosons (which, unlike fermions, can exist dimensionlessly in the same energy state).

The universe is all about symmetric and antisymmetric wavefunctions. A boson is converted into a fermion by being rendered antisymmetric in relation to the wavefunction, and a fermion is converted into a boson by being rendered symmetric. Each of these processes involves enormous amounts of energy. Energy is released when fermions are created from bosons (as in the Big Bang), and energy is absorbed by fermions when they are being converted back into bosons (as in black holes). That, in short, is the key process taking place between the dimensionless and dimensional domains. The dimensionless domain is all about wavefunction symmetry (no Exclusion Principle), and the dimensional domain is all about wavefunction antisymmetry (Exclusion Principle).

The Exclusion Principle, which gives rise to the material universe, is just a mathematical antisymmetry operation. There is no sufficient reason why wavefunctions should always be symmetric with regard to wavefunction symmetry, hence antisymmetric operations (and thus the creation of a physical universe) are inevitable.

What was the Big Bang? – it was an event in which antisymmetric operations took place on a cosmic scale.

Leibniz argued that there could never be two identical atoms because there would never be any sufficient reason for one to be here and the other there rather than vice versa – and nothing can logically happen without a sufficient reason. The Exclusion Principle is the perfect demonstration of Leibniz's

principle because it guarantees that every fermion has a unique energy signature.

Bosons might seem to contradict Leibniz's principle, but they don't because there IS a sufficient reason why bosons should act as if they are identical particles. It's all in the symmetry. Mathematical symmetry drives EVERYTHING. Conservation laws are about symmetry and, ultimately, they are about the quintessential symmetric number – zero, the number that lies exactly at the centre of positive and negative numbers, whether real or imaginary. All objective properties of the universe are conserved at exactly zero. The universe never at any time deviates from zero. Existence is possible only because it is never anything other than "nothing".

There is no sufficient reason why any objective property of the universe should not be conserved at zero. Any number other than zero would involve a symmetry violation. Moreover, since there is no sufficient reason for any arbitrary non-zero number, any property that is not conserved at zero can arrive at only one other number – *infinity*. So, all conservation laws must in fact be based on zero, and anything NOT conserved must be based on infinity. The information content of the universe is heading for infinity, i.e. *divinity*!

The Matter Illusion

The Pauli Exclusion Principle is responsible for the fact that ordinary bulk matter is stable and occupies volume, and that two solid objects cannot be in the same place at the same time. Its effects are much more important than those of Coulombic electrostatic forces. The fact that we perceive a "real", material, solid, physical world is entirely due to the Pauli Principle. In other words, here we have the key mathematical "trick" that creates the objective "illusion" of the material world. Without it, there would be no material world at all. It's all in the math.

Fermions and Bosons

All elementary particles are either fermions or bosons. Fermions, with half "spins", are described by antisymmetric multiparticle wave functions and cannot share the same quantum state. Bosons, with integer spins, have symmetric multiparticle wave functions and, unlike fermions, can share the same quantum state.

Electrons, protons and neutrons are key fermions: photons, and helium atoms are examples of bosons. (It's because helium is bosonic that, at the lowest temperatures possible, it displays extraordinary properties, including defying gravity!)

"[It is not electrostatic repulsion between the electrons in an atom that] is keeping the electrons apart, although it will increase the separation if it is included [in calculations]. We should also warn against a simple classical picture of the Pauli principle, the thought that two things can't be in the same place, after all, so perhaps it's no surprise two electrons can't be in the same state. Two electrons *can* be in the same identical space wave function provided that their spins point in opposite ways. Furthermore, two bosons can be in the same state, and although that is perhaps reasonable sounding for photons, it is equally true for heavy atoms. In Bose-Einstein Condensation, a large number of atoms occupy the same quantum state. This happens in liquid Helium4 below about two Kelvin, it becomes a superfluid and flows without friction. BE condensation has also been achieved with laser cooled collections of large atoms in a trap. … The Pauli Exclusion Principle is the basis of the periodic table, and consequently of almost everything else." -- Michael Fowler, University of Virginia

Just to reiterate a key point here – two electrons can be in EXACTLY the same place, providing they have different spin numbers. Just consider how profound that is. If they were really "physical" entities, this would be impossible, but, of course, no "particles" are physical. All particles are mathematical. It's mathematics that allows two suitable electrons to occupy the same space, not materialism.

When will the materialist prejudice fade away? When will people cotton on that all things are mathematical and it's their mathematical properties that determine what they can and cannot do and can and cannot be?

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What is the universe all about? Strangely enough, the answer is symmetry and antisymmetry of the total wavefunction for two identical particles with respect to the exchange of those particles, i.e. by swapping them. Does the total wavefunction retain the same sign (symmetric) as a result of the exchange, or does the sign change from + to – (antisymmetric).

All the properties of the universe flow from the consequences of these two situations. Imagine if there were no such thing as mathematics. The universe simply could not exist. Only mathematics can explain why things are the way they are. What is mathematics? Ultimately, mathematics is SYMMETRY, and how symmetry can be broken while maintaining overall conservation laws.

Imagine that the universe starts out as a Singularity, comprising an infinity of identical particles (monads), all completely symmetric with regard to one another. Such a universe is sterile. It contains no individuation, no contrast, no differences between anything. It can't grow, evolve, develop or perfect itself. It's stuck.

There's only one thing to do – it must introduce individuation (different things). What is the Exclusion Principle? – it is the individuation generator. It takes identical things and makes them unique (individuated). It does so by introducing ANTISYMMETRY.

The completely symmetric universe is the universe of pure, blank mind. The antisymmetric universe is the material universe. The symmetric universe gives rises to the antisymmetric universe via a single, cosmic event – the Big Bang.

It's vital to realise that minds (monads) must themselves become individuated *before* the material universe can arise. The following process takes place:

1) Existence "begins" as an infinity of unindividuated, blank, identical minds – *bosonic* minds – the Singularity.

2) The Big Bang occurs and an exclusion principle is first applied to an infinite number of identical bosonic minds, converting them into individuated, fermionic minds.

3) An infinite number of individuated minds (minds = monads = mathematical points) is of course functionally equivalent to a perfect Cartesian arena in which a mathematical "physical" universe can be placed.

4) So, monads – minds – can be both bosonic and fermionic. Likewise, physical particles can be bosonic and fermionic.

5) Bosons and fermions – mental and physical – underlie all things.

Existence is simply the exploration of bosons, fermions and their various relations and interactions. That's it – the whole shooting match.

The symmetric "One" of Neoplatonism gives rises to the antisymmetric Nous of Neoplatonism (which constitutes a perfect universe of individuated fermionic monads, all of which have unique coordinates – just as all fermionic particles have unique energy states).

Once a Cartesian system exists, the potential exists for a material universe (suitable for material fermions). The Big Bang is a two-step process: it generates first fermionic monads and then material fermions.

Fermionic monads create the stage – the Cartesian arena – and material fermions are the actors that step onto the stage. Is it not superbly logical?

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Existence in its basic form is a Singularity consisting of infinite identical monads, none distinguished from another. Absolute, perfect symmetry applies. This is the default state of existence. There is no sufficient reason for anything to be distinguished from anything else. Such a system is sterile. It can do only one thing: *break* the symmetry. Symmetry breaking is the most important act of all. It is what allows individuation to take place: the generation of unique things – unique life forces (souls), and unique material things.

The simplest of all material symmetry breakings is none other than the Pauli Exclusion Principle, which ensures that all entities get a unique energy signature. In terms of monads, this corresponds to giving every monad a unique set of coordinates (remember that energies = numbers; numbers, ontologically, are the frequencies of energy waves). After that, the whole of material existence becomes possible.

In the original Singularity, all monads have the same coordinates, hence there is nothing to which Cartesian "extension" (materialism) can apply. All distances are zero (non-extension). Only once monads have unique coordinates can non-zero distances between them be generated, at which point extension (matter) can enter existence.

The fact that monads have coordinates does not, however, mean that they move anywhere in any physical sense. All that has happened is that they have gone from being identical monads to uniquely identifiable monads (via

energy signatures that correspond to perfect Cartesian coordinates).

The monadic acquisition of these coordinates allows an objective mathematical universe to be born – corresponding to what is known as the material universe. But it is not material and it isn't "extended" in the *physical* sense. It is extended in the *mathematical* sense, which is something very different. It gives identical results observationally, but at no time does anything actually leave the original Singularity. In fact, nothing *ever* leaves this Singularity. There is eternally nothing other than the Singularity.

The Singularity is the *perfect* mathematical object. It contains what seems like an entire physical universe of infinite extent, but there is no such universe. There is simply a mathematical universe, which exactly matches the hypothetical physical universe (no test can be performed to distinguish it from a physical universe).

Existence is pure mathematics. It is an eternal Singularity. It contains infinite mathematical points (monads), and, from these, by applying an antisymmetric Exclusion Principle, a perfect Cartesian universe can be constructed, in which a universe of Cartesian extension can unfold, which is observationally identical to anything that can be called a "material" universe or Cartesian extension.

The word "material", or "physical", is redundant. It has no formal meaning. "Extension" is a mathematical concept, not a physical concept. All notions of physicality and materialism should be abandoned. We should simply refer to Cartesian extension and non-extension, or extended mind and mind itself. Everything is mind – because mind is mathematics.

Between them, Descartes and Leibniz solved everything. Descartes produced the critical ideas of a) extension and non-extension and b) the Cartesian graph of infinite ordered points.

Leibniz, his greatest successor, was the genius who realised that the Cartesian arena wasn't a mathematical abstraction, but an ontological arena. Moreover, mathematical points weren't abstractions either – they were eternal life forces (monads, minds, souls!).

Leibniz took Descartes' system away from the pencil and paper of the classroom or study and instead wrote it on the cosmos itself. Incredible though it may seem, we actually inhabit a perfect Cartesian grid, and this grid corresponds to a cosmic mathematical mind. It is the ancient ether, the most mysterious and perfect of all substances. (Note that Newton's absolute space is also tacitly based on a perfect mathematical Cartesian grid.)

The Cartesian grid is none other than the Platonic domain of the perfect, immutable laws of mathematics. It's a perfect mathematical mind providing a perfect mathematical arena in which everything knows exactly what to do mathematically. Everything is mediated mathematically. There are no non-mathematical elements in this system. Nothing non-mathematical can intrude into it or play any part in it. You won't find Allah, Jehovah, or Jesus Christ anywhere in this mathematical wonderland. Thank God!

There is nothing other than a mathematical Singularity, and nothing else is required. Mathematics – living mathematics – answers everything unconditionally, incontrovertibly, absolutely and eternally.

It really is the simplest possible system once you get your head around it. It's flawless, magnificent and transcendentally beautiful. As Leibniz required, it's the best of all possible worlds. It's simplest in hypotheses and richest in phenomena. It is just ONE infinitely complex point. Can you grasp that single fact? Existence is ONE dimensionless, mathematical point! The whole of existence fits into that point. EVERYTHING. The infinite heavens finally translate to one existential Singularity, capable of infinite mathematical self-transformation. Mathematics is the ultimate alchemical agent that turns *itself* from base metal into gold.

What could be simpler, more pared down? The Singularity is eternally zero – "nothing". Existence is literally nothing and everything, eternally intertwined. Everything cancels out to zero, so appears to be nothing, while actually being everything.

Leibniz asked why there is something rather than nothing. His final answer was that something IS nothing and nothing IS something. How, logically, could there be any other answer? It's all in the mathematics. In particular, it's in the mathematics of just two numbers: zero and infinity, and their inverse relationship. ALL of the secrets of existence are buried within zero and infinity, including life, mind, consciousness, the soul, the afterlife, and God. Mathematics answers all of the questions of religion and, moreover, it gives us the best possible answers: we will live forever (guaranteed) and we ourselves will become God (also guaranteed, one way or another). What could be better than that mathematics will make Gods of us all? Every one of us will come to have complete understanding of the Singularity, and hence complete control over existence, just as God must have if he is genuinely God.

Mathematics is the only possible answer to existence. Above all, the

mathematics of the Singularity – of zero and infinity.

What do scientists dread most of all? – the Singularity! According to them, everything breaks down at the Singularity. The laws of physics fall apart, they say. Empiricist materialism cannot cope with the Singularity. It refutes everything about empiricism and materialism. Yet it causes no problems at all for idealism, rationalism and mathematics.

Two numbers – zero and infinity – define existence, and are the source of everything. They are the most mysterious numbers of all, and the numbers most hated by science. What an irony. Science can never provide the final answers to existence precisely because it rejects zero and infinity.

The Singularity is a living point. It is *infinitely* alive. When you understand that zero and infinity are the essence of life and mind, you have understood all.

Existence is the ultimate point. It is one point infinitely expressed: an infinity of points all contained in a divine Singularity. It is divine because this Singularity is the True God. It expresses its divinity through all of us: through the infinite monads of which it is comprised. As they evolve individually, it does so collectively. It is the *Gestalt*, and it's greater than the sum of its parts.

Just as Bishop Berkeley thought, we all live inside God. But he is not our Creator. We ourselves are part of God, and he part of us. We can all become Gods, but only he can be the "God of Gods".

This is the best possible system of divinity. There is no Creator, no bully, no Torture God, no Terror God, no heaven, no hell, no resurrection. Instead, we all have the possibility, via reincarnation, to become more and more perfect – to become authentic Gods.

God = the living, evolving, dialectical universe. He is NOT perfect, he is evolving towards perfection. Why does evil exist? Simple: it's part of the dialectic of existence. It's inevitable and necessary. In many ways, evil – and overcoming it – is the whole point of existence. How else do we become divine exemplars if we don't overcome all the worst things in ourselves and in others?

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The Mind of God – the Singularity – creates an idea of an external world via mathematics, but there is *no* external world. There is nothing material or physical. There is only subjective mathematics (i.e. how a monad internally experiences mathematical reality) and objective mathematics (the common

mathematical universe constructed by all monads, and constructed *from* them).

It is the OBJECTIVE mathematical universe that humanity considers a real, solid thing that goes on existing even when we have died. Yet we remain eternally part of it, and we are continually being reincarnated within it. Our objective mathematical ("physical") bodies are temporary: our dimensionless, non-physical, subjective mathematical souls are permanent.

The universe of our experience is literally made of minds (monads) and the energy content of those minds. Because of the existence of a perfect Cartesian arena, these energy contents are no longer trapped within individual monads, but can roam across the entire monadic arena. They do so thanks to the simplest possible reason: mathematical coordinates. As soon as you have coordinates, you have a map, a territory, the ultimate cosmic GPS system. Everything can travel from one place to another via coordinates. They don't have to physically travel, of course: they simply have to *experience* different coordinates. It's the continually changing set of coordinates that monadic energy encounters that creates the grand illusion of movement through space and time, through a physical universe. But nothing is moving other than the dynamic mathematical relations made possible by changing coordinates.

Imagine every mind having a readout of the exact coordinates of where it is in the universe. Now, if that readout is continually changing, the mind will experience movement and the idea of experiencing the world "out there". Yet the mind isn't moving at all; only the coordinates in the readout are changing, and the mind is continually reacting to the new situation brought about by the new coordinates. The whole thing is occurring mentally. The whole of life, as it seems to us, is really just a changing set of mathematical coordinates. When the coordinates no longer change in relation to a particular body, we are "dead", and we need a new body, which we get via reincarnation, and then a whole new set of coordinates starts unfolding. When we become God we transcend the coordinates –and we see them all at once rather than sequentially.

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Despite the highly mathematical nature of what we are saying, we would expect any Buddhist, Hindu, Jain or Taoist to intuitively grasp its essence – because all we are doing is giving precise mathematical form to what they already believe about the nature of the universe, about its relationship with

Void, with "Nothingness", with how nothing somehow contains everything.

The Singularity of Illuminism – Abraxas to provide a name for it – is just Brahman of Hinduism, or the Tao of Taoism. When people achieve moksha, nirvana, Tao, enlightenment or gnosis (they all mean the same thing in the end), they have entered into union with the Godhead, the underlying Unity, the Singularity. Prior to that, they must undergo the wheel of birth, death and rebirth – samsara. They will be subject to Maya – illusion – a narrow vision of reality brought about by over-reliance on the senses, on empiricism, materialism, on basic consciousness, on our limited state of evolution, of our unexpanded minds, of our hostility to reason and mathematics.

Mathematics is the ultimate psychedelic – the supreme mind expanding and reality-revealing instrument that allows us to transcend Maya. The entire rational nature of Brahman/Abraxas/Tao is made conscious through mathematics alone.

As for the Eastern concept of karma, that is a purely Mythos idea and has no value or reality at all. Only stupid people believe in karma.

We have rid Eastern religion of all the mysticism, obfuscation and woo woo and given it a precise, ironclad, Western mathematical makeover. The East was intuitively right about the true nature of existence, but wrong about how it approached it. The West was right about how to approach it, but wrong about what it was approaching. Illuminism is the synthesis of Eastern intuitive brilliance and Western technical and analytical know-how. It's the ideal and *only* solution.

Abrahamism has zero mathematical content and is incompatible with mathematics. Abrahamism is quite literally the most stupid idea of all time, and must be eradicated.

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Quantum mechanics says that atoms are mostly empty space. In truth, they are *completely* empty space. Thanks to mathematics, "nothing" can be presented in countless different forms. What passes as "mass" in physics is just a special mathematical type of nothing, "concentrated" nothing, in a manner of speaking. In the final analysis, the universe is never anything other than an endless way of presenting nothing. The evolution of the universe is about finding the optimal arrangement of nothingness. The universe advances from blank nothingness (pure potential) to perfect nothingness (complete actualisation), yet it remains nothing at all times and can never be anything

other than nothing. Existence is the Void, and the Void is seeking to make itself Ultimate Void – Divine Void.

The universe, being nothing, requires nothing. It exists because it the lowest possible energy state of the universe – the Ground State – and its total energy is permanently zero.

It might be argued that minus infinity is the proper ground state (lowest possible energy) but, of course, minus infinity is simply plus infinity when viewed from a different perspective. Plus infinity and minus infinity are mere mirror images of each other. Zero is always the lowest possible state, and so the universe must always reflect zero. The secret of existence is that it never departs from nothing, and never can. The universe is a self-solving equation, and what it is solving is how to optimally configure zero. "Everything" is just "nothing" expressed in a certain way. Zero contains infinity, and infinite zeros (monads) contain EVERYTHING. All the mysteries and secrets of existence lie buried in the twin numbers zero and infinity. They are the flip sides of the same coin. Infinity is implicit in zero, and becomes explicit in any anti-symmetric rather than symmetric environment. Symmetry, the breaking of it, and the attempt to return to it, is what drives existence.

Of course, scientific materialism has no other aim than to wage war against zero and infinity and seek to remove them entirely from consideration. Science can deliver a multitude of tactical victories, but it has no strategic vision at all. It will NEVER deliver the truth of existence. Science reduces everything to its basic components, but it refuses to go all the way to the ultimate basic components – Leibnizian monads, ontological zeros.

"The one reality science cannot reduce is the only reality we will ever know." – Jonah Lehrer.

After Abrahamism and Karmism, scientific materialism is the most absurd false claimant in human history. It talks about facts, evidence, reality and truth and yet, when it comes to all of the most important issues, it has nothing to say. It has no means of understanding ultimate reality because it dogmatically rejects the two numbers that define ultimate reality. It's caught in the ultimate trap, rendered impotent by its own ideology. Materialism is precisely that school of thinking which is defined by its rejection of zero and infinity. The place where it needs to go is the place where it can never go because it denies its very existence. Zero and infinity constitute the ultimate

forbidden zone for materialism. Scientific materialism will never discover the theory of everything, the ultimate answer of existence.

To decide between scientific empiricist materialism and scientific rationalist idealism is simple. It reduces to whether zero and infinity are ontological or not. If they're not, materialism is right. If they are, materialism is refuted. God, the afterlife, the mind, consciousness and the soul all depend on this single question. Nothing has more at stake than this one question. No scientific experiment will ever be able to probe the domain of zero and infinity. It will never be amenable to the scientific method.

Reason is the sole determinant in this matter. Will you accept the diktats of reason, or will you reject reason in favour of experimental proof (which will never come)?

No one will ever have direct, objective experience of zero and infinity, only the subjective experience of these two numbers. This is the final showdown between the rival ideologies of rationalism and empiricism, of idealism and materialism. To accept the rationalist, idealist position you must reject your senses and experience. If you keep faith with your senses and experiences, you have declared yourself an irrationalist – and denied yourself access to the most important answers of all.

The universe has set up the most fabulously cunning test for us. The universe is, ultimately, all about reason, but this can never be proved by any means other than reason. The materialists and the empiricists have declared themselves the enemies of reason: they will not accept reason without sensory proof, but there can be no proof of entities which do not exist in the material, sensory world.

Do we live in a rationalist universe, or a universe of the senses? How you answer that question will determine whether you will be an atheist or someone certain you can become God. Are you an irrationalist or rationalist? Atheism has often staked a claim to being the ultimate expression of rationalism. It is nothing of the kind. It is the fundamental enemy of rationalism and the champion of the fallible human senses. It recites the same old mantras: absence of evidence is evidence of absence; if we can't prove something's existence with our senses then it can't exist.

Rationalism makes no appeal to faith. It appeals only to the hardest logic and reason, but it does not embrace any need whatever for sensory proof. Rationalism is about immutable, eternal, Platonic truths of analytic mathematics. Are you for or against Plato? Are you for or against Pythagoras,

Descartes and Leibniz? These are the four great champions of rationalism. If you accept their rational arguments based on mathematics, you have given yourself access to the numinous domain. If you reject mathematics in favour of your irrationalist senses, you will be an atheist, and a sad, miserable person who will never understand the mysteries of life. It's your choice. The answers are out there – but they are available only to scientific rationalist idealists like Leibniz, not to scientific empiricist materialists (the scientific establishment).

If you are a materialist, you *must* be an atheist. If you are an idealist, there is no rational reason why you cannot be 100% certain that you are an immortal life force (a soul), and that you can become God. It is as 100% certain as $2 + 2 = 4$. It's an eternal, immutable, analytic truth.

The irony about the empiricist materialist position is that there's not one scintilla of evidence that it reveals anything whatever about the "real" world: things as they are themselves. In this context, Kant's ideas are definitive. All we ever encounter via our senses is a subjective, mind-created phenomenal universe. It has nothing at all to do with the noumenal universe (i.e. the universe as it really is).

Kant believed that the noumenal universe was formally unknowable. We disagree with that. The noumenal universe is entirely mathematical, hence can be entirely known via mathematics, i.e. by the exercise of mathematical reason. Reason, and not our senses, reveals true reality to us rather than phenomenal, illusory reality. The scientific establishment has thrown in its lot with phenomenal rather than noumenal reality. It will never know the truth.

Human beings are prisoners of their own minds and senses. There's only one escape route: mathematical reason. That alone can allow people to gain an objective view of the universe, beyond the confines of their sensory jail.

If the universe weren't entirely grounded in rational and mathematical principles and laws, and indeed in basic mathematical units, Kant would be right that the world outside our minds is unknowable. But, thanks to mathematics, EVERYTHING about true reality is knowable, but can be reached only by mathematics and reason.

Symmetry

A new Age of the universe begins in perfect symmetry, but it can do nothing until it breaks that symmetry, and it does that by applying an energy Exclusion Principle, which generates unique particles. Uniqueness is the ultimate expression of symmetry breaking.

If we think of the symmetrical universe as the thesis and the antisymmetric universe as the antithesis then the synthesis is one that subjectively maximises uniqueness (antisymmetry) while objectively maximising symmetry. Hegel insisted that the universal *Geist* (mind/spirit) must alienate itself before finding itself again, at a much higher level (the level of self-awareness).

Alienation corresponds to radical antisymmetry (both subjective and objective), which the dialectical process then overcomes, ultimately restoring perfect harmony objectively, while preserving and enhancing subjective uniqueness. In other words, we all become Gods, and, as Gods, we all come back together as a Community of Gods – and that brings an Age of the universe to its conclusion.

In terms of Big Bang cosmology, the Big Bang is initially perfect symmetry. An Exclusion Principle is applied, and that corresponds to the Big Bang "explosion", but it is not finite – it happens on an infinite scale. It happens everywhere at once. But the Big Bang doesn't stop. It keeps applying the Exclusion Principle to fresh symmetric monads (of which it has an infinite supply), thus creating antisymmetric monads (with unique spatial coordinates). The result of this is that space keeps expanding (via David Hilbert's so-called "Hotel Infinity" mechanism). The expansion of space has a remarkable effect. It steadily destroys anything it created at the beginning of the expansion. Think of two points initially separated by one cm. Eventually, they will be separated by, for example, a trillion kilometres, or even infinity. Any material things requiring close bonding fall apart. Such an expansion is equivalent to a repulsive effect being applied to the universe, i.e. the universe isn't just expanding, it's speeding up too. Galaxies are accelerating apart.

A repulsive force called dark energy is used to account for this –
basically another name for the cosmological constant first introduced by Einstein in his general theory of relativity to provide a counter-effect to gravitational attraction and maintain a stable universe, neither expanding nor contracting.

According to Big Bang cosmologists, all of the galaxies in our universe are racing apart at incredible speeds, being pushed apart by the expanding, and indeed accelerating, universe. Eventually they will be infinitely far apart, but so will all of the contents of the galaxies, and so, eventually, will the contents of atoms (although scientists currently deny that atoms are affected).

To understand the effects of expansion, it's vital to realise the importance of something that we call "spatial density". As space expands, spatial density decreases (imagine an original set of points becoming increasingly separated as more and more points appear amongst them, pushing them apart: the density of the original collection automatically decreases). The formation of matter takes place at high spatial density (soon after the Big Bang) and is destroyed at low spatial density (as an Age of the universe reaches its end). Eventually, the antisymmetry of the material (fermionic) universe is destroyed and replaced by the symmetry of a bosonic universe.

Compossibles

It's said that a monkey typing for infinity could produce the entire works of Shakespeare. Of course, this is a fanciful thought since no monkey could type forever. Nor could you have infinite typing monkeys. No such thing as a typing monkey exists or ever could exist outside our imaginations (a real monkey would strike a few keys and then wander off for a banana). You often hear mathematicians and cosmologists saying that anything that can happen will happen and they even say that typing monkeys are out there somewhere. They might as well say that there are rhinos out there writing love poetry. The fact that we can imagine something doesn't make it automatically possible, regardless of infinity. As Leibniz observed so brilliantly, things have to be COMPOSSIBLE, i.e. possible in the context of the rest of their environment.

As soon as that criterion is applied, an infinite number of hypothetical possibilities are rendered impossible. There is no conceivable evolutionary outcome where monkeys will actually type Shakespeare's plays, or type anything for that matter. Typing is not compossible with the activities in which monkeys are capable of participating. Beyond a thought experiment, it's an impossibility. In any case, a typing monkey wouldn't be a monkey; it would be something else – a humanoid.

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In Multiverse theory, calculations have been performed to show how far we have to go to find an exact copy of the earth, including, perhaps, exact copies of us.

"All you need to do is work out how many subatomic particles it's possible to cram into the observable universe. Calculate the number of possible configurations of those particles and multiply that by the diameter of the observable universe." -- BBC, Horizon: *To Infinity and Beyond*

In our observable universe, so the argument goes, there's a finite number of particles, hence a finite number of ways to arrange the universe. But there's a fundamental problem with this type of argument. What it does is characterise the universe as an infinite repetition of universes like our observable universe, and it assumes that such universes are all fundamentally finite, with a finite number of particles. In that scenario, it would indeed be possible to find identical earths. However, the scenario is intrinsically absurd. The "observable" universe doesn't imply "finite" universe. There's no necessary connection at all.

Imagine counting from zero to one million. Then imagine that when we reach a million, our next count takes us to zero and we begin all over again. This way, we could go on counting forever, based on a finite range (zero to a million). But this isn't how numbers work. They don't stop at one million… they go on and on.

Mathematically, every individual, unique number is defined with regard to ALL OTHER NUMBERS (of which there are of course infinitely many). By exactly the same token, all particles are defined with regard to ALL OTHER PARTICLES, of which there are infinitely many. The corollary of this is that no part of the universe can EVER exactly resemble any other part because any set of particles anywhere in the universe is always unique. There can never be an exact copy of earth out there, or exact copies of us. There could certainly be planets like earth and beings like us, but they would never be replicas. We are unique souls on a unique planet.

It can't be emphasised enough that there is no such thing as a particle defined *finitely*. All particles are defined *infinitely*, i.e. with regard to everything else, exactly as in the case of Pauli's Exclusion Principle where the energy levels of all particles change in response to those of all other particles. The fact that the particles of earth have a particular, unique energy signature means that there can never be a replica earth (or indeed replica versions of us) because the Pauli Exclusion Principle would need to be violated to allow the energy levels of the particles of that other hypothetical earth to be identical to those of this earth.

The WHOLE COLLECTION of atoms is the important thing, not any individual atoms. All electrons and all nuclei are all subject to the exclusion principle. None of them can be in the same state. This, ipso facto, refutes the "identical worlds" position. There's no such thing as a repeating set of isolated atoms because isolated atoms don't truly exist. Everything is connected to everything else.

Moreover, when you add in the Heisenberg Uncertainty Principle, any concept of replicas becomes doubly incoherent. If we can't specify the positions and momenta for the particles of this earth, how can we have an exact definition of it in order to create a replica of it? It's impossible. To compound the problem, if atoms are 99.9999999999999% empty space, what does it mean to say that another planet is identical? Is it being said that the 0.0000000000001 of actual "stuff" is identically arranged? How could empty spaces be meaningfully compared? Not just static empty spaces – *dynamic* empty spaces.

The Infinity Multiplier

If you want to understand Illuminism, you must understand the concept of the Infinity Multiplier. If, mathematically, something can happen once, it can happen an infinite number of times – unless there is a sufficient reason why that should not be so. Barring any sufficient reason blocking the way, all single instances of anything are automatically multiplied infinitely many times. If there is a sufficient reason for one of something to exist, there is a sufficient reason for an infinity of that same thing to exist.

So, if one fundamental particle of reality exists, there are automatically infinitely many such particles because of the Infinity Multiplier. Science – completely bewildered by the concept of infinity – is logically incoherent because it denies the existence of the Infinity Multiplier. Science implicitly states that there IS a sufficient reason why infinity should not happen, but it is unable to identify any such reason (other than infinity's incompatibility with the materialist paradigm), hence it is just a matter of faith and dogmatism.

Existence is EVERYWHERE. It can't not be. Existence is an infinite plenum. We are surrounded by infinity in all possible directions. Nothing can get in the way of infinity. The universe is most definitely not finite, and that means that the Big Bang was not a finite event. It was an instantaneous,

infinite expansion event. The universe instantly went from being a single point (containing infinite undifferentiated points) – the Genesis Origin – to an infinite number of differentiated points. All that was required to achieve the Big Bang was an Exclusion Principle that converted "bosons" into "fermions". It really was as simple as that.

The Love Boat

Do you know why people are so obsessed with love? It's because the ultimate truth of existence is that we travel through eternity entirely on our own. No one else can ever be us. No one else can ever be in our shoes. No one else can take our burden. It's all up to us.

When you fall in love then, for an ecstatic period, you seem to merge with another person and your existential loneliness is temporarily assuaged. People long to be in love because it's the only true answer to the crushing isolation most people feel at their core. Whenever you can release that pressure, it's joy unlimited.

Scientifically, we might say that love is when two fermions, suffering under the loneliness of the Exclusion Principle, temporarily become bosons sharing the same state. They can no longer be distinguished. They are "one flesh".

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Bosons are responsible for transmitting the forces of nature. The electromagnetic force is carried by photons; the quarks inside atomic nuclei are stuck together by the strong force mediated by gluons; the W and Z bosons carry the weak force responsible for radioactive decay; gravitons are said to carry the gravitational force.

Symmetry

All elementary particles have a property called spin, which is compared with rotation around an axis, like a spinning ball (though given the "fuzziness" of the quantum world, a spinning ball is far too concrete a concept).

The quantum world is based on two classes of particles: the fermions (matter particles) and bosons (force particles). The fermions can have only

half-integer spins (n/2), such as 1/2 or 3/2, while bosons can have only whole integer spins (n), such as 0, 1, 2. Fermions obey Fermi-Dirac statistics and Bosons obey Bose-Einstein statistics. These correspond to two radically different types of behaviour. Crudely put, fermions always stay apart and bosons love to get together. Fermions are extreme introverts, so to speak, autonomous, individuated and independent while bosons are extreme extraverts, all crowding together. They are "other-directed", always following the fashion, always keeping up with the Joneses. If the fermions are extreme individualists (anarcho-capitalist libertarians?!), the bosons are communists!

When the earth spins 360 degrees (a full circle), it returns to its starting point. But if a spin 1/2 fermion rotates through 360 degrees, it arrives at a quantum state that has the opposite sign to its starting point, i.e. +1/2 goes to -1/2. To get back to its starting point, it needs to spin another 360 degrees, making a total of 720 degrees (a double rotation).

So, spin values are all about the relationship that particles have to 360-degree rotation, with "1" meaning that it takes 1 complete rotation of the particle to complete 360 degrees and a "1/2" meaning that it requires a rotation of 720 degrees to return it to its starting point (1/2 x 720 = 360 degrees). Rotating a spin -1/2 particle by 360 degrees takes it to the state with the opposite quantum phase (antisymmetric).

A spin-zero particle can only have a single quantum state: it's a sphere which looks the same no matter what angle it's rotated through. A spin-2 particle returns to its original state after a 180-degree rotation (2 x 180 = 360), and a spin-4 particle needs only a ninety-degree rotation (4 x 90 = 360).

All particles with different spins are seeing the world in different ways. The spin 1/2 electron (fermion) experiences two universes rather than one. A 360-degree rotation brings it into a "negative", antisymmetric version of the universe, and a further 360-degree rotation brings it back to the beginning. Fermions experience this antisymmetric universe and bosons never do. The bosons only ever experience a symmetric universe.

Since "spin" is really just a mathematical abstraction, we can choose to think of it in alternative ways. One way is via cosine and sine functions.

Consider the following diagram from Wikipedia:

http://en.wikipedia.org/wiki/File:Sine_and_Cosine.svg)
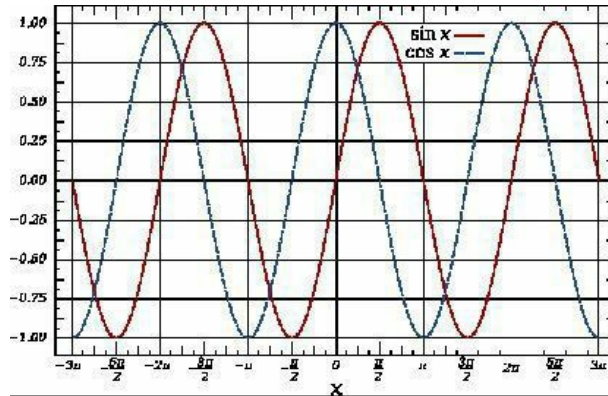
Technically, the graphs of the sine and cosine functions are sinusoids of different phases, shifted by 90 degrees. The cosine wave is perfectly symmetric when reflected in the y-axis. The sine wave, on the other hand, is perfectly antisymmetric, i.e. if we take the peak from 0 to π radians and reflect it in the y-axis, it has no matching peak (mirror image) between 0 and $-\pi$ radians. Instead, the peak between 0 and $-\pi$ radians is actually perfectly inverted compared with where the mirror image of the first peak would be. To put it another way, to get from the peak between 0 and π radians to the peak between 0 and $-\pi$ radians, we first have to perform a reflection in the y-axis followed by a reflection in the x-axis: a two-stage reflection. We can think of cosine waves as being the natural means for describing bosons, and sine waves for describing fermions.

Just as bosons with spin 1 are associated with 360 degrees (a single full rotation), and fermions with spin 1/2 are associated with 720 degrees (a double rotation), cosines involve only one symmetrical operation (a single reflection), while sine waves involve two (two reflections in two perpendicular axes). There is always this extra factor, an extra step, a complicating factor, in the fermion case.

Consider the symmetrical cosine peak between -π and +π. There is nothing to prevent us cramming as many bosons as we like into this peak. In fact, if we keep narrowing the peak until it becomes a so-called *Dirac delta function*, we could have an infinite number of bosons in a single state (the Big Bang Singularity).

Now consider the situation with the sine wave in the same range (-π to +π). There are two completely distinct and separate antisymmetric regions (one between 0 and +π and one between –π and 0). As far as fermionic electron shells in atoms are concerned, we can imagine one electron inhabiting the region between -π and 0 (with spin -1/2), and another

inhabiting the region between 0 and π (with spin +1/2).

Where all bosons are symmetric with regard to being swapped with each other (hence can inhabit the same state), fermions are antisymmetric with regard to being exchanged, meaning that they can never inhabit the same state.

It's all there in the simple symmetry of cosine and sine waves. In other words, "bosons" and "fermions" are constructed scientific terms that are really doing nothing but providing another way of describing symmetry operations involving cosine and sine waves. We could go through all scientific jargon and replace it with underlying mathematical operations, i.e. science is just a different way of talking about mathematics. It doesn't describe a separate reality; it describes a mathematical reality but uses a specialised non-mathematical vocabulary. Science is mathematics using a different, less precise terminology. All scientific concepts ought to be translated back into proper, precise, analytic mathematical concepts.

We might regard bosons as "cosine particles" and fermions as "sine particles". Given that bosons are force particles and fermions are matter particles, we might therefore conclude that what's really going on is that cosine waves are mediating relations between sine waves. If we could "see" what was really going on, it would simply be an enormous ocean of sine and cosine waves all interacting with each other using mathematical symmetry (including antisymmetry).

The scientific jargon that is used to describe "reality" is just that – jargon. The scientific vocabulary is obscuring the fact that nothing but mathematics is actually going on. As a direct consequence of the way scientists use vocabulary, we are led into thinking that they are describing a scientific rather than mathematical universe, and this has led to the catastrophic idea that mathematics isn't at the root of everything. Mathematics has been turned into an abstraction – a tool for illuminating scientific reality – and thus its ontological status has been overlooked and ignored. It's astonishingly damaging that reality is viewed scientifically rather than mathematically because science is about contingent, provisional, synthetic "truths" while mathematics is about necessary, certain, immutable, eternal, analytic truths. These are two absolutely contradictory views of the worlds: science is empirical and mathematics is rational.

If you agree that the universe is a rational, comprehensible place, organised according to rules that can be rationally grasped, then it should be

approached from a strictly rationalist angle (i.e. mathematically), not from an ad hoc, empiricist angle (i.e. scientifically).

If you want definitive answers to existence, only mathematics can provide them. That's an irrefutable fact. If you want a provisional, uncertain and non-definitive description of the universe (using an invented, human vocabulary), choose science, with its imprecise, bogus, ad hoc terms.

Antisymmetry Is Not Asymmetry

The contrast between symmetry and antisymmetry is simply that antisymmetry involves a change of sign. Antisymmetry is *not* asymmetry (i.e. the absence of symmetry).

Identical particles

In physics, all particles of a particular kind are considered identical e.g. all electrons are identical. This means that it's impossible to say which is which: they are indistinguishable. A distinguishing mark can't be placed on them and subsequently tracked.

Even though the Pauli Exclusion Principle seems to make all electrons distinguishable, this is not in fact the case. It's true that no two electrons can be in the same state, but we can never say *which* electron is in any particular state, i.e. a set of unique energy states for all electrons does not equate to these electrons having distinguishing "marks" on them. We can arrange the identical electrons how ever we like; we just can't give any two of them the same state. Any electron can occupy ANY of the states. It's the states that are unique, not the electrons. Although we can know at any instant that no two electrons can occupy the same state, we cannot know which electron is in which state. If we focus on any state, literally any electron in the universe could occupy it. The next instant, it could be occupied by any other electron in the universe. We can never tell.

The same is arguably true of monads. An infinite set of coordinates is available, but any monad can take on any of the unique sets of coordinates, and can change to any other. The coordinates themselves NEVER change, but the particular monad occupying them might change.

Supersymmetry

According to the theory of "Supersymmetry", the equations of the Theory of Everything can be expressed equally well in bosonic terms OR fermionic terms. The reason for this is that, according to this theory, every boson has its fermionic counterpart, and vice versa.

In Supersymmetry, we can talk of both bosonic and fermionic force fields rather than just bosonic force fields. Supersymmetry modifies the standard model of physics in two ways:

1) It adds four other dimensions to the existing four dimensions of spacetime, giving a total of EIGHT dimensions.

2) All the particles of the standard model have corresponding "superpartners".

Supersymmetry unites fermions and bosons in a single, overarching eight-dimensional geometric framework known as *superspace*. In the ordinary 4D framework, the different spin properties of fermions and bosons make them radically different. In the new 8D framework, the spin properties of fermions and bosons are reconciled and they become the same within that overall context. The new framework achieves this by a allowing every fermion to have a bosonic counterpart, and every boson to have a fermionic version of itself, thus rendering all particles *fermion-bosons* rather than separate fermions and bosons.

The extra dimensions are not of the "physical" space and time type. They are strictly mathematical and allow the rotation of particles in and out of the extra four dimensions, thus permitting the mathematical conversion of fermions into bosons, and vice versa. In terms of "abstract" mathematics, the conversion is extremely easy; in terms of ontological mathematics, it's extremely hard because the conversion requires enormous amounts of energy.

The four extra dimensions that are added to the normal four dimensions are called fermionic dimensions ("quantum dimensions"), while the original dimensions are called bosonic dimensions.

Fermionic spacetime is very different from bosonic spacetime. In the latter, you are not restricted. You can keep going in any direction unimpeded. In fermionic spacetime, however, you can occupy only coordinates not occupied by other fermions. It's as if every coordinate has an on and off switch. If the switch is on, the location is occupied and you can't go there. If the switch is off, you are allowed to go there. Obviously, this turns smooth,

continuous motion into jerky, discrete motion. In each location, you can have only 0 fermions or 1 fermion.

Imagine a minefield universe, or a noughts and crosses universe. You can move only to coordinates where no mine (or cross) is present. If you're surrounded by mines in all direction, you can't move at all. (You yourself are a mine, so no one can land on you either.)

So, bosonic spacetime is continuous and fermionic spacetime is "discrete", and the two spacetimes have radically different properties. The whole 8D configuration space is called *superspace*. This is a geometrical structure which allows fermions and bosons to be treated fully symmetrically.

Given that spin 1 bosons can complete a full rotation in 360 degrees while spin 1/2 fermions require 720 degrees, we can think of the extra fermionic dimensions as allowing a full fermionic rotation in just 360 degrees, but in a special 8D rather than 4D configuration space. Via rotation in and out of the 8D configuration space to the normal 4D spacetime, fermions and bosons become interconvertible. So, in this view, bosons and fermions are no longer radically different. In fact, they might all be regarded as essentially identical particles, differentiated only by their geometrical rotational properties. Just as 1/2 and -1/2 spin electrons are identical electrons differentiated only by their spin quantum number, so we can say that all particles are the same if their spin properties, and other properties such as charge, are factored out. ("Charge" itself must vanish at a higher symmetry level. Presumably, charge involves some symmetrical mirror relation between positive and negative numbers.)

What this means is that it is possible to transform bosons into fermions and fermions into bosons, and what we see as two different kinds of particles is actually an illusion created by geometry.

If Supersymmetry is right, it provides yet more evidence that physics is just an approximation to a precise, underlying mathematical reality.

Particles and Fields

In Supersymmetry, as soon as fermion particles exist, bosonic fields exist to interact with them and carry their effects. Equally, as soon as bosonic particles exist, fermionic fields exist to interact with them and carry their effects. Of course, this is just scientific jargon for mathematical operations involving antisymmetric functions (particles) and symmetric functions (fields, mediated by quanta such as photons in the case of the electromagnetic

field).

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The supersymmetric counterparts of particles are known as *superpartners* or *sparticles*. They are listed in the tables below:

Force Particles and their Matter Particles Superpartners:

Name	Spin	Superpartner	Spin
Graviton	2	Gravitino	3/2
Photon	1	Photino	1/2
Gluon	1	Gluino	1/2
W+	- 1	Wino	+,- 1/2
Z0	1	Zino	1/2
Higgs	0	Higgsino	1/2

Matter Particles and their Force Particles Superpartners:

Name	Spin	Superpartner	Spin
Electron	1/2	Selectron	0
Muon	1/2	Smuon	0
Tau	1/2	Stau	0

Neutrino	1/2	Sneutrino	0
Quark	1/2	Squark	0

At much higher energies – those experienced at the Big Bang – there was complete symmetry. All the fermions and bosons and their superpartners were present. However, since the supersymmetric partners are predicted to be considerably more massive than their ordinary partners, they can exist only in high-energy environments.

As the universe cooled down, the superpartners couldn't be sustained and collapsed down to their ordinary and more stable partners that we encounter now.

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All of the superpartners are much more massive than ordinary particles, hence are unstable and rapidly decay. They cascade down to the *lightest superpartner* ("LSP"). This is stable since this has nothing below it into which it can decay.

The LSP would be a permanent component of our universe and, together with neutrinos, make up the so-called dark matter that is said to constitute some 80% of all the matter in the Universe. "Dark" particles are those that are electrically neutral, hence do not experience the electromagnetic "light" force. The *sneutrino*, the *gravitino* or the "*neutralino*" have all been proposed as the LSP.

The Higgs Field

The Higgs field (and its associated particle, the Higgs boson) is of critical importance because it is said to confer mass on the particles with which it interacts. Any particle without a mass (such as a photon) is ipso facto immune to the Higgs field.

The Higgs field is often described using the following metaphor:

"Imagine a cocktail party of political party workers who are uniformly distributed across the floor, all talking to their nearest neighbours. The ex-Prime Minister enters and crosses the room. All of the workers in her neighbourhood are strongly attracted to her and cluster round her. As she

moves, she attracts the people she comes close to, while the ones she has left return to their even spacing. Because of the knot of people always clustered around her, she acquires a greater mass than normal, that is she has more momentum for the same speed of movement across the room. Once moving she is hard to stop, and once stopped she is harder to get moving again because the clustering process has to be restarted. In three dimensions, and with the complications of relativity, this is the Higgs mechanism. In order to give particles mass, a background field is invented that becomes locally distorted whenever a particle moves through it. The distortion – the clustering of the field around the particle – generates the particle's mass." -- David Miller

The Higgs field in a vacuum is likened to a lattice which permeates the universe. The Higgs boson associated with the Higgs field is the so-called "God particle", the existence of which has now been confirmed at CERN in the experiments involving the Large Hadron Collider (LHC).

The Higgs field is sometimes described as an ocean-like ether that fills all of space and engulfs all susceptible particles. It causes a kind of "drag" in those particles which manifests itself as mass. The Higgs field is almost indistinguishable from empty space but those particles that interact strongly with the Higgs field are heavy, those that interact weakly are light, and those that don't interact with it at all are massless.

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The Big Bang is conceived as starting as a pure energy event in which all forces were unified, so where did mass come from, i.e. how did energy get converted into particles with mass? The Higgs field (with its Higgs bosons) provides the theoretical account of what took place. This field is therefore fundamental to material existence, and hence to our world. Yet there is something somewhat circular about this argument. The Higgs field confers mass, and Higgs bosons themselves have mass. So, where did they get their mass – by interacting with their own field? The Higgs field cannot be the whole story.

Intuitively, the appearance of mass must have a deep connection with the antisymmetry associated with the Pauli Exclusion Principle, which plays the decisive role in causing particles to be individuated. All fermions – all of which obey the Pauli Exclusion Principle – have mass. Photons, gluons and

hypothetical gravitons (all bosons which do not obey the Exclusion Principle) do not have mass, hence do not interact with the Higgs fields. But the W and Z bosons of the weak nuclear force, and the Higgs boson itself, DO have mass. So, one of the key questions physicists ought to be addressing is why all fermions (antisymmetric particles) interact with the Higgs field, most bosons (symmetric particles) do not interact with it, yet some do.

It's as if the bosons that have mass are actually a third type of particle that sits between massless, symmetric bosons and massive, antisymmetric fermions. This third type of particle is characterised by being symmetric while having mass (typically associated with antisymmetry). It would seem that the symmetry associated with massless bosons is starting to break down with massive bosons. So, we might speculate that there are three types of particle symmetry: 1) symmetry, 2) antisymmetry and 3) *transitional* symmetry (a hybrid – or dialectical synthesis – of symmetry and antisymmetry). This transitional symmetry would be critical for converting fermions into bosons, and vice versa.

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Instead of the "God particle", contemporary Gnostics often refer to the Higgs boson as the "Satan particle" because it's responsible for creating the material domain of the God of Abraham (the Devil), while the True God Abraxas resides in the realm of pure light and is gloriously unaffected by the Higgs field and Higgs boson.

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Mathematically, we might say that the Higgs field is what deforms and contorts pure real and imaginary waves (space and time waves) and makes them into hybrid, fused complex waves (spacetime waves). Or we might say that complex numbers create the Higgs field: the Higgs field is a manifestation of the mathematics of complex numbers.

Symmetric, massless bosons are associated with pure real or imaginary waves, antisymmetric massive fermions (i.e. fermions with mass) are associated with complex waves (having real and imaginary components), and massive bosons represent the transition from pure real or imaginary numbers to mixed complex numbers. In other words, when physicists talk about bosons and fermions, what they are really doing is inventing a new jargon for

talking about something that is fundamentally mathematical: the ontological relationship between real, imaginary and complex numbers, and how they are interconverted via symmetry operations

Once again, we see how we could easily dispense with physics and wholly replace it with ontological mathematics. Unlike physics with its contingent, synthetic statements, mathematics delivers analytic, necessary truths, hence removes all of the uncertainty and provisionalism associated with physics.

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While the Higgs mechanism might successfully describe how mass comes about, does it actually explain what mass is? Science often describes rather than explains: they are NOT the same thing. Mass is actually something to do with speed, space, time, symmetry, antisymmetry, real, imaginary and complex numbers. In other words, it's ferociously complicated and "mass" is just a way of simplifying the discussion and the analysis of a fundamentally mathematical set of relations.

Force and Matter Particles

The physical universe is divided into matter and force particles. The interactions which affect matter particles are due to an exchange of force carrier particles. These force particles are like metaphorical basketballs being tossed between matter particles, which therefore act as metaphorical basketball players. What we normally think of as "forces" are actually the effects of force carrier particles on matter particles. When a fermionic basketball player wants to transmit a force to another fermionic basketball player, he simply throws him the bosonic basketball. If no ball is thrown, there is no force between the two players.

If we want to explain repulsion rather than attraction in our basketball analogy then we might imagine the ball as superheated, and the basketball players don't want to touch it. They actively avoid receiving the ball instead of demanding it, or push it away as fast as possible.

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One important thing to know about force carriers is that a particular force carrier particle can only be absorbed or produced by a matter particle which

is affected by that particular force. For instance, electrons and protons have electric charge, so they can produce and absorb the electromagnetic force carrier, the photon. Neutrinos, on the other hand, have no electric charge, so they cannot absorb or produce photons.

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There are two ways to think about quantum processes:

1)   *The field picture*: a field generated by one particle causes a force to affect another particle.

2)   *The particle transfer picture*: one particle emits a virtual particle which is absorbed by another particle, thus transmitting a force to it.

As a quantum field theory, the Standard Model of particle physics has been successful in describing the three non-gravitational forces of nature bosonically. (The electromagnetic force, for example, is the result of exchanging virtual photons.) So, physicists have been striving to treat gravity in the same way as the other forces. The gravitational force would therefore be the result of exchanging virtual gravitons (the graviton is a hypothetical boson: it hasn't yet been experimentally observed).

General Relativity describes gravity as the curvature of spacetime. General Relativity is a background *independent* theory, while the Standard Model is background *dependent*. This makes any reconciliation technically impossible.

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All force carriers operate as *virtual* particles when transmitting their force. A real particle can be detected and therefore must carry energy; virtual particles can't be detected directly and can exist only within the confines of the energy-time version of the Heisenberg uncertainty principle. For some theorists, such virtual particles don't exist at all and are merely mathematical instruments for getting the right answer, i.e. they operate in much the same way as many theorists think of imaginary numbers, i.e. not as ontologically real, but allowing calculations to be performed in the most efficient and effective ways.

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Bosons are the particles which transmit the different forces between the matter particles. They have whole number spins. Fermions are matter particles which have half spin numbers. All Fermions are real particles. Bosons can sometimes be virtual particles and sometimes real particles. Virtual particles are the particles which transmit the forces between particles e.g. virtual photons carry the electromagnetic force between electrons. They are called virtual particles because they can't be directly detected.

The electromagnetic force is mediated by an exchange of virtual photons. The weak force, associated with radioactivity, is mediated by particles called W and Z bosons. The strong force is mediated by gluons.

A virtual, or force-carrying, particle can be thought of as a quantized excitation of a field. It does not exist by itself; it cannot be measured except by measuring the force it carries. Real particles, on the other hand, can be measured and exist by themselves.

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All matter is made up of two kinds of elementary particles: leptons and quarks. Ordinary, everyday matter (atoms) consists of electrons, protons and neutrons. Electrons are leptons and the neutrons and protons of atomic nuclei are composed of quarks.

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So-called gauge bosons carry the fundamental forces – as virtual particles. W and Z bosons carry the weak force. Photons carry the electromagnetic force. Gluons carry the strong force. Gravitons are hypothesised to carry the gravitational force. The W and Z bosons have mass while the photon, gluon and graviton do not.

The W and Z bosons, though having mass, exist as virtual particles mediating the weak force. Because of their mass, they can have only a short range of influence (unlike photons).

Like the photon, W and Z bosons can also exist as real particles. Gluons are thought to exist as real particles only in quark-gluon plasma inside the incredibly hot and dense cores of neutron stars.

Fermions and Bosons

Fermions are matter particles (quarks and leptons). They are dimensional. Bosons are force particles and most of them are dimensionless. Are bosons "mind" particles that create binding forces for material fermions?

Photons (the carriers of the electromagnetic force) bind electrons and atomic nuclei; gluons (carriers of the strong nuclear force) bind the protons and neutrons within nuclei; W and Z bosons (carriers of the weak nuclear force) are responsible for the radioactive decay of subatomic particles and also for initiating hydrogen fusion in stars. Weak interactions affect all fermions. Gravitons are associated with the binding force of gravity between bodies.

The Conservation Paradox

Photons do not obey any obvious conservation law. While extreme conditions are required to create or destroy electrons, photons are being created and destroyed, emitted and absorbed, all the time, meaning that there is a constant fluctuation in the total number of photons in the universe at any given time. Every time you switch on a light, you create countless photons. Given that the energy of the universe is constant, the fact that photons aren't conserved is potentially problematic. Perhaps a "photon-equivalent" can be defined. Imagine a light bulb having a capacity for releasing a specific number of photons, say x trillion. When the light is switched on, photons pour out and are absorbed by our skin, the walls, the carpet, the air, and so on. Some of these, in turn, may emit the photons they have absorbed, and something else will then absorb them. So, although there is a tremendous variability in the number of photons in existence at any one time, there will never be more or less than the photon-equivalent with which we began. The photon-equivalent number is made up of "active" and "potential" photons. As the number of active photons increases, the number of potential photons decreases, and vice versa – but the total number of active and potential photons always remains exactly the same.

This lack of straightforward conservation foreshadows the final fate of the material universe – *everything* will be converted to photons in the end.

Rock Concert Particles

A popular analogy to show the difference between fermions and bosons concerns a classical concert in a seated hall versus a rock concert in a non-seated hall. In a classical concert, everyone has an allocated seat and no two people can occupy the same location – this reflects the behaviour of fermions. With a rock concert, the fans can roam around the whole auditorium and even sit on each other's shoulders. This is bosonic behaviour.

An atom combines both types of concert hall, so both types of behaviour (fermionic and bosonic) are observed. Matter particles (fermions, including electrons, protons and neutrons) remain in place, while bosons (force particles such as photons) roam around transmitting their force from here to there.

The Miracle of Superconductivity

When super-cooled to the "lambda point" (around -271 degrees Celsius) Helium-4 transforms into a superfluid where bosonic characteristics become visible, resulting in incredibly strange behaviour. Superfluid helium possesses almost zero viscosity (the opposite of slow, thick fluid such as syrup). It possesses zero entropy and almost infinite electrical conductivity (if electricity could be conducted commercially via superfluid helium, the cost of electricity would decrease dramatically since the efficiency of transmission would be close to 100%). Superfluid helium in an open-topped container can disregard gravity and creep up the walls of the container and over the edge and out of the container. It will continue to do so until its level on both sides of the container is even.

How Do They Know?

It's easy to say that the Pauli Exclusion Principle ensures that electrons go two by two into stable electron shells. But think of an electron being transferred from one atom to another; how does the incoming electron "know" what the existing set-up of the electrons is? How does it know which shells are occupied? How does it know which spin to adopt? What physical force is operating on it and transmitting this information to it? The only way to make sense of it is within the mathematical context of every particle knowing exactly where every other particle is and how it's configured. That

can only happen within an infinite dimensional space – which is none other than the Singularity. All particles are inherently interconnected and know exactly what all of other particles are doing.

The Einstein Podolsky Rosen "paradox", where two entangled particles continue to stay connected and transmit information between each other instantaneously even when they are separated by enormous distances, is not a freakish exception: it's true of everything. Locality, based on the speed of light, is continually violated. Non-locality applies, and the speed of light is ignored.

The Inclusion Principle

The wavefunction which describes a collection of bosons must be symmetric with respect to the exchange of identical particles, while the wavefunction for a collection of fermions is antisymmetric.

Particles exhibiting symmetric states are called bosons and those exhibiting antisymmetric states are fermions. This difference results in radically different statistical properties. Bosons obey Bose–Einstein statistics and fermions obey Fermi–Dirac statistics. Fermions obey the Pauli Exclusion Principle – no two fermions can share the same quantum state – while bosons might be said to obey an *Inclusion Principle* – any number of bosons can be included in the same quantum state.

Infinite Energy

"A major paradox is the prediction of quantum mechanics that every part of the Universe is filled with infinite amounts of energy which, according to relativity, should create infinite amounts of gravity everywhere." -- Richard Osborne, *The Universe*

Science must answer why there isn't infinite gravity. Illuminism can explain it easily. The infinite energy is trapped inside dimensionless monads, which are outside space and time, hence can have no gravitational effects on space and time.

The Pauli Exclusion Principle

"Pauli's Principle says that identical electrons cannot occupy the same energy level. This is an absolute requirement. So it also means that electrons will

avoid each other at all costs. And that, it was proved, is the actual reason why I don't fall through the empty atoms that make up the floor. That's ultimately what gives the illusion of solidity to the empty world of atoms." – Brian Cox

On a British TV science programme, Professor Brian Cox said, "The Pauli Exclusion Principle applies to every electron in the universe, not just every electron in a single atom or a single molecule. ... No identical electrons can be in precisely the same energy level. … You can think of the whole universe as a vast box of atoms with countless numbers of energy levels all filled by countless numbers of electrons. Here's the amazing thing: the Exclusion Principle still applies. So, none of the electrons in the universe can sit in precisely the same energy level. But that must mean something very odd. [When any energy levels in any electron are changed], all the electrons *across the universe* instantly but imperceptibly change their energy levels. So everything is connected to everything else."

The following day, several online physics forums went into hyperdrive as numerous physics enthusiasts pronounced that Cox had committed a catastrophic error and misrepresented the Pauli Exclusion Principle.

Here are a number of their comments:

"I did enjoy Brian Cox's program on quantum mechanics last night, but one bit left me thinking 'no, that's not right!' The gist of it was that all the electrons in the universe have to be in constant communication to ensure that no two of them are ever in the same state. If he changed the energies of electrons in a diamond, by heating it in his hand, all the other electrons in the world would have to adjust their energies too. I think this may have been an attempt to show that entanglement follows from the Pauli Exclusion Principle, but was it a simplification too far?"

"The Pauli principle confused me when I first heard it at school: did it mean that no two hydrogen atoms in the universe could be in their ground states simultaneously? I have always understood, since then, that it doesn't mean that, because which proton the electron is bound to is part of its state. So 'in the first energy level around *this* proton' is a different state from 'in the first energy level around *that* proton'. The exclusion principle states that no two electrons can be in the same 'state' not, as Cox seemed to be implying, that they might not have numerically the same energies. That is not forbidden as far as I know. We would not see nice spectral lines from billions of hydrogen

atoms all making the same state transition at the same time, if it was."

"I now know there is a deeper explanation of the exclusion principle, namely that the multi-particle wave-function of a half-integral spin particle is antisymmetric, and that means the probability of finding two of them in the same place is zero. So OK, Pauli and entanglement are connected. But I always like a simple explanation if one is available. What does the panel think? Did what Cox said amount to a good explanation for a general audience, or does it risk perpetuating a misunderstanding?"

"Basically, I too am confused by the application of Pauli's exclusion principle to the whole Universe. Do the states of the electrons really shift everywhere? And if so, how exactly do they shift – has this been measured? Nevertheless, it is freaking awesome."

"Cox is still wrong. Pauli concerns 'states' in a (quantum) system, not absolute energy levels throughout the universe. I can't believe it hasn't been more heavily reported/criticised. Unless he was being 'ironic'?"

"I too was confused about this. Every fermion in the universe is entangled with each other: surely not. If what Cox said is the true interpretation then how is any calculation of the energy levels of an electron in an atom possible? As the potential energy in a shell is fixed so a change in energy state would result in emission or absorption of radiation. I don't quite see how this is possible. Maybe I have my reasoning backwards. Also, I think he tried to do much in one hour. My wife stopped listening and started blowing raspberries (literally) and I am sure most of audience did not understand most of what he was on about."

"It appears to me that he's making an argument based on the idea of indistinguishable/identical particles. Essentially, in quantum statistics, particles behave differently to how one would expect in classical physics because particles such as electrons are indistinguishable from each other. In other words, if you have two electrons and swap them it's equivalent to having done nothing to them, because no one can tell the difference between before and after. Likewise, my guess is that he's arguing that, in theory, it's possible for electrons far away from each other to be in identical environments relative to an identical nucleus. Thus, without knowledge of Pauli's Exclusion Principle, one might expect them to have identical energy

levels. Pauli, however, shows that is simply impossible. Perhaps that's something akin to Brian Cox's argument. I would love to hear him state the rigorous version of his pop sci comments."

"I am a little annoyed that Brian Cox has introduced the 'woo woo' factor into science on national television. The 'woo woo' factor I am referring to is something that has been highlighted several times in this thread and that is that rubbing the surface of a diamond will change the quantum states of a white dwarf 600 light years from here; essentially he is saying that everything is connected and invokes the Pauli Exclusion Principle to legitimise this claim. This is false. Even if he didn't want to confuse his audience with wavefunctions and bra-ket notations there is still conceptually a major difference between saying no two electrons can occupy the same energy state WITHIN ONE ATOM and no two electrons can occupy the state WITHIN ONE UNIVERSE. The former is the Pauli Principle and the later is plain metaphysics (perhaps even Buddhism!). The nearest we can get to applying the Pauli Principle to multiple atoms is when these atoms are Quantum Entangled which does mean instantaneous action at a distance but here the atoms need to be entangled in the first place. Thus rubbing a rough-cut diamond will have no effect. And the 'confusion he has caused' is criminal."

"Not wishing to be argumentative but why be overly technical, since the diamond is being heated (or cooled for that matter) the only thing that is obvious that the energy of the system is being changed. Exactly when and how the 'energy level' of an electron changes isn't the issue, it's his assertion that all the electrons in the universe adjust their energy levels to ensure no two have the same; and that's just bollocks."

Amazingly, Professor Cox replied, for which he deserves the utmost credit.

"Seems to be some confusion here about the Pauli Principle. Jeff Forshaw and myself write about it in detail in our book *The Quantum Universe*, chapter 8. The essential point is that two widely separated hydrogen atoms should not be treated as isolated systems. If you'd like to see how we teach this to undergraduates in Manchester, have a read of this:

http://www.hep.manchester.ac.uk/u/fo...le%20Well.html

"But I do also recommend our book, because the argument is extended to explain semiconductors.

"xxxxxx – in particular, I suggest you pay close attention, especially if you're an undergraduate. You might up your degree classification!"

Brian

The following is an extract from the link specified by Professor Cox:

An example to illustrate how indistinguishable particles can behave as if they are distinguishable

Imagine two electrons bound inside two hydrogen atoms that are far apart. The Pauli Exclusion Principle says that the two electrons cannot be in the same quantum state because electrons are indistinguishable particles. But the exclusion principle doesn't seem at all relevant when we discuss the electron in a hydrogen atom, i.e. we don't usually worry about any other electrons in the Universe: it is *as if* the electrons are distinguishable. Our intuition says they behave as if they are distinguishable if they are bound in different atoms but as we shall see this is a slippery road to follow. The complete system of two protons and two electrons is made up of indistinguishable particles so it isn't really clear what it means to talk about two *different* atoms. For example, imagine bringing the atoms closer together – at some point there aren't two atoms anymore.

   You might say that if the atoms are far apart, the two electrons are obviously in very different quantum states. But this is not as obvious as it looks. Imagine putting electron number 1 in atom number 1 and electron number 2 in atom number 2. Well after waiting a while it doesn't anymore make sense to say that "electron number 1 is still in atom number 1". It might be in atom number 2 now because the only way to truly confine particles is to make sure their wavefunction is always zero outside the region you want to confine them in and this is never attainable. We therefore really should treat our two electrons as being indistinguishable from each other, i.e. we are to think of two electrons in the potential of two protons. … The problem is clear – how can both electrons be in (e.g.) the ground state at the same time? Crucially, we are not allowed to appeal to the fact that the electrons are localized on one proton or the other to get round this problem. In the language of quantum mechanics, the energy eigenstates for each electron are not localized on one proton or the other. The initial wavefunction for one electron might be peaked in the region of one proton but after waiting for long enough the wavefunction will evolve to a wavefunction which is not

localized at all. **In short, the quantum state is completely specified by giving just the electron energies and then it is a puzzle why two electrons can have the same energy**. A little thought and you may be able to convince yourself that the only way out of the problem is for there to be *two* energy levels whose energy difference is too small for us to have ever measured in an experiment.

<p style="text-align:center">✶✶✶✶✶</p>

Some people were fully satisfied by Cox's explanation, but others persisted with their objections. Here are a couple of pro and con remarks:

"That link is very illuminating. As the wavefunction of two electrons 'overlaps' no matter how far apart they are they cannot be thought of as localised or discrete anymore. So what happens to one affects the other. So Cox is right in a sense, is that right? If I understand that page properly then my understanding of the exclusion principle has certainly evolved."

"Bruce Rosenblum, in his book *Quantum Enigma*, says that everything is interconnected due to entanglement."

"To be clear: the statement from Brian is not about settling energy levels/states like one has to adjust the ocean level when one takes a drop out of it. **He suggested that every electron somehow is aware of the state of all other electrons in the universe, and adjusts accordingly. One should be able to come up with some evidence before making such a bold statement public**."

Professor Cox then offered further clarification:

Dear all,
    Let me add a bit more by way of clarification, because I think it's interesting. I've already posted a detailed analysis of the behaviour of a two proton–two electron system, and shown how the exclusion principle leads to a covalent bond in a Hydrogen molecule. Let me paste a couple of pages from my book *The Quantum Universe* – to save you having to buy it – and annotate it in a couple of places.
    In the book, we do the double well as I posted previously. This is how we describe the situation:
    "It seems that we must conclude that the pair of identical electrons in two

distant hydrogen atoms cannot have the same energy but we have also said that we expect the electrons to be in the lowest energy level corresponding to an idealised, perfectly isolated hydrogen atom. Both those things cannot be true and a little thought indicates that the way out of the problem is for there to be not one but two energy levels for each level in an idealised, isolated hydrogen atom. That way we can accommodate the two electrons without violating the Exclusion Principle. The difference in the two energies must be very small indeed for atoms that are far apart, so that we can pretend the atoms are oblivious to each other. But really, they are not oblivious because of the tendril-like reaches of the Pauli principle: if one of the two electrons is in one energy state then the other must be in the second, different energy state and this intimate link between the two atoms persists regardless of how far apart they are.

This logic extends to more than two atoms – if there are 24 hydrogen atoms scattered far apart across the Universe, then for every energy state in a single-atom universe there are now 24 energy states, all taking on almost but not quite the same values. When an electron in one of the atoms settles into a particular state it does so in full "knowledge" of the states of each of the other 23 electrons, regardless of their distance away. And so, every electron in the Universe knows about the state of every other electron. We need not stop there – protons and neutrons are fermions too, and so every proton knows about every other proton and every neutron knows about every other neutron. There is an intimacy between the particles that make up our Universe that extends across the entire Universe. It is ephemeral in the sense that for particles that are far apart the different energies are so close to each other as to make no discernible difference to our daily lives.

This is one of the weirdest-sounding conclusions we've been led to so far in the book. Saying that every atom in the Universe is connected to every other atom might seem like an orifice through which all sorts of holistic drivel can seep. But there is nothing here that we haven't met before. Think about the square well potential we thought about in Chapter 6. The width of the well determines the allowed spectrum of energy levels, and as the size of the well is changed, the energy level spectrum changes. The same is true here in that the shape of the well inside which our electrons are sitting, and therefore the energy levels they are allowed to occupy, is determined by the positions of the protons. If there are two protons, the energy spectrum is determined by the position of both of them. And if there are 1080 protons

forming a universe, then the position of every one of them affects the shape of the well within which 1080 electrons are sitting. There is only ever one set of energy levels and when anything changes (e.g. an electron changes from one energy level to another) then everything else must instantaneously adjust itself such that no two fermions are ever in the same energy level.

The idea that the electrons 'know' about each other instantaneously sounds like it has the potential to violate Einstein's Theory of Relativity. Perhaps we can build some sort of signalling apparatus that exploits this instantaneous communication to transmit information at faster-than-light speeds. This apparently paradoxical feature of quantum theory was first appreciated in 1935, by Einstein in collaboration with Boris Podolsky and Nathan Rosen; Einstein called it 'spooky action at a distance' and did not like it. It took some time before people realized that, despite its spookiness, it is impossible to exploit these long-range correlations to transfer information faster than the speed of light and that means the law of cause and effect can rest safe.

This decadent multiplicity of energy levels is not just an esoteric device to evade the constraints of the Exclusion Principle. In fact, it is anything but esoteric because this is the physics behind chemical bonding. It is also the key idea in explaining why some materials conduct electricity whilst others do not and, without it, we would not understand how a transistor works."

We then go on to 3 wells, and then to 1023 or so – which is the situation in small lump of silicon – and show that this multiplication of very closely-spaced energy levels, (correction added – the occupation of which is governed by) the Pauli principle, is the origin of the conduction and valance bands – i.e. the key to understanding how transistors work (which we also describe).

<p align="center">✶✶✶✶✶</p>

I'll admit that we just state that causality is preserved without proof in the book. The notion of causality in quantum field theory is actually a tricky one – there is a large literature on it if you do a search on Spires. But the description of the Universe as a single potential well, with an associated energy level spectrum, is surely valid unless one introduces new physics, which is not mandated by experiment – and I remind you that this rather counter-intuitive picture is necessary at a macroscopic level (admittedly transistor-sized and not universe-sized) in order to understand the conduction

and valence bands in semiconductors.

The more 'presentational' questions posed by some on the forum – namely that one shouldn't say that everything is connected to everything else for fear of misinterpretation – is interesting. In my view, the interpretation of quantum theory presented above is not only valid, but correct in the absence of new physics – and therefore everything IS connected to everything else. I was very careful to point out in the lecture that this does not allow any woo woo shite into the pantheon of the possible, as I think I phrased it.

My general position is that when communicating with the public we shouldn't spend our time triangulating off nutters. I'm having to deal with this in spades in my current series, *Wonders of Life*, where it is tempting to try to give creationists no ammunition at all by avoiding areas of doubt when describing the origin of life and the evolution of complex life on Earth. My strategy is to ignore such concerns, because these people shouldn't occupy any of our time! If we tried to take account of every nob head on the planet, we wouldn't have time to make the programs or write the books.

Brian

The Quantum Principle

So, the Pauli Exclusion Principle is as profound, foundational and universal as the Heisenberg Uncertainty Principle. In fact, the two must be fundamentally related: any alteration to any energy levels of a fermion anywhere in the universe causes an instantaneous universal rebalancing of energy across *all* fermions. Any such rebalancing will immediately cause changes in position and momentum of each fermion. Now bear in mind that no individual fermion is *ever* isolated. All fermions are continually adjusting their energy levels and thus causing all other fermions to adjust theirs. It's a cosmic feedback system with every element feeding back to every other element and instantaneously adjusting to reflect the changes – and that goes on *forever*.

The Pauli Exclusion Principle is also inextricably linked with quantum entanglement: everything knows what everything else is doing *instantaneously*.

The Pauli Exclusion Principle, the Heisenberg Uncertainty Principle and the "Entanglement Principle" are all just different aspects of something more fundamental that we shall name the "Quantum Principle".

The One-Electron Universe

John Wheeler made one of the most interesting suggestions in the history of science when he mentioned to Richard Feynman that perhaps there is only a single electron in the universe, the trajectory of which is so intricate through space and time that it seems to be in many places simultaneously.

We can conceive of one Platonic electron – the Form of the perfect electron – and then an infinite number of copies, all of which are in contact with the Platonic electron. They all feedback to it, and it to them. Every "electron" thus knows where every other electron is and what its energy is.

Remember what Brian Cox said, "And so, every electron in the Universe knows about the state of every other electron. We need not stop there – protons and neutrons are fermions too, and so every proton knows about every other proton and every neutron knows about every other neutron. There is an intimacy between the particles that make up our Universe that extends across the entire Universe."

In every case, we can envisage a Platonic controlling version of every particle, and infinite copies of it, all linked to it.

Cox said, "Our intuition says they [electrons] behave as if they are distinguishable if they are bound in different atoms but as we shall see this is a slippery road to follow. The complete system of two protons and two electrons is made up of indistinguishable particles so it isn't really clear what it means to talk about two different atoms. For example, imagine bringing the atoms closer together – at some point there aren't two atoms anymore."

This situation brings to mind the ancient paradox of the Ship of Theseus. This paradox poses the question of whether an object remains the same object if all its component parts are replaced.

Plutarch wrote, "The ship wherein Theseus and the youth of Athens returned [from Crete] had thirty oars, and was preserved by the Athenians down even to the time of Demetrius Phalereus, for they took away the old planks as they decayed, putting in new and stronger timber in their place, insomuch that this ship became a standing example among the philosophers, for the logical question of things that grow; one side holding that the ship remained the same, and the other contending that it was not the same."

Thomas Hobbes complicated the problem by wondering what would happen if the original planks were gathered up after they were replaced, and used to build a second ship. Is either the original Ship of Theseus?

"In *The Wonderful Wizard of Oz* (1900) by L. Frank Baum, a lumberjack's cursed axe chopped all his limbs one by one, and each time a limb was cut off, a smith made him a mechanical one, finally making him a torso and a head, thus turning him into the Tin Woodman, an entirely mechanical being, albeit possessing the consciousness of the lumberjack he once was. Conversely, in the book *The Tin Woodman of Oz*, the Tin Woodsman learns that his old human body parts (minus the head) were sewn together to create a new man who then married his old sweetheart." -- Wikipedia

And what of phantom limb syndrome where amputees still feel that their missing limb is present? How can such a phenomenon exist? Does the Ship of Theseus "miss" its original parts?

Wikipedia provides an analysis of the question in terms of Aristotelian philosophy:

"According to the philosophical system of Aristotle and his followers, there are four causes or reasons that describe a thing; these causes can be analyzed to get to a solution to the paradox. The formal cause or form is the design of a thing, while the material cause is the matter that the thing is made of. The 'what-it-is' of a thing, according to Aristotle, is its formal cause; so the Ship of Theseus is the same ship, because the formal cause, or design, does not change, even though the matter used to construct it may vary with time. In the same manner, for Heraclitus's paradox, a river has the same formal cause, although the material cause (the particular water in it) changes with time, and likewise for the person who steps in the river.

"Another of Aristotle's causes is the end or final cause, which is the intended purpose of a thing. The Ship of Theseus would have the same ends, those being, mythically, transporting Theseus, and politically, convincing the Athenians that Theseus was once a living person, even though its material cause would change with time. The efficient cause is how and by whom a thing is made, for example, how artisans fabricate and assemble something; in the case of the Ship of Theseus, the workers who built the ship in the first place could have used the same tools and techniques to replace the planks in the ship."

In the light of the indistinguishability of particles, we can ask whether it makes any difference whatever if every proton, neutron and electron in our bodies is replaced, just like the planks of Theseus' ship.

If it doesn't make the slightest bit of difference – and surely it doesn't – then it means that no part of us is encoded in our atoms. Above all, our memories can't be physically encoded in our brains. So where ARE our memories?

If they are not stored physically (dimensionally) then they are stored mentally (dimensionlessly).

The universe is all about INFORMATION. Rather than talk about material fields – reflecting some kind of physical universe – it would be much better to talk about information fields. Particles aren't localised "things": they are condensations of information fields. Rather than think of infinite individual electrons it's much more valuable to think of one electron associated with an infinite electron field. The information contained in the electron template (archetype, Platonic Form) can manifest itself wherever an electron is logically required. The information associated with an electron – its properties – is what's important, rather than any actual, "physical" electron.

If electrons are simply "excitations" of an electron information field then it's no surprise that they're all technically indistinguishable. The reality of electrons is the SINGLE electron information field. It's precisely because there's only one united field that all electrons can obey the Pauli Exclusion Principle. The Principle is built into the field. Any excitation of the field to produce a "local" electron automatically reflects the Principle.

The Singularity

"Technically, quantum mechanics says that things can be in an infinite number of places at once. It says that sub-atomic building blocks of our bodies are constantly shifting in response to events that happened at the edge of the known universe a billion light years away."-- Brian Cox

"Everything is interconnected due to entanglement." -- Bruce Rosenblum, *Quantum Enigma*

"Everything is connected to everything else." -- Brian Cox

There's one obvious way to rationalise these statements: everything exits within a Singularity. Everything is automatically connected to everything else. Everything is entangled, and everything is everywhere at once. Try

making sense of these statements without invoking a Singularity!

Things aren't "things" at all. They are information systems.

The Singularity – the universe – is an organism, not a machine with separate parts. Particles imply separate parts, but there are no separate parts. Fixed particles occupying fixed locations are an illusion. How can all electrons know instantly about the energy signatures of all other electrons, and be able to adjust themselves accordingly unless they all belong to what we might call a Super Electron (the ensemble of all electrons: the Electron of all electrons)?

Consider the Heisenberg Uncertainty Principle. According to the standard Copenhagen Interpretation, subatomic particles do not simultaneously have a position and momentum – so they're not actually "particles" at all. There's not really anything there at all other than incredibly complex mathematical fields that have much more in common with mind than matter.

Symmetry

Symmetry is always more beautiful than asymmetry. Beautiful people are said to have more symmetrical faces than ordinary people. People with higher body symmetry are thought to be healthier than average (i.e. to have "better" genes).

Mathematics is the exploration of symmetry.

The Most Important Equation Of All

"To this day, the theorem of Pythagoras remains the most important single theorem in the whole of mathematics." – J. Bronowski

"Pythagoras's Theorem is the most frequently used theorem in all of mathematics." – Eli Maor

Is Pythagoras's Theorem the renowned "God Equation"? No!

Now it's time for the fanfare of trumpets, or the sounding of Gabriel's horn, as we announce the greatest equation of all…

The singular honour of being the key equation of existence goes to **Euler's Formula**, also called the Euler identity, dating back to the 1740s:

The God Equation: $e^{ix} = \cos x + i \sin x$

where i is the imaginary unit and x is any real number (in radians).

(An equivalent expression is ix = ln(cosx + isinx))

Wikipedia says, "Euler's formula, named after Leonhard Euler, is a mathematical formula in complex analysis that establishes the deep relationship between the trigonometric functions and the complex exponential function. Euler's formula states that, for any real number x, e^{ix} = cosx + isinx where e is the base of the natural logarithm, i is the imaginary unit, and cos and sin are the trigonometric functions cosine and sine respectively, with the argument x given in radians. This complex exponential function is sometimes denoted cis(x). The formula is still valid if x is a complex number, and so some authors refer to the more general complex version as Euler's formula."

The special case of the formula when x = π gives the mysterious and beautiful identity:

$$\mathbf{e^{i\pi} + 1 = 0}$$

This identity connects the fundamental numbers i, π, e, 0, and 1, the fundamental operations +, ×, and exponentiation, and the equals sign.

   The great mathematician Gauss commented that if this formula was not immediately obvious, the reader would never be a first-class mathematician. It was not, however, Gauss who invented this mathematical joke: "How many mathematicians does it take to change a light bulb?"

   The answer is of course -$e^{i\pi}$. If you're not bent over doubled laughing, you'll never have a first-class sense of humour!

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Euler's number, e, is the base of the natural logarithm. Like pi, it's an irrational and transcendental constant. (A transcendental number is not a root of any non-zero polynomial with rational coefficients.)

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So, Euler's formula relates cosine waves, sine waves, the imaginary number, i, and the transcendental numbers, e and π.

   These are the elements that define REALITY. Within this formula,

imaginary and real numbers are given equal status, cosines and sines are given equal status, exponentiation is explicit (and the natural logarithm (ln) implicit), and the circle is present via π. These, ontologically, are all we need to create the universe.

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Illuminism is based on numbers. In particular, it asserts that zero (the monad), is the arche, the fundamental substance of existence, dependent on nothing else. Thanks to the Infinity Multiplier – the rule that if one of something exists then, unless there is a sufficient reason to prevent it, an infinite number must exist – the arche consists of infinite monads, each autonomous, eternal and indestructible. A monad does not contain "nothing"; it contains INFINITY. Yet this infinity is a very particular type of infinity. It is required to be a perfectly balanced infinity in terms of positive and negative components, so that the positive is perfectly cancelled by the negative, leaving a resultant of zero. Moreover, it's an infinity that is not permitted to privilege real numbers over imaginary numbers. So, not only are there infinite positive real numbers, matched by infinite negative real numbers, there are also infinite positive imaginary numbers balanced by infinite negative imaginary numbers.

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The following depiction of the Euler formula (courtesy of Wikipedia) is nothing less than the key to material existence. It is the most important diagram you will ever see. We call it the "God Graph".
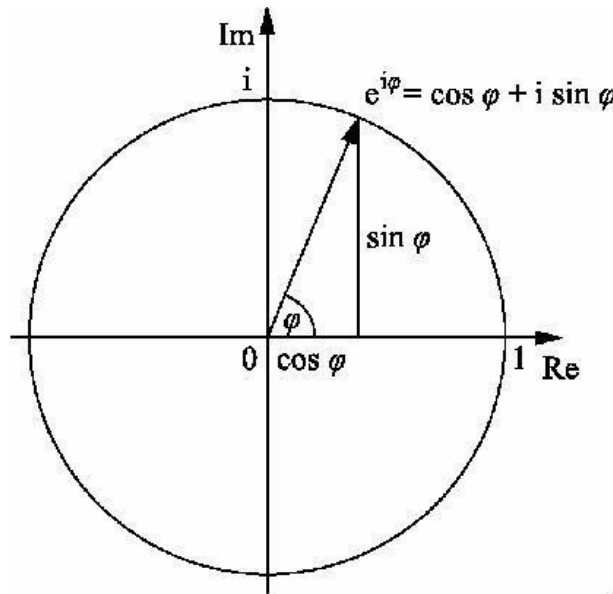
Wikipedia says, "This formula can be interpreted as saying that the function e^{ix} traces out the unit circle in the complex number plane as x ranges through the real numbers. Here, x is the angle that a line connecting the origin with a point on the unit circle makes with the positive real axis, measured counter clockwise and in radians."

The Divine Equation

When people look at the Euler unit circle, they see it as just a mathematical abstraction. Not one for one second do they relate it to reality. People are willing to buy into science's narrative of atoms, electrons, protons, neutrons and so on, and to accept these as "real", yet they'll just as quickly reject the mathematical relations and equations on which these entities are all based.

Our task – as ontological mathematicians rather than scientists – is to persuade you that you have bought into a false description of reality and to make you see mathematics as true reality.

We are now going to make perhaps the strangest assertion you have ever heard: the WHOLE of reality revolves around the Euler unit circle and the purpose of this book is to convince you of that fact.

We will analyse this unit circle in great detail. The first thing to point out is that it encapsulates *perfect* balance between positive and negative numbers, and between real and imaginary numbers.

We often emphasize that no numbers should ever be privileged over any

others. We condemn science for trying to create a subset of mathematics called "empiricist mathematics" where real numbers greater than zero and less than infinity are deemed real and all other numbers unreal.

It's precisely because of the blindness of scientists to "unreal" numbers that they have never understood the significance of Euler's Formula even though it delivers the answers to everything. The ultimate answer has been staring them in the face all along and they have ignored it because they have chosen to cling to their religious faith in their Meta Paradigm of empiricist materialism.

Euler's Formula obeys the strict requirement of ontological mathematics that all numbers must be treated on a par. There are no "unreal" numbers: they are all ontological.

Only one number can stake any claim to any special status, and that is zero – the origin – upon which all other numbers depend. It is the perfect balance point of all the other numbers, which is why the monad is the "container" of all other numbers, their source. There it is, slap bang in the middle of the Euler unit circle, controlling all. It's the SOUL of the circle.

According to ontological mathematics, the monad is the rational, logical, mathematical basic unit of reality. There are infinite monads. Each monad is autonomous – dependent on nothing else for its existence – and each monad is indestructible and eternal.

Pythagoras was the first ontological mathematician when he declared that all things are numbers. Plato built on Pythagoras's vision and created a perfect domain of mathematical Forms – the eternal laws of mathematics accessible only to reason and not to the human senses. Descartes became an ontological mathematician when he drew his famous distinction between extended (material) and unextended (mental) things.

Leibniz was the greatest ontological mathematician of all and the first person to proclaim that reality was based on infinite mathematical monads (zeros). Had Leibniz been alive when Euler introduced his God Equation, he would have appreciated its significance immediately, and the world might now be a very different place.

Leibniz placed zero at the heart of existence. It's at the heart of the Big Bang, black hole singularities, and of course the Euler Formula.

Zero is not "nothing". It's a balance point for positive and negative numbers. Positive and negative numbers always have a diametrically opposed relationship. It takes a rotation of 180 degrees to turn a positive number into a

negative number. But what happens with a ninety degrees rotation? If coordinate axes separated by 180 degrees have a diametric relationship, those at 90 degrees have an *orthogonal* relationship. "Orthogonal" is derived from the ancient Greek *orthogonios* "right-angled" (from *ortho* "straight" and *gonia* "angle" – related to *gony* "knee").

In order for a positive number to become a negative number, it must first be rotated through 90 degrees – at which point it becomes, ontologically, an imaginary number.

Science is founded on a mathematically incoherent view of reality. In the old Newtonian model, there were three orthogonal spatial axes that were labelled x, y and z. If we consider such a system in purely mathematical terms, how does a number on the x-axis become a negative number? In order to get from its starting position to its end position, it has to rotate 90 degrees via either the y or z-axis. This is mathematically invalid since it has to leave its "x" domain and venture into the alien "y" or "z" domains.

Einsteinian physics wasn't much better. It offered rotations in 4D spacetime where the four axes were now x, y, z and t. Now, an x *spatial* number could rotate through a *temporal* axis to reach its negative counterpart – ontological nonsense; mathematical absurdity.

In Illuminism, rather than have three spatial axes and a separate time dimension (Newtonian physics) or three spatial axes fused with a time axis (Einsteinian physics), there are three orthogonal complex *planes* (x, y and z). The x complex plane has a real axis (x) and imaginary axis (x_i); likewise with the y and z planes. Each plane is exactly of the type depicted for the Euler unit circle. For simplicity, we will treat reality as if it consists of just a single complex plane, but it is always to be understood that there are in fact three orthogonal complex planes. All of the same principles apply to the 2D world as to the 6D world.

The 6D Illuminist scheme is enormously more symmetrical than the Newtonian or Einsteinian systems. An x spatial number can be converted into a negative x number via a valid mathematical rotation in the complex x plane, allowing the x spatial number to become an x imaginary number (after a 90-degrees rotation) before becoming an x negative number (180-degrees rotation).

In Illuminism, all "x" operations are carried out in a pure sense, i.e. without any contamination from the y and z-axes, and likewise for "y" and "z" operations. All laws must be conserved within their own planes. Imagine

if all "x" entities could suddenly become "y" entities – it would lead to an unstable universe. The universe must be robust and resilient in terms of all rotations, translations and indeed any mathematical operation applied to it. Imagine squaring all of the real numbers, positive and negative. Since all negative numbers squared are positive, you would lose all of the negative numbers via this squaring operation. This corresponds to an "unstable universe. The situation can be stabilized only via imaginary numbers since the square of an imaginary number is a negative number. The "scientific" world of real numbers greater than zero and less than infinity is asymmetric and mathematically unstable under almost any universal mathematical operation applied to it – hence is pure nonsense.

In the universe of ontological mathematics, strict mathematical conservation laws keep everything stable.

$$*****$$

In Illuminism, real numbers are the basis of space and imaginary numbers are the basis of time. Therefore, space and time are fully integrated within the complex plane. Time is not some weird thing, radically different from space. It's just the orthogonal axis to the space axis. It really is that simple.

One of the greatest misconceptions of science is that time is required for change. Time is treated as something of a wholly different nature from space. Where space is static, time is dynamic.

When time is properly understood as imaginary space, which is orthogonal to real space, its true role becomes crystal clear. Just as real space is not understood to move, nor should imaginary space be understood to move. *Movement* is something entirely different from space and imaginary space (time). Movement is *energy*. Energy moves through *both* real space and imaginary space. Movement through space is measured with rulers, and movement through time is measured with clocks. Space and imaginary space are stationary: it's the energy that's moving. There's no such thing as time "flowing".

Science fundamentally misunderstands time. It makes it a moving thing different from space when in fact it's just orthogonal space with exactly the same mathematical properties, except in the domain of imaginary rather than real numbers.

Ontological mathematics is all about mathematically clarifying what the loose, speculative terms of science actually mean. It's about applying strict

conservation and symmetry laws. It's about making everything conceptually precise.

Algebraic Closure

The field of real numbers is not algebraically closed. By contrast, the fundamental theorem of algebra states that the field of complex numbers *is* algebraically closed.

Empiricist mathematics, based purely on real numbers, is not algebraically closed. Illuminist mathematics, based on complex numbers, is algebraically closed.

A key difference between science and Illuminism is that the former is based on real numbers and the latter on complex numbers. There is no scientist or philosopher anywhere on earth working on the ontology of imaginary numbers and hence of complex numbers. No establishment scientist or philosopher has ever offered any explanation of why reality is based on real numbers rather than complex numbers; of why real numbers are privileged over complex numbers; of why an algebraically incomplete set of numbers is chosen over an algebraically complete set.

Mathematics, as used by scientists, doesn't make any formal sense. It is wholly incoherent. No one ever debates this topic. It's simply ignored by all concerned. How can science possibly create a Theory of Everything when it hasn't even resolved the status of mathematics within science?

To any mathematically minded person, it ought to immediately strike them as much more logical that reality should be based on complex numbers rather than real numbers. What sufficient reason could there be for excluding complex numbers? Only the prejudices of empiricists cause them to omit complex numbers. They don't know what complex numbers mean ontologically, so they pretend they don't exist – and that's what passes as scientific rationality! Scientists have an incredible habit of simply ignoring key issues. They advance no rational arguments. They simply take it for granted that real numbers make "sense" in terms of reality and complex numbers don't, and the whole way they think about the world reflects this lazy, irrational, anti-mathematical attitude. Leibniz would be shocked if he could see the way modern "scientists" think, with a wholesale disregard for sufficient reason and mathematical coherence, and an obsession with experimental data in preference to *a priori* logic. Everything that scientists do is moulded by the empiricist rather than rationalist Meta Paradigm.

In the future, it will be regarded as an intellectual scandal that scientists were so irrational for so many centuries, and preferred their senses to reason. Scientists continue to believe that mathematics is just some tool that they can hack to pieces if they wish. They don't realise that you accept ALL of mathematics, or none at all. There's no intermediate mathematics.

"Aren't equations just tools of science, of less intrinsic value and interest than the tasks they were developed to help us with? How do some of them acquire an inherent value or significance beyond the process of inquiry to which they belong? Tools surely can become icons, the way, for instance, a hammer and sickle became symbolic of the Soviet state – but a mathematical and technical object like an equation? What makes such an abstract thing able to stand literally alongside a pair of boots or a car?" – Robert P Crease

This is a perfect example of the traditional instrumentalist approach of the scientific mind; of how mathematics is dismissed as a weird abstraction, or some secondary and rather uninteresting tool. Mathematics is deemed to be "mysterious" and then everyone forgets about it and gets on with other stuff. Why is it more important to understand the Big Bang than to understand mathematics? Yet, ironically, the Big Bang *is* mathematics: it is the purest mathematical event of them all, completely uncontaminated by physics.

Scientists ponder the Big Bang because they think they are probing the origins of "reality". All the "big" physics experiments, such as those at CERN, are supposedly yielding information about the Big Bang. Yet why not ponder the ontology of mathematics instead? You don't need trillions of dollars and huge machines – you just need a pencil and paper! Of course, ontological mathematics IS reality, TRUE reality, but the scientific establishment is not interested in pencil, paper, truth and absolute knowledge. Rather, it wants vast funds, vast experiments, glittering careers and POWER!

Science's absurd prejudice against ontological mathematics is precisely what has crippled science, and prevented it from achieving a Theory of Everything (TOE). An empiricist account of reality is ludicrous. An empiricist TOE is an impossibility. Any viable TOE must be rational, logical, mathematical and *a priori*. Irrational empiricism will never provide the ultimate answers. You can build a Large Hadron Collider the size of the universe, and it still won't unlock the secrets of existence. But the rational human mind will.

In book after book, it is stated that mathematics is a powerful language devised by human beings to describe natural phenomena. This is entirely false. It's science that's a powerful language devised by human beings to describe natural phenomena. Mathematics, unlike science, is *a priori* and eternal. It *precedes* human minds. Mathematics, unlike science, is a universal language. Any intelligent alien species from another galaxy would have a mathematical system that, although expressed in different symbols, would be almost instantly translatable into humanity's version of mathematics. The same is not true of science. Empiricist materialist science is a human construction. It uses ad hoc concepts and is extremely closely tied to the human senses and how they perceive the world. Aliens with non-human senses might not be able to make any sense at all of human science. It might seem to them to be full of incomprehensible concepts that bear no resemblance to how they interpret reality. Science is a human *interpretation* of the phenomenal world – the world as it appears to human senses. Science has no inherent connection with reality at all, just as alchemy – its predecessor – didn't. The ONE THING that has saved science from being just another quasi-religious Mythos like alchemy is MATHEMATICS.

The Greeks, Romans and other ancient civilisations had clunky ways of representing numbers. Mathematics couldn't be performed properly with these cumbersome systems. In other words, these systems were human constructions of mathematics that didn't reflect true mathematics.

For millennia, western mathematicians had a series of bitter battles over "unreal" numbers – zero, infinity, negative and imaginary numbers. The prejudice of the human mind against "unobservable" numbers probably lost humanity at least a thousand years in terms of its intellectual development. Even now, science has fully embraced the old mathematical hostility to zero, infinity, negative and imagery numbers. It's as if scientists have learned nothing from the mathematicians. Even worse, mathematicians themselves continue to be prejudiced against these numbers, and give them minimal attention, avoiding them where they can.

Mathematics has been held back whenever mathematicians have tried to match mathematics to observable, "sensory" reality, and has made huge strides whenever mathematics has completely ignored empirical reality.

The Indians – by embracing zero – created a mathematical revolution.

Zero is India's greatest achievement and constitutes one of the greatest leaps forward in human history.

When Westerners embraced *imaginary numbers*, they too started doing remarkable things mathematically.

Mathematical notation is critical. Leibniz discovered calculus, utilizing notation that is still used today. Newton invented a version of calculus called "fluxions", which no one uses now because the notation was so awkward. Mathematically, Newton was no match for Leibniz.

The lesson of history is that it's mad to have prejudices against mathematical unobservables, and it's essential to find the best notation and number systems.

Mathematics works properly only when it has the right number system (incorporating unobservable numbers), and the most logical notation.

Every alien species would have faced similar mathematical challenges, and they would all have come round to the right representation of mathematics in the end – because there is only ONE mathematics. It is universal.

With science, it's a different matter. All alien species would have their own, different versions of science, reflecting their different sensory capabilities. Somehow, humanity has managed to convince itself that mathematics is a mere construct while science reveals reality. It's the opposite way around. Mathematics reveals universal reality and science is a species-specific interpretation of mathematical reality. There is only one mathematics for all the species of the universe, but there is separate science for each species. Science is a construction of our minds – our inadequate attempt to grasp mathematical reality – and mathematics is reality itself. Our minds don't invent mathematics: they are ingrained with it and understand it intuitively. Eventually, they discover it consciously. The FINAL STEP in mental evolution is for mathematics to replace science as our means of grasping reality. That critical step removes us from an anthropomorphic view of reality to a species-neutral, cosmic, enlightened view. That step is when we transcend the human condition – and get ready to become cosmic deities.

Above all, the human mind could never have constructed the numbers ZERO and INFINITY. These are the two numbers that define existence, and the fact that the human mind struggles so much with them in terms of mathematics and science shows how alien they are to our minds.

Infinity is, however, readily employed by humans with regard to the most

mysterious thing we can think of – God. Equally, we are happy to reduce our enemies to "nothing" – worthless. But when it comes to technical thinking, we flee from zero and infinity. They break all the nice rules we have constructed. M-theory goes as far as to seek to remove them to oblivion. How can any sane person imagine that our minds – which are so resistant to zero and infinity – created these numbers? The truth is that the only reason we have these numbers is that they are forced upon us by mathematics.

It was said of God that if he didn't exist it would be necessary to invent him. It's the opposite with zero and infinity. They do exist but scientists and mathematicians feel it necessary to ignore them. They wish they would go away.

Humanity stands on the threshold of divinity, and the only thing separating us from the celestial planes is our attitude to mathematics. Once we understand that mathematics is ontological, nothing will hold us back. Once we get rid of our empiricist, materialist scientific prejudices and embrace idealist, rationalist mathematics, we will have a comprehensive Theory of Everything within a decade.

So, to repeat – we don't invent mathematics, we discover it. The world around us is made of mathematics. We do, however, construct science. Science is an anthropomorphic interpretation of reality, one that panders to our human senses and is therefore species-specific rather than universal. Science is full of ad hoc hypotheses and is synthetic *a posteriori*. It offers no certainty and no absolute knowledge. It relies on experiment rather than reason. Any theory can be demolished at any time by new experimental data. There is no endpoint in science. It's an entirely provisional undertaking, and inherently fallible. It has an invented jargon that no alien species is compelled to acknowledge. However, no intelligent alien species could deny the language of mathematics.

We must grow up. We must jettison science and replace it with mathematics. Human mental evolution requires this final, decisive step. When humanity accepts mathematical unobservables as ontologically real then we have at last escaped from the human chains that bind our minds via our fallible human senses. We have allowed our senses rather than our reason to tell us what is real – and that is wholly irrational. We must become HYPERRATIONAL if we wish to unlock the final secrets of the universe.

The universe is constructed on the most perfect rational design principles – those of mathematics. When we understand mathematics, we understand the

cosmic design plan. If we continue to delude ourselves that the human senses are paramount, we will cut ourselves off from rational reality and enter a subjective fantasyland predicated on human irrationality and Mythos. Even science is a form of Mythos while mathematics is the quintessential Logos subject.

Mathematics = the Universal Language, agreed on by all alien species across the cosmos. Mathematics, being independent of the senses, is species independent. It relies only on reason – which transcends human minds.

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All intelligent alien species would have discovered π, e, i, 0, infinity. They would use different symbols for them, of course, but the meaning would be identical. Mathematics is necessarily universal. You can't have a mathematics for humans and a different mathematics for alien "Species X", 100 light years away. Mathematics is the same everywhere. The same is not true for science, being dependent on the senses of a species, the types of experiments they perform and the philosophical and religious Meta Paradigms to which they subscribe.

Numbers

The most critical feature of mathematics was, as Pythagoras realised, the number system itself. Numbers ARE mathematics. You can do mathematics properly only when you have the right numbers. Above all, you must have zero, infinity, negative numbers, imaginary numbers and irrational numbers, to go along with rational numbers and counting numbers.

Even today, mathematicians are uncomfortable with zero, infinity, negative and imaginary numbers. Scientists are even more extreme and rule out these numbers completely.

The final breakthrough that humanity needs to make is to accept numbers as existents – as ontological. And as intimately related to Euler's Formula.

"Like a Shakespearean sonnet that captures the very essence of love, or a painting that brings out the beauty of the human form that is far more than just skin deep, Euler's equation reaches down into the very depths of existence. … this equation is the mathematical analogue of Leonardo da Vinci's Mona Lisa painting or Michelangelo's statue of David." – Keith

Trigonometry

Trigonometry means "measuring triangles". There's an astonishing link between circles, trigonometry and waves, and it's all captured by Euler's Formula.

In right-angled triangles, the sine of an angle is defined as "the side opposite the angle, divided by the hypotenuse" and the cosine is "the adjacent side, divided by the hypotenuse". To put it another way, sine is about the ratio of the vertical to the diagonal and cosine the ratio of the horizontal to the diagonal.

Because we are dealing with ratios, the absolute size of the triangle doesn't matter. As far as sin x and cos x are concerned, all that matters is the angle x.

So, what is a "sine wave"? Take a circle of unit radius (i.e. the diagonal – hypotenuse – has a fixed length). Plot the value of angle x (x-axis) versus sin x (y-axis) as x goes from 0 degrees to 360 degrees, i.e. the number of degrees in a circle. What pops out is the archetypal wave – the basis of all other waves – the sine wave.

To be crystal clear, the archetypal wave is something derived from a circle. Think of a point moving round the circumference of a circle at a constant rate of circumference ($2\pi r$) over radius (r) = 2π.

A cosmic postulate: everything in the universe travels at exactly 2π, a constant number. This is why the universe has a cosmic speed limit. Nothing can go faster than 2π.

In other words, the cosmic speed limit is derived from the fact that everything is based on circles and the sinusoidal waves associated with them.

Physics equations are packed with expressions containing the constant 2π. Guess why?! So common is 2π that it has even been suggested that π should be redefined as 2π, so that the circumference of a circle becomes just πr, hence just π for a unit circle.

A point moving around the circumference of the circle will continue to do so forever. The wave associated with that motion will also go on forever, and this is the basis of eternal energy.

The ancient Greeks were beguiled by the beauty of the circle and regarded

it as so perfect that they believed the gods had surely made the planets move in perfectly circular orbits (hence why it took so long for people to accept elliptical orbits).

In fact, the circle IS the perfect basis of reality, just as the Greeks thought.

A cosmic postulate: everything in the universe travels in a circle forever, hence in a sinusoidal wave forever. That is the definition of energy, i.e. energy is eternal circular motion that can equally well be described as eternal sinusoidal wave motion.

Such motion can *never* stop. Ontological circles and waves (hence numbers) are perfect perpetual motion machines. There is no sufficient reason why this circular motion would ever cease.

Newton's First Law of Motion states that a body will travel in a straight line at constant speed forever unless an external force acts upon the body. Every body persists in its state of being at rest or of moving uniformly forward, except insofar as it is compelled to change its state by a force impressed on it.

Given that a straight line with a point at infinity can be proved to be functionally equivalent to a circle, we can see that an eternal circular movement, eternal wave motion and eternal straight-line motion (with a point at infinity) are all exactly the same.

The critical point is that energy is eternal motion. Eternal motion is an *inherent* feature of the universe. The universe can never stop. Motion/energy is in fact the defining feature of the universe. There is no such thing as an Aristotelian Prime Mover who is perfectly still but imparts motion to everything else. There is no stationary Creator.

In Dante's *Paradiso*, love of God inspired everything to move, and everything was striving to move closer to God. In reality, love plays no part, unless it's love of power or self-love. Everything is in fact striving not to get closer to God but to *become* God.

There is something truly extraordinary about this eternal energy: it is also ZERO energy. In other words, external energy comes at no price. It's the ultimate free lunch. You can see exactly why if you refer back to the God Graph. The Euler unit circle is the perfect balance between positive and negative real numbers and between positive and negative imaginary numbers, meaning that everything cancels to zero.

So, the universe consists of eternal energy that, mathematically, is also

zero energy. This is the universe's incredible secret. And all of this energy moves at absolutely the same rate (2π).

The circle (and the wave) offer perfect symmetry, the perfect means to ensure that the universe's objective properties ALWAYS cancel to zero. The universe, as we keep saying, remains at zero ("nothing") forever – but only thanks to mathematics and its incredible balancing act.

Amplitude

A unit circle has a radius of one by definition, but a circle can of course have any radius. The radius is none other than the amplitude of a wave, which is a measure of its intensity (its "volume", so to speak).

The energy transported by a wave is directly proportional to the square of the amplitude of the wave. Thus, a doubling of the amplitude of a wave results in a quadrupling of the energy transported by the wave. A tripling of the amplitude gives a nine-fold increase and a quadrupling gives a 16-fold increase.

The area of a circle is πr^2. We might conclude that the energy of a circle is, ontologically, none other than its area. This can be divided into four (corresponding to the four quadrants of the circle, and the overall total energy is zero).

The reason why 2π, the amplitude squared and the imaginary number, i, feature in so many equations of physics simply demonstrates that Euler's Formula appears everywhere in physics, albeit often heavily disguised.

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Amplitude lets us add waves *vertically*. So, if we want to add a sine wave with amplitude 2 to one with amplitude 3, we get:

2 sin x + 3 sin x = 5 sin x

But what about *horizontal* wave addition?

Instead of a horizontal axis of x, what if we change the horizontal axis to distance – either real space or imaginary space (and imaginary space will of course be equated with time).

A basic wave is plotted over 360 degrees. This is one oscillation of the wave. How many basic 360 degree waves (oscillations) can be fitted in between two fixed horizontal points? The answer is anywhere in the range

zero to infinity.

In terms of a horizontal axis of time, the time it takes to perform one complete oscillation is called the Period (T), measured in seconds. "Period" comes from the Latin *periodus* ("cycle"). One wave oscillation is one cycle – one complete rise and fall of the wave.

A second horizontal measure is the number of times the wave oscillates in one second. This is called the frequency, f. "Frequency" comes from the Latin *frequens* ("numerous"). So, if there are five wave oscillations in one second (frequency = 5 Hz), the Period (time for one oscillation) is 0.2 seconds.

The relationship between period T and frequency f is:

$T = 1/f$

Or, equivalently

$f = 1/T$

That is, they are the inverse of each other.

To reiterate:

Period → the time in seconds for a wave to oscillate once (a 360 degrees rotation in terms of a circle).

Frequency → the number of times a wave oscillates in one second (measured in Hz).

The next major wave concept is *angular velocity*.

Angular velocity is defined as the angle rotated in one second (measured in degrees per second) and is closely related to the wave's frequency. Given that a full rotation of a circle = a complete wave oscillation = 360 degrees, the angular velocity, ω, is defined as:

$\omega = 360f$

or, equivalently:

$\omega = 360/T$

(since $f = 1/T$).

If frequency = 1Hz, ω = 360 degrees per second.

If frequency = 2 Hz ω = 720 degrees per second.
If frequency = 0.5 Hz, ω = 180 degrees per second.

If period = 1 second, ω = 360 degrees per second.
If period = 2 seconds, ω = 180 degrees per second.
If period = 0.5 seconds, ω = 720 degrees per second.

Given that ω stands as a proxy for the frequency (and the Period), a sine wave can be expressed as a function of time, f(t), using the expression:

f(t) = a sin ωt

where a = amplitude, t = time and ω = angular velocity.

So,

x → the total angle rotated in a given time t (in degrees) measures distance (since it corresponds to a proportion of the circumference).

ω → the angle that can be rotated in 1 second (in degrees per second) is the velocity per second.

t → the time (in seconds)

ωt is in fact a measure of angle x since degrees per second multiplied by seconds = degrees.

If ω = 90 degrees per second, x = 90 degrees after 1 second.

If ω = 90 degrees per second, x = 180 degrees after 2 seconds.

The equation f(t) = a sin ωt therefore gives us a formula for describing a sine wave of any amplitude, any angular velocity and any frequency.

Cosine Waves

Cosine waves can be treated in exactly the same way to produce a matching formula:

f(t) = a cos ωt

It's essential to point out that cosine and sine waves are ORTHOGONAL to one another. The cosine wave is identical to the sine wave except it's shifted

ninety degrees to the left.

Vertical and Horizontal

There's something else remarkable about sine and cosine waves in terms of Euler's Formula. The "vertical" sine waves are IMAGINARY and the horizontal cosine waves are REAL. (Just refer back to the God Graph to see that this is so.)

THERE ARE ONLY TWO KINDS OF ENERGY WAVES. ANY ENERGY WAVE IS EITHER A COSINE OR SINE ENERGY WAVE. SINES CARRY THE INFORMATION OF IMAGINARY NUMBERS, AND COSINES OF REAL NUMBERS. THEIR COMBINATION GENERATES COMPLEX ENERGY WAVES, PART IMAGINARY AND PART REAL.

Science says that energy is based on real numbers. Ontological mathematics says that energy is based on complex numbers. Complex numbers are algebraically closed; real numbers are not. A world of only real numbers makes no mathematical sense AT ALL.

Probably the most flagrant intellectual scandal of all time is how eager scientists are to use mathematics and how reluctant they are to define the precise relationship between science and mathematics. They are obviously afraid to delve too deeply. After all, the two subjects are diametrically opposed. Mathematics is eternal, a *priori*, necessary, immutable, analytic and perfect. It is the quintessence of *rationalism*. Science, on the other hand, is temporal, *a posteriori*, contingent, mutable, synthetic, provisional and imperfect. It is all about *empiricism*.

Science is exactly where the two rival schools of rationalism and empiricism collide. The two cannot coexist as equal partners since they are mutually exclusive. So, will mathematics (rationalism) give way or will scientific experimentation (empiricism)? In practice, science supports empiricism and rejects rationalism, though no scientist, mathematician or philosopher outside the Illuminati gives any real thought to these issues at all. With ontological mathematics, rationalism is the key, and scientific experimentation is simply an activity that helps to illuminate mathematics but is *never* permitted to contradict mathematical proofs and truths. Any experiment inconsistent with mathematics is ipso facto false and wrong (just as we saw recently with the "superluminal" neutrino experiments).

Time and Imaginary Numbers

Why does science work at all given that it so mathematically incoherent? One reason is "alternative labelling". Whenever "time" appears in scientific equations, it's actually an implicit, disguised reference to sine waves and imaginary numbers.

"Time" does not actually exist, and nor does space. These are simply labels attached by scientists to underlying mathematical concepts. The real concepts are imaginary space (aka "time") and real space (aka "space").

"Time" does not "move", "flow", or "pass". What actually moves is energy and it moves in three mathematically equivalent forms: 1) circularly, 2) as waves, and 3) as straight lines (each with a point at infinity). We can choose whatever representation is most useful and, in most cases, that will be the WAVE REPRESENTATION.

Unlike real space, imaginary space is *unobservable*. We subjectively experience it as the passage of time. What that actually means is that we are travelling through imaginary space.

It cannot be stressed enough that imaginary space is mathematically identical to real space except it's orthogonal to it. Our senses have evolved to directly observe "real" things and only to indirectly experience "imaginary" things. That's why time seems so much less "concrete" than space. We can watch our journey through space (in a plane, for example), but we cannot watch our journey through imaginary space. By looking at our watches, we can measure our journey through imaginary space, but that's not the same as directly observing it.

Strangely enough, travelling through time is our DEFAULT condition. It takes a huge effort and lots of real energy to divert our journey through imaginary space to one through real space.

Science has never understood the nature of time yet time is childishly simple mathematically – as long as you accept imaginary numbers as ontological.

The two wave equations:

$f(t) = a \sin \omega t$

$f(t) = a \cos \omega t$

are actually wrong mathematically since time does not formally exist.

They should actually be rewritten as:

$f(d_i) = a \sin \omega d_i$

$f(d_i) = a \cos \omega d_i$

where d_i (imaginary distance) replaces time.

Moreover, they have two "real" counterparts:

$f(d_r) = a \sin \omega d_r$

$f(d_r) = a \cos \omega d_r$

where d_r is real distance.

It's not time that moves – it's dimensionless points that move, through both real and imaginary space.

If frequency is all about time (imaginary space) then what is its equivalent for real space? The answer is spatial frequency.

Spatial frequency is called the "wavenumber" and is proportional to the reciprocal of the real wavelength.

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Note that because sin 0 degrees = 0 and cos 0 degrees = 1, all sine waves begin at 0 and all cosine waves begin at the amplitude, a (and at one for a unit circle).

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All basis sine and cosine waves, having a perfect balance of area beneath the x-axis (negative) and above (positive), have a total area of zero for any whole number of oscillations.

Differentiation

When you differentiate sin x, you get cos x.

When you differentiate cos x, you get sin –x.

Isn't that magic?!

Space, so to speak, is the differential of time and negative time is the differential of space. Mathematics just keeps delivering wonders and miracles.

The Dot Product

The "inner product" is a way to perform calculations involving two vectors. *Vectors* are quantities that have both direction and magnitude (e.g. velocity) and *scalars* have only magnitude (e.g. speed). An inner product is indicated by the symbol "**.**", hence the expression "dot product" is often used. A key use of the inner product is to determine whether two vectors are perpendicular or not. If the inner product is zero, the vectors are orthogonal (perpendicular); if the inner product is non-zero, they are not orthogonal.

Rule: two vectors intersecting at right angles always yield an inner product of zero.

"The dot product is directly related to the cosine of the angle between two vectors in Euclidean space of any number of dimensions. ... As the cosine of 90° is zero, the dot product of two orthogonal vectors is always zero. Moreover, two vectors can be considered orthogonal if and only if their dot product is zero, and they have non-null length. This property provides a simple method to test the condition of orthogonality." – Wikipedia

The dot product, based on the cosine, has a sine counterpart called the *cross product*:

"Because the magnitude of the cross product goes by the sine of the angle between its arguments, the cross product can be thought of as a measure of "perpendicularness" in the same way that the dot product is a measure of "parallelness". Given two unit vectors, their cross product has a magnitude of 1 if the two are perpendicular and a magnitude of zero if the two are parallel. The opposite is true for the dot product of two unit vectors. … Unit vectors enable two convenient identities: the dot product of two unit vectors yields the cosine (which may be positive or negative) of the angle between the two unit vectors. The magnitude of the cross product of the two unit vectors yields the sine (which will always be positive)." -- Wikipedia

Waves can be expressed as vectors, hence dot and cross products are relevant to waves. A wave is in fact a vector of infinite dimensions.

When a sine wave is multiplied by a cosine wave and the result is integrated, the result is always zero. If vectors are used to represent sine and cosine waves, their inner product is always zero. That is, sine waves and cosine waves are orthogonal.

Finding an inner product is equivalent to integrating a product.

Heisenberg's approach to quantum mechanics was based on vectors and matrices while Schrödinger's was based on waves. The magic of mathematics showed that the two approaches – which seemed radically different – were in fact completely equivalent.

Rule: the inner product of a sine vector and cosine vector is always zero. All cosine waves are orthogonal to all sine waves.

This constitutes another fantastic mathematical means of enforcing overall zero in terms of cosmic energy.

Tensors

"Tensors are geometric objects that describe linear relations between vectors, scalars, and other tensors. Elementary examples of such relations include the dot product, the cross product, and linear maps. Vectors and scalars themselves are also tensors. A tensor can be represented as a multi-dimensional array of numerical values. The order (also degree or rank) of a tensor is the dimensionality of the array needed to represent it, or equivalently, the number of indices needed to label a component of that array. For example, a linear map can be represented by a matrix, a 2-dimensional array, and therefore is a 2nd-order tensor. A vector can be represented as a 1-dimensional array and is a 1st-order tensor. Scalars are single numbers and are thus zeroth-order tensors." -- Wikipedia

Tensor mathematics is the basis of Einstein's general theory of relativity.

<p style="text-align:center">✱✱✱✱✱</p>

Aliens might have a theory of existence based on waves, circles, vectors, or straight lines with a point at infinity. They might use wave analysis, vector analysis, matrix analysis or tensor analysis.

The point is it doesn't matter – as long as the approach is mathematically consistent. The disaster for humanity is that science has evolved separately

from mathematics and is now a complete mess in mathematical terms. Quantum mechanics and M-theory are mathematically background *dependent* while general relativity is background *independent*. This is a preposterous situation. You would think that scientists would spend more time pondering the deep question of the relationship between mathematics and science than wildly experimenting with one ad hoc approach after another.

Mathematicians – the Most Disappointing People in the World

Mathematicians ought to be the supreme intellectual elite of humanity. Instead, they, like scientists, have fallen foul of the empiricist materialist paradigm and most of them reject Platonic ontological mathematics.

We get mathematicians sending us messages in which they feebly seek to defend some discredited scientific position rather than doing what they ought to be doing – taking the side of Leibnizian rationalist, idealist mathematics.

We despise mathematicians who have sold out to science and can't grasp the simple truth that mathematics is reality. These people are arch traitors.

Every mathematician on earth – out of sheer self-interest if not the plain truth – should rally around the Pythagorean-Platonic-Cartesian-Leibnizian view of mathematics as the supreme ontological truth. Why would any competent mathematician take the side of ugly, ad hoc, provisional science *against* beautiful, pure mathematics? If you love science so much, go and be a scientist and leave mathematics in the hands of rationalists.

It's time mathematicians got serious. They must become the radical intellectual vanguard of humanity – not fucking geeks, nerds and dorks trying to uphold the irrational Meta Paradigms of science.

Any mathematician who can't see the TRUTH of mathematics is unfit to be a mathematician. If you're a mathematician and you're not on side – not doing you're utmost to promote our mathematical vision – then you ought to hang your head in abject shame. Be gone from Plato's Academy. You're not fit to walk in its hallowed groves.

The Horror

Mathematicians do not have a good track record of being open-minded and welcoming new ideas. They hated zero and resisted it. They hated infinity and hated. They resisted imaginary and complex numbers. They never liked negative numbers. Many innovative mathematicians such as Cantor were driven ill and mad by the hostility of the mathematics establishment to their new thinking.

Sadly, mathematics has proved itself as susceptible to rigid Meta Paradigms as science. In fact, the mathematics establishment and the scientific establishment are almost identical. They are all about arrogant careerist functionaries, more interested in status, salary and departmental power than in the pursuit of truth.

If you want to go on a quest for the Absolute Truth, you must send out your knights in ALL directions. Why did the quest for the Holy Grail so often fail? It was because knights went in the likely directions, to the predictable places, using the conventional tactics. They were operating according to the establishment Meta Paradigm, one that was unfortunately wholly false.

It's a disaster when the direction of science and mathematics is dictated by a blinkered, careerist establishment that deliberately sets out to quash "heresy" and freethinking and just wants legions of unimaginative functionaries pitifully carrying out feeble scientific and mathematical projects, green lighted according to the prevailing Meta Paradigm.

We need to get the heretics, the visionaries, the mystics, the revolutionaries, the outsiders, the freethinkers, the unconventional geniuses into the top positions in mathematics and science. They are the ones who should choose the direction of science and mathematics, and allocate the funding.

The careerists who run science and mathematics are an immense brake on progress. They must be swept aside.

Meaning

Why did metaphysics fail? It was because metaphysicians had no unarguable platform from which to state their case. Metaphysics, like religion, degenerated into mere opinion and conflicting belief systems. There was no way to establish the correctness of one view over any other. Therefore, metaphysics came to be seen as speculative, ineffectual and incapable of delivering any certainty.

Early science – which we shall describe with the general term of

"alchemy" – was often religious, mystical, astrological, metaphysical, numerological, and as hopeless as religion and metaphysics themselves.

"Proper" science began with careful astronomical observations and calculations. Then Descartes introduced Cartesian diagrams and used his dualistic system of mind and matter to separate the mental world of religion and metaphysics from the material world of science.

The mental domain was alive – an organism – while the material domain was a machine, a mechanism, a clockwork device. Suddenly, the material world was all about calculations, measurements, observations, and so on. The "Will of God", capricious human free will and all unpredictable elements were removed from the scene.

Science became MATHEMATICAL. It provided accurate measurements and created accurate hypotheses and theories that could be experimentally tested for their validity. PROOF of claims became possible. Rival theories could be compared and contrasted and less successful theories discarded. This was an immense advance over religion and metaphysics where there was no possible means of proving any view correct and any other view false.

How does a Christian prove Christianity true and Islam false? How does the Muslim do the reverse? Since there are no facts to appeal to – only culturally conditioned belief systems – there is no possible means of rationally getting rid of these religions. They will survive as long as they have believers. When they no longer have believers, they will be quickly forgotten.

How does a supporter of Schopenhauer prove his views over those of Kierkegaard? What criteria are to be used? Again, there's no way forward. It's all opinion and speculation.

But with science, Einstein can PROVE that his theory is superior to Newton's. Science can actually kill off bad ideas and wrongheaded nonsense by producing facts, evidence and measurements. Imagine how brilliant it would be if we could definitively kill off demonstrably false religions and metaphysical systems.

Yet science, with its mathematical underpinning, has itself run aground. It can't answer everything within its own parameters. Above all, what does it do when it encounters things that cannot be directly measured?

The ether is the most famous example of all. Science had the choice of rationally accepting an ether that could not be directly observed or measured or empirically rejecting the ether for exactly the same reasons.

This is the same problem that has ALWAYS affected science and mathematics. In ancient and medieval times (and even in the modern day to a large extent), mathematicians could not directly observe or measure "nothing", infinity, negative numbers, imaginary numbers and infinity – and so concluded that these were all fictitious. It's no accident that "imaginary" numbers are labelled as if they are fantastical.

Science adopted exactly the same attitude as mathematics and rejected zero, infinity, negative and imaginary numbers.

The key issue is this. Zero, infinity, negative and imaginary numbers are all things that can feature in equations, that can have precise measurements applied to them in the theoretical – but non-observable – domain.

We can perform endless exact calculations with imaginary and complex numbers, or with negative numbers. Are these calculations to be dismissed as "nonsense" because we cannot directly observe the outcomes, while the exactly equivalent calculations involving real numbers are to be accepted as true and valid because we can?

In other words, is observability to be necessarily privileged over unobservability? Are real numbers to be extracted from mathematics and regarded as ontological – while all other numbers are to be treated as unreal?

The alternative position is that mathematics, not observability, dictates what is "real". This is none other than the great philosophical debate of whether rationalism (based on potentially infallible logic and reason) is true or whether empiricism (based on the fallible human senses) is our best guide to reality.

The whole of current science and mathematics is predicated on empiricism rather than rationalism. Yet the irony is that all of these "unreal" numbers ARE observable and usually measurable.

TIME = imaginary numbers.

ANTIMATTER = negative numbers.

MIND, LIFE, CONSCIOUSNESS = zero and infinity.

THE INFINITE UNIVERSE = infinity.

Outside Illuminism, there is no scientific, mathematical or philosophical definition or explanation of what time actually is, and how it differs from space. Is time energy? Is it a different type of space? Does time flow? Is it a

substance? Where is it? Where was it before the Big Bang? Can it be created out of nothing? Does it end? Can you observe it? Can you *leave* time? Can you travel backwards in time? And so on.

In Illuminism, the issue could not be simpler. Real numbers define space and imaginary numbers define time. They are orthogonal to one another. Space is associated with cosine energy waves and time with imaginary sine waves.

If time is treated in terms of real numbers – as it conventionally is by science – then its fundamental relationship with space is misunderstood and wrongly defined. This necessarily means that science will *never* achieve a grand unified theory of everything.

As soon as time is defined as Illuminism defines it then Euler's dazzling Formula can immediately be deployed to explain the interaction of space and time. Without an imaginary-numbers definition of time then Euler's Formula CANNOT be used and its immense unifying and explanatory power is shockingly and wastefully tossed away.

The irony is that the role of time in Einstein's special theory of relativity exactly matches that of an imaginary quantity – so why has science refused to treat time as formally imaginary? Only its empiricist prejudices prevent this.

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In one of his theories, Stephen Hawking relies on "imaginary time" – which he considers identical to space.

In fact, imaginary time is NEGATIVE space. Simply by applying successive rotations by the imaginary number in the complex plane, we can produce the following scheme:

Time = Imaginary Space (first rotation by i, starting from the real space x-axis).

Imaginary Time = Anti (Negative) Space (second rotation by i).

Anti Time = Anti Imaginary Space (third rotation by i).

Anti Imaginary Time = Space (fourth rotation by i = 360 degrees – back to the beginning).

Alternatively,

Space = Anti Imaginary Time.

Imaginary Space = Time.

Anti Space = Imaginary Time.

Anti Imaginary Space = Anti Time.

<div align="center">*****</div>

By definition, we can't empirically observe an infinite universe, yet we can rationally infer it – what sufficient reason would there be to prevent an infinite universe?

Such is their ingrained hostility to infinity that many scientists try to construct some kind of finite universe or bounded universe. The Big Bang theory itself is normally cast in finite terms: a finite event in which finite space and time were created.

Yet there is no mathematical problem with the Big Bang being cast as an infinite event, i.e. an infinitely small (dimensionless) point, containing infinity, instantly transforms itself by an operation of mathematical antisymmetry into an infinitely large universe, which then expands according to "Hotel Infinity" mathematics.

This has all the same observable features as the conventional theory but provides a *definitive* mathematical explanation of what happened. It is a RATIONALIST account rather than EMPIRICIST.

Plato, a great champion of the rationalist stance, declared that the domain of reason (the realm of Perfect Forms) was REALITY and that it was entirely inaccessible to the senses. The sensory, empiricist domain – which scientists call the "real" world – was for Plato an inferior, botched copy of reality.

Rationalism is all about an unobservable domain of pure reason which explains everything else. Empiricism is all about the denial of any such rational domain. Scientific empiricism is therefore committed to an IRRATIONAL, sensory understanding of reality.

Empiricism is *not* a scientific position. It's a statement of metaphysics. In other words, science rejects metaphysics on metaphysical grounds! It invokes Karl Popper's falsification principle that cannot itself be falsified, hence is non-scientific in its own terms. It invokes logical positivism's verification principle that cannot itself be verified, hence is non-scientific in its own terms.

In other words, science, while rejecting metaphysics, stands on the shakiest metaphysical ground conceivable.

It appeals to non-scientific verification and falsification principles, and it endorses empiricist materialism while relying on eternal scientific laws that are not empirically observable (i.e. you can't physically detect a law or put it in an apparatus and perform experiments on it) and which are immaterial. Laws can only be RATIONALLY inferred.

Therefore, science is a ludicrous house built on sand. It relies on rationally inferred, immaterial (idealist), eternal laws while rejecting rationalism and idealism. All of its key principles are metaphysical even though it rejects metaphysics. It dogmatically asserts that the unobservable cannot exist – yet its own laws are unobservable and no scientist has the vaguest idea of how the laws of science came to be in the first place.

Science declares that absence of evidence is evidence of absence – by which criterion it should abandon its own laws since there is no empirical evidence that they exist (they are unobservables that are rationally inferred).

Frankly, science has no rational, logical basis whatever. The only reason it is taken seriously at all is that it's good at measuring things – thanks to mathematics. Without rationalist, idealist Platonic mathematics, science would be an irrationalist, Mythos joke not far removed from religion.

Scientists are amongst the worst people on earth for understanding what science actually is. Non-intuitive, irrational and anti-philosophical, they are unable to contemplate the meaning of their own arena of expertise. What they are good at is instrumentalism – getting the "right" answers, or at any rate useful answers.

Science is a pragmatic subject lacking all self-awareness. It works, but it has no idea why. No scientist can explain reality. It's not even a question that engages their interest. "Shut up and calculate" is the mantra of scientists.

What a sad, pathetic bunch.

<p style="text-align:center">∗∗∗∗∗</p>

Science should be conducted on the basis of observation where possible, but there should be no hesitancy about appealing to rational unobservables where direct observation is impossible.

Humanity has to choose ONE rational schema via which it can define ALL of existence, living and dead, mental and material, observable and unobservable. There is only one conceivable candidate – *mathematics*.

Numbers unite all things. Everything is just an expression of numbers and their properties and relations. Humanity's task is simply to map numbers to observables where possible, and, where observation is impossible, to use the rational laws of mathematics themselves.

Leibniz was the great genius who understood the proper approach to science. He seamlessly mixed mathematics, logic, reason, science, and metaphysics (including religion).

Science must abandon empiricism and materialism and return to Leibniz's methodology. There's no question of wandering off into woo woo and mumbo jumbo as long as everything is required to be straitjacketed by the iron edifice of mathematics. Can anyone describe Euler's Formula as "woo woo" because it references zero and i?

Richard Feynman often talked of the wondrous way in which mathematics was inevitably at the root of any meaningful interpretation of nature. It's impossible to imagine any other interpretation.

"A world of mathematical structures. I'm too excited to sleep." – Werner Heisenberg (on first understanding quantum theory)

"Everything of importance is founded on mathematics." – Robert Heinlein

Our Challenge

To all mathematicians and scientists, we throw down this challenge.

Forget your materialist and empiricist preconceptions. Undertake a grand experiment. Embrace rationalism, idealism and ontological mathematics. See where it takes you. What harm can it do?

Aren't scientists supposed to experiment? Well, then, why don't they experiment with their Meta Paradigm prejudices and leave them to one side for a time? See what happens by invoking a different Meta Paradigm, one that accepts the WHOLE of mathematics as ontologically real. Embrace zero and infinity, negative and imaginary numbers.

Verily, the scales will fall from thine eyes and thou will seest further than ever before!

Flawed Physics – the Moving Target

"Of course, as physicists learn more physics their equations change. No one, not even Einstein, is immune to this evolution. Just as Newton's gravitational

theory gave way to Einstein's, Einstein's have to give way to newer ideas that are compatible, as Einstein's equations are not, with quantum mechanics. So, Einstein's physics is, at some fundamentally deep level, 'wrong' (or, more graciously, 'missing something') and so is only approximately correct."
– Paul J Nahin

Gore Vidal said that an intellectual is someone who understands an abstract, and that's certainly true. Most people live "concretely" – embedded, like animals, in the present moment.

Euler's Formula is, according to Paul J Nahin, the "gold standard for mathematical beauty". He added, "I think [it] is beautiful because it is true even in the face of *enormous* potential constraint. The equality is precise; the left-hand side is not 'almost' or 'pretty near' or 'just about' zero, but *exactly* zero. That *five* numbers, each with vastly different origins, and each with roles in mathematics that cannot be exaggerated, should be connected by such a simple relationship, is just stunning. It is *beautiful*. And unlike the physics or chemistry or engineering of today, which will almost surely appear archaic to technicians of the far future, Euler's formula will still appear, to the arbitrarily advanced mathematician ten thousand years hence, to be beautiful and stunning and untarnished by time."

"Gentlemen, that is surely true, it is absolutely paradoxical, we can't understand it, and we don't know what it means, but we have proved it, and therefore we know it must be true." – Harvard mathematician Benjamin Peirce, discussing Euler's Formula, which transfixed his imagination and which he called "the mysterious formula".

"My work always tried to unite the truth with the beautiful, but when I had to choose one or the other, I usually chose the beautiful." – German mathematician Hermann Weyl

Another Miraculous Differential

When you differentiate $y = e^x$, you get e^x. Nothing has changed! Does that not make you want to sing *Hosanna*?!

Fuck Jehovah!

Maclaurin's Expansion

Scottish mathematician Colin Maclaurin gets the credit for one of the most important results of all time. Every function can be expressed in terms of the following infinite series expansion:

$$f(x) = a_0 + a_1x + a_2x^2 + a_3x^3 + a_4x^4 + a_5x^5 + \ldots$$

So, why is infinity so feared when it underlies ALL functions?

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Here's another cause for a hymn to God (the mathematical God, that is)…

$$e = 1 + 1/1 + 1/2 + 1/6 + 1/24 + 1/120 + 1/720 + \ldots \text{ to infinity}$$

or, to be more concise…

$$e = 1/0! + 1/1! + 1/2! + 1/3! + 1/4! + 1/5! + 1/6! + \ldots \text{ to infinity}$$

How could God improve on that? Is not mathematics divine? Only people without souls could be immune to mathematical magic. Who needs water being turned into wine when you can have an infinite series being turned into e?

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Sin x and cos x can be expressed as infinite expansions.

$$\sin x = 0 + x + 0x^2 - x^3/3! + 0x^4 + x^5/5! + 0x^6 - x^7/7! + 0x^8 \ldots$$

i.e. $\mathbf{\sin x = x - x^3/3! + x^5/5! - x^7/7! + x^9/9! \ldots}$

$$\cos x = 1 + 0x - x^2/2! + 0x^3 + x^4/4! + 0x^5 - x^6/6! + 0x^7 + x^8/8! \ldots$$

i.e. $\mathbf{\cos x = 1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! \ldots}$

Euler performed the same task for e^{ix}, analysed the results and immediately noticed that the cos x and sin x expansions were contained in the e^{ix} expansion, thus leading to his wondrous result:

$\mathbf{e^{ix} = \cos x + i \sin x}$

This equation reveals the profound connection between exponential and trigonometric functions.

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Some examples:

$e^{2i\pi} = 1$

$e^{i\pi/2} = i$

$e^{i\pi} = -1$

$e^{-i\pi/2} = -i$

<div align="center">✱✱✱✱✱</div>

Infinity is embedded in everything. Why? Because everything is ultimately based on the divine circle, the perfect symbol and ontological expression of infinity.

Circles = Waves = Vectors = Straight Lines (with a point at infinity).

Don't bow to Allah: bow to mathematics – it's so much more powerful.

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So, when $x = \pi$, $e^{i\pi} = -1 + 0$ or $e^{i\pi} + 1 = 0$

Thus, an *irrational transcendental* number (e), raised to the power of the imaginary number (i) multiplied by another *irrational transcendental* number (π), plus the number one, is *precisely* equal to zero. Does that not beggar belief?

Moreover, we see that the imaginary number is right at the heart of mathematics. It's not some unreal, fantastical fairy number.

The deepest connections of the whole of mathematics are present in this formula. It has been described as the centre of all mathematical analysis, and that's exactly what it is.

Rational, irrational, transcendental and imaginary numbers all come together. Zero and one are present. π, the symbol of the eternal, infinite circle is there.

The general Euler Formula is the God Equation, and the special case where $x = \pi$ is the innermost key to existence. We might refer to it as the *Soul Formula*. Ontological zero (the monad, the mind, the subject, the soul) equals

$e^{i\pi} + 1.$

Pythagoras's Identity for Sin and Cos

$(\sin x)^2 + (\cos x)^2 = 1$

This is established via the multiplication of Euler's formula and its complex conjugate:

$e^{xi} = \cos x + i \sin x$

$e^{-xi} = \cos x - i \sin x$

$(e^{xi})(e^{-xi}) = [\cos x + i \sin x][\cos x - i \sin x]$

$e^{xi} = \cos^2 x - i \sin x \cos x + i \sin x \cos x - i^2 \sin^2 x$

$1 = \cos^2 x + \sin^2 x$

Cyclops

When Euler worked at the Berlin Academy in the mid eighteenth century, Frederick the Great derisively called him a "mathematical Cyclops" (Euler had lost the sight in one eye, probably because of his excessive close study of all things mathematical). He was history's most prolific mathematician and was said to find calculating as easy as breathing. His mathematical brain was assisted by a prodigious memory. By the time he died, he was wholly blind, yet he was still performing calculations up to his last breath.

Euler was renowned as a master of analysis and was even referred to as "analysis incarnate" (which is a lot better than being Jesus Christ – bullshit incarnate!).

The world desperately needs a modern Euler. With the likes of Gauss, Riemann, Descartes, Pythagoras, Plato, Fourier and Leibniz, he stands in the company of the greatest mathematicians of all time. Sadly, modern functional mathematics (for functionaries) is taught in such a way as to prevent new Eulers from appearing on the scene.

To be an Euler, you need a grand *vision* of mathematics and most mathematicians these days are narrow, boring technicians, too afraid to do anything bold, radical, imaginative and outside expected parameters. Mathematicians are drones now, as tedious as analytic philosophers, another

dismal group lacking all vision and creativity.

A Mathematical Conundrum

For an infinite series to converge to a finite sum, a *necessary* condition is that its terms should tend to zero (each new term is smaller than the previous term). However, it is not a *sufficient* condition. For a series to converge, the terms must not only go to zero, but go there *fast enough*. If the convergence isn't sufficiently rapid, the series diverges to infinity. The famous *harmonic series* (1 + 1/2 + 1/3 + 1/4 + 1/5 …) does not converge.

Thus, there must be a "balance point" for series of this kind. Anything on the "good side" of the balance point converges, and anything on the bad side diverges. But does any series sit at exactly the balance point? In which case, does it converge, diverge, oscillate, or what?

Feynman

Richard Feynman encountered $e^{i\pi} + 1 = 0$ at age 14 and described it as, "The most remarkable formula in math." He added, "This is our jewel."

"To those who do not know mathematics it is difficult to get across a real feeling as to the beauty, the deepest beauty of nature … If you want to learn about nature, to appreciate nature, it is necessary to understand the language that she speaks in." – Richard Feynman

What is astounding about people like Feynman is that they knew nature was all about mathematics and yet they refused to make the intuitive leap that mathematics IS nature.

What is an Orthogonal Wave Function?

"An orthogonal wavefunction is of paramount importance in quantum mechanics. When two wavefunctions are orthogonal, it means that they represent two mutually exclusive physical states. We state this in quantum mechanics by taking the inner product, or the integral of the two wavefunctions over all space with limits of -infinity and infinity, and set a requirement that this is equal to 0. This quality means that the two "vector spaces" which are being described by the wavefunctions are not linear combination of each other." -- http://wiki.answers.com

Even and Odd Functions

A function is *even* if:

f(x) = f(-x)

Geometrically, an even function is symmetric with respect to the y-axis, i.e. its graph remains unchanged after reflection about the y-axis.

cos(x) is an even function

A function is *odd* if:

-f(x) = f(-x)

or

f(x) + f(-x) = 0

Geometrically, the graph of an odd function has rotational symmetry with respect to the origin, meaning that its graph remains unchanged after rotation of 180 degrees about the origin.

sin(x) is an odd function.

Even functions are symmetric and odd functions are antisymmetric and this takes us right back to bosons and fermions.

The Formula

Euler's formula links the exponential and trigonometric functions via the imaginary number.

The exponential function, e^x, involves a very rapidly growing graph – an uncontrolled, runaway process. Yet e^{ix} is about as controlled as you can get: a beautiful circle. The introduction of the imaginary number tames the exponential beast. How is this possible? It's because multiplication by the imaginary number is equivalent to rotation in the complex plane.

By ontologically relating imaginary numbers to time and real numbers to space, we give this situation a whole new twist: *time* is what *controls* space and makes it manageable. The orthogonality of space and time and their rotational relationship mediated by the imaginary number is what literally holds the physical universe together.

God, we are told, created space and time. No, it's Euler's Formula that creates space and time and manages their relationship. That's why Euler's Formula is the God Equation.

Euler's Formula is entirely beyond the human senses, observations or experiments. Reason alone demonstrated its truth – and that's our whole point. Science is *incapable* of establishing eternal truths such as Euler's Formula (but will happily use them when they allow the right answers to be generated). So, those who sign up to science as the source of "truth" or "knowledge" – as humanity's best gauge of "reality" – have turned their back on the *real* truths of mathematics. Empiricism cannot yield truth; rationalism can – and Euler's Formula is the supreme demonstration.

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Euler's Formula influences an enormous number of scientific and engineering equations because unmanageable situations expressed solely in real numbers are instantly tamed as soon as the imaginary number is admitted to the problem via Euler's "imaginary exponential".

Euler's Formula, with its cosine and sine functions (the basis of all waves), is found wherever wave phenomena are found. By the wave-particle duality of quantum physics, waves are in fact found EVERYWHERE. A particle is itself just a special form of a wave expression.

So, Euler's Formula is the foundation of reality. It is the authentic God Equation.

Euler's Divine Joke

A story is told that radical French philosopher Denis Diderot, an ardent atheist, challenged Euler to mathematically prove the existence of God. Euler replied, "Sir, $(a + b^n)/n = x$, hence God exists. Reply!" Diderot, dumbfounded, promptly fled.

It's surprising that Euler didn't quote his own most famous formula since it's so spectacularly mysterious and transcendent, wondrously connecting the five most fundamental numbers in the universe.

Mind your Tongue

Euler was a reserved and laconic man. When Frederick the Great's mother asked him why he was so timid and reluctant to speak, Euler replied, "Madam, it is because I have just come from a country where everyone who speaks is hanged." (He was talking of Imperial Russia.)

Metaphorically, not much has changed. The scientific and mathematical establishments fire anyone who speaks his mind and challenges the prevailing paradigm. Science and mathematics carry out the Spanish Inquisition "by other means" (usually by denying funding to "heretical" research ideas).

Not An Equation

$e^{i\pi} + 1 = 0$ isn't actually an equation since an equation has the form of $f(x) = 0$ (e.g. $x^3 - 2x - 4 = 0$), which will be true only for a certain value or values of x, i.e. the *solutions* of the equation. Since $e^{i\pi} + 1 = 0$ doesn't have any variables, it can't be an equation. It is therefore a formula or a theorem.

$e^{ix} = \cos x + i \sin x$ is an *identity* because it's true for any angle x, not just for π radians, i.e. it is *identically* true for *any* value of the variable.

Waves

The whole of existence is based on energy waves. There are cosine energy waves ("real") and sine energy waves ("imaginary"). Simple waves can be added together to generate complex waves. Complex waves contain more information than simple waves. The evolving universe is all about moving from the simplest waves to the most complex. The most complex waves of all are those associated with consciousness.

Fourier analysis is the archetypal mathematics of waves – of adding simple waves to create complex waves, and decomposing complex waves into their constituent basis waves.

You can't argue with numbers. You can't mess with eternal mathematical truths. The Abrahamic God is powerless to alter Euler's Formula.

Ontological Mathematics

Our system is designed to replace science. Science is indissolubly linked with the failed and irrational Meta Paradigms of empiricism and materialism. It's now time for rationalism – for an ultra mathematical vision of reality. There

is no rational reason for rejecting mathematics as the basis of reality. Mathematics has every conceivable property required to explain existence. There is no other plausible candidate. Mathematics can have no genuine imitators. The success of science is entirely due to mathematics, so why haven't scientists said to themselves, "Well, who needs science? – let's turn to mathematics."

The reason they haven't is that they are religiously beguiled by empiricism and materialism. As an act of faith, they reject rational unobservables.

The progress of humanity rests on a single issue: will the intelligentsia stick with empiricism or return to Platonic, Cartesian and, especially, Leibnizian rationalism?

Science has presented the choice as one of scientific evidence versus religious faith. This is nonsense. Rationalism is the OPPOSITE of faith, but it is also directly opposed to empiricism. Empiricism has more in common with faith than it does with rationalism. Empiricism, like faith, is fundamentally IRRATIONAL.

We, the Illuminati, present a different choice: scientific faith in the human senses and experiments versus rationalism grounded entirely in mathematics. We now formally accuse science of being a position of faith and proclaim mathematics as the sole defender of reason and knowledge.

We have contempt for human sensory data. Has there ever been a falser god than the defective, easily deceived human senses, subject to every kind of delusion and illusion? No rational person would ever base a system of knowledge on the human senses. Science overtly does, but in truth it doesn't – its real foundations lie in mathematics, not in the human senses.

So, let's just ditch the senses and embrace reason. Isn't that the LOGICAL thing to do?

Which scientist will stand opposed to reason, especially mathematical reason? Science is charlatanry. It's an insult to reason, and a brake on rational progress.

The Cosmic Speed Limit

One of the greatest mysteries of physics is why there is a cosmic speed limit – normally considered to be the speed of light.

Imagine that all motion takes place in the context of circles. Imagine a particle travelling uniformly along a straight-line radius. As it moves, it is subject to an *absolute* constraint: the circumference of the circle associated

with it must be $2\pi r$ at all times. The particle travels at a constant rate of circumference/radius = 2π.

That is, everything is travelling at 2π – the cosmic speed limit.

Lorentz Transformations

We are now going to perform mathematical magic. We will show you how Einstein's special theory of relativity is actually all about Euler's Formula. In the process, we will overthrow the biggest and most disastrous error in the history of scientific thinking – Einstein's principle of relativity.

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Using the Lorentz transformations that feature in Einstein's special theory of relativity, we have calculated L_m, the dynamic length of a moving ruler as seen by a stationary observer with an equivalent rest ruler of length l_r, at five different speeds: 0.0c, 0.5c, 0.707c, 0.866c and 1c, where c is the speed of light. We have also done the same for time and mass.

Lorentz Transformation Length Equation A) $L_m = L_r\sqrt{(1-(v^2/c^2))}$

Speed = 0.0c; L_m = 1.0 unit

Speed = 0.5c; L_m = 0.866 units

Speed = 0.707c; L_m = 0.707 units

Speed = 0.866c; L_m = 0.5 units

Speed = 1c; L_m = 0 units

Lorentz Transformation Time Equation B) $T_m = T_r/\sqrt{(1-(v^2/c^2))}$

Speed = 0.0c; T_m = 1.0 unit

Speed = 0.5c; T_m = 1.155 units

Speed = 0.707c; T_m = 1.414 units

Speed = 0.866c; T_m = 2.0 units

Speed = 1c; $T_m = \infty$ units

Lorentz Transformation Mass Equation C) $M_m = M_r/\sqrt{(1-(v^2/c^2))}$

Speed = 0.0c; M_m = 1.0 unit

Speed = 0.5c; M_m = 1.155 units

Speed = 0.707c; M_m = 1.414 units

Speed = 0.866c; M_m = 2.0 units

Speed = 1c; $M_m = \infty$ units

Now, let's use $e^{ix} = \cos x + i \sin x$ and see what happens when we calculate cos x for five particular angles:

<u>Cos x</u>

x = 0 degrees; cos x = 1

x = 30 degrees; cos x = 0.866

x = 45 degrees; cos x = 0.707

x = 60 degrees; cos x = 0.5

x = 90 degrees; cos x = 0.0

Let's do the same for sin x

<u>Sin x</u>

x = 0 degrees; sin x = 0

x = 30 degrees; sin x = 0.5

x = 45 degrees; sin x = 0.707

x = 60 degrees; sin x = 0. 866

x = 90 degrees; sin x = 1.0

If we refer to the God Graph once again (shown again on the next page) – the unit circle in the complex plane traced out by Euler's Formula – we can see

that it features a right-angled triangle (in fact, an infinite number of them), and that means of course that we can apply Pythagoras's theorem. Given that the radius of the unit circle is always "1" in an absolute sense, that means that the hypotenuse of any relevant right-angled triangle is also always 1. The "Pythagorean identity" states that for any angle in a triangle with a hypotenuse of 1, the square of the sine plus the square of the cosine is 1, i.e. $\sin^2 x + \cos^2 x = 1$.
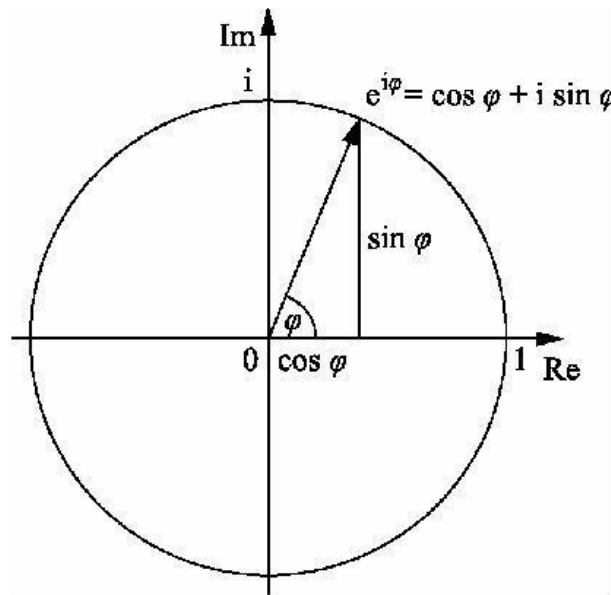
Now, we are going to make a few ontological mathematical definitions. Firstly, $\cos x = v_s$, the speed of a body through SPACE. Secondly, $\sin x = v_t$, the speed of the same body through imaginary space (TIME). What, therefore, is the hypotenuse?

Let's write $\sqrt{(v_s^2 + v_t^2)}$ = hypotenuse = 1 (unit circle).

Or,

$$v_s^2 + v_t^2 = 1$$

The hypotenuse is in fact none other than c, the speed of light, the invariant physical speed limit of the cosmos. In other words, if time is defined by the imaginary axis and space by the real axis, any body's speed through SPACETIME is always c, light speed, but this speed can be broken down into two components: one speed through space and another through imaginary space (time), and these two speeds are dynamically coupled, one increasing as the other decreases, and vice versa. They are permanently constrained to

ensure that their combined speed through spacetime is *always* c (which is precisely why c is invariant).

Equation D) $v_s^2 + v_t^2 = c^2$

If $v_s^2 + v_t^2 = c^2$ then $v_t^2 = c^2 - v_s^2$. Dividing each side by c^2 and taking the square root, we get $v_t/c = \sqrt{(1 - (v_s^2/c^2))}$.

The term on the right of the last equation is none other than the inverse of the Lorentz factor, which is the core of the Lorentz transformations. In other words, the Lorentz transformation is embedded in the Euler Formula.

Let's return to the Lorentz transformation that deals with length:

Length Equation A) $L_m = L_r\sqrt{(1-(v^2/c^2))}$

Speed = 0.0c; L_m = 1.0

Speed = 0.5c; L_m = 0.866

Speed = 0.707c; L_m = 0.707

Speed = 0.866c; L_m = 0.5

Speed = 1c; L_m = 0

Here, "speed" refers to speed through SPACE (v_s).

Using equation D) $v_s^2 + v_t^2 = c^2$, we get the following results:

If v_s = 0.0c, v_t = 1.0c

If v_s = 0.5c, v_t = 0.866c

If v_s = 0.707c, v_t = 0.707c

If v_s = 0.866c, v_t = 0.5c

If v_s = 1.0c, v_t = 0.0c

If we take, for example, v_s = 0.5c then L_m = 0.866 units and v_t = 0.866c (from the above calculations).

We can see that $v_t/c = L_m/L_r$.

In fact, $L_m/L_r = v_t/c = \sqrt{(1-(v^2/c^2))}$.

Regarding Time Equation B), $T_m = T_r/\sqrt{(1-(v^2/c^2))}$,

When $v_s = 0.5c$, $T_m = 1.155$ units and $v_t = 0.866c$.

Regarding Mass Equation C) $M_m = M_r/\sqrt{(1-(v^2/c^2))}$,

When $v_s = 0.5c$; $M_m = 1.155$ and $v_t = 0.866c$.

Now, 1.155 is simply 1/0.866 (the answer is precise if rounding approximations are avoided).

So, v_t/c – the ratio of an object's speed through time to the speed of light – is equal to $L_m/L_r = T_r/T_m = M_r/M_m = \sqrt{(1-(v^2/c^2))}$.

What we have shown here is that the Lorentz transformations of Einstein's special theory of relativity – that underpin Einstein's famous theory – are inherent within Euler's Formula.

We can reproduce ALL of Einstein's results, with far more elegance and power, thanks to Euler's Formula.

But there is of course a staggering difference between our theory and Einstein's. Our theory is based on ABSOLUTE SPACETIME. Einstein's relativity principle is wholly absent from it.

In our theory, based on Euler's Formula, every radius of the Euler unit circle (of which there are an infinite number), stands as a separate frame of reference. All of these reference frames are moving at exactly the same speed – the cosmic speed limit (which, by convention, we will take to be the speed of light). The reference frames differ only in their ROTATIONAL ANGLE, which changes the relative proportion of space to time.

So, as a body increases its speed through SPACE, what it is doing is reducing its angle of rotation from ninety degrees (the position of the imaginary axis – the time axis) to zero degrees (the position of the space axis).

Humanity lives in a "timelike" zone. Since we move very slowly through space, nearly all of our motion is through time, i.e. we are positioned close to the imaginary axis. Light, on the other hand, isn't in time at all. All of its

motion is along the spatial axis.

Euler's unit circle shows exactly why's there's a cosmic speed limit, why everything moves at the same speed and why light is always measured to have the same value. Yet all of this is true in an absolute, not a relative, context. Euler's Formula completely refutes Einstein's catastrophic principle of relativity and restores the reality principle, hence objective reality.

We often talk about an undetectable, absolute reference frame – the "ether" – but that is somewhat loose talk. All frames of reference are in fact in motion at the same speed, at different angles to one another. It is impossible for any physical thing to be stationary. The stationary reference frame is the *coordinate system itself* by which all the moving reference frames are defined. This stationary reference frame is inaccessible to physical bodies, is undetectable and is completely mental – composed of dimensionless mathematical points (monads).

Einstein, as an empiricist materialist, preferred to abandon objective reality and embrace the absurdities of relativity whereby time, distance and mass can no longer be absolutely, objectively defined for all observers. Had he been a mathematical rationalist like Leibniz, he would have embraced Euler's Formula and accepted an absolute but undetectable ether, and there would have been no need for relativity. Objective reality would have been preserved.

With Euler's Formula, time dilation, length contraction and mass increase are all *absolute* effects, not relative. Euler's Formula allows the absolute ether theory of Lorentz and Poincaré to be fully resurrected, and to become infinitely more powerful than Einstein's ridiculous relativity. With Euler's Formula, time is precisely defined in terms of imaginary numbers, which are orthogonal to real numbers.

Thanks to Euler's Formula, a brand new particle can be defined: the CHRONON, the basic particle of time. While photons do not experience time (time passes infinitely slowly for them, i.e. it has stopped), chronons do not experience space (i.e. all measuring rods measure zero distance since distance "passes" infinitely slowly).

Just as "light" is a spectrum (and visible "white" light is a composite of all the different components of the visible light spectrum), so we might infer that "time light" (so to speak) is a spectrum, and "normal time" is a composite of different components of the normal time light spectrum. (As speed through space increases, high frequency time bands are lost or displaced, causing low

frequency time bands to dominate and time to slow down, i.e. to dilate.)

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All objects travel at the same net speed through *spacetime*. This is the cosmic speed limit. It's the radius of a uniformly expanding Euler circle. If we double or quadruple the radius of the circle, we simply double or quadruple the relative cosine and sine components. The proportions always stay the same for a given angle.

The first law of motion is really that everything will travel at a constant radial speed forever, unless acted upon by a force, which will have the effect of changing the angle of the radius with respect to the real axis, and thus changing the relative proportions of sine and cosine components. If something is brought to a halt in its travel through space, it simply means that it is now travelling purely through time. There is no such thing as "stationary" in terms of spacetime. Everything is always moving. Every time Einstein treats objects as if they were in a stationary frame of reference (according to his relativity principle), he is talking literal nonsense since there is no such thing as a stationary reference frame for any physical object. A physically stationary object is not temporally stationary. Einstein believed that time could somehow be filtered out via a clock synchronization process where clocks in different reference frames have their clocks synchronised at some arbitrary point – but no such synchronization is ontologically possible, hence Einstein is plain wrong. His mathematics is correct (hence why his theory appears to be valid), but not his physics!

Euler's Formula fully reveals the errors of Einstein's ways. The critical features of Einstein's system – the invariance of light speed, the fused nature of space and time to make spacetime, the same laws of physics in all frames of reference are all true in the system based on Euler's Formula, yet this formula is predicated on an absolute, not a relative frame of reference. The coordinate system itself, in which the Euler circle is plotted, is the absolute reference frame which confers absolute, objective reality upon each moving frame of reference and refutes Einstein's legendary relativistic thinking.

Who in their right mind would not reject Einstein's relativity (with its inherent rejection of objective reality), and embrace instead Euler's absolute system, with objective reality inbuilt? Euler's mathematics is infinitely clearer, simpler, more elegant and more powerful than Einstein's relativity.

Einstein's system is based on the invariance of light speed. In Euler's

system (in our graph) light travels exclusively along the x-axis (real axis), where there is no time component (time has "stopped", or rather does not exist). No matter what reference frame we are in, light will always be the fixed x-axis mode of motion, hence why it is invariant for ALL observers. In the full 6D Illuminist universe, involving three orthogonal complex planes, just like the one we have been describing, the situation will be more complex of course – but the principles remain exactly the same. Light will always have a well-defined, fixed type of motion with regard to everything else, no matter the motion of the measuring equipment.

In Michelson and Morley's famous experiments to measure light speed, it was inevitable that they would detect no differences in light speed for exactly the reasons we have mentioned. Light belongs to a fixed reference frame, which is the same in relation to all other reference frames (it is always their space-only axis; there is no time component).

Euler's system involves no *physical* ether – hence why it has never been detected – but it does rely on an inherently unobservable ether, composed of dimensionless mental monads that create an absolute coordinate system in which all things take place. It is precisely this absolute arena that underpins objective reality, and it was precisely this that Einstein removed with his principle of relativity.

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Einstein's system can't explain the EPR paradox, involving correlated particles becoming infinitely separated and yet still able to communicate INSTANTANEOUSLY with each other. How does Euler's system deal with it?

Well, consider the situation where $V_t = V_s = 0.707c$ (corresponding to an angle of 45 degrees for both sin x and cos x), i.e. where time and space are perfectly balanced.

We previously wrote $\sin^2 x + \cos^2 x = 1$, but if we put the imaginary number in front of sin x (i.e. i sin x) – as in Euler's Formula – and square it (without invoking the complex conjugate), then, applying Pythagoras's Theorem, we get $\cos^2 x - \sin^2 x = 0$, where cos x = sin x.

We thus have *two* situations for x = 45 degrees:

1) $\cos^2 x + \sin^2 x = 1$ (based on using the complex conjugate).

2) $\cos^2 x - \sin^2 x = 0$ (based on not using the complex conjugate).

The first equation applies if cosine and sine relate to what we might call *immiscible* ontological properties (space and time). That is, space and time do not mathematically cancel each other at 45 degrees where they are perfectly balanced. It's as if space and time can be treated as if they were both defined by real numbers – which is why physics is full of equations where time is treated as a real rather than imaginary quantity.

However, if we remove the ontological nature of space and time by going down to the level of the monadic coordinate system – which is outside space and time by definition – we now reach a state where imaginary and real numbers are miscible mathematically. What this means is that they can indeed cancel each other at x = 45 degrees, i.e. $\cos^2 x - \sin^2 x = 0$.

Thus, for any two points lying along the 45-degree axis, they are always separated by *zero* distance. Moreover, the same is true for 135 degrees, 225 degrees and 315 degrees, i.e. all the 90 degree rotations from 45 degrees. This further means that, in terms of a coordinate system based on these sloping axes, it's possible to get from ANY point to ANY OTHER point via a "zero channel" – i.e. where the distance between two points is always zero. From one point we can reach another point directly (if they both lie on the same diagonal), or via two steps if they are not on the same diagonal. (In which case, we move along a diagonal from one point to an intermediate point, which is on the same diagonal as the point we want to reach. Since each step involves zero distance, the first and second points are also therefore separated by zero distance).

In other words, a SINGULARITY exists at the centre of any coordinate system based on the complex plane (of balanced real and imaginary axes). All points in the plane are separated by zero distance from the perspective of this Singularity, this zero channel. Thus, instantaneous communication is compulsory via this channel since there is literally no distance to travel.

This Singularity – outside space and time – and yet sitting implicit within the coordinate system of space and time, is the wondrous mathematical secret at the heart of existence that makes instantaneous connection between apparently infinitely separated points trivial. Viewed from the right angle, the points aren't separate at all! That's the beauty of the complex plane and the mathematics that flows from it.

The Singularity provides a channel outside space and time, thus

circumventing Einstein's physical speed limit. Outside space and time, there's nothing – no sufficient reason – preventing instantaneous communication.

So, there is nothing mysterious about the EPR paradox or the Pauli Exclusion Principle which allows all electrons to be simultaneously aware of each other – it's all in the MATH!

Is it not a wonder of wonders? Thanks be to Mathematics, the one, true God!

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A crucial mathematical distinction must be drawn between two ways of looking at the complex plane. In one case, we can define a complex number as c = a + ib. Here, we have hardwired real and imaginary numbers together, thus rendering them "immiscible", i.e. they're stuck together and can't act independently of each other. But we can also write (a, ib) as conventional, separate coordinates where a and ib are *not* harnessed together and can act independently. In this case, the numbers are *miscible*. Real and imaginary distances can merge into one another and cancel each other.

No Tachyons

The Euler Formula shows that nothing can travel faster than the cosmic speed limit. So, superluminal *tachyons* – which are possible in Einstein's relativity theory – are *impossible* in the Euler system. No tachyons have ever been observed and they imply radical problems with causality since they generate endless potential time paradoxes. Any theory which does not explicitly forbid superluminal travel of physical particles is ipso facto false, and should be rejected on those grounds alone. Einstein's theory is manifestly false.

"Advanced" Waves

"Like Dirac's equation, Maxwell's wave equation for light has two solutions, the so-called 'retarded solution' that describes a wave travelling forward in time and the 'advanced solution' that describes a light wave travelling backward in time. Both of these waves travel at the same speed – the speed of light in a vacuum – but in opposite temporal directions. The retarded wave travels in the normal direction – from past to future – while the advanced

wave goes the other way – from the future into the past. … Although advanced waves are permitted by Maxwell's equations, no advanced waves have ever shown up in any experiment. All light waves that we know about seem to be of the retarded variety." -- Nick Herbert, *Faster than Light*

Euler's Formula addresses this problem without any difficulty at all. The wave generated by an Euler unit circle has four phases:

1) 	0 – 90 degrees: positive real numbers and positive imaginary numbers.

2) 	90 – 180 degrees: negative real numbers and positive imaginary numbers.

3) 	180 – 270 degrees: negative real numbers and negative imaginary numbers.

4) 	270 – 360 degrees: positive real numbers and negative imaginary numbers.

Phase 1 supplies the "retarded" waves that go forward in time and Phase 4 supplies the "advanced" waves that go in the opposite direction. They are part of the same wave process and indeed they are supplemented by the other two "antimatter phases": Phase 2 supplies the antimatter retarded wave, and Phase 4 supplies the antimatter advanced wave.

So, why don't all of these wave phases cancel out; why do they seem to give us the "Phase 1" world with which we are familiar?

Looking at the God Graph once again, we can think of this as creating four ontologically separate zones, all separated by various insurmountable "walls".

The four zones are:

1)	0 – 90 degrees: positive space (matter) and time.

2)	90 – 180 degrees: negative space (anti-matter) and time.

3)	180 – 270 degrees: negative space (anti-matter) and anti-time.

4)	270 – 360 degrees: positive space (matter) and anti-time.

Zones 1 and 2 are separated by a "chronon wall" – nothing in zone 1 can

penetrate time to reach the antimatter universe. Zones 1 and 4 are separated by a luxon wall (of photons) – nothing in zone 1 can penetrate light to reach the anti-time universe. Zones 2 and 3 are separated by a luxon wall for the anti-matter universe, and zones 3 and 4 are separated by a chronon wall for the anti-matter universe.

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One of the great mysteries of physics is what happened to all the antimatter? Theoretically, there ought to be as much antimatter as matter, but we seem to be in a purely material world.

The Euler system gives a simple explanation: there is indeed as much antimatter as matter, as symmetry demands, but it's locked away in an unreachable zone of the universe, shielded by an impenetrable chronon wall. Similarly, there is an anti-chronon universe but an impenetrable luxon wall shields us from it. So, ontological mathematics creates a perfectly partitioned universe, operating overall according to perfect mathematical symmetry.

On a cosmic basis, there are clear-cut zones of matter/time, antimatter/time, antimatter/anti-time and matter/anti-time. However, at the particle level, we can generate small quantities of "alien" particles. For example, although we live in a material world, scientists can generate small amounts of antimatter.

Why is that? It's because everything is based on the Euler Formula on both a cosmic and local level (*as above, so below*). Exotic types of particle are born only via extremely energetic processes that are reflective of the Big Bang when everything was initially highly symmetric. As the universe cooled, everything settled into stable patterns. Whenever we create local high-energy experiments, we have the chance to locally recreate particles that are not ordinarily found in our zone of the universe. That's why scientists can make antimatter.

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What does "charge" mean? Why does it come in positive and negative varieties? Is a negative particle a kind of antimatter in relation to positive charge?

The Euler Formula gives us an opportunity to offer a potential explanation of charge. Imagine that a negatively charged particle such as an electron

actually belongs to the 90 – 180 degrees zone (of negative real numbers and positive imaginary numbers.) Moreover, it is stabilised by sending out "advanced waves" into the 180 – 270 degrees zone (of negative real numbers and negative imaginary numbers). Similarly, positively charged particles belong to the 0 – 90 degrees zone (positive real numbers and positive imaginary numbers), and these send advanced waves into the 270 – 360 degrees zone (positive real numbers and negative imaginary numbers).

At the level of the Euler's formula for individual particles, there are no ontological walls; such walls apply only on the cosmic scale to large aggregates of particles.

Particles and particle combinations are mathematically (and ontologically) stabilised by the full features of a "circular wave", as it cycles from 0 to 360 degrees in the complex plane (involving both real and imaginary numbers, and positive and negative numbers).

Euler's Formula provides all the mathematical ingredients we could possibly need for immense variety based on a relatively simple starting point.

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Why are quantum particles "fuzzy"? Well, one easy answer is that Euler's Formula provides a wave cycle that involves more elements than just straightforward space, matter and time.

Trigonometric Functions

"In mathematics, the trigonometric functions (also called circular functions) are functions of an angle. They are used to relate the angles of a triangle to the lengths of the sides of a triangle. Trigonometric functions are important in the study of triangles and modelling periodic phenomena, among many other applications. ... modern definitions express them as infinite series or as solutions of certain differential equations, allowing their extension to arbitrary positive and negative values and even to complex numbers." -- Wikipedia

The Euler Formula and the Helix

"The sine function is the orthogonal projection of the rotated unit circle. The

cosine function is also the projection of the unit circle, just 90 degrees out of phase with sine. In three dimensions, the unit circle, sine and cosine are the unit helix as viewed from each axis. This fundamental geometry is expressed by Euler's formula." – Wikipedia

What is DNA? A double helix. Is DNA yet another direct manifestation of Euler's formula?

Space and Time

Let's concentrate on the $0 - 90$ degrees region of Euler's Formula. The real axis is at 0 degrees and the imaginary axis at ninety degrees. The real axis is the space axis and has no time component. The imaginary axis is the time axis and has no space component. In between, all the infinite radii of the circle can be expressed as the hypotenuses of an infinite number of Pythagoras's triangles.

The significance of this is that any object moving in the spacetime region between the real and imaginary axes has TWO aspects: a speed through space and a speed through time rather than a single speed through space (real axis) or time (imaginary axis).

With his special theory of relativity, Einstein proclaimed an observer moving at constant speed in a straight line to be stationary (i.e. to have zero speed through space; he ignored time, or simply assigned it its default speed of one second per second). He then used the length, mass and time Lorentz transformations to establish how the length, mass and time of a moving observer would appear to the stationary observer. Of course, given that the "moving" observer could equally consider himself stationary, he could do the same in reverse.

So, let's consider the situation where two observers have a speed relative to each other of 0.866c.

Applying the Lorentz transformations, each thinks that the other has twice the mass, half the length and time passes twice as slowly for them. What happens in the Euler system?

If $v_s = 0.866c$ then $v_t = 0.5c$ (since $v_s^2 + v_t^2 = c^2$).

The Lorentz factor $= 1/\sqrt{(1-(v_s^2/c^2))}$.

In the special theory of relativity, length is multiplied by the inverse Lorentz

factor and mass and time are multiplied by the Lorentz factor.

When $v_s = 0.866c$, the Lorentz factor $= 2$ and its inverse $= 0.5$. But this is exactly equal to the value of v_t, and its inverse.

In other words, what you are ACTUALLY doing when you work out the Lorentz transformations for Einstein's special theory of relativity is NOT comparing a stationary frame of reference with a moving frame of reference as Einstein maintained (and which is the basis of his principle of relativity), but comparing a speed through space with a dynamically linked speed through time, i.e. two moving frames of reference but with one spatial and one temporal.

The two schemes use the same basic mathematics but imply diametrically opposed worldviews: Einstein's based on relativity and Euler's on absolutism. Einstein has gotten away for a century with his false theory because it works mathematically and thus was vindicated experimentally. This furnishes the perfect example of how the whole science establishment can fall in line with a rather crazy idea (relativity destroys objective reality, hence is mad) because of elegant mathematics, successful experiments and a philosophical inability to consider rival interpretations. Einstein's fallacious theory – which has fooled the whole scientific establishment for a hundred years – ought to spell the end for the scientific establishment and their way of doing things. They didn't see the error of Einstein's ways because they were locked into Meta Paradigms regarding empiricism and materialism which were consistent with Einstein's view. The Euler view, on the other hand, belongs to the rationalist and idealist Meta Paradigm.

Science now ought to divide into two. One branch should continue with empiricism and materialism (Newtonian and Einsteinian science) and the other should adopt rationalism and idealism (Leibnizian and Eulerian science) – and the two can then form a dialectic that drives each other forward.

Rest Mass

There is a fundamental problem with the concept of mass in Einstein's special theory of relativity. Wikipedia says, "Mass in special relativity incorporates the general understandings from the concept of mass-energy equivalence. Added to this concept is an additional complication resulting from the fact that 'mass' is defined in two different ways in special relativity:

one way defines mass ('rest mass' or 'invariant mass') as an invariant quantity which is the same for all observers in all reference frames; in the other definition, the measure of mass ('relativistic mass') is dependent on the velocity of the observer."

So, the difficulty is that one observer can have a rest mass and another observer moving relatively to the first observer can assign a dynamic mass to the first observer. Let's imagine the hypothetical situation where an observer is moving near or actually at light speed relative to another observer. As far as he's concerned, his mass is the same as always. According to the other observer, his mass is approaching infinity or is actually infinite. How can this be reconciled with object reality? It obviously can't. It's not at all clear how relativity can make any claim to obey energy conservation laws given the kind of thought experiment we have just conducted. No consistent definition can be provided of anything's "actual" mass. Rest mass is truly valid only to the observer in his own frame of reference and those who share his frame of reference. To other observers moving uniformly with respect to the first observer, he has a relativistic mass while they have a rest mass. To the other observer, it's the other way around. So "rest" and "relativistic" mass are completely subjective. They have no formal, objective meaning. Sure, a mathematical formula exists for translating rest and relativistic masses in different moving frames of reference, but that has nothing to do with objective reality: that's just a way of producing a consistent subjectivity.

Even relativists are unhappy with how mass is defined:

"Okun and followers reject the concept of relativistic mass. Also Arnold B. Arons has argued against teaching the concept of relativistic mass. For many years it was conventional to enter the discussion of dynamics through derivation of the relativistic mass, that is the mass–velocity relation, and this is probably still the dominant mode in textbooks. More recently, however, it has been increasingly recognized that relativistic mass is a troublesome and dubious concept. [See, for example, Okun (1989).]... The sound and rigorous approach to relativistic dynamics is through direct development of that expression for momentum that ensures conservation of momentum in all frames rather than through relativistic mass." -- Wikipedia

Taylor and Wheeler advocated avoiding the concept of relativistic mass altogether and said, "The concept of 'relativistic mass' is subject to misunderstanding. That's why we don't use it. First, it applies the name mass

– belonging to the magnitude of a 4-vector – to a very different concept, the time component of a 4-vector. Second, it makes increase of energy of an object with velocity or momentum appear to be connected with some change in internal structure of the object. In reality, the increase of energy with velocity originates not in the object but in the geometric properties of spacetime itself."

Einstein himself said, "It is not good to introduce the concept of the mass $M = m/\sqrt{(1 - v^2/c^2)}$ of a moving body for which no clear definition can be given. It is better to introduce no other mass concept than the 'rest mass' m. Instead of introducing M it is better to mention the expression for the momentum and energy of a body in motion."

These all point to extremely serious conceptual errors regarding the definition of mass, which relativists seek to circumvent in various ways. However, they can't just pretend the problem doesn't exist. It DOES exist – and they have failed to address it. Mass is an incoherent concept in relativity theory precisely because relativity itself is incoherent and contradicts the principle of objective reality.

The specific question relativists must answer is what IS mass. (Surely that's not too much to ask of a scientific theory!) Is it to be defined with regard to rest or movement, and of course there is no actual answer in relativity. Relativity is incapable of explaining what things authentically *are* since there is no objective reality in relativity theory.

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Regarding dynamic length and mass in real space, these have an inverse relationship:

K (a constant) = $L_m M_m$

(As L_m goes from 1 to 0, M_m goes from 1 to infinity.)

That is, as a body experiences length contraction, it also experiences a proportionate INCREASE in mass. In fact, the two things are different manifestations of the same thing. Mass increases BECAUSE length is contracting. If a particle goes faster through real space, its length shrinks and mass increases. Its mass increases because its energy has to be crammed into a smaller and smaller space. If a particle with mass turns into a photon (so to

speak), its energy becomes infinite because its length has contracted to zero, and, moreover, time has stopped for it (making it eternal, hence an eternal energy system).

There must be an analogous but inverse process for imaginary space (time) rather than space, and imaginary mass rather than real mass.

J (a constant) $= T_m M^i_m$, where M^i refers to imaginary mass.

(As T_m goes from 1 to infinity, M^i_m goes from 1 to 0.)

With real mass, the mass becomes greater and greater as the speed through real space increases, becoming infinite at light speed through real space. With imaginary mass, the mass becomes smaller and smaller as the speed of the particle increases through space, until it is formally zero at light speed through real space.

    With real length, the length becomes smaller and smaller as the speed of the particle increases through real space, until it is formally zero at light speed through real space. With imaginary length (time), this becomes greater and greater as the speed of the particle increases through real space, becoming infinite at the speed of light through real space.

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In the above section, we were talking about what happens as speed through real space increases (necessarily meaning that speed through imaginary space – time – decreases). In this scenario, the starting position is for things to be moving at light speed through *time* (imaginary space) and at zero speed through real space.

    Given the symmetry inherent in this situation, we can also imagine a starting position of things moving at light speed through *real space* and hence at zero speed through imaginary space (time).

Thus (for increasing speed through time and decreasing speed through real space),

K (a constant) $= L_m M_m$

(As L_m goes from 0 to 1, M_m goes from infinity to 1.)
J (a constant) $= T_m M^i_m$, where M^i refers to imaginary mass.

(As T_m goes from infinity to 1, M^i_m goes from 0 to 1.)

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Mass is all about energy being crammed into space. When space no longer exists, nor, in fact, does mass. Without space, mass becomes pure energy – which is why photons are said to have zero "rest mass". Mass is actually "dimensional" energy (energy constrained and shaped by dimensional space) and where there are no dimensions then there is only pure energy (which occupies no space). A black hole singularity doesn't have an immense mass – it has no mass at all! All of the "mass" has become dimensionless energy. Mass is the "finitization" of energy: it is dimensionless energy (outside space and time) that has been converted into something dimensional (inside space and time).

Imagine taking a *single* quantum of energy and placing it in a unit volume of space. You have thus created "mass". If you now halve the unit volume, you haven't changed the energy content (which is still one quantum), but you have *doubled* the mass. If you shrink the unit volume to zero, you have apparently made the mass infinite. In fact, all you have actually done is return a single quantum of energy to the infinite, dimensionless domain.

If you take a thousand quanta of energy and place them in a unit volume, you will have a thousand times the mass. If you halve the unit volume, you will again double the mass you have, and if you reduce the volume to zero, it will again become infinite.

When mass is said to "increase" as speed increases, it's something of a misnomer. Increasing speed and decreasing length (wavelength!) mean that FREQUENCY (spatial frequency) is increasing. As higher spatial frequencies appear, these displace higher temporal frequencies, leading to time dilation and reduced imaginary mass.

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At zero speed through *space* (equivalent to light speed through time), a chronon, by analogy with the photon, has "rest imaginary mass" of zero. On the other hand, its imaginary energy is *infinite*. At light speed through *space*, a chronon's wavelength is infinite and its imaginary energy zero.

Human beings have enormous imaginary energy – that's what's propelling us through time!

Remarkably, we are primarily children of imaginary numbers, of imaginary energy and imaginary mass – and yet science completely denies the ontology of imaginary numbers, i.e. it denies our "physical" essence because it is unobservable, just as it denies our immaterial essence (the soul) for the same reason.

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Zero and infinity bound everything. All *finite* particles (i.e. "mortal" particles inside space and time) are greater than zero and less than infinity. All *infinite* particles (i.e. eternal, indestructible particles outside space and time) are defined by zero and infinity.

The Paradox

Einstein's theory of relativity was regarded as a tremendous breakthrough in scientific thinking. While it certainly has valuable elements, it also contains catastrophic blunders that have inhibited clear scientific thinking for a century. The principle of relativity itself is the problem. It makes it impossible to explain what concepts like mass mean. It also steered many scientists away from mathematical, absolutist thinking and trapped them in the bizarre web of relativity where objective reality has vanished. Relativity is background *independent* while quantum mechanics is background *dependent*. What this means is that scientists have struggled for several decades to reconcile two different, incompatible and indeed mutually exclusive paradigms. Unsurprisingly, they have failed dismally. Anyone with the slightest mathematical or philosophical literacy could have told them that from the outset. Scientists ought to have devoted their time to understanding what background independence or dependence implies about reality. But scientists aren't interested in such metaphysical questions and they simply blundered on with two warring theories and hoped that some miracle would allow them to be united. No such miracle has ever appeared. How could it? It's impossible to marry two theories that don't even agree on what kind of stage they are dealing with.

Unfortunately, it's remarkably difficult to prove relativity wrong experimentally. Consider John Gribbin's comments from his excellent book *Schrödinger's Kittens*:

"The special theory has been tested in very many experiments, and passed every test with flying colours; I will give just one classic example of time dilation at work.

"The atmosphere of the Earth is constantly being bombarded by particles from space, called cosmic rays. When these particles interact with atoms high in the atmosphere, they often produce showers of another kind of particle, called muons. These muons have a very short lifetime. They exist as muons only for a couple of microseconds, before they 'decay' into other kinds of particle. Even though they travel at a large fraction of the speed of light, they do not live long enough, according to everyday common-sense ideas about time, to get through to the surface of the Earth. And yet, particle physicists find that most of these muons do get down to the ground. The explanation is that because the muons are moving so fast relative to the Earth, time is running more slowly for them. To be precise, the special theory of relativity says that the lifetime of the muons is extended by a factor of 9 – they live 9 times longer, according to our clocks, than they would if they were sitting still."

The problem with this explanation is that it doesn't prove Einstein's principle of relativity right. It simply proves that time dilation is a real phenomenon, but time dilation doesn't require relativity. Time dilation is completely compatible with an absolutist, non-relativistic theory. In fact, time dilation is built into the ontological version of Euler's Formula, an absolutist formula.

Gribbin continues, "But remember that the special theory also says that muons are entitled to regard themselves as sitting still. In their own frame of reference, surely they should still decay before reaching the ground? Not at all! If the muons are regarded as being at rest, which is indeed allowed, then we have to regard the Earth as rushing past the muons at a sizeable fraction of the speed of light! This, of course, will cause the Earth to shrink, from the point of view of the muons, by the amount calculated from the Lorentz transformations. Because the speed involved is the same, and because of the symmetry between space and time in those equations, the amount of the contraction is the same as the amount of the time dilation – a factor of 9. But because of the opposite sign in front of the time part of those equations, the thickness of the Earth's atmosphere *shrinks* by a factor of 9. From the muons' point of view, the distance they have to cover is only one ninth of the distance we measure for the thickness of the Earth's atmosphere, and they

have ample time to complete such a short journey before they decay.

"The special theory of relativity is not some crazy hypothesis, but passes Newton's experimental test – it 'explains the properties of things' *and* 'furnishes experiments' which can be used to test (successfully) those explanations."

Unfortunately for relativists, this second explanation of what is happening is COMPLETELY UNTESTABLE. In fact, according to empiricist, positivist thinking, it ought not to be mentioned at all. How could anyone EVER know what reality is like from the viewpoint of muons? How can the alleged shrinking of the Earth ever be experimentally verified?

This is where relativity theory is supremely cunning. A verifiable experiment is performed – which is compatible with either a relativistic OR absolutist interpretation and then mention is made of a mathematically consistent but wholly unverifiable "alternative reality" where the relativity principle applies. But, in truth, it NEVER DOES. This secondary relativistic world doesn't exist and no one can ever prove that it does. So what's the point of it? Why shouldn't it be abandoned as a superfluous, untestable hypothesis in exactly the same way that Einstein got rid of the ether on precisely the same grounds!

No one needs relativity. The muons' behaviour is a result of an absolute, not relative, effect. Since we can only ever inhabit ONE frame of reference, what's the point of referring to another frame of reference of which we can have no conceivable knowledge except by way of the Lorentz transformations? This is the uttermost philosophical nonsense. Einstein abandoned objective reality for empiricist reasons (no physical ether could be detected) in order to create a bizarre relativistic world that was itself unempirical (no one can ever empirically know what is going on in any frame of reference other than their own)! Is that not extraordinary?

It would take an ingenious experiment to absolutely refute relativity. The matter could certainly be settled once and for all by sending an astronaut into space at near light speed. If Einstein's right, the astronaut won't die because he'll be able to consider himself stationary. If absolutism is right, the astronaut will be crushed to death because he will experience actual length contraction. We don't have the technology to perform such an experiment, and it would be morally wrong (!), but we know in principle that the two different approaches *can* be differentiated – if we can find a clever enough

test and the right technology.

What's for sure is that we can't appeal to muons to tell us what's going on!

Wave Orthogonality

If we integrate sin nx cos mx with respect to dx from -π to +π radians (a full circle) for all values of n and m greater than zero, we always get a result of *zero*, i.e. the sine and cosine functions are orthogonal.

If we integrate cos nx cos mx with respect to dx from -π to +π radians (a full circle), we always get a result of zero for n not equal to m, and a result of π when n=m, i.e. different cosine functions are orthogonal and it's only when they are the same (n= m) that they're not orthogonal. The same is true for the integration of sin nx sin mx.

This means that all waves are orthogonal to one another, and only non-orthogonal to themselves

Two Domains

The God Graph demonstrates something remarkable. Concentrating on the first quadrant – from 0 to 90 degrees – we see that the region is bounded by two axes, the positive real axis and the positive imaginary axis. Now, between these axes, we can draw radii and we can also regard these as the *hypotenuses* of Pythagorean right-angled triangles. We can't, however, do the same with the two axes.

In their case, the two radii (real axis and imaginary axis) form the equal-length *sides* of a Pythagorean triangle. These radii/axes are *sides* of a right-angled triangle; in all other cases the radii are *hypotenuses* of a right-angled triangle.

While radii are hypotenuses, they belong to the FINITE world. As soon as the hypotenuse is transformed into an axis (which happens physically when, for example, a particle is accelerated to light speed), it leaves the finite world and enters the dimensionless domain of zero and infinity.

We can imagine starting from a straight line (the real axis) and then producing an infinite set of right angled triangles as we rotate through ninety degrees, terminating with another straight line (the imaginary axis). The difference between straight-line behaviour and right-angled triangle behaviour corresponds to the difference between the infinite and the finite.

It's all in the geometry.

The angle of a straight line is 180 degrees and the internal angles of a triangle add up to 180 degrees, but they are radically different arrangements.

With a right-angled triangle, we can divide the hypotenuse by the opposite side (to give sin x) and the hypotenuse by the adjacent side (to give cos x). But what happens when the hypotenuse, opposite side and adjacent side all merge (as in the real and imaginary axes)? The world becomes radically different.

$$*****$$

Speed is defined as distance over time. Along the real axis, where time doesn't exist, what happens when you attempt to calculate speed by dividing by time? If there is no time (equivalent to a clock taking infinity long to tick) any clock is stuck at zero forever. So, elapsed time is always zero and when we divide by zero, we of course get an infinite result.

What about the situation with the imaginary axis? In this case, distance doesn't exist, so all measuring rods permanently measure zero distance. Therefore, dividing distance (zero) by time will always give a zero result.

Thus we see that the pure time and space domains are defined by those two familiar numbers zero and infinity – the numbers rejected by scientific empiricist materialists. No matter how much they might want to wish away these numbers, they never will. The dimensional material world will always be bounded by the dimensionless mental world, and indeed sit inside it.

$$*****$$

Just as there is a maximum physical speed limit (equated to light speed), so in fact all physical things have precise limits above zero and less than infinity.

There are four zones of existence:

1) The mental domain of zero and infinity.

2) Zero to *minimum physical limit*: a forbidden zone.

3) *Minimum physical limit* to *maximum physical limit* (this is the familiar physical world).

4) *Maximum physical limit* to infinity: another forbidden zone.

When stars of the right proportions are collapsing, they reach a stage of IRREVERSIBLE collapse and become black holes. This irreversible process corresponds to something physical slipping into one of the forbidden zones where nothing stable can exist, so the next stop is the mental, dimensionless world.

This is always true. An object with mass being accelerated to light speed will suffer extreme length contraction and mass expansion and will irreversibly collapse just like a black hole: therefore, nothing with mass can ever actually reach light speed.

The rest mass of the photon is said to be zero – that's the only way it can exist in the dimensionless domain. Its energy is however infinite. This poses yet another problem for relativity. Doesn't infinite energy equate to infinite mass via Einstein's famous equation of mass-energy equivalence?

Rest Mass versus Relativistic Mass

Einstein's relativity principle requires the definition of a rest mass – the mass something has in the frame of reference where it considers itself stationary. However, in an absolute system, there is no such thing as a rest mass since no accessible frame of reference is stationary. Mass is ALWAYS dynamic, related to the object's speed (and length). To be clear, in the Eulerian system, Einstein's "rest mass" is simply abolished. No such thing exists. At a stroke, this removes all of the conceptual difficulties and awkward definitions that bedevil "rest mass" and "relativistic mass".

The Special Regions

The two axes – real and imaginary – are obviously special domains. Another potentially interesting domain is where time and space are equally balanced (v_s and v_t both equal 0.707c). Here, there is perfect balance between real and imaginary numbers, and that might lead to novel phenomena. This is exactly where the square roots of the imaginary number are found (as illustrated below):
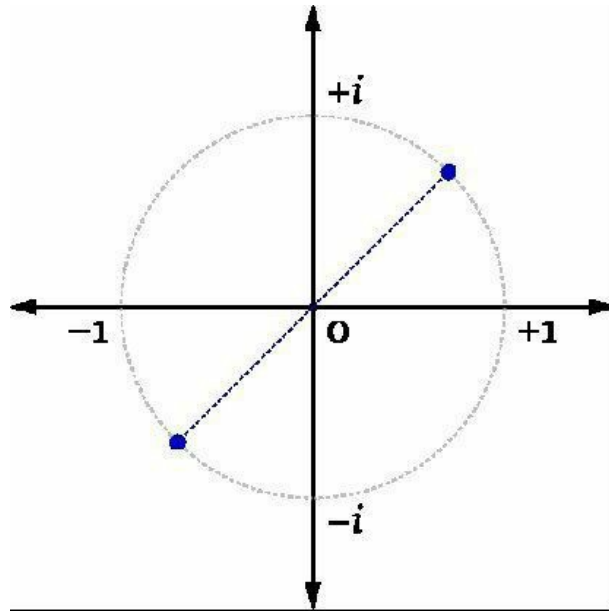
The square roots of the imaginary number are:

± (√2/2)(1 + i)

*****

We can define a hypothetical "rest mass" – one that can never actually be attained – with respect to the imaginary axis. A "real space" particle that has no motion through space has a length of one unit, a mass of one unit and experiences time units of one.

As a particle speeds up, its length contracts, its mass increases and it experiences time dilation, all in accordance with the Lorentz transformations. If it could hypothetically reach light speed, it would have zero length, infinite mass (or rather energy) and would experience no passage of time.

We can treat a particle's length as a wavelength. Its wavelength decreases as its speed increases, and its mass correspondingly increases. Mass thus performs the same role as *frequency*.

"Lorentz worked out a theory that the mass of a particle with a given charge is inversely proportional to its radius. In other words, the smaller the volume into which a particle crowds its charge, the greater its mass. …The mass of a particle is inversely proportional to its radius." -- Isaac Asimov

With regard to electromagnetic radiation, speed of light (a constant) = wavelength multiplied by frequency (c = λf), i.e. wavelength is inversely proportional to frequency.

Frequency, like mass, is a measure of energy ($E = hf$ where f is the frequency and h is Planck's constant; in the case of particles, $E=mc^2$).

We might speculate that particle length = wavelength, mass = frequency and we can write $c = \lambda$ (particle wavelength) times mass (particle frequency). If we take $c = 1$ (in appropriate units) then $\lambda f = 1$ for all particles.

If $\lambda = \sqrt{(1-(v^2/c^2))}$ and $f = 1/\sqrt{(1-(v^2/c^2))}$ then λf always $= 1$.

Particle speed with respect to the speed of light determines a particle's wavelength (length) and frequency (mass).

So, we can think of a particle as simply another type of wave, one defined between zero and ninety degrees of the Euler unit circle.

$$*****$$

What about imaginary particles? These are functionally the inverse of real particles.

The wavelength of a chronon (a time particle) is defined by:

$$\lambda = 1/\sqrt{(1-(v^2/c^2))} \text{ and } f = \sqrt{(1-(v^2/c^2))}$$

so $\lambda f = 1$, as with real particles, but now the wavelength dilates as the speed through space increases, and the frequency (mass/energy) decreases.

$$*****$$

There are various types of wave:

1) Those that travel 360 degrees round the Euler circle.

2) Those that travel along axes: the positive real axis, the negative real axis, the positive imaginary axis and the negative imaginary axis.

3) Those that travel along radii.

4) However, in a 6D universe involving three real axes (x, y, z) and three imaginary axes (x_i, y_i, z_i), all sorts of waves are possible depending on different combinations of the axes and different kinds of unit circles. The Euler unit circle is based on (1, i, -1, -i), but we can have others such as: (1, 1, -1, -1) → real numbers, and (i, i, -i, -i) → imaginary numbers

… and all other possible combinations if we relocate the origin to asymmetric

positions (e.g. instead of an origin at (0,0,0,0) we might move it to (1,1,1,1).)

All we are ever dealing with in the universe are different types of wave, and how they interact with each other.

Linear and Angular Momentum

Anything that has momentum is difficult to stop. In a linear system, experiencing no friction, a body set in motion will continue in motion unless acted on by an outside force. This is the principle of the conservation of momentum. Linear momentum, p, is equal to mass times velocity.

What about angular momentum? In a system of rotational rather than linear motion, a body in a closed orbit free from friction will continue with constant angular momentum. Angular momentum, L, is equal to mass times velocity times radius.

In Niels Bohr's simple model of the atom – devised before the advent of the full power of quantum mechanical theory – an electron being excited from its ground energy state can "jump" only to an orbit where its angular momentum increases by some whole number (n) times $h/2\pi$, where h is Planck's constant. Similarly, an electron dropping down orbits will have its angular momentum changed by a factor of $n(h/2\pi)$. So, here we see "quantum leaps" taking place. Any old transitions aren't possible. They must be "harmonious", just as Pythagoras always believed. Only certain states are stable and all other states are unstable. Transitions at the quantum level are always from one stable state to another.

L, the angular momentum, is $1(h/2\pi)$ for the first Bohr electron orbit, $2(h/2\pi)$ for the second orbit, $3(h/2\pi)$ for third, and so on.

Louis de Broglie defined a wavelength for all atomic particles, according to the equation:

$\lambda = h/p$ where h is Planck's constant and p is momentum (additionally, p = mv, where m is the particle's mass and v its velocity).

De Broglie reasoned that only a whole number (n) of wavelengths could be fitted along the circumference of the atom:

$n\lambda = 2\pi r$

Therefore, $n(h/mv) = 2\pi r$

Therefore, n(h/2π) = mvr

Now we can see why h/2π features in so many equations of physics; and it's always telling us of the explicit or implicit presence of circles.

We live in a universe of circles, and a universe of circles is universe of waves, and a universe of waves is a universe of energy – and all of that is a universe of numbers, of *mathematics*.

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Niels Bohr told Werner Heisenberg that atoms were not things. So what are they? Fairy dust? Of course atoms are things: they're just not empiricist, materialist things – they're mathematical objects.

Humans as Particles with Wavelengths

Consider the "depth" of a human being (side-on width) as the wavelength of a human being at rest. At 0.866 light speed, this wavelength has halved and the person's mass has doubled. At light speed, the person's wavelength has been reduced to zero and his mass is now infinite.

That's what happens in the Eulerian absolute system. In the Einsteinian relativistic system, the person's mass doesn't change at all if he can consider himself stationary (by virtue of moving in a straight line at a constant speed); yet someone else observing him and moving relative to him thinks his mass is approaching infinity as his speed nears light speed.

In the Eulerian view, mass is absolute: all observers would agree on someone's mass. In Einstein's relativistic view, mass is wholly subjective. One observer thinks his own mass is x units, and another observer thinks the first observer's mass is y units. According to Einstein, both are right, but of course both CAN'T be objectively right because they give different answers. The only way for both to be right is for the world to be subjective, and for different subjective views to be mathematically translatable one onto the other and vice versa.

The Geometrical Universe

When a body increases its speed through space, what it is doing is reducing its speed through time, and that corresponds to reducing the angle of a body's radial motion from a near 90-degree angle to a smaller angle (relative to the

real axis). In other words, motion is all about geometry and trigonometry – about MATHEMATICS, not physics. When Plato forbade non-geometers from entering his Academy, he was merely reflecting the sign that metaphorically hangs over the whole universe: "You will never understand the universe if you are ignorant of mathematics."

Mathematics: patterns, numbers, equations, systems, information, functions, order, organisation – that's all that exists.

When you realise that you yourself are an immortal, 100% mathematical object – and that it is mathematics itself that is the source of your life and mind – your attitude towards mathematics will change forever. The more you understand mathematics, the more you understand your own nature and that of the universe – and the more power you will have.

Isn't it typical of humanity that mathematics – the key to existence – is taught so boringly and badly in schools that it kills off most people's interest in the subject?

Imagine if we were all taught that God is a mathematician and the more we understand mathematics the closer we get to God and the blueprint of existence itself.

The Mathematical Field

Imagine the universe as an enormous information field. This information field can create infinite identical, indistinguishable electrons, protons or neutrons using a Platonic information archetype of each particle. Each particle can be assigned a unique energy level or set of quantum numbers, but it's the levels and the quantum numbers that are the unique, not the particles themselves.

What does it mean to talk about an electron orbiting a proton (in the hydrogen atom) if both the electron and the proton can be continually replaced? What's moving? Does the electron have any speed? How can it if there's no such thing as a *specific* electron that we can track?

So, if particular things aren't moving, what is? And the answer of course is that it's the information system that contains the movement. No *physical* movement is required. The movement is, ultimately, mental, or mathematical to be more precise.

Ontological mathematics is about movement: eternal movement. That movement is controlled by interlocked circles and waves: an infinite number of them.

We can regard the physical world – the world of appearances – as an AS IF world. It's *as if* there are countless identifiable particles that we can track one by one. But no such world actually exists. What actually exists is a world of mathematical information. We ourselves are part of the information system and we ourselves are information systems. We are subjective information systems – *experiencing* the information – and the physical world is about objective mathematical information (that which is experienced by the subjects).

Fourier Transforms

It's remarkable enough that the God Equation allows us to completely recast Einstein's special theory of relativity and make it an absolutist theory, thus restoring objective reality and sanity to the universe. Yet its power is so much greater than that. Euler's Formula stands at the heart of Fourier Analysis, and Fourier Analysis stands at the heart of quantum mechanics, which is the most successful theory in scientific history!

We will now delve into the magical world of Joseph Fourier, one of the important mathematicians in history.

Lord Kelvin described Fourier's theory as a "mathematical poem", and that's exactly right. It's awesome, majestic, and it's key to the reality – thanks to Euler's Formula that provides the engine for Fourier mathematics. Here are the formulae for the Fourier Transform and the inverse Fourier Transform, expressed in terms of time and frequency. Note the Euler expression at the core of each equation:

The **Fourier Transform** .com

$$\mathcal{F}\{g(t)\} = G(f) = \int_{-\infty}^{\infty} g(t)e^{-i2\pi ft}\,dt$$

$$\mathcal{F}^{-1}\{G(f)\} = g(t) = \int_{-\infty}^{\infty} G(f)e^{i2\pi ft}\,df$$

(The http://www.thefouriertransform.com/ website provides a wealth of information about the Fourier Transform.)

Fourier

"One of science's most valuable intellectual tools is a mathematical technique called Fourier analysis…

"Think up a wave form as complex as you can imagine. Joseph Fourier showed how to express such a wave as the sum of elemental sine waves. A

sine wave is the kind of pure tone that would be produced by a perfect musical instrument that could sound and hold forever a single pitch, uncontaminated by notes higher or lower in the musical scale. The closest approximation to true sine waves is produced by lasers and electronic oscillators. Fourier discovered, in effect, that sine waves act as a natural alphabet for waves, and he showed how to use this alphabet, how to calculate for any wave form, the sine wave frequencies, amplitudes, and phases that uniquely specify that wave form. …

"That a few special wave forms might be expressed as the sum of sine waves is not so surprising, but Fourier's demonstration that any wave form whatsoever can be expressed this way is truly remarkable. An elementary sine wave is a smooth oscillation that goes on forever. Yet sums of these smooth endless waves are able to represent waves that are not smooth – waves with sharp corners, for instance – or waves that are not endless – short pulses, for instance. Fourier analysis can achieve sharp-cornered waves by adding up many waves with high frequencies. …

"To produce zones using elemental waves that are never silent requires the phases of these infinite waves to be such that these sine waves destructively interfere. In the silent zones the waves completely cancel each other out. …

"The elemental sine wave – out of which all other waves can be constructed – is itself a wave, infinitely long with a certain precise frequency, wavelength, and phase velocity. …

"A distinctive feature of Fourier components, the elemental sine-wave alphabet, is that they are infinitely long. …

"Strictly speaking each phase wave goes on forever without beginning or end. A pure phase wave extends its direction of motion across all space and vibrates eternally at one unchanging frequency. A phase wave is infinite and monotonous. …

"It may seem strange that all the wave forms in the world, each of which has a beginning and an end, can be considered to be made up of elemental sine waves that are of unlimited extent. However, these elemental sine waves have to be infinite because they must be able to simulate any wave form no matter how long." – Nick Herbert, *Faster than Light*

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All fermions have a unique signature – unique quantum numbers leading to a unique energy definition. What else has a unique signature? – NUMBERS.

Every number on the number line has no imitators. But what are numbers *ontologically*? They are energy waves. Cosine waves are real number energy waves and sine waves (orthogonal to the cosines) are imaginary number energy waves.

These waves are infinitely long and eternal (they are pure, indestructible energy). As Herbert says, "A pure phase wave extends its direction of motion across all space and vibrates eternally at one unchanging frequency. A phase wave is infinite and monotonous."

To truly understand Fourier analysis, it's essential to grasp that two radically different domains are being linked by Fourier mathematics. On the one hand there are pure, immutable, unmixed, eternal Platonic waves in a domain outside space and time, i.e. they belong to a SINGULARITY, hence are everywhere at once (exactly as photons are everywhere at once because they don't experience time and all distances are contracted to zero). On the other hand, there are composite waves – composed of many (possibly infinite) simpler waves – and these are located in the perishable, mortal domain of space and time.

Leibniz declared that the simplest units of existence must be incapable of being broken down because anything that was composite *could* be broken down, hence was not basic. Thus, Leibniz defined the "monad", the dimensionless point, the zero, as the fundamental unit of existence, incapable of being reduced or destroyed.

Fourier mathematics provides an astonishing vindication of Leibniz, and refutation of current scientific thinking.

Each pure wave is much like a Leibnizian monad. It exists outside space and time and cannot be destroyed or reduced. It belongs to a Singularity, i.e. it's just a dimensionless point.

The world of space and time is all about COMPOSITE waves. It's because they're composite that they're IN space and time. All such waves can be decomposed into their basic, eternal components, and that's exactly what Fourier mathematics is all about.

Mainstream science has generally found Leibniz's monads preposterous and unthinkable, and yet Fourier analysis, which is at the root of the most successful scientific theory in history (quantum mechanics), is incredibly Leibnizian. No sane scientist would ever dismiss Fourier and yet they dismiss Leibnizian monads out of hand – because they are unempirical. Yet, strictly speaking, all pure waves are empirically unobservable too. They are Platonic

waves in an inaccessible realm.

People make a key mistake when they think about waves. They have in mind what appears on an oscilloscope, the instrument for measuring time-varying signals. That is a *temporal* depiction of a wave.

A true wave is one measured against rotational angle of the radius of a circle, which feeds in to trigonometry involving hypotenuses, sines and cosines. This has nothing to do with time. This is a process outside time and space, involving pure, analytic mathematical considerations. Such a cyclical wave is eternally perfect and immutable. Infinity is implicit within it. It will keep doing the same thing forever.

An oscilloscope wave is something *in time* that might change at any instant. We can't monitor this wave for eternity, so we NEVER know for sure what's going to happen to it. It might seem like a perfect wave while we're observing but, but will it continue to be perfect when we stop looking at it, or when we're dead? It's an unknown.

Fourier analysis is all about PERFECT basis waves removed from space and time versus composite, imperfect waves in space and time.

Leibniz's monads are composed of perfect waves that all cancel to zero overall. Each Leibnizian monad is nothing other than a container for the infinite set of perfect Fourier basis waves. From these basis waves, the composite waves of the material world, of space and time, are generated. The whole of quantum reality derives from Fourier mathematics and, ontologically, the whole of Fourier analysis derives from the contents of Leibnizian monads.

Science and mathematics ought to be exclusively centred on the dimensionless monad – as the ontological mathematics of Illuminism is. Instead, scientists are obsessed with the 1-D strings of superstring theory and M-theory. If these "scientists" knew anything about science or mathematics, they would realise that no string can be defined without reference to Fourier basis sinusoidal waves – which aren't *in* space and time (so where are they?!).

M-theorists are implicitly referring to dimensionless basis waves to define their 1-D strings while explicitly asserting that there are no dimensionless basis waves, just as there are no monads. This is a fatal circular argument.

Scientists use mathematics to define 1-D strings and then assert that strings are empirical (therefore exist) and basis waves are abstract, hence do not exist. Yet how can 1-D strings be legitimate if they are based on non-

existent abstractions, without which they could not be defined?

Science cannot make any sense until the relationship between science and mathematics is defined once and for all. This division between abstract (non-ontological) mathematics and concrete (scientific) mathematics must be resolved.

In Illuminism, mathematics IS existence and all mathematics, dimensionless or dimensional, is ontological. Science, on the other hand, accepts only empiricist mathematics that can in principle be observed. All other mathematics is consigned to abstract oblivion. Empiricist mathematics is an insult to true mathematics and is the product of the empiricist, materialist Meta Paradigms of the close-minded, dogmatic scientific establishment.

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Standard Fourier analysis: decomposing a complicated signal that varies with time into basis components that vary only in frequency. In the frequency domain, only three pieces of information are required to accurately define this signal: the frequency, amplitude and phase.

The Fourier Transform assumes that a signal is analyzed over an infinitely long period of time. There is no concept of time when analyzing signals from the perspective of the frequency domain. Frequency never changes with time in the Fourier analysis. The Fourier Transform assumes that any signal can be constructed just by adding a series of sine waves of infinite duration. Because a sine wave is a continuous and periodic signal, the Fourier Transform will operate as if the data in the signal is also continuous and periodic (but the period will be infinite).

The building blocks – the basis waves of Fourier analysis – are sines and cosines, which oscillate forever (perfect, Platonic oscillations).

The basic mechanism of a Fourier Transform is to determine, for every frequency, the contribution of a complex sinusoid at that frequency in the composition of the signal being analysed.

"A Fourier transform hides information about time. It proclaims unambiguously how much of each frequency a signal contains, but it is secretive about when these frequencies were emitted. It pretends, so to speak, that any instant of a signal is identical to any other, even if the signal is as complex as a Mozart symphony or changes as dramatically as the

electrocardiogram of a fatal heart attack. The information about time is not destroyed (if it were, we could not reconstruct the signal from the transform), but it is buried deep within the phases. The same sines and cosines can represent very different moments in a signal because they are shifted in phase so that they amplify or cancel each other." – Barbara Burke Hubbard, *The World According To Wavelets* (This book is highly recommended.)

"This phenomenon of constant change built from immutable elements is hard to reconcile with our physical experience and intuition; physicist J Ville even called it 'a distortion of reality.'" – Barbara Burke Hubbard, *The World According To Wavelets*

In many books, the most crucial points are often passed over rapidly, with no attempt to emphasize their astonishing significance. One of the key laws of reality is CONSTANT CHANGE IS BUILT FROM UNCHANGING ELEMENTS. What we have here is a declaration that immutable mathematical Forms (Platonic Forms outside space and time) can give rise to dynamic mathematical Forms (in space and time). This is none other than the Rosetta Stone of ontology, the key that allows us to understand how the fixed laws of mathematics (the domain of being) can create the dynamic world (the domain of becoming).

"A *local* characteristic of the signal becomes a *global* characteristic of the transform." – Barbara Burke Hubbard, *The World According To Wavelets*

This is another key point. Local features in the dynamic world are associated with global features in the world of being.

There are two domains: one of being and one of becoming, just as Plato always asserted. What Plato did not realize, because the right mathematical language did not exist in his time, is that each domain is the mathematical transform of the other. Local features in one domain are global in the other. Anything that is *precise* in one domain (hence excludes everything else in that domain) is *completely uncertain* in the other domain (hence includes *everything* in the other domain) – this is the mathematical origin of the famous Heisenberg Uncertainty Principle.

You couldn't get a better example of dialectical logic – of opposites being connected rather than excluding each other.

Hegel, with his dialectical philosophy, embraced the core principles of quantum mechanics long before scientists had even discovered the quantum

world!

Aristotelian logic appears to apply to one domain only, but necessarily produces the opposite effect in the other domain to which it is invisibly coupled. Thus, if we know the precise position of a particle in one domain (i.e. Aristotelian logic permits us to say with absolute certainty that the particle is *here* and not *there*) then we know *nothing at all* about its related property in the domain of its Fourier transform. Momentum is the Fourier transform of position, so if we know exactly where a particle is, we know nothing about its momentum, hence it could be absolutely anywhere at the next instant. In other words, precise knowledge of position is available only for the briefest instant conceivable. Equally, if we know a particle's momentum exactly, we have no idea where it is positionally: it could be *anywhere in the universe*.

Aristotelian logic fails ontologically because it falls foul of the laws of Fourier transforms. To the Aristotelian mind, a particle must have a definite position and momentum, like a pool ball. It never occurred to the Aristotelian mind that position and momentum might be properties that relate to different domains that stand in direct contradiction of each other. We gain knowledge in one only by losing it in the other. The best we can hope for is a fuzzy compromise between the two opposing domains – which is why quantum mechanics is probabilistic. THERE IS NO SUCH THING AS CERTAIN KNOWLEDGE OF THE DYNAMIC WORLD. The laws of Fourier transforms forbid it. The unchanging laws of mathematics are the only certain knowledge available to us. They are the *static* Forms of mathematics. The *dynamic* Forms of mathematics are all produced by Fourier transforms, hence are inherently uncertain.

Applying Aristotelian logic is fine in the world of static mathematical Forms but falls apart in the domain of dynamic mathematical Forms. Then only dialectical logic will suffice. Everything, in effect, is dialectically paired off with its opposite. We can gain exact knowledge about position at one instant only by sacrificing any knowledge of it at the next. Nature actually conspires to thwart a nice, neat Aristotelian world of pure logic and is instead all about dialectics.

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In human terms, the Uncertainty Principle can apply to such things as love. The more obsessively you love someone, the more you start to achieve the

opposite result – they come to *hate* you. By trying to make love "exact", you lose it completely. The best you can hope for is "fuzzy" love. The most useful logic for the dialectical universe is "fuzzy logic" which can accommodate opposites.

The key principles of our day-to-day lives, which seem to have no connection with mathematics, are actually encoded in the mathematical fabric of existence. Uncertainty is an absolute principle of dynamic existence – of the domain of becoming.

In fact, it can be aligned precisely with the Hegelian dialectic. Someone tries to attain precise knowledge (the thesis) but in doing so they create the opposite effect in the linked world of the transform, hence their own actions have generated the antithesis. A struggle will take place and a kind of compromise will be attained (the synthesis). This will then serve as the higher starting point for a new but more sophisticated pursuit of knowledge (a new thesis), which will in turn generate a higher antithesis and a higher synthesis and so on. The ultimate outcome of the dialectical process – the omega point – will not be perfect knowledge, but the best knowledge available. That is the best we can hope for in relation to dynamical Forms. Only the static Forms offer absolute knowledge in the truest sense.

Had Fourier analysis been available to Pythagoras, Plato and Aristotle, they might well have understood the whole of reality centuries before Jesus Christ showed up with his moronic Forrest Gump philosophy and set humanity on the disastrous path to the Dark Ages.

Christianity – the Age of Unreason.

Total number of mathematical pronouncements made by Jesus Christ ("God")? *Zero*.

Mathematical ignorance of Jesus Christ ("God")? *Infinite*.

IQ of Jesus Christ ("God")? *Fifty* – just like his followers.

Official classification of Jesus Christ ("God")? *RETARD*.

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"A point on a line is determined by a single number, a point in the plane by two (its two coordinates), and a point in three-dimensional space by its three coordinates. To define a function one must know all its values: an infinity of numbers. A function, such as a wavelet or a signal, can be thought of as a single point in an infinite-dimensional space." – Barbara Burke Hubbard, *The*

We can think of a Leibnizian monad in just these terms – a single point in an infinite-dimensional space.

Fourier Series

A Fourier Series: any periodic function can be represented as a sum of sines and cosines.

"Roughly, what this means is that any curve that periodically repeats itself, no matter how jagged or irregular, can be expressed as the sum of perfectly smooth oscillations (sines and cosines). The irregular curve and the sum of sines and cosines are two different representations of the same object in different 'languages'. The trick is to multiply the sines and cosines by a coefficient to change their amplitude (the height of their waves) and to shift them so that they either add or cancel (changing the phase)." – Barbara Burke Hubbard, *The World According To Wavelets*

"While irregular functions can be expressed as sums of sines and cosines, usually those sums are infinite. Why translate a complex signal into an endless arithmetic problem in which one must calculate an infinite number of coefficients and sum an infinite number of waves? We seem to be jumping out of the pot into the frying pan. Fortunately, a small number of coefficients is often adequate. In the case of the heat diffusion equation, for example, Fourier showed that the coefficients of high-frequency sines and cosines rapidly approach zero, so all but the first few frequencies can safely be ignored." – Barbara Burke Hubbard, *The World According To Wavelets*

An important point is that very high frequency sines and cosines (which correspond to very high-energy waves) do not occur in the material world – only a limited range of frequencies can apply in the material world. Very high-energy waves correspond, via Einsteinian physics, to very high masses and densities and their characteristics approach, in the limit, those of black holes. Just as black hole singularities can be considered outside material reality and shielded from that reality by a one-way event horizon (which allows things in but nothing out), so can very high-energy waves. Therefore, it makes sense that the Fourier coefficients associated with high-energy waves should rapidly tail off to zero and make no contribution.

"With the discovery of quantum mechanics, it became clear that Fourier analysis is the language of nature itself. On the 'position space' side of the Fourier transform, one can talk about an elementary particle's position; on the other side, in 'Fourier space,' one can talk about its momentum or think of it as a wave. The modern realization that matter at very small scales behaves differently from matter on a human scale – that an elementary particle does not simultaneously have a precise position and a precise momentum – is a natural consequences of Fourier analysis." – Barbara Burke Hubbard, *The World According To Wavelets*

"The Fourier transform is the mathematical procedure that breaks up a function into the frequencies that compose it, as a prism breaks up light into colours… A function and its Fourier transform are two faces of the same information. The function displays the time information and hides the information about frequencies. The function corresponding to a musical recording shows how the air pressure (produced by sound waves) changes with time, but it doesn't tell us what frequencies – what notes – make up the music. The Fourier transform displays information about frequencies and hides the time information: the Fourier transform of music tells us what notes are played, but it is extremely difficult to figure out when they are played. Nevertheless, the function and its transform both contain all of the information of the signal. We can compute the transform from the function and then retrace our steps, reconstructing the function from the transform. (This process is known as *inverting* the transform.)… In a Fourier transform, the information on time (or on space) is hidden in the phases: the displacement of the sines and cosines for each frequency, affecting how they add or subtract." – Barbara Burke Hubbard, *The World According To Wavelets*

Fourier transforms most commonly convert time functions into frequency functions, and vice versa. However, a space function can also be transformed. Since frequency has an inverse relationship to time, a different but similar concept has to be used for space. Spatial frequency is called the "wave number": it's the inverse of space just as frequency is the inverse of time.

Difference between the Fourier Series and the Fourier Transform

Fourier analysis concerns Fourier series and Fourier transforms. A Fourier series is an expansion of a *periodic* signal as a linear combination of a possibly infinite set of simple oscillating functions (sines and cosines), while a Fourier transform is for *aperiodic* signals (occurring without periodicity). In these cases, the trick is to treat the signals as if they have a repeating period of infinity, thus allowing them to be treated as special cases of ordinary periodic signals.

Fourier analysis involves decomposing complex signals into basis elements and analyzing the signals in relation to another domain (typically the frequency domain if the original signal is in the time domain). The Fourier series is the simple, periodic precursor of the aperiodic Fourier transform, and can be considered a special case of the more general Fourier transform. A Fourier series is a sum of discrete elements whereas the Fourier transform is the decomposition over a continuous set of basis functions (involving integration instead of summation).

"The only frequencies that contribute to the Fourier series of a periodic function are the integer multiples of the function's base frequency (the base frequency being the inverse of the period). If a function is not periodic but decreases sufficiently fast at infinity so that the area under its graph is finite, it is still possible to describe it as a superposition of sines and cosines – to analyze it in terms of its frequencies. But now we must compute coefficients for all possible frequencies, to compute its Fourier *transform*... Since we are now dealing with a nonperiodic function, we must consider the interval between minus infinity and plus infinity." – Barbara Burke Hubbard, *The World According To Wavelets*

The Fourier Transform

A Fourier transform of a waveform involves decomposing the waveform into a sum of component sinusoidal waveforms of different frequencies. If the waveform is not periodic then the Fourier transform will be a CONTINUOUS function of frequency: a summation of sinusoidal waves of ALL frequencies.

The Fourier transform is a frequency domain representation of a mathematical wavefunction. The Fourier transform contains exactly the same information as the original function. The function and its transform differ only in the manner of presentation of the information. The transform permits

a different view of the same information, usually leading to clearer understanding.

The diagram below provides a clear pictorial representation of the essence of the Fourier process. In the time domain, a complex wave is decomposed into basis waves. The same information is then presented in terms of the frequency domain:
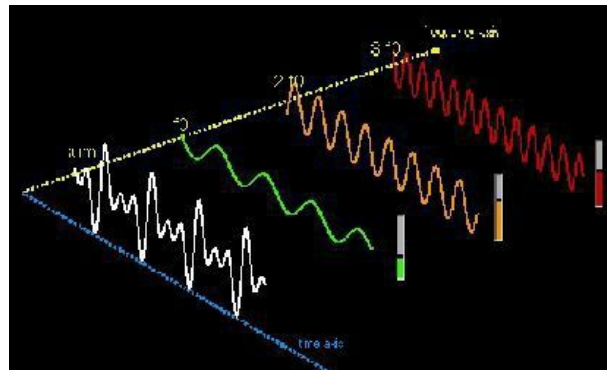
Fourier transforms provide a vital key to problem solving. They allow a particular relationship to be studied from a radically different viewpoint. The simultaneous depiction of a function and its Fourier transform often proves the breakthrough to problem solving.

Even and Odd

Consider the relationship between real and imaginary functions in the time domain and their Fourier transforms in the frequency domain. An arbitrary function can be decomposed into the sum of an even and an odd function:

Time domain	Frequency domain
h(t)	H(f)
Real	Real part even, imaginary part odd
Imaginary	Real part odd, imaginary part even
Real even, imaginary odd	Real
Real odd, imaginary even	Imaginary
Real and even	Real and even

Real and odd	Imaginary and odd
Imaginary and even	Imaginary and even
Imaginary and odd	Real and odd

The Heisenberg Uncertainty Principle

It's rare to get a clear account of the Heisenberg Uncertainty principle, but Barbara Burke Hubbard does an outstanding job in her book *The World According To Wavelets.*

"A very brief signal, well localized in time, necessarily has a Fourier transform that is spread out: a broad range of frequencies. Think of a very brief signal – zero everywhere except at a skinny peak. To represent it as a Fourier series, one would need to carefully add together a great many sines and cosines. Conversely, a signal with a very narrow range of frequencies is necessarily spread out in time; it's not possible to convince just a few sines and cosines to cancel out so that the value of the signal is zero outside of a narrow time interval." – Barbara Burke Hubbard, *The World According To Wavelets*

"The Heisenberg Uncertainty Principle is often interpreted to mean that we can't simultaneously know the position and momentum of an elementary particle. The truth is stranger: an elementary particle does not simultaneously have a precise position and a precise momentum. Fourier analysis is the language we need to express this peculiar situation. Mathematically, position and momentum correspond to the two different sides of the Fourier transform. Quantum mechanics is probabilistic, but in most cases instead of dealing in discrete probabilities, like the odds of getting a straight flush or getting ten heads 10 times in a row, these probabilities are continuous. We can calculate the probability that a particle will be in a given region, but not the probability that it will be at a particular point. Integrals are the natural tools to use to express these continuous probabilities." – Barbara Burke Hubbard, *The World According To Wavelets*

"The Heisenberg uncertainty principle does not limit what we can know about reality; it describes that reality. The shorter-lived a function, the wider

the band of frequencies given by its Fourier transform, the narrower the band of frequencies of its Fourier transform, the more the function is spread out in time." – Barbara Burke Hubbard, *The World According To Wavelets*

"In quantum mechanics, answers also depend on the way the question is asked; i.e., on the experiment performed. When physicists asked light what it was made of, sometimes it answered that it was made of particles, sometimes that it was made of waves. But while time-frequency decompositions are different perspectives on a signal that one knows, and that doesn't change, one can't have a perspective on the reality of quantum mechanics without changing that reality. Every time one measures the system, one changes it. So saying that light is made of particles or of waves makes no sense. It's both at once, in flagrant contradiction with our experience and common sense. There is only one reality, the wave function; trying to understand it with a mentality moulded by our deterministic world seems doomed to fail." – Barbara Burke Hubbard, *The World According To Wavelets*

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"At the purest level one just has to accept the uncertainty principle and its implications. However, it is always more comforting when we can form a mental model with properties that the theory has, as then we can develop intuition about its behaviour and implications. The position and momentum uncertainty does have an analogue that we are familiar with. Draw lots of dots to form a wave with a fixed wavelength; then if we identify position as the location of a given dot in the wave, and momentum as the wavelength; this is an analogue of the uncertainty principle at work. According to quantum mechanics, the higher the momentum so the shorter is the wavelength. Suppose I know the position precisely; then all I have is a single dot and it is impossible to know what the wavelength will be; it could be anything you want. If I have a few dots forming the beginning of the wave, then I will begin to see if the wavelength is small or large, and only after I have a complete wavelength will I be able to say with absolute certainty what its value is. However, the price of this certainty in knowing the wavelength is giving up knowledge of position to any better precision than the length of the wave. Mathematically this is realized by Fourier analysis – the representation of any curve, or even an abrupt spike, as a superposition of waves with different wavelengths. A singular spike at a precise location is equivalent to a

sum over an infinite set of all wavelengths. One sees here that it is an oxymoron to define the position of a wave; it only becomes a known wave when one measures over its full wavelength." – Frank Close, *Nothing, A Very Short Introduction*

The Big Question

"Mathematician Michael Frazier of Michigan State University was taught that 'real' mathematics by 'real' mathematicians is and should be useless." – Barbara Burke Hubbard, *The World According To Wavelets*

It's extraordinary that such an attitude ever existed. Tragically, it *still* exists and it represents a kind of insanity. Anyone engaged in any activity that they themselves define as "useless" is wasting their life, wasting everyone else's time and should not receive a cent of public funding or be allowed to teach.

As regards mathematics, this subject is *never* useless. The fact that mathematical advances might have no immediate practical applications is irrelevant. Most of modern science is based on extremely obscure mathematical techniques that, while they were being developed, seemed entirely abstract. Mathematics provides the ultimate treasure trove for understanding reality. The more mathematical knowledge humanity possesses the more the universe will reveal its secrets to us. Every mathematical advance, no matter how abstruse, is important. We need far more mathematicians doing mind-boggling mathematics.

The attitude that mathematics is a powerful language devised by human minds for describing natural phenomena is absurd. How could we possibly invent a way of thinking that allows us to reveal nature's secrets with such astounding accuracy if nature does not in fact speak exactly the same language?

Imagine a Chinese person in the 17th century with no knowledge of English writing a set of plays that turned out to be *identical* to those of Shakespeare. Despite its inherent absurdity, that's an enormously more likely scenario than the one in which we construct a language that just happens to be perfect for describing nature even though nature, according to the logic of the premise, is not itself mathematical (because mathematics is just something we made up).

We are part of nature and both nature and we are entirely mathematical. Mathematics is not only the language of existence, mathematics IS existence.

The laws of mathematics are encoded in every point (monad) in the universe. We do not invent mathematics, we discover it; we *reveal* it. It pre-exists our human existence and entirely shapes our world and us. It perfectly describes nature because it constitutes the laws from which nature is created.

In the philosophy of Kant, according to which our minds create reality, it's perfectly logical to say that our "invention" of mathematics allows us to understand nature (because we have invented nature too, based on our mathematics). However, if nature exists independently of our minds then it's impossible that any invention of our minds could accurately describe it. No mind could *ever* make up something as complex as mathematics.

There are three possibilities:

1) Our minds invent mathematics *and* nature.

2) Our minds invent mathematics but not nature. Nature is *not* mathematical (and, like Kant's noumenal universe, is technically unknowable), yet, remarkably, our mathematics allows us to define it with extreme precision.

3) Our minds and nature both reflect mathematics because both are inherently mathematical given that mathematics constitutes the fabric of existence.

The prevailing worldview is 2), the *least* probable option. Option 1) is perfectly logical if rather implausible and 3) is the only realistic option.

How could it be any other way? We are not separate from nature; we are part of nature. Why wouldn't nature "speak" mathematics? After all, it must be based on some sort of language in order to be so perfectly ordered and organized. It must employ some set of regular laws and rules. If the language of nature is *not* mathematics then what else could it possibly be? Why does it reflect mathematics so precisely if it is not itself mathematical? It's impossible to conceive of any non-mathematical language that nevertheless seems to possess all of the myriad qualities and properties of mathematics. If nature is indeed based on mathematics then the question immediately arises as to where mathematics came from and where is it stored. We have provided the answer. All of the mathematical laws of nature are encoded in the basic unit of existence – the monad, the mathematical point. The actual fabric of existence is mathematical. We, as products of nature, are fully mathematically encoded. It's *impossible* for mathematics not to be encoded in

the fundamental units of existence. It's *impossible* for the universe to be non-mathematical. It's *impossible* for some of the universe to be mathematical and some of it non-mathematical.

The Illuminati are mathematical monists – mathematics is all there is. Mathematics can be considered a "substance": the substance of existence. There is no other substance. No other substance would be capable of interacting with the mathematical substance since they would have no common language. The whole universe and all of its phenomena must be based on a single language via which everything communicates with everything else. Mathematics is the only rational candidate for this language.

If anyone rejects this position, they must explain the origin of mathematics and why our universe is so staggeringly mathematical without being mathematical. They must explain how the human mind invented mathematics if the mind is not itself a product of mathematics.

It's impossible for anyone to meet these challenges.

Did the Abrahamic God invent mathematics? If so, who invented him? In Illuminism, mathematics is the equivalent of God. Mathematics has always existed and can never not exist. It can be neither created nor destroyed. It can only be transformed from one form to another, according to its own inherent rules. There is nothing and no one external to mathematics since mathematics is everything. Nothing can exist outside mathematics and, even if it did, it could not communicate or interact with mathematics since there would be no common language.

Illuminism solves the famous problem of mind-body dualism by reducing them both to a common mathematical foundation. Mind and matter are two complementary expressions of mathematics.

Matrix Mechanics

Heisenberg and Schrödinger approached quantum mechanics in two radically different ways. Heisenberg used vectors and matrices (his formalism was known as "matrix mechanics") and made no mention of waves or particles, and Schrödinger used wave functions that provided a conceptually clear wave model of atomic structure. It seemed that the two approaches couldn't be describing the same phenomena and yet it was eventually proved that they were mathematically equivalent. This is another example of an apparent mathematical dualism concealing an underlying monism.

Schrödinger's approach is enormously more popular than Heisenberg's

because it offers a clearer picture of what's happening and involves more familiar mathematical techniques, yet Heisenberg's matrix mechanics may yet win the day. By treating quantum systems as mathematical abstractions, Heisenberg's techniques might offer the advantage of resisting any temptation to try to formulate potentially misleading conceptual models.

The way you think about a problem affects how you handle and solve it. A more descriptive model might be a more *deceptive* model. Quantum mechanics has been bedevilled by the inability to interpret the mathematics of the formalism in a consistent way. It's "picture thinking" that causes much of the confusion. A perfect mathematical mind has no need of any helpful pictures, so perhaps the best approach is to be as abstract as possible, i.e. to use Heisenberg's methodology. It might be initially much more daunting, yet in the end it may prove enormously more successful. After all, reality consists of nothing but static and dynamic points. What could be more abstract?

Fourier Analysis – Key Ideas

A complex wave is a sum of simple waves.

A function in the time domain can be converted into one in the frequency domain, and vice versa.

A function in the space domain can be converted into one in the spatial frequency domain, and vice versa.

Functions in one domain are converted to functions in another, with no loss of information (although there turns out to be an inherent small uncertainty).

We can analyze functions that are periodic and even functions that are not periodic (by defining them as functions that repeat over an infinite period).

Imaginary numbers and the exponential function are essential to the success of Fourier analysis. Once again, we find apparently ontologically unreal imaginary numbers playing a decisive role in equations that describe reality. According to scientists and mathematicians, imaginary numbers are just "instrumental" – they somehow allow us to get the right answers in extremely elegant ways but they have no real meaning. According to Illuminism, imaginary numbers yield the right answers because they are an integral part of ontological reality.

Fourier Uncertainty

All Fourier relationships are associated with an intrinsic degree of uncertainty. The fundamental problem is this: we are trying to link two fundamentally different domains. The frequency domain is outside space and time, while the space and time domains are, by definition, inside space and time.

The methodology of Fourier transforms requires all aperiodic functions to be treated as if they repeat on an infinite timescale. The problem of course is that we cannot actually monitor any function over an infinite period. Instead, we define a finite portion of the period and then endeavour to determine the essential characteristics of the entire wave from that one piece. Obviously, the longer the portion of time we analyze, the better. If we define this finite time range as Δt then, because it's not infinite as it should be in principle, it generates a characteristic uncertainty, Δf, in the frequency representation of the function.

As Δt increases, Δf decreases, and vice versa. The relationship $\Delta t \Delta f$ is ALWAYS A CONSTANT. The uncertainty in one quantity is always matched in the opposite direction by the uncertainty in the other quantity. $\Delta t \Delta f$ can never be zero, hence an unavoidable, constant degree of uncertainty is always present. This is inbuilt in nature. It truly is inescapable.

If we extend Δt to infinity then Δf becomes zero, but of course we can never in practice get to Δt = infinity since we can't view any wave over an infinite period, and this would in fact constitute total *uncertainty* in relation to time. Equally, if we set Δt to zero (meaning that we weren't observing the wave for any time at all) then Δf is infinite. If we attempt to view the wave for any finite, manageable time, a fundamental uncertainty relation traps us.

It's impossible to overestimate the significance of this result. The fundamental constants that are produced by uncertainty relations between Fourier transform pairs shape our universe.

What are the two key Fourier pairs?

1) Time and frequency

2) Space and spatial frequency

Time is derived from imaginary numbers and space from real numbers. Spacetime (where space and time are mathematically fused together)

corresponds to the domain of complex numbers. We know from Einstein's special theory of relativity that as the speed of an object increases, time appears to dilate and length to contract for that object (from a stationary observer's viewpoint), in order to ensure that the speed of light remains a constant. A mathematics website declares:

(http://www.mathpages.com/home/kmath488/kmath488.htm)

"In a sense, there is also a conjugacy between space and time – two observables that had been regarded as disjoint and independent prior to the early 1900s. In special relativity the inertial space and time intervals dx and dt between two events are components of a single invariant spacetime interval ds between those events. These intervals are related according to the Minkowski metric, which can be written in the form: (dx/dt + ds/dt)(dx/dt – ds/dt) = $1/c^2$ where c is the speed of light. This can be regarded as an 'uncertainty relation' for space and time. In general, physics was based, prior to 1900, on the premise that h (one quantum of action) and $1/c^2$ were both zero. With the advent of quantum mechanics and special relativity, it was realized that they both have non-zero values, although they are extremely small in terms of ordinary units."

This means that a fixed interval between two events in spacetime can be viewed in different ways in terms of space and time by observers moving at different speeds.

In order to create a grand unified theory of everything, it's essential to reduce a large diversity of phenomena to a simple set of basic principles. In Illuminism, one of the key basic principles is that everything is moving, i.e. everything is imbued with eternal energy. Energy in the dimensionless domain is *thought* and energy in the dimensional domain is physical movement. "Mental" energy is confined within monads (this constitutes thinking), and "physical" energy moves in the Cartesian arena defined by monads, and creates material objects in motion. That's all there is in the universe: moving thought and moving objects.

Frequency (both temporal and spatial) plays a pivotal role in Illuminism. Frequency is directly proportional to energy: high frequency means high energy while low frequency means low energy. Frequency, of course, implies a wave. How is a wave defined? The key concepts are period, frequency, wavelength, amplitude and phase.

The period (T) of a wave is the amount of time it takes for one cycle to

complete and is measured in seconds per cycle.

Frequency (f) is the number of cycles that can happen in one second. "Hertz" (Hz) is the unit of frequency, and is defined as cycles per second.

Frequency and period are the exact inverses of each other:

$f = 1/T$ and $T = 1/f$

Wavelength (λ) is defined as the distance from a particular height on the wave (usually the highest point – the crest – or the lowest point – the trough) to the next spot on the wave where it is at the same height and going in the same direction. It is measured in metres.

The speed of the wave $= f\lambda$

In the case of the speed of light, $c = f\lambda$

v = velocity of the wave (m/s)

f = frequency (Hz)

λ = wavelength (m)

Amplitude is a measure of how big the wave is. Two waves might have exactly the same frequency and wavelength, but different amplitudes. The amplitude of a wave is measured as the height from the equilibrium point to the crest, or the depth from the equilibrium point to the lowest point of the trough. It takes more energy to generate a higher amplitude wave. Therefore, both frequency and amplitude are involved in the energy of the wave. Frequency might be regarded as a wave's inherent energy that can't be changed and amplitude as its variable energy (intensity) that can be raised or lowered.

Phase concerns the fraction of a wave cycle that has passed an arbitrary point. Two waves with identical frequencies, wavelengths and amplitudes may differ in phase, meaning that one wave is marginally shifted with regard to the other so that they do not perfectly overlap each other.

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Einstein defined the energy of a particle as: $E^2 = m^2c^4 + p^2c^2$ where m is the particle's "rest mass", c is the speed of light and p is the particle's

momentum.

If a particle is stationary then $p = 0$ and $E^2 = m^2c^4$, which can be reduced to the rather more familiar $E = mc^2$. If a moving particle (such as a photon) has zero rest mass then $E = pc$. Since $c = f\lambda$ then $E = pf\lambda$. Since E is also equal to hf then $hf = pf\lambda$. Therefore, $\lambda = h/p$, i.e. everything has a wavelength, and it can be measured by determining the momentum. As a particle's momentum increases, its wavelength decreases and its frequency increases, i.e.it becomes more energetic. Momentum is therefore a proxy for frequency, and wavelength serves as a proxy for spatial position. We know that space and time both enter into a Fourier transform relationship with frequency (defined in spatial or temporal terms) and we know that Fourier transforms are associated with inherent constant of uncertainty, hence we see the origins of Heisenberg's famous uncertainty principle regarding position and momentum. It is impossible to know both simultaneously with perfect precision.

$E = pc$ implies that a photon is a particle, albeit with no rest mass. But quantum mechanical wave-particle duality also allows a photon to be described in wave terms. The relevant equation is $E = hf$ where f is frequency and h is Planck's constant, the constant that shapes the quantum world.

Louis de Broglie was the man who derived the equation $\lambda = h/p$, and he proposed that it applied to all particles, not just photons. This was one of the greatest unifying ideas in the history of science; a brilliant intuitive insight. However, de Broglie and his fellow scientists then seemed to suffer a failure of nerve or intuition, or perhaps they remained too dogmatically attached to old scientific concepts, to push forward the advantage they had gained to its logical conclusion, which we will come to in due course.

For particles with a rest mass, their momentum $p = mv$ (mass multiplied by velocity). So, if we know a particle's mass and velocity, we know its wavelength. We have fully entered into the bizarre quantum world where things are neither waves nor particles but somehow both (or at least according to the conventional interpretation of quantum mechanics).

For "particles", $p = mv$. For waves, $p = E/c$

But what does it mean to say that a massless particle such as a photon has "momentum"? In fact, how can something without mass be a particle in the first place? Moreover, if photons are sizeless and dimensionless – they experience neither space nor time – how can they feature in the material world at all?

One of the most difficult concepts of all to grasp is the ontological significance of Fourier transforms. Neither the "original" domain nor its transform is privileged over the other. Both domains are equally true and yet they are also radically different. A function that exists in the space and time domain equally exists as its transform in the aspatial and atemporal domain of wavenumber and frequency.

This is the great mystery of existence and it is of course intimately related to the mind-body problem. The body is an enormously complex mathematical function in space and time and it has a corresponding Fourier transform in what we shall label FREQUENCY SPACE where space and time are not experienced. Frequency space is where the mind operates. Mind only ever influences frequency space, but by making changes in frequency space, the inverse Fourier transform (i.e. the original spacetime function) is correspondingly changed since the function and its transform are dynamically coupled.

As physical events take place in the material world, our bodies are impacted, changing our mathematical function, and also changing the mental Fourier transform. As our minds work, they alter the transform and hence the linked body. The mind-body problem is completely solved by Fourier mathematics.

When we mentally choose to stand up or sit down, what we are doing is altering the mental Fourier function, and that is immediately reflected in the body Fourier function (i.e. our body stands up or sits down).

The mind-body Fourier system is of course set up in very particular and sensitive way. Massive damage to the body, and especially the brain, also profoundly affects the mental Fourier transform and the whole system – body and mind – ceases to function properly. Death destroys the mind-body Fourier system completely. The atoms of which we are made are scattered to the winds. Our mental Fourier transform – our mortal "consciousness" – perishes too, but our essential self does not die since it's a monad outside space and time.

Through reincarnation, our essential self establishes a new body function and a new mind-body Fourier relationship. This process of reincarnation will continue indefinitely. It can stop only when a monad becomes fully conscious and enlightened, and has no further need of any particular body. Monad consciousness occurs at the point we refer to as *gnosis*, and to which Eastern religions give such names as moksha and nirvana. All such words mean

essentially the same thing – cosmic enlightenment when the mind's need for a body has ceased.

The key point to grasp is that mind and matter are Fourier transforms of each other. We are now using "mind" in the expanded sense of the complete Fourier transform representation of a body in a frequency space outside space and time. Mind, in the more conventional and restricted sense, is the "personality" that controls the mental representation (Fourier transform) of the body. In the case of animals, the "personality" is unconscious, and even humans have a very high degree of unconscious mental activity.

Because most philosophers are mathematically illiterate, and most mathematicians and scientists are functionaries who have little imagination and a basic hostility to the concept of an immaterial mind, none of them has ever conceived of Fourier mathematics as the answer to mind-body dualism. Thinkers in general have never grasped the explanatory power of Fourier mathematics. It's because it involves TWO domains, each given parity of significance.

In materialism, the mental domain is simply dismissed; in idealism, it's the material domain that's given short shrift. These are the two basic schools of thought into which people have divided themselves in order to address Cartesian mind-body dualism.

The Fourier transform school of thought – the actual answer to Cartesian dualism – involves the reality and necessity of BOTH domains. They are not *physically* linked (so scientific materialists are baffled by that) and they are not all about mind (so idealists are equally baffled). The transform link is a MATHEMATICAL link, and this is the key to everything. Mathematics alone can explain mind-body dualism. All other attempts have failed because they have approached the problem purely physically or purely mentally. A twin approach is required – mental and physical, on an equal footing – and this can be understood only by appealing to an underlying, unifying *tertium quid* (third thing). Only mathematics itself can be the tertium quid. Mathematics is mind AND matter.

The New Age of human thought will revolve around mathematics as the tertium quid and the concept of the transform as the means of allowing communication between two separate but mathematically linked domains. This will come to be seen as one of the most important concepts of all time. And, of course, it is grounded in the God Equation that can equally well define the physical and mental domains.

Cartesian mind-body dualism made body and mind into two separate substances, and no one could rationally account for how these different substances interacted, leading to the denial of matter by idealists and the denial of mind by materialists. The concept of the mathematical transform allows the problem of apparent dualism to be handled *easily*. There IS a dualism, but only in a technical mathematical sense, not in the sense of different and mutually exclusive substances. Matter is simply mind in the domain of space and time while mind itself resides in the non-space and non-time domain – the frequency space. As we alter our personal mathematical function in terms of our body (matter), we AUTOMATICALLY and SIMULTANEOUSLY alter the corresponding mathematical transform in terms of our mind. By exactly the same token, if we alter our mathematical function mentally, we also AUTOMATICALLY and SIMULTANEOUSLY alter the mathematical function bodily. When I mentally choose to move my arm, my arm physically moves because my bodily mathematical function is inescapably harnessed to my mental mathematical function.

The concept of the mathematical transform is at the root of free will. Our bodily mathematical function is at all times being impacted by the physical environment we inhabit. This is the aspect that scientists choose to focus on. Because they don't believe in mind as an independent substance, they believe that a chain of physical cause and effect must dictate all of our behaviour. There is no scope at all for free will in such a system. In other words, if pushed, scientists will concede that they do not believe in free will and regard it as some kind of inexplicable illusion.

Free will is possible only because there is a dimension of existence that doesn't belong to the material world at all. That other "dimension" is in fact dimensionless – it's the mental domain. We have free will because, regardless of what is happening in the material world, we can make decisions in the mental domain that are not in any way dictated by material events. Our mental choices will be reflected in the physical world thanks to the astounding properties of the Fourier transform that straddles two worlds at once, with equal validity and truth in each world. (Note that inherent Fourier uncertainty is critical to ensuring that there is no *absolute* causal link between the material and mental worlds. The two domains are extremely closely linked, but not perfectly, and it is this imperfection that creates the room for

free will. Without it, we would be machines.)

THERE IS NO MYSTERY AT ALL CONCERNING FREE WILL: IT IS AN INHERENT PROPERTY OF THE MIND-MATTER FOURIER TRANSFORM PAIR AND ITS INTRINSIC UNCERTAINTY RELATION.

There are four situations:

1) Matter affects matter (the scientific world).

2) Matter affects mind (if you fall over, you will mentally experience pain).

3) Mind affects matter (if you decide to raise your hand, it will rise).

4) Mind affects mind (thinking: one thought leads to another).

Scientific materialism addresses only the first situation and is clueless about the other three. Idealism regards all four situations as being reflections of situation 4, i.e. everything is mental.

Only the Fourier transform can explicitly address situations 2 and 3 without contradiction or incoherence. The Fourier transform quintessentially links two separate domains: the spacetime time domain, and the frequency domain.

Mind and matter interact via their indissoluble transform link, and freedom is possible because of the inherent small uncertainty associated with the transform.

Physical damage can ruin the effectiveness of the transform from one direction, and mental damage can achieve the same result from the other direction.

Something like the placebo effect of faith healing can be explained immediately via the Fourier transform. We really can heal ourselves if we have powerful enough minds – the minds of Gods. We can literally cure our physical problems if we are good enough at handling the mathematical transform relationship. Faith healing and the placebo effect work by allowing an intuitive rather than conscious set of mathematical repairs to be effected by the mind. Obviously, the greater the physical problem, the less likely it is to be affected by mental repairs – the gap is just too big – but, equally, the more the faith, and the greater the mental power and intuition, the more the mind can perform bodily miracles. In essence, our minds alter the mental side of the Fourier transform and mentally repair the defect; the repair is then

automatically reflected physically via the magic of the transform relationship.

How and why does homeopathy prove so successful for the considerable number of people who swear to its efficacy? As far as the scientific community is concerned, there is no scientific phenomenon associated with homeopathy and it relies purely on the placebo effect. Well, here are the mathematical reasons why they are wrong. When a homeopathic solution is first being prepared, the active ingredient is indeed physically present. By the laws of the mind-matter Fourier transform, this homeopathic solution has a mental mathematical function associated with it: a function based on INFORMATION (all mental activity is in fact informational activity). The presence and purpose of the active ingredient is *informationally encoded* in the mental mathematical function. As the physical solution is progressively diluted, the mental Fourier transform is also changed, but even the complete removal of the active ingredient from a sample of the solution does not remove the INFORMATION regarding the active ingredient from the sample solution's Fourier transform. The transform relates to the WHOLE, and each part is encoded with the information of the whole. So, the homeopathic sample solution, although physically stripped of the active ingredient, is not at all stripped of the vital information concerning the active ingredient.

Naturally, this information is not physical, so cannot be seen, heard, tasted, touched or smelled or in any way physically detected. To a scientist, it is simply NOT THERE and it's ludicrous to say it is. To the Fourier transform, it most certainly is there. When a patient takes the remedy, they are adding to their own informational Fourier transform the information associated with the active ingredient. They are then able to use this new curative information to resolve their medical condition. The absence of the physical ingredient is irrelevant because homeopathic remedies work via the mind rather than the body. They provide vital supplementary information to the mind which can then cure the physical ailment by using that information.

Conventional medicine works in a two-fold manner; physically and mentally. The active ingredient is both physically and informationally present. Therefore, conventional medicine will always be your best bet, and we are not denying that for a moment. However, homeopathic medicine can without question complement conventional medicine and offer alternative treatment paths. Homeopathic medicine instead of being both physical and informational is purely informational, but this by no means fatally impairs its

effectiveness. Ultimately, nothing is more important than information. If we had more powerful minds, physical medicines would be rendered redundant.

It's certainly possible to envisage a time when the main purpose of medicine will not be to provide physical cures but purely mental, informational cures. It does not matter how the information gets "uploaded" to the mental Fourier transform. It could be by some solution absorbed into the body, or a pill, or by some technological link via computers. All that matters in the end is that critical information is added to our mental Fourier transform to allow us to effect bodily repairs and cures.

What is a near-death experience? It's when some severe trauma temporarily dissolves the mind-matter Fourier relationship and a person starts to experience life without a body. When the physical trauma is resolved, the old Fourier relationship springs back into place and the person is back to normal.

Consciousness is a curious phenomenon because it seems to sit on the body side of the Fourier relationship (because it has to be attuned to what the body is doing), but it is of course on the mental side. When the body dies, conventional consciousness dies too because it is so much associated with the physical body. Instead, a higher consciousness takes over.

Consciousness is a much *slower* phenomenon than it ought to be (given that it's a mental phenomenon outside space and time). The reason for this is that it has to sit between mind and body, so to speak, acting as an arbiter. It's possible for the mind to take a decision and for the body to start reacting to the mind's decision *before* consciousness has become aware of the decision. This is the explanation of the famous Libet experiment that seems to suggest that bodies start moving before a conscious decision is taken to move, hinting that consciousness is a mere epiphenomenon. In a sense, this is true.

A change in mental state instantly causes a change in physical state, but consciousness takes time to catch up. In fact, it may be via the bodily movement that consciousness starts to reflect the original mental decision. In other words, mind (as distinguished from consciousness) takes a decision, which then initiates a physical response, and that physical response is then detected by consciousness *after the fact*. Consciousness ALWAYS reflects the mental decision we took, but appears to do so via the bodily response to the initial mental decision. This would ensure that consciousness always *seems* to be on the body side of the transform, where it needs to be to ensure that it is fully in tune with the body.

If consciousness were firmly located on the mental rather than physical side of the transform, it would inevitably produce a strange sensation of the body seeming like some alien thing that we were controlling, and taking too long to respond to our instantaneous decisions. It makes perfect sense to have consciousness responding to body *after* body has responded to mind. Everything works out right, but in a way whereby we think our consciousness is located IN our body – in our brain specifically. (In fact, our mind isn't in our body at all in any conventional sense.) The Libet experiment may be the most dazzling proof of what we are saying.

What is an out-of-body experience? It's when a person's consciousness – previously linked to the body – flips due to some peculiar event and ends up on the mental side of the Fourier transform, suddenly freed from the restrictions that apply to the body. Now it can travel anywhere outside space and time.

Certain groups of people may be particularly prone to out-of-body experiences: schizophrenics, dissociatives and bipolar individuals. In other words, some mental conditions may point to unconventional mind-matter relationships, leading to abnormal mental states where consciousness is more fluid than in "normal" people. It's for this reason that we might expect people suffering from various mental conditions to be much more creative and visionary than ordinary people. The trouble of course is that they may also be prone to tipping over into madness.

The first person to truly glimpse the Fourier-transform relationship between mind and body wasn't in fact an Illuminatus. It was the German philosopher Schopenhauer, and even though he probably never encountered Fourier transforms, nevertheless he intuited that this kind of relationship was in operation.

Consider these remarks by R. J. Hollingdale concerning Schopenhauer's philosophy:

"Now it will be clear that if we have knowledge of ourselves, of this 'I', it will be a different kind of knowledge from that which we have of anything else. All other kinds of knowledge amount to establishing relations between ideas, but knowledge of oneself would be knowledge of immediate reality. And this is what Schopenhauer maintains knowledge of oneself actually is. We know ourselves objectively, in the same way as we know all other phenomena, as an object extended in space and time: we know ourselves as

body. But we also know ourselves subjectively, we have an inner consciousness of our own existence, and we possess feelings and desires. This inner world Schopenhauer calls 'will': we know ourselves as will. And thus there follows the 'single thought' which, properly understood, Schopenhauer says constitutes the whole of his philosophy: 'My body and my will are one.' My body is the phenomenal form of my will, my will is the noumenal form of my body: my body is 'appearance', my will 'thing in itself'."

If we call the mental domain the noumenal world and the physical domain the phenomenal world then we can associate phenomena with spacetime mathematical functions and noumena with their Fourier transforms in the domain outside space and time. Just as Schopenhauer recognised, "My body and my will are one." This means that anything I will is reflected in my body, and anything that happens to my body is reflected in my will. Body and will are a unity. Each is the transform of the other.

All those philosophers who refer to noumena and phenomena are, in truth, referring to the different sides of the transform relationship. This is the mathematical key to Kant's philosophy (and also Schopenhauer's, which is derived from Kant's). Freedom, soul and God are on the noumenal side of the transform while the scientific world is on the phenomenal side.

Science takes an interest in only one side of the Fourier relations – the space and time side – and ignores the other side (outside space and time). All of the problems of science stem from its inability to comprehend that it's dealing with a world of transforms and must pay equal attention to both sides.

The most critical area of Fourier confusion is none other than quantum mechanics itself. To understand what's going on in that domain, it's essential to grasp the true meaning of Fourier uncertainty.

In the macroscopic world, we are normally dealing with well-defined signals, which have only a small degree of uncertainty associated with them, i.e. the inescapable uncertainty of the Fourier world is largely irrelevant. Let's just say, for example, that this uncertainty affects only the tenth decimal place of a result we are interested in. Well, that won't trouble us, will it? But what happens in the microscopic world where we are dealing with signals that are of the same order of magnitude as the fundamental Fourier degree of uncertainty? Instead of the tenth decimal point, it is the number itself that becomes uncertain. In those circumstances, reality itself is radically affected.

In fact, we now have to struggle to define what we actually mean by reality. As the founders of quantum mechanics discovered, scientific determinism as understood in the Newtonian world vanishes and is replaced by a probabilistic world. Because of the fundamental and inescapable nature of quantum uncertainty, this outcome is inevitable and actually defines reality.

Let's be extremely clear. Every Fourier pair is associated with a fundamental degree of uncertainty. If we call our Fourier pair X and Y then the uncertainty in X and the uncertainty in Y, when multiplied together, equals a constant number, i.e. $\Delta X \Delta Y = C$. As the uncertainty in one half of the pair rises, it falls in the other half, and vice versa. There is a constant dynamic tension between the two. Now, if we are dealing with "big" things and C has a very small numerical value then we can effectively ignore it. It's likely to be swamped by larger errors arising from system "noise", flaws in experimental equipment and measuring devices, and so on. In the big world, we might as well treat C as zero and discount it. However, that is impossible when we are making measurements that are of the same scale as C, or even smaller. Then C changes from being irrelevant to being decisive.

That is what has happened in the quantum world, which is defined by Planck's constant, h. This has the value:
h = 0.000,000,000,000,000,000,000,000,006,626.

This is absurdly small in relation to our world, but not in terms of atoms which are absurdly small too.

Planck's constant is without doubt one of the key numbers of existence. It arises, ultimately, from a Fourier pairing of position (which we might define as an instantaneous, STATIC measurement) and energy (which is an inherently DYNAMIC quality). We are contrasting static and dynamic measurements, static and dynamic points, which are inherently opposed. The whole of existence is reduced to monads (static points) and the energy (dynamic points), which originated in the monads.

Planck's constant is the Fourier constant that defines the uncertainty linking static and dynamic points (or position and momentum if we refer to Heisenberg's Uncertainty Principle). There is a fundamental tension between the static and the dynamic on the atomic scale. The more we try to define a static point (a precise position), the more uncertain that point's dynamic properties become and the less we are able to specify where the point will be at the next instant. We can *never* get round this problem. It's built into nature, into the relationship between the static and the dynamic. We call it a

"problem" but, in fact, meaningful existence and free will are entirely built on this inherent uncertainty. The world as we experience would be impossible without Planck's constant. We wouldn't be here without it.

For all those people who believe in a Creator God, how would they account for the fact that existence is based on a fundamental uncertainty principle? God CANNOT know everything because quantum uncertainty renders it impossible. Therefore, the Abrahamic God is refuted. End of story.

If we know the precise location of a point at time x, we won't have the vaguest idea of where it will be at the next instant. This has dramatic consequences for Fourier spacetime functions. We move away from essentially deterministic Fourier spacetime functions to probabilistic functions. The distinction is critical. In the deterministic case, if we know a Fourier spacetime function accurately, we also know its Fourier transform accurately. Both functions contain the SAME information from different perspectives. In the case of probabilistic Fourier transforms, this is no longer true. We can accurately define neither the "original" function nor its transform. In fact, something remarkable happens. The Fourier pair (original function and transform) split into a constantly interacting "actuality" function and "probability" function.

What does this mean? The actuality function is the function that governs the "concrete" movement of a particle – defined in terms of a moving point (a point particle) – in space and time. This function represents physical reality. It is absolutely precise. There is nothing at all fuzzy or indeterminate about it. In other words, we know exactly where every point particle in the universe is at all times. So why is quantum mechanics so intimately connected with ideas of probability and indeterminacy? The reason is that although we know exactly where every particle is at any instant, we are wholly unable to say where they will be one instant later. In other words, the actuality function is always *certain*, but how it will *develop* is completely *uncertain*. We have absolutely no way of knowing for sure how any particle's actuality function will develop. The best we can do is state a probability.

What we have here is an astonishing combination of infinitely precise knowledge combined with infinite uncertainty. Why? Because of the Fourier transform probability function. We know from the Heisenberg uncertainty principle that if we have precise knowledge of position at one instant, we have infinite uncertainty regarding its momentum (linked to energy/frequency). In other words, the Fourier transform probability function

that accompanies the particle's actuality function contains EVERY POSSIBLE PATH that the particle could take in the next instant. Every conceivable future possibility regarding the particle's trajectory is contained in the probability function, and there are infinite possibilities.

If the same is true for every particle in the universe, doesn't that mean the universe will be an infinitely crazy place with particles randomly shooting off to the other side of the universe?

Long before the birth of quantum mechanics, Leibniz had the answer to this cosmic riddle. Consider Bertrand Russell's comments regarding Leibniz's "compossibles":

"But sometimes, in papers not shown to any human being, there is a quite different theory as to why some things exist and others, equally possible, do not. According to this view, everything that does not exist struggles to exist, but not all possibilities can exist because they are not all 'compossible'. It may be possible that A should exist, and also possible that B should exist, but not possible that both A and B should exist; in that case, A and B are not 'compossible'. Two or more things are only 'compossible' when it is possible for all of them to exist. Leibniz seems to have imagined a sort of war in the Limbo inhabited by essences all trying to exist; in this war, groups of compossibles combine, and the largest group of compossibles wins, like the largest group in a political contest. Leibniz even uses this conception as a way of *defining* existence. He says: 'The existent may be defined as that which is compatible with many more things than is anything incompatible with itself.' That is to say, if A is incompatible with B, while A is compatible with C and D and E, but B is only compatible with F and G, then A, but not B, exists by *definition*. 'The existent,' he says, 'is the being which is compatible with the most things.' In this account, there is no mention of God, and apparently no act of creation. Nor is there any need of anything but pure logic for determining what exists."

So, we can imagine the probability functions associated with the actuality functions as participating in a great war in a probabilistic Limbo, striving to negotiate the optimal set of compossibles. Every conceivable future of the universe is engaged in this metaphysical war. Everything that can happen and will happen is contained in this Limbo. However, there are infinite sets of outcomes that will NEVER be actualized. Only the most probable cosmic set of compossibles will be realized.

What does this imply about existence? It suggests that a particle, whose position we knew precisely at the previous instant, is extremely likely to manifest itself at a new position extremely close to the one it had before, i.e. the world won't evolve in some crazy and random way but actually in rather a good approximation to determinism. Given that there are endless trillions of particles, some particles will surely end up in odd places, but almost all will show up more or less exactly where we would predict they would show up. Quantum indeterminacy does NOT lead to chaos, to a fuzzy universe. Reality is intact.

How should we picture material reality? – as a rock solid, precise reality in space and time hardwired to a Fourier transform of probability outside space and time. The Fourier transform is the MENTAL domain. This is where free will can exist. This is where the world is freed from scientific determinism.

We can think of an actuality function buried within a probability function (or probability cloud). At every instant, the actuality function collapses the probability function (this is known in quantum mechanical circles as the "collapse of the wavefunction") and a specific, concrete event occurs. Yet as soon as the collapse occurs, the probability function instantly reforms itself to reflect the new position of the particle and to provide the particle with yet another set of infinite possibilities. This process goes on forever, in a manner that Aristotle would surely have appreciated since he was obsessed with potential and actualisation.

The whole cosmos operates according to the law of potential being converted into actuality at every single instant. Infinite possibilities are always lined up in front of us, but the vast majority are not compossible. In practice, only a small number of realistic compossibles are awaiting us. That's why most people's lives are so predictable.

So, the universe continually generates an infinity of possibilities in the mental domain, and then the material universe collapses the universal wavefunction into a single outcome – physical reality! This process goes on forever.

Scientists, with their dogmatic, ideological hatred of mind as an independent reality, have completely misunderstood quantum mechanics and tried to turn it into some freaky materialistic phenomenon. They talk about wave-particle duality as if waves and particles were both simultaneously true in a physical sense. There are in fact no such things as physical waves for individual particles. There are only mental waves belonging to the particle's

Fourier probability function. The Fourier probability function is tantamount to the particle's mind, determining where it will go next from an infinite range of possibilities, yet having to be cognizant of all the probability functions of all the other particles (all the compossibles).

Interpreting Reality

Let's examine the main scientific interpretations of quantum theory:

The Copenhagen Interpretation (CI)

This is the most basic, pragmatic and instrumental interpretation, and remains the most popular. It states that we commence a process and then measure what happens at the end, and we don't care at all what happens in between, and we make no attempt to understand it. This, of course, is the total abandonment of any attempt to explain reality, but scientists don't care because all they're interested in is doing measurements and calculations, writing papers to advance their careers and, most importantly, getting the right answers. The Copenhagen Interpretation is the minimalist, no-thrills approach that provides scientists with the basics and nothing more. Most are perfectly satisfied with it. The Copenhagen Interpretation has a great deal in common with the Behaviourist approach to psychology. You might imagine that the mind is the most important entity to a psychologist, but Behaviourists concluded that it was a superfluous hypothesis! They decided that all that mattered was applying a stimulus to a human being, and seeing what behaviour resulted. The mind was reduced to a black box sitting between the applied stimulus and the observed behaviour. Who cared what, if anything, happened in the black box? The "scientific" aspect of the experiment was the stimulus and the response. Everything else was deemed subjective and irrelevant nonsense. The Copenhagen Interpretation similarly regarded everything between the start of an experiment and the observation at the end as a black box that could be safely ignored. It was as if a curtain was drawn across the world between the experimental input and the experimental output.

In terms of the famous double-slit experiment of quantum mechanics, the CI says it's pointless to ask which slit the particle actually went through.

In general, the CI states that it's meaningless to talk about a system unless we are measuring it. We can't possibly know anything without measuring apparatus. The CI also states that the role of the observer is critical since the

observer chooses what type of experiment to perform, and this will emphasize either the particle or wave aspect of reality, i.e. reality takes on the "shape" the observer chooses.

By implying that the universe is somehow dependent on observers, the CI destroys the "reality principle" which states that the universe has objective reality in the absence of observation.

The Many-Worlds Interpretation

"The basic idea is the following: When a quantum system is faced with a choice of alternatives such as a particle going through one of two or more slits, rather than the wavefunction entering a superposition, we think of it, and the whole Universe along with it, as splitting into a number of realities equal to the number of options available. These different worlds/universes/branches will be identical to each other apart from the different option chosen by the particle: in one universe it has gone through the upper slit, in the other it has gone through the lower slit." Jim Al-Khalili

So, according to this interpretation, the universe keeps replicating at a more or less infinite rate. Where are these endless universes? How do they all fit together? How do they acquire the energy necessary for existence? Why aren't they always colliding with each other? Have the scientists resorted to magic yet again? Scientists scoff at the concept of independent mind yet, without a second thought, have no difficulty invoking infinite, replicating parallel universes.

According to this interpretation, all possible realities co-exist, each requiring its own parallel universe. We ourselves split into endless copies, with endless versions of our consciousness. Some parallel universes might be very like the one we are currently experiencing. Others might have diverged massively and we could be leading a radically different life, for better or worse. Do you like the idea of being merely one random version of yourself amidst an enormous collection? There's nothing special or unique about you. You do not have any free will. You are simply a probabilistic expression of all the different quantum choices that have been offered to you during your life. You never *decided* to do one thing or the other. The universe chose for you – and created a whole new universe to accommodate each different choice. As many philosophers have observed, this interpretation constitutes the worst possible violation of Occam's razor. It keeps multiplying entities

endlessly rather than being as economical as possible. If there is no sufficient reason for Occam's razor to be violated then, as a general principle, it must not be.

Related to this interpretation is the "many minds" interpretation. Instead of an infinite numbers of worlds, this interpretation proposes an infinite number of minds, i.e. each of us has an infinite set of minds. Imagine that all of our minds start out the same way and then, on a probabilistic basis, start reflecting the different choices we might make. So, the first time we are faced with a choice, fifty percent go one way and fifty another. If one of the fifty percent groups is faced with a new binary choice, they will again split fifty fifty. Meanwhile, the same thing will be happening with the original fifty percent group that made a different choice. They too will start splitting according to the new sets of choices confronting them. Every choice leads to a new branch. Because we have an infinite collection of minds, every conceivable choice can be explored. What we have is one physical world in which endless mental possibilities are realized.

It's not at all clear how mind relates to body in this view. We seem to have one body possessed by endless different conscious states relating to all the different choices we made in our life. However, what if one choice led to death or disease? How would this affect the body if it's the same body that made a healthier choice in another of its conscious states? It seems to raise enormously more problems than it solves.

Both the many worlds and many minds interpretations are attempts to explain the fact that the quantum mechanical superposition of states for a potentially infinite set of particles offers infinite possible futures. Rather than allowing any *choice* between the different possibilities, these approaches look for ways to ensure that ALL possibilities actually happen. To look at it another way, they are typical scientific attempts to eliminate the concept of free will. Instead of permitting us to *choose* one course of action over another, they ensure that every possibility takes place as a matter of course.

In Illuminism, the universe continually actualizes ONE reality out of endless possible futures, based on the principles of least action, highest probability, and, in the case of conscious beings, free will. There are not infinite worlds and infinite realities: there is only one objective reality. Each human does not have infinite minds and consciousnesses. Rather, each person has one mind and one consciousness and actively chooses some options over others. Discarded choices are exactly that: discarded. They never happen.

They don't get enacted in some alternative, parallel universe or mental state. They simply vanish. All the choices we NEVER made in life, don't hang around. They were never actualised. Our lives reflect the choices we did make of our own free will; not those we didn't make.

Any interpretation that forbids the exercise of free will is absurd. The many worlds and many minds interpretations claim in some crazy way that although we may always seem to have a choice, we never actually do, because all eventualities automatically play out. If that were the case, why would Nature create the *illusion* of free will for us? Why would we not go through life simply as zombies or programmed automata? If we have no actual choice, why do we think we have? What's the point of the illusion? Why do we wrestle with our decisions if, according to these theories, every possibility will occur regardless?

Science has an almost insurmountable problem with free will and scientists keep trying to think up ways to eliminate it.

It would be easy to imagine a world of computer beings who randomly divide into two equal groups whenever faced with any binary choice. Half would follow one fork and the other half would follow the other fork. Since the whole thing is random – like tossing a coin – there would be no actual decision taken by any computer being. No stress would be experienced; no illusion of choice; no speculation about what might happen if the alternative choice were made. Science, for some extraordinary reason, would prefer us to be computer beings rather than human beings – because then science would never have to address the issue of free will.

Science has chosen to make itself the enemy of what it means to be human. That's one of the reasons why the gulf between science and religion is so wide. Science hates messy emotions and choices because they ruin the nice, deterministic, predictable and calculable world of which scientists dream. Scientists are almost congenitally fearful of anything that undermines their deterministic worldview.

Illuminism reveres mathematics, but not for one moment does it regard mathematics as hostile to free will, choice and feelings. Illuminism is all about mathematics as ALIVE: as willing, feeling, striving. Science treats mathematics as a dead, arid abstraction. In the Illuminist view, when mathematics is unconscious, it creates the deterministic world that scientists love. However, the fundamental units of existence – monads – are mathematical entities that are alive and striving to become conscious. They

succeed – in us! The mathematical universe is a living universe, one that is seeking to optimize itself. According to science, the universe is dead and "life" is some bizarre and unnecessary aberration that gets in the way of nice, straightforward scientific calculations on lifeless, mindless atoms and inert stars and galaxies.

Scientists have remarkably little interest in the phenomena of mind, consciousness and life. All of these things are resistant to the deterministic, dead mathematics that scientists employ, but they are not resistant to the living mathematics of Illuminism. In Illuminism, mind and life are integral to existence. The universe is an evolving organism, a cosmic mind seeking to maximize its power. The scientific view continues to be one of a dead universe, a clockwork cosmos made of mechanical parts that randomly rearrange themselves and somehow miraculously give rise to life and mind, for no known or indeed knowable reason.

In science, there is no possible bridge between dead atoms and human beings who fall in love and recite poetry. Technically, human beings are composed of nothing but food, drink and atoms breathed in from the air. How on earth can food, drink and air arrange themselves into beings who contemplate the stars and ponder the origins of existence? The only way for life to be possible is if it is inherent in the universe. Life can never come from death. Mind can never come from the mindless. Those are two of the most basic laws of existence. No incompatible substances can ever interact. Life and death, mind and mindlessness are two examples of incompatible pairs of substances.

Another law of existence is that it must be a monism – based on a single substance – not a dualism or polyism. The monistic substance of which the universe is comprised must be inherently alive and possessed of mind. There is no other way to rationally account for our own living, minded existence. Every phenomenon exhibited by existence must have its roots in the fundamental stuff of existence.

Schrödinger's Cat

One of the most famous paradoxes of all time is that of Schrödinger's cat where the eponymous cat is in a special box where it has a 50-50 chance of being poisoned to death depending on a random event. The logic of quantum mechanics – in terms of the Copenhagen Interpretation! – is that until an observer opens the box and thereby collapses the wavefunction, the cat will

exist in a strange superposition corresponding to a live cat, a dead cat, and intermediate ghostly combinations of living and dead cat.

What people fail to grasp is that it is NOT quantum mechanics that says that the Schrödinger's cat paradox is plausible. Rather it is only the CI that says so. Remember that the CI emphasizes the beginning and end of an experiment, and the role of measurement and the observer. Anything between the beginning and end of the experiment is treated as a black box about which we can know nothing other than that it must contain probabilities for all possible mathematical states of the system, and mathematics does not hesitate to treat life and death on a par: both are just mathematical functions with certain properties, and these functions can overlap and create intermediate functions. $(a + b)^2 = a^2 + b^2 + ab + ba$. If we replace a and b by "living cat" and "dead cat", we get a probability for living cat, a probability for dead cat and probabilities for some strange combinations of living and dead cat. When the observer's measurement is performed (by opening the box), the wavefunction collapses to living cat or dead cat. Intermediate states are never observed. This is because such states are not compossible. They CANNOT exist in the real, objective world.

In all quantum mechanical interpretations other than CI, the paradox does not arise at all. The paradox is purely an artefact of a particular view of the meaning of quantum mechanics. The paradox emerges from the refusal of the CI to state what goes on inside the "black box" prior to a measurement. The CI is correct solely to the extent that we can't have evidence of anything until we perform experiments, measurements and observations. However, even though it's impossible for us to know what's going on in the black box until we look, we can surely have rational knowledge of what's taking place. The moon doesn't disappear when we're not observing it, to use Einstein's pertinent criticism. Reality persists. The "reality principle" doesn't dissolve because we haven't performed any experiments. The world doesn't hang around waiting for us to collapse the wavefunction. The paradox of Schrödinger's cat actually highlights the absolute absurdity of the Copenhagen Interpretation. The only reason this interpretation survives is that it cannot be experimentally refuted, and its advocates have placed experimental knowledge above rational knowledge.

Scientists such as Richard Dawkins, when they are rubbishing the idea that science can't disprove the existence of God, like to say that it also can't disprove the existence of a green teapot behind the moon that moves away

every time we go to investigate it. In other words, any number of absurd scenarios can be presented that can't be experimentally refuted. Yet, when it comes to the Copenhagen Interpretation, science is now apparently willing to admit ANY absurdity because such absurdities (like a combination of a living and dead cat) cannot be experimentally refuted. Talk about having your cake and eating it. If the green teapot behind the moon is ludicrous then so is the simultaneously living and dead cat.

Why have scientists subordinated reason to experiment? By doing so, they have undermined the whole concept of a rational, objective, real universe – which, of course, fatally undermines the scientific project itself. If the world doesn't exist until scientists perform experiments then science is nothing but "magic" that pulls "reality" out of a top hat like a magician pulling out a rabbit. The Copenhagen Interpretation is every bit as laughable as the Behaviourist declaration that mind is a superfluous hypothesis. It represents the fanatical, irrational dogmatism and ideology of extremist empiricism and materialism.

Rather than challenge the importance of experiments (upon which science is based), science chose to deny reality itself and created the equation REALITY = EXPERIMENTAL OBSERVATION.

Therefore, science, via the CI, is actually committed to the position (irony of ironies) of the extreme idealist Bishop Berkeley that "to be is to be perceived". Until something is perceived (observed) it's not there other than as a bizarre cloud of probability. Reality isn't real at all; it's merely a possibility that is made real by observation. Observation is the true reality.

This shows how deranged scientific "philosophy" has become. It has ended up in a position where it boils down everything to observation as the sole credible reality. Yet, although observation is ultimately purely a mental phenomenon (a set of ideas in our minds), science of course repudiates mind as having independent reality.

You cannot get a more confused and contradictory "philosophy" than science. It's every bit as muddled and preposterous as Abrahamism. It despises reason, mind and objectivity reality and instead worships "observation", without even being able to define what observation is. Is it a mental phenomenon? Does it create reality from mere possibility? How do we know that our observations are "real"? We could go right back to Descartes and say that an evil demon was intent on deceiving us and his chosen tool was "observation". How could we ever know that our

observations correspond to reality? It's as if we've gone back hundreds of years in time.

In Illuminism, reality is true at every instant. The cosmic wavefunction is constantly being collapsed and then reformed – all via the mental domain outside space and time. The cat dies as soon as the poison is released because it is part of an objective universal wavefunction. It is not waiting for someone to open a box and determine its fate. It is not a bit alive, a bit dead and a bit in-between. Reality couldn't care less about experiments performed by scientists. Reality goes on – the moon exists – regardless of scientific observation. It's madness to make reality depend on observers and their observations. It's the rebirth of Bishop Berkeley's philosophy whereby if you leave a room it ceases to exist (unless God is continuing to observe it!). The opposite is the truth. Observers and their observations depend on objective reality.

Science should now be explicitly equated with the philosophy of Bishop Berkeley, and all the craziness that entails. The only real difference is that whereas Berkeley says that the room vanishes when you leave it (unless God is observing it), scientists of the Copenhagen stripe say that it dissolves into a superposition of states of existence and non existence – and only when you return to it and make an observation does it become "real" again. Strangely enough, the room always seems to be there just as you left it and never seems to plunge into the abyss of non-existence or some other weird superposition state.

Scientists continually reveal how staggeringly ignorant of philosophy they are. The Copenhagen Interpretation is just a modern recasting of the old empiricist versus rationalist debate. The empiricists insisted that experience, experiment, observation and evidence were "truth" (just as the CI advocates do), while the rationalists insisted that reason and logic were the only route to truth and mathematics was the supreme truth.

What is truer? – that $2 + 2 = 4$ or that grass is observed to be green? Well, we know that grass isn't green at all. It's our perception of grass that introduces greenness. There's no objective greenness in grass at all. We wouldn't even perceive it as green if we had the genes for colour blindness. Grass's greenness is ultimately caused by us, not by it.

So, how will you define "truth"? Will it be on the basis of fallible, deceptive human senses and observations or will it be on the basis of eternal and immutable laws of mathematics, reason and logic? Sure, reason can go

astray when it departs from mathematics, but 2 + 2 will always equal four, and that's never going to change. If you want Truth with a capital T you must stick with mathematical truths. Science, by privileging observation over mathematics, has departed disastrously from Truth.

Observation is the servant of reality, not the *creator* of reality. We observe what is really there. The universal wavefunction is forever determining reality. It does so on a collective, objective basis: on the basis of compossibles. The universe doesn't wait for us to collapse the wavefunction. The whole point of "objective reality" is that it doesn't depend on any individuals or their individual observations.

Einstein, a greater philosopher than most of his colleagues (though by no means perfect) understood that the Copenhagen Interpretation was an outright attack on objective reality and tried to fight back. Sadly, he came to be regarded as a pathetic old man way behind the times, someone who hadn't grasped the new quantum reality. In fact, it was the advocates of CI who hadn't understood quantum reality. Quantum reality MUST be consistent with objective reality. Quantum mechanics is unquestionably weird, but not so weird that it makes reality depend on human observations. Any interpretation of quantum mechanics that does not show how observations reflect rather than create reality is ridiculous.

The essence of the difficulty facing conventional quantum mechanical interpreters is that they refuse to countenance the existence of the mental domain. As soon as you associate quantum mechanics with a mental domain, all of the problems vanish. Probability doesn't become a physical thing but a mental thing, and we know all about mental probability because every day we ourselves do nothing but choose from the mental possibilities that we continually present to ourselves. We ourselves demonstrate how quantum systems work. There's no mystery at all.

Quantum mechanics is the surest possible proof that mind exists independently of matter, and indeed creates and controls the material domain. Wavefunction collapse is a nonlocal mental process that has local physical consequences. We ourselves continually collapse our mental wavefunction and give rise to physical actions.

You walk from A to B not because your body starts walking of its own accord but because you have chosen to walk rather than read or sing or eat or daydream or whatever else you might have chosen to do. You collapsed the wavefunction of possibilities in favour of walking. Scientists, with their

loathing of free will, simply cannot concede that the world is based on mental choices rather than physical necessity. That's why they can't grasp the message which quantum mechanics is proclaiming loud and clear.

Decoherence

The concept of "decoherence" is the first sign that quantum physicists are starting to get real. Jim Al-Khalili provides an excellent description of the concept in *Quantum: A Guide for the Perplexed*.

"Physicists came to appreciate what must be happening when an originally isolated quantum system such as a single atom, existing happily in its superposition, becomes entangled with a macroscopic object. It turns out that the superposition of different states forced upon such a complex system involving a trillion trillion atoms simply cannot be maintained and very quickly disappears, or decoheres. One way to think about it is to say that the delicate superposition gets irretrievably lost amongst the stupendously large number of other possible superpositions due to the different possible combinations of interactions between all the atoms in the macroscopic system … Decoherence is a real physical process that is going on everywhere all of the time. It takes place whenever a quantum system is no longer isolated from its surrounding macroscopic environment and its wavefunction becomes entangled with the complicated state of the environment… In fact, decoherence is one of the fastest and most efficient processes in the whole of physics."

Decoherence (which is remarkably similar to Leibnizian compossibility) is the right sort of concept to explain what is going on, but it needs to be expressed much more radically. No atom is ever isolated from the rest of universe. It is always absolutely connected to everything else via the nonlocal domain of mind. The collapse of the collective wavefunction for everything in the universe is happening all of the time, with no gaps. Yet we might choose to say that no collapse is happening at all. What we really mean is that the wavefunction of the universe continually selects one solution from the infinite number open to it, and this solution constitutes objective reality in space and time: the actualisation of potential. The space and time domain and the mental domain are hard-wired together and constantly feeding back one to the other. They form the perfect synergic system. The mental wavefunction

evolves in the way it does because of how closely it's linked to the physical wavefunction. In fact, the physical wavefunction is really just the perpetual actualisation of the mental wavefunction.

The universe follows the principle of least action; it's lazy. It doesn't do anything it doesn't have to do. So, as the physical wavefunction of the universe evolves, it follows the mental option that affords it the least effort. Most things proceed in an orderly fashion. Only the occasional weird things happen. Most of all, decoherence is a process that is not waiting for any observer or any experiment. It is happening all of the time – continuously.

Richard Feynman's Multiple Histories Interpretation of Quantum Mechanics

Richard Feynman belongs to the pantheon of the world's greatest thinkers. Such people's views should always be treated with the utmost respect. Even when they get something wrong, they usually do so in an ingenious and invaluable way that sheds new light on difficult problems. Wikipedia says of Feynman's quantum mechanical interpretation:

"The concept of multiple histories is closely related to the many-worlds interpretation of quantum mechanics. In the same way that the many-worlds interpretation regards possible futures as having a real existence of their own, the theory of multiple histories reverses this in time to regard the many possible past histories of a given event as having real existence. This concept was introduced by Richard Feynman, whose Feynman path integral is integrated over the set of all possible histories. The idea of multiple histories has also been applied to cosmology, in a theoretical interpretation in which the universe has multiple possible cosmologies, and in which reasoning backwards from the current state of the universe to a quantum superposition of possible cosmic histories makes sense."

In *Schrödinger's Kittens*, John Gribbin writes of Feynman's approach to Quantum Electrodynamics (QED): "He deals in terms of particles – photons and electrons – and probability waves. The probabilities tell you where you are most likely to find the particles, but when you do find them you do indeed find them as particles … One of Feynman's key contributions to the development of QED was his realization that we have to take account of

every possible path from A to B. We have already seen, from the experiment with two holes, how a single photon passing through the experiment seems to be aware of both holes, as if it had followed both routes through the experiment. But Feynman goes further. In going from one place to another, he says, a particle takes account of every possible route. Not just straight-line routes, or smoothly curving routes, but the most complicated and wiggly 'trajectories' that you can imagine … Because the calculations involve adding up (integrating) all possible paths, this kind of approach to quantum physics is often called the 'path integral' or ('sum-over-histories') approach."

In Feynman's approach, when all paths are summed together, they all in fact cancel out, leaving just the physical path actually taken. This is one of the best ways of thinking about quantum physics, although the reference to "histories" ought to be removed since it implies a retrospective explanation of what is taking place. It should more sensibly be referred to as "Feynman's All Paths Interpretation".

In Illuminism, all possible paths are automatically available to any particle via the mental Singularity which connects everything in the universe. The physical path the particle actually takes will be determined according to probabilities relating to compossibles. The possible paths are in the *future*, not the *past*. Actualisation is all about selecting one option from all the possible options. You don't work backwards and say, "Ah, how did the particle get here? Well, somehow, it travelled via all possible paths." No, it didn't. It took just one path through the infinite number available to it. Functionally, the two different views lead to the same outcome since the particle's path must always be calculated according to EVERY possible path.

The key question is this: should we formulate our explanations of what happens in the world by imagining particles routinely travelling by *all possible routes* (a view that contradicts objective reality and the reality principle), or by imagining that each particle *chooses* one particular path from all the possible routes open to it (a view that supports a mental interpretation of quantum mechanics)?

Feynman's approach is actually equivalent to the de Broglie-Bohm interpretation. The Feynman path integral is functionally equivalent to the de Broglie-Bohm pilot wave (quantum potential) that guides the particle by choosing the most probable route from the full set of paths available to it. Feynman's approach is as nonlocal as that of de Broglie-Bohm because it

takes into account ALL paths (i.e. taking account of the WHOLE universe), not just those permissible according to Einsteinian physics (based on no non-local influences).

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The best way to think of quantum mechanics is in terms of a definite, material particle being guided by a mental, probabilistic wave, and interacting with the probabilistic waves of all the other particles in the universe. We, as human beings, are physical bodies being guided by minds that are calculating all of the future paths available to us and choosing the most probable, or the one we judge "best". But what is most probable or best for a genius or hero won't be most probable or best for one of the sheeple or common herd.

Quantum mechanics becomes easy to understand once probabilistic waves are entirely separated from particles and associated instead with nonlocal mind in a Singularity which connects everything. All of the quantum mechanical confusion has arisen from trying to imagine a particle and a wave as one quasi-physical entity (although they are mutually exclusive by definition).

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What are the two classic elements of quantum theory? – Heisenberg's uncertainty principle and the double slit experiment.

Heisenberg's uncertainty principle is nothing other than the consequence of a Fourier relationship between the spacetime material domain and the non-space/non-time mental domain. In other words, it has nothing to do with physics and is simply a mathematical property of Fourier transforms. This is true of EVERYTHING in physics. Physics is just a way of talking about mathematics using non-mathematical labels.

What is an electron, a quark, an atom, or a molecule? In truth, they are all just mathematical functions with certain properties. Because the functions describing them are extremely complex and abstract, we choose to label them with various names we have invented. When we refer to the named thing (e.g. an atom), we are allowing ourselves to talk about something that we can't picture – complex mathematical functions. Although we are all mathematical beings, we do not think in terms of mathematical functions. Instead, we think in terms of emotions, sensations, pictures, words and so

forth. Why? Because the natural selection that comes with evolution has decided that these are much more effective ways of interacting with the world than pure mathematics. The Mona Lisa as a Fourier transform would never captivate us in the same way as the one we see does. It's as simple as that.

Science is just a way of converting mathematical entities into simplified "picture concepts" with which we can work relatively easily. Sadly, scientists have become confused and mistake their simplifications as reality.

The Grand Unified Theory of Everything already exists – it's mathematics! The scientific grand unified theory of everything can never be anything other than mathematics except described using scientific rather than mathematical jargon. The reason why quantum mechanics and relativity theory haven't been reconciled is that no scientist has yet found the common mathematics that unites them. The two theories use conflicting approaches to mathematics – incompatible models, concepts and pictures. Scientists are approaching the problem wholly wrongly. What they have to do is find the mathematical principles that bind the two theories. In fact, what they have to do is read this book! Don't hold your breath.

Scientists can't make any progress until they start taking *mind* seriously – the domain of zero and infinity. It's the inability of scientists to deal with zero and infinity that stands in their way of ever achieving a grand unified theory. M-theory, their great hope, is wrong from the outset because the first thing it seeks to implement is a prohibition on zero and infinity, i.e. on MIND. M-theory is all about making finite little 1-D string loops the fundamental basis of reality rather than mathematical points.

Scientists' hatred of zero is almost comical. What did zero ever do to them? Zero is the most important number in mathematics – the origin of everything else – yet scientists spend all of their time trying to pretend it doesn't exist. They hate it because it ruins their calculations when they have to divide by zero, i.e. because they don't know how to handle it mathematically. Rather than try to find the right mathematical tools for handling zero, they have instead created a set of "scientific" concepts from which zero is permanently excluded. Zero is the Forbidden Number. Scientists view zero much as Christian theologians once did – as evil, as Satanic!

Scientists need to undergo a mass exorcism and learn to love zero, to see it as the ultimate good – as GOD! Science can make no further progress until it places zero – the Leibnizian monad – at its centre and builds everything on

top of it. Instead, it tries to build an enormous edifice without any foundations at all.

Zero is the fundamental building block of existence. Any building that does not embrace zero is certain to collapse, exactly as science has now done. Science has FAILED. It has run up against impossible problems because it is now confronting the two numbers – zero and infinity – from which it has always fled. Now it can go no further until it grasps their ontological significance – as the Illuminati did long ago thanks to Leibniz, the master of zero and infinity (via calculus and his monads). M-theory will keep many scientists in lucrative careers for decades but it will never get anywhere in terms of a final explanation of reality because it is conceptually flawed from the outset, holed below the waterline since it's designed to exclude zero and infinity. That's not to say that it might not enjoy some successes along the way. Some interesting mathematics may emerge from the efforts of so many clever minds.

Here is wisdom – mathematics is the Absolute Truth. Science is true only to the extent that it reflects mathematics. As soon as it strays from mathematics, it becomes a belief system with no real foundations at all. It becomes alchemical Mythos. For science to be "complete", it must reflect complete mathematics. We have provided all of the concepts scientists need to finish their job. Sadly, they are dogmatic empiricist materialist fanatics and they are as deaf and blind to the truth as Abrahamists. Richard Dawkins might as well sit on a throne and call himself the Darwinist Pope because he's as blindly wedded to his ideology as the guy in the Vatican is to his. Isn't it about time someone wrote *The Dawkins Delusion*?

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So, what happens with the famous double slit experiment of quantum mechanics? Why is an interference effect produced when the experimental equipment processes one particle at a time? Does the particle somehow go through both slits? Of course it doesn't. The particle's "mind" exists in the Fourier transform domain and consists of an infinite superposition of possible paths the particle might take. It is this superposition that constitutes the origin of the characteristic wave pattern we see experimentally. Each time the experiment is repeated with a different particle, the "mind" of each different particle generates a similar but slightly different superposition of possible paths. Each particle takes a marginally different route through the apparatus,

and it will be based on a wavelike (pilot wave) rather than particle-like guidance system. Across hundreds of thousands of particles, we will obtain a classic wave interference pattern. When properly understood, the double slit experiment is proof of the existence of mind and actually reveals how our own minds work. Scientists haven't grasped the truth because of their ideological resistance to the concept of mind as anything other than materially generated.

Scientists despise the concept of "nonlocality" because it's a codeword for "mind". Mind, unlike matter, is everywhere and isn't affected by any physical restrictions such as the physical speed of light. Nonlocality sends a shudder through all scientists because it means that materialism is false. All interpretations of quantum mechanics include non-locality in one way or another, but scientists still refuse to confront it head on. The Copenhagen Interpretation is largely about trying to reinterpret nonlocality as a mathematical abstraction with no ontological reality.

As soon as nonlocality is acknowledged as ontologically real then the floodgates open to non-physical reality – the mental reality! Scientists are fighting a desperate rearguard action against the mind even though it keeps popping up everywhere in all of their most prized theories. No matter how much it annoys scientists, zero, infinity, negative numbers and imaginary numbers keep appearing in their equations and they have to keep calling them abstractions and "unreal" rather than concede that they are as real as anything else.

Science will make itself compatible with mathematics and indeed with reality only when it admits the ontological reality of zero, infinity, negative and imaginary numbers. It really is as straightforward as that. That's where all the answers to the great mysteries of existence lie. Where else would you look other than the most mysterious numbers?

All valid paranormal phenomena occur via the ontologically real mental domain. Rupert Sheldrake's morphic resonance occurs via that mechanism. Homoeopathy takes place via the mental domain.

The psychic gift that many ordinary people have (but don't realise it) is intuition. Intuition is about plucking answers out of "thin air" (i.e. out of the mental domain via the Fourier transform). Many "psychics" have powerful intuition and become convinced they have special powers. Unfortunately, intuition isn't something that can take place to order, and psychics – in order to make a living – start "enhancing" their gift, i.e. they cheat. Soon, they have

descended into charlatanry and are relentlessly exploiting gullible people, yet they will go on believing themselves to be "authentic".

The exploits of frauds shouldn't be allowed to destroy the credibility of the mental domain. It really is there, and it's the most important thing in our lives. The fact that it's not susceptible to any straightforward physical experimentation can hardly be held against it. After all, being non-physical is what defines it, so why would we expect to gain physical knowledge of it? It's impossible. The verification, validation and falsification principles deployed by scientists regarding physical phenomena are invalid regarding mental phenomena. Mental phenomena will always be probabilistic and subjective while the physical world appears mostly deterministic and objective. They are chalk and cheese. New techniques have to be developed to reliably probe the mental domain.

What is our best hope in this regard? Mathematics!

The von Neumann/Wigner Interpretation

"In his treatise *The Mathematical Foundations of Quantum Mechanics*, John von Neumann deeply analyzed the so-called measurement problem. He concluded that the entire physical universe could be made subject to the Schrödinger equation (the universal wave function). Since something 'outside the calculation' was needed to collapse the wave function, von Neumann concluded that the collapse was caused by the consciousness of the experimenter. This point of view was later more prominently expanded on by Eugene Wigner, but remains a view held by very few physicists." -- Wikipedia

Von Neumann's idea that something "outside the calculation" must be invoked is an interesting one. That's dangerously close to suggesting that something outside the universe is needed to explain the universe. But what would explain the thing outside the universe, and what would explain the thing outside the calculation? Are they part of a larger calculation? In fact, every answer regarding the universe must be contained within the universe since it can't be anywhere else. Equally, the quantum mechanical calculation must contain the means of bringing itself to a conclusion. Consciousness belongs to entities that are themselves quantum mechanical systems, hence must still be part of a quantum mechanical calculation. It is absurd to cite one calculation as the solution to another calculation since this is simply begging

the question of what provides the answer to the first calculation.

That's why it must always be rationally concluded that the fundamental stuff of existence already contains, in rudimentary form, all of the features that are manifested by the universe. Life and mind must already be present in the basic units of existence because otherwise we would need to appeal to something inanimate to explain life. Similarly, to explain mind, we would need to appeal to non-mind. As for consciousness, it can be explained only in terms of being an advanced expression of something more basic but of the same kind: the unconscious mind. A sleepwalking human being is perhaps the best example. A sleepwalker can do many of the same things as a conscious person but without being conscious. Consciousness is the unconscious mind with an extra "whoosh", and we attribute it to language, social communication, and the ability to construct a *waking narrative* centred on the subjective entity "I". Of all animals on earth, only humans are "I's". Only a tiny number of non-human animals can recognise themselves in a mirror; only they have the prerequisites for the construction of "I".

Death

Death means the elimination of part of our personal mathematical wavefunction. It does not mean the elimination of the whole thing. In fact, our mathematical wavefunction is infinite, and the death of our mortal self is almost irrelevant in terms of the bigger picture. Our mathematical essential self is immortal. If you have experienced the loss of a loved one, don't worry. You will definitely meet them again. Why? Because mathematics guarantees it. They are not dead; only a part of their mathematical properties has altered. Death is nothing but an alteration, albeit a significant one, in a mathematical equation, but it does not obliterate the whole equation. The equation goes on and will undergo endless other transformations: births and deaths and evolution to higher states, culminating in the attainment of divinity.

The De Broglie-Bohm Interpretation

According to this view, definite particles are guided by some sort of *physical* force field called the "quantum potential". Regarding the double-slit experiment, this interpretation says that although the particle will certainly go through one slit or the other, the quantum potential "pilot wave" will go through both. It's the pilot wave that causes the classic wave interference

pattern to be generated, not the particle. The pilot wave guides the particle in a wavelike manner rather than particle-like manner. The quantum potential is nonlocal since it defies the Einsteinian speed of light limit. When the quantum potential is disturbed in one location that change is instantly reflected throughout the whole of space.

"What we must not forget is that quantum mechanics is nonlocal whatever interpretation we choose to apply. It is just that, in the Copenhagen view, the nonlocality is just another mathematical property of the wavefunction, and hence deemed not to be 'real'. The price to pay is that certain properties of the atom are also not real (until measured of course). The physicist John Bell, who was a keen supporter of Bohm's ideas, always stated that he would much rather give up locality than reality itself." – Jim Al-Khalili

Isn't it remarkable that nonlocality is the primary characteristic of the mental domain, yet scientists will do anything to avoid the conclusion that nonlocality is proof of the existence of mind as the controlling element of the physical world?

"Bohm's programme actually belongs to a class of interpretations known collectively as 'hidden variables' theories, and this is the most sophisticated of these approaches. These hidden variables represent a deeper level of physical reality that is hidden from us but is the origin of quantum uncertainty and fuzziness. In the de Broglie-Bohm interpretation, the hidden variables are the definite positions of the particles." – Jim Al-Khalili

The de Broglie-Bohm interpretation resembles that of Illuminism, with the vital difference that the "pilot wave" in Illuminism is mental, not physical. It collapses everywhere at once because it is not in space and time at all, but in the mental domain. In Illuminism, a mental pilot wave guides a physical body – *exactly* as a mental pilot guides a human body! *As above, so below.* The mind-body relationship is ingrained in the fabric of the cosmos.

What is our mind? – a superposition of possible futures from which we select one. As soon as we do so, a new superposition develops and again we have to choose … and we keep choosing until the day we die. We are exactly the same as quantum systems. Our body is the "physical particle" and our mind is where the superposition of possible futures is generated. Our mind continually collapses our personal wavefunction to create a definite physical state in time and space, then instantaneously generates a brand new

superposition of possible futures.

What is free will? It's the ability to freely choose between the different possible futures that we generate. In quantum systems, lacking consciousness, a much more automatic process takes place. Consciousness is the only fundamental difference between human beings and quantum systems. Isn't that exactly how it ought to be if we are to explain how we are what we are given that we are created entirely from quantum particles?

Reincarnation

No one has ever explained how reincarnation takes place – until now! Your essential self is a monad, a soul, outside space and time, with infinite energy. Monads are different from the "physical", moving points of energy we have been discussing. Monads are strictly mental. All that a monad has to do is introduce a "binding function" (in like manner to how gluons bind quarks in a nucleus) into the "probability cloud" associated with a newly fertilized egg.

Just as hundreds of millions of sperms compete to fertilize an egg in the physical sense, the egg must also be fertilized *mentally*, and the competition is every bit as intense. Countless souls are trying to attach themselves to a body, but some are naïve and clumsy; they don't know how to do it. Some get lucky and manage it by accident. But the ones that are successful over and over again are those that have already done it many times before. There are "elite" souls that have mastered the process so completely that they can choose exactly which body they want to enter.

All of the information pertaining to a newly fertilised egg is already present in the mental domain. What is DNA if not information that a mind can easily read once it knows how (just as the free humans in *The Matrix* can easily read machine code)? An elite mind can crack the DNA code and it can also detect the environment surrounding a particular fertilized egg: the parents, how rich they are, what type of home and jobs they have; what country they live in and so on. After all, this is just information. Souls, as they develop, get better and better at processing information until they are so good at it that they enjoy Godlike powers.

Elite souls aren't plunged into some random body. They choose the body they will inhabit. They choose the life they will lead. The truly smart souls know how to pick the lives that will bring them closer to divinity.

The human race contains a significant number of elite souls. Those that are on the path to gnosis belong to two main groups: Myers-Briggs INTJ and

INTP personality types. Elite souls are "old" souls – veterans that have inhabited many human bodies previously. Most human souls are "young", immature and naïve. These souls have only just escaped from the animal world and they remain somewhat animalistic. They tend to be Myers-Briggs extravert sensing and feeling types. They are never intuitives or thinkers. They're stupid and easily duped. The billions of Abrahamists in the world are raw, idiotic souls that haven't yet grasped the first thing about reality. They are "sucker souls", easily conned, easy prey for the forces of darkness.

All Abrahamists are Devil worshippers. They are clueless and credulous and obey anyone who shouts at them, intimidates them and dominates them. They are all submissive because they don't know any better. That's why they're all on their knees. It never once occurs to them that it's inconceivable that "God" would ever demand that anyone should kneel to him. God is not some ludicrous narcissist on a power trip. No sane, rational being would feel anything but revulsion if someone knelt in front of him. Abrahamists don't worship God; they worship power. That's why they think it's entirely reasonable that they should be on their knees. That's why they worship human kings. That's why they worship celebrities and the super rich. That's why they worship prophets. It's all about power. They worship anyone more powerful than they are, and above all they worship infinite power – "God".

Yes, it's true that brute power loves to be worshipped – but that's the Devil, not God. God is pure rationality and he has zero interest in being worshipped. The compulsion to be worshipped is all about power, emotion, self-love, self-aggrandisement. It has nothing to do with reason. In fact, it's the opposite.

Numbers

"Natural" numbers are the counting numbers: 1, 2, 3, 4…

"Integers" are the counting numbers plus zero and the negatives of the counting numbers: -4, -3, -2, -1, 0, 1, 2, 3, 4…

"Rational" numbers can be expressed as fractions (as ratios of one number to another).

"Irrational" numbers cannot be expressed as fractions.

The set of "Real" numbers comprises all of the above.

All "Real" numbers have "imaginary" counterparts where every real number is multiplied by the imaginary number, i, the square root of minus one.

"Complex" numbers have both real and imaginary components and have the form C = a + bi where a is a real number and bi is an imaginary number.

It is a fundamental principle of Illuminism that the world is neither "real" nor "imaginary" but complex. Science on the other hand asserts that the world is fundamentally "real" and not complex. But there is no sufficient reason for real numbers to be privileged over imaginary numbers (and hence complex numbers). It's simply human prejudice and ignorance that causes imaginary numbers to be treated as unreal.

Orthogonality

When two entities are mutually perpendicular, they are said to be orthogonal. Orthogonality is one of the most important features of mathematics. All coordinate axes are orthogonal. Any two things which, when multiplied together, give a result of zero, are also defined as orthogonal. Remarkably, all waves are orthogonal to each other. If two sinusoids do not have the same frequency then the integral of their product is zero. When a sine wave is multiplied by a cosine wave and the result integrated, the result is always zero. If a wave is multiplied by itself and the result integrated, the result is *greater* than zero.

These properties of waves are incredibly valuable because they allow many apparently awkward terms to be eliminated by the simple expedient of multiplying them with something orthogonal to them.

Just to emphasize: ALL NON-IDENTICAL WAVES ARE ORTHOGONAL TO ONE ANOTHER. So, somehow, it as if we have infinite waves all at right angles to each other.

Just as the imaginary axis is at right angles to the real axis, so the frequency axis is at right angles to the time axis, and the spatial frequency axis at right angles to the space axis. In human terms, it might seem ridiculous that we can keep adding orthogonal axes relating to all manner of different things. Where, physically, do all of these orthogonal axes go? Yet again, we are thinking in human rather than mathematical terms. To a mathematical mind, orthogonal axes can be added indefinitely: there are no restrictions at all.

In physical terms, we might imagine all sorts of orthogonal axes superimposed on one another. Mathematically, it's no problem, even if it's hard for our minds to visualize. How do we envisage the six axes of the six-dimensional universe – three real axes and three imaginary axes? For convenience, we can imagine the three imaginary axes sitting directly on top of the three real axes. The crucial point is not to allow the limits of the human imagination to dictate what is and is not possible. The mathematical mind is the judge. Even the M-theorists do not hesitate to speak of 11-dimensional universes. In their case, they are happy to roll up dimensions so that you can't see them, but they still insist on some kind of human rather than mathematical reality to dimensionality. They roll up the dimensions because they can't think of any other way to fit them into a "real" universe of real numbers. Illuminism suffers from no such defect. There are no rolled up dimensions, only orthogonal dimensions.

In fact, our six dimensional universe is technically incomplete. It requires another six dimensions: three frequency dimensions and three spatial frequency dimensions. In other words, we need to add the Fourier transform universe to the "normal" universe, and superimpose them one over the other. But given that these six new dimensions are in some sense derived from the original six, can we truly regard them as additional dimensions? Moreover, we can regard the imaginary dimensions as ninety-degree rotations of the three real dimensions, or vice versa. Therefore, we might say that there are only really three dimensions, and we can derive new sets of dimensions from these by performing mathematical operations, such as multiplying by the imaginary number OR inverting them, or multiplying by an imaginary number AND inverting them, or squaring them or taking the square root, or indeed any other valid mathematical operation. The universe must remain stable under any such transformation. No matter what operation we apply to our mathematical universe, it must remain mathematically complete. This is one of the key meanings of the expression "complete mathematics", the foundation stone of Illuminism.

To be even more exact, we don't actually need any dimensions at all. The universe is technically ZERO dimensional. It's an eternal Singularity.

Pythagoras declared that all things are numbers. All of these numbers can be considered implicit within a zero-dimensional mathematical point. By placing all of the numbers side by side in order, we can create a one-dimensional number line. By ninety-degree rotation we create a second axis

(two dimensions) and by a second ninety-degree rotation at ninety degrees to the first and second axes, we create a third axis. We can them perform various other mathematical operations on these dimensions to derive new dimensions – as many as we desire for whatever purposes we desire. Ultimately, everything comes from numbers and the operations that are performed on them, so Pythagoras is triumphantly vindicated.

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If we say there are six spacetime dimensions and six frequency dimensions, making a total of twelve dimensions, we can then double this number to 24 if we want to reflect the extra fermionic dimensions discussed in a previous section about a supersymmetrical *superspace*.

Goldilocks

The reason for the "Goldilocks universe" – where the values of all the physical constants seem to be exactly right for our existence – is that they are all derived in *exactly the same way* (via Fourier transforms and other mathematical relations).

These constants are not in any way arbitrary: they *must* have the values they have. Scientists play thought games with adjusting these constants and simulating what the effects are (such as changing the strength of gravity, or changing the speed of light, or whatever). While it might seem as though such adjustments correspond to some sort of alternative possible reality, there are NO alternative realities. All constants are fixed permanently by the mathematical features of the universe. They are all designed for life – *for us* – because mathematics is alive.

The Planck constant is not something that arbitrarily has its particular value. It is an ontological consequence of ontological Fourier mathematics. It can't have any other value.

Windows

Various techniques are used to make Fourier transforms more flexible. The "windowed" Fourier transform is one method, and there is growing interest in an extension of Fourier analysis known as "wavelets".

We suggest that something such as wavelets would be a much better

approach to finding a scientific grand unified theory of everything than M-theory, which is conceptually fallacious from the outset.

John Cramer's Transactional Interpretation

The de Broglie-Bohm interpretation involves nonlocal instantaneous connections across space. In Illuminism, this nonlocal aspect reflects the mental Singularity that stands at the centre of existence and connects everything.

If a valid description in terms of space can be provided, so, by a principle of equivalence, can one in terms of time. John Cramer's *Transactional Interpretation* fulfils that role. Here, nonlocal instantaneous connections across time are described.

Spatially, all distances are zero in the mental Singularity, i.e. everything is spatially connected. Temporally, no time passes since all clocks tick infinitely slowly, i.e. everything is temporally connected.

It makes perfect sense for there to be two complementary approaches to analysing quantum mechanics: one based on the mental Singularity considered in terms of space and one in terms of time. Both are in fact equivalent although they may seem very different. They are simply coming at the same problem from the alternative perspective.

We assert that the two best approaches to understanding quantum mechanics are the de Broglie-Bohm pilot wave interpretation (based on space) and the Cramer Transactional interpretation (based on time) involving a transaction between an "advanced" and a "retarded" wave, one seeming to go backward in time and another forward in time, but both actually happening in so-called "pseudo time" where time doesn't actually pass at all. They must be understood in terms of the mental Singularity outside space and time, of course.

The mental Singularity is the true key to quantum mechanics.

Madness

Quantum guru Niels Bohr said, "There is no quantum world. There is only abstract quantum physical description. It is wrong to think that the task of physics is to find out how nature is. Physics only concerns what we can say about nature."

This sums up the desperate character that science now has. To make a statement that physics is only about what we can say about nature is to make our senses, our vocabulary, our perceptions, our human thought processes the determinants of "reality", i.e. it anthropomorphizes the universe and makes science into a Mythos, like religions of faith.

Bohr is 100% wrong. The task of physics is *precisely* to find out how nature is – as an objective reality independent of human beings and human perceptions. Only one rational language allows us to transcend our human condition, and that's mathematics. Mathematics can be performed by any alien species, with radically different senses and perceptions from those of humans. We can all agree on a single reality mathematically, but not through any other means.

Bohr and Heisenberg managed to turn physics into a subjective absurdity, and the science community failed to stop them. Einstein and Bohm resisted the tide, but were ignored or actively mocked for doing so.

Never forget that science does not *have* to be empiricist, positivist and materialist. These are philosophical choices that the scientific establishment has made, and they have turned science on its head. Until the twentieth century, all scientists believed they were discovering how nature really is. They didn't believe they were engaged in an exercise of subjective opinion, tenuously based on mathematics (the status of which has never been formally defined by science – is it subjective or objective?).

Science has turned itself into a faith-based religion, and scientists don't seem to have noticed. John Bell, the discoverer of the famous Inequality Theorem, was the last true scientist, the last to accept objective reality and to think that we could gain real knowledge of it.

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The various interpretations of quantum mechanics are all, at a deep level, actually the same, which is not surprising since they are based on exactly the same mathematics. Each approach simply exaggerates one aspect of the mathematics and then mistakenly interprets it in terms of standard scientific ideas such as determinism, empiricism, positivism, absence of mind, absence of free will etc.

Once quantum mechanics is understood to have a mental Singularity at its core, it becomes much easier to see that all of the different interpretations are really the same.

Let's sum up quantum reality. Strictly speaking, there are three domains. The first is the space domain (based on real numbers) and the second is the time domain (based on imaginary numbers). These two domains are orthogonal to one another and create the familiar space and time domain of the material world. Time and space are fused into a single dynamic system (spacetime). If spatial lengths contract then times expand, and if spatial lengths expand then times contract. These linked, dynamical adjustments ensure that the maximum speed of the universe – the speed of light – remains invariant. As length contracts to zero, time expands to infinity (clocks don't tick at all). As length expands to infinity (i.e. rulers can't measure at all), time contracts to zero (clocks tick infinitely quickly).

There is a third domain where, mathematically, real and imaginary numbers are exactly matched and cancel each other out, meaning that all distances are zero, i.e. everything is located at the same point (a Singularity), at which no physical time passes (or alternatively passes at infinite speed if distance can be said to have "stopped"). So, we have a spacetime material domain based on the ontological separation of the real (space) and imaginary (time), and a non-space, non-time mental Singularity where the real and imaginary ontologically cancel each other.

In other words, complex numbers are the key to everything. Remember that a complex number is defined as a + bi (e.g. 4 + 3i). Consider the complex number 3 + 3i. What is the distance between the origin and the complex point (3, 3i)? If we allow real and imaginary numbers to be immiscible (i.e. they can't mix ontologically) then the distance between the origin and the point cannot be calculated using a straightforward application of Pythagoras's Theorem (it's like trying to add apples and oranges) and the trick of "absolute values" has to be invoked, as discussed in the next section.

If we allow them to be miscible (i.e. they can mix) then we can apply Pythagoras's Theorem and we get the astonishing result that the distance between the origin and (3, 3i) is ZERO.

Thus, we have two complex domains: one physical (the real and imaginary components of complex numbers don't mix) and one mental (the real and imaginary components of complex numbers do mix; though we have to describe a complex number in this case as (a, bi) rather than a + bi).

In the example of a complex plane involving one real axis and one imaginary axis, the immiscible situation corresponds to the imaginary axis being orthogonal to the real axis. The miscible situation corresponds to the

creation of a new complex axis at 45 degrees to the other two. This new axis has the extraordinary property that all distances along it are zero. If we now define another complex axis orthogonal to the first, we can construct a coordinate system in which we can reach any point from any other without travelling any distance (all distances are zero).

We might say, then, that the "mental" domain in this complex plane is at 45 degrees to the "physical" complex domain. The latter domain is the conventional physical world of science, and the former domain is the informational, mental channel where everything is connected instantaneously (thus immediately explaining the EPR paradox).

Is it not wondrous? Is mathematics not divine?

Absolute Values; Polar Coordinates

We have shown how it's possible to use Pythagoras's Theorem to produce, astoundingly, a zero-distance result between two separate points. As you would expect, mathematicians and scientists obsessed with "real" numbers avoid using this technique. Instead, what they do is use "absolute" calculations. In mathematics, the absolute value (or modulus) | a | of a real number, a, is the numerical value of a without regard to its sign (and thus – magically – inconvenient, "unreal" negative numbers are abolished!) In terms of the complex plane, "polar coordinates" are used to perform absolute operations. Wikipedia says:

"Another way of encoding points in the complex plane other than using the x- and y-coordinates is to use the distance of a point P to O, the point whose coordinates are (0, 0) (the origin), and the angle of the line through P and O. This idea leads to the polar form of complex numbers.

The absolute value (or modulus or magnitude) of a complex number $z = x + yi$ is

$r = |z| = \sqrt{(x^2+y^2)}$

If z is a real number (i.e. $y = 0$), then $r = |x|$. In general, by Pythagoras's theorem, r is the distance of the point P representing the complex number z to the origin."

Does it not take the breath away how many tricks mathematicians and scientists use to avoid confronting negative and imaginary numbers? It truly

is an intellectual scandal. It's time to stop using absolute values all the time, and see what happens when negative and imaginary numbers are given full rein. Immense ontological vistas are being wiped out by "absolute values".

The Frequency Domain

Yet there's an alternative mathematical way to look at the relationship between the physical and mental domains. The physical domain is composed of space and time where complex, composite functions can come into being. The mental domain is, on the other hand, mathematically orthogonal to both the space and time domains and comprises a temporal frequency and spatial frequency domain. The mental domain is composed of pure, unmixed, eternal Platonic basis functions outside space and time. The physical domain is where the basis functions can be combined in space and time to create composite functions.

This frequency domain (mental domain) provides the Fourier transform of the space-time domain. All Fourier transform relations are associated with an inherent constant of uncertainty, originating in the fact that, in one domain, signals are inherently infinite and in the other they are finite to all practical intents and purposes. This is an absolutely crucial point. Basis waves, each with its own unique frequency, are eternal Platonic entities. Complicated functions – composites of basis functions – exist in space and time and our ability to analyse them is inherently limited since we can't monitor them forever. Even though we can say that such functions have an infinite period, we can't ever verify this. We can only ever assume it and take a sample of it. From our sample, we hope to gain knowledge of the complete function over infinity, but in practice there will always be uncertainty. And if there is uncertainty on one side of the Fourier transform them it must be reflected on the other side too.

In short, ontological uncertainty comes from a collision of unmixed eternal basis functions and composite functions that can be analysed only over a finite period: it's an archetypal clash of the infinite and the finite, of the immortal and mortal.

The Fourier frequency domain – being outside space and time – is a Singularity (and bear in mind that EVERY monad contains infinite frequencies, and there are infinite monads within the mental Singularity). The Singularity effortlessly expresses every possibility about how the material universe in space and time will evolve.

Only *one* reality can actually be expressed in the material universe (objective reality), so all of the infinite possibilities that exist in the mental domain must collapse into a single reality.

Human beings are perfect examples of the quantum process. At any time, we could choose to do many different things, but when it comes to it we can actualize only one of our choices and must discard the alternatives – which are then gone forever. We can't go back and make a different choice. Nor does the physical world branch into alternative universes to allow all of our potential choices to actually happen, nor do we generate infinite different consciousnesses where all of our possible choices can be enacted. No, we CHOOSE, and the universe chooses too. Only one reality actually happens and all the alternatives vanish.

The Fourier domain of frequencies, the Singularity where everything is connected, is the cosmic mind, and the space and time domain is its body. The mind chooses the reality that the body experiences, just as we use our mind to choose what we will do with our body.

Of course, all entities in the universe are linked. None of them can operate independently. Everything is connected and everything affects everything else. In other words, the Singularity is a mind-bogglingly complex arena where an infinite number of coupled equations are being solved simultaneously. To use Leibniz's term, only some solutions are "compossible", i.e. many possible solutions are exceptionally improbable and are discarded. The universe always performs in the most probable way requiring the least action. We ourselves could do many extremely improbable things with our lives, but almost all of us just follow the path of least resistance and behave entirely predictably, as little more than programmed human machines. *As above, so below.*

The universe, by and large, operates like a scientific machine controlled by predictable scientific laws. Only as more and more consciousness evolves in the universe does it become increasingly probable that the universe will operate in a non-machine like manner. Animals are highly instinctual and don't exercise any conscious choices. Most human being are little more than animals and also behave instinctually, with precious little consciousness. Only a small number of human beings are truly conscious and they are the ones who perform the great wonders of existence. They are the Leibnizes, the Leonardos, the Pythagorases, the Hegels, the Michelangelos, the Goethes, the Byrons, the Einsteins. The gap between such people and the ordinary masses

is akin to the gap between a human and an ant. Some human beings are effectively Gods in relation to the common herd of humanity. The Gods are those who shape the destiny of humanity and even the universe.

Einstein Podolsky Rosen (EPR) Paradox

One of the clearest experimental proofs of nonlocality (hence mind) is contained in the so-called EPR paradox. This concerns the phenomenon of entanglement where events are instantaneously correlated despite being separated by potentially infinite distance, in contradiction of Einstein's rule that no physical transfer of information can take place faster than the speed of light. Einstein referred to "spooky action at a distance" in relation to the paradox. He believed this paradox would demonstrate that something was fundamentally wrong with quantum theory. In fact, there is no paradox: quantum mechanics is right and Einstein is wrong. Nonlocality is a genuine property of the universe, and, although scientists refuse to concede the point, nonlocality unarguably demonstrates the existence of a universal mental domain in which everything is connected. Scientists cannot acknowledge nonlocality as mind because it would destroy their materialist paradigm and open the gates to an idealist model which overturns scientific dogmatism.

The Correspondence Principle

The Correspondence Principle states that the results of quantum mechanics must give rise in due course to the conventional classical physics results, i.e. as we scale up from the microscopic quantum world to the macroscopic classical world, the familiar classical results must appear from the bizarre quantum substratum. There can be no disjunction between the two.

Strangely, no scientist ever considers an equivalent correspondence principle in relation to life and mind. Shouldn't there be a theory of life which underpins the classical domain of biology, i.e. shouldn't there be a "quantum mechanics of life" that in due course generates classical biology? In exactly the same way, shouldn't there be a "quantum mechanics of mind" that gives rise to classical psychology?

Isn't it odd that scientists acknowledge the need for a correspondence principle *except* where life and mind are involved? Then, all of a sudden, these miraculously "emerge" from non-life and non-mind.

In terms of quantum mechanics, scientists' attitude to life and mind would

be equivalent to arguing that classical mechanics suddenly appears ("emerges") at a certain threshold but has no obvious or necessary relation to any quantum mechanical properties.

In fact, the whole of classical physics must be obviously contained within the quantum mechanical paradigm or it cannot be valid. More than that, life and mind must also be present in quantum mechanics because where else would they come from? So, quantum mechanics, or the basic theory of existence to be more precise, must be able to give rise to classical physics, chemistry, biology and psychology. Leibniz's Monadology achieves all of these tasks! No scientific entity does. 1D strings certainly won't provide any answers.

The Organ Grinder

Science would be a joke without mathematics. Mathematics without science would remain as imperious as ever. Which is the monkey and which the organ grinder? So why do people believe in a scientific universe and reject a mathematical universe? "Science" is just a loose collection of ad hoc hypotheses, held together by mathematics. Why not just get rid of the ad hoc, provisional, contingent science and leave the analytic, *a priori*, necessary mathematics? One is eternally true and one is only as true as the last experiment. Isn't it time to put irrational, empiricist science in its place?

The Soul

According to Abrahamists, God made man in his own image. Therefore, only humans have souls. (Actually, there was some debate in Abrahamic circles as to whether Adam alone was created in God's image, hence only men had souls – and women were soulless and Satanic, the source of evil and temptation, like Eve.)

According to Darwinism, humans have an ape ancestor, and apes definitely weren't created in God's image. Therefore, no one has a soul and there is no God. (Darwinism goes hand in hand with atheism.)

According to Illuminism, ALL creatures have souls. In fact, the basic unit of existence itself is the soul (the monad). We live in a soul universe and the whole purpose of existence is to maximise the potential of souls. Human beings possess more advanced souls than animals, but it's simply a difference of degree, not of kind. Apes will acquire human souls when they reincarnate

in the human domain. Animals that can recognise themselves in mirrors (the "mirror test") are those that will reincarnate as humans next time round.

The God of Gravity

Newton stated that God was the immediate cause of gravity, and space was God's body. Funnily enough, you don't hear too many of his scientific admirers and worshippers repeating this view. The scientific establishment treats Newton as though he were an honorary atheist. In real life, of course, he was an Apocalyptic religious fanatic, mystic and maniac.

Infinite Versus Finite Beings

We are all infinitely long-lived, yet our experience of life is as an endless sequence of finite, mortal lives (via reincarnation). The sequence can terminate only when *gnosis* – enlightenment – is attained.

Living Atoms? Soul Atoms? The Mind of the Atom? The Quantum Mind?

We should not consider atoms as purely physical. They are mental as much as physical. Like humans, they are body and mind. In terms of wave-particle duality, body is that part that we call "particle" and mind is the wave part. The mental wave guides the physical particle, just as our minds guide our physical bodies. We are body and mind, and so are the atoms of which we are made. *As above, so below.* What could be more straightforward and obvious?

The material world is the world of space and time. The mental world is its Fourier transform: the domain of frequency. Frequency – an inherently wave characteristic – is the basis of mental activity.

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Schopenhauer was insistent on the importance of music and asserted that it was an immediate copy of reality itself. Given that music is based on waves (sound waves), it automatically reflects many characteristics of mind. It conveys emotion (a mental experience) and, if we were so inclined, we could actually make it into a spoken language (another archetypal mental expression) by using musical notes as an alphabet.

Superposition

Superposition is one of the fundamental principles of quantum mechanics and permits the adding together of states that in classical physics would be mutually exclusive. Of course, superposition is the type of phenomenon that we would associate with mind. Our thoughts are a superposition. We can be humming a tune, thinking of quantum mechanics, checking out someone, yawning, worrying about a medical appointment and so on … all at the same time. Orwellian "doublethink" is a superposition of contradictory ideas, with both ideas simultaneously being held to be true.

Wavefunction collapse is another central feature of quantum mechanics. It is defined as a discontinuous change in the wavefunction occasioned by an act of measurement. But isn't making a mental choice none other than a collapse of a wavefunction too? After all, we select one just possibility from a superposition of possibilities.

The Largest Atom

Caesium is regarded as the largest atom, with a size of 0.000000005 cm. The incredible smallness of this number shows that treating any atomic-scale particle as a dimensionless point will certainly provide a good first approximation.

What is an atom anyway? Is it a valid "thing" in its own right or is it a mathematical combination of subatomic functions belonging to even more point-like particles such as electrons, protons and neutrons? Of course, we can further decompose protons and neutrons into quarks, and if we take string theory seriously, we can trace back everything to unimaginably small 1-dimensional string loops. What order of size are these?

0.0000000000000000000000000000001 cm across!

So, string theory is really a means of getting as close as possible to a point-particle representation of reality, but stopping marginally short of such a depiction in order to avoid the difficulties of zero-dimensional entities. Imagine calculus where all calculations stop marginally short of the calculus limit, for no discernible reason other than ideology or ease of calculation. Could we take calculus seriously if we could not extend it all the way to the final limit? Differential calculus is about measuring the tangent line to any given point on a curve. Note the definition: the task is not to measure the tangent of a tiny but finite region of the curve – you have to go the limit, to

the dimensionless point itself. How can it be valid to stop short?

Philosophically and mathematically, it's ludicrous for string theorists to posit 1-D loops rather than dimensionless points as the "true" limit of calculus. The whole conceptual basis of calculus collapses if we can't go all the way down to a dimensionless point. Scientists, such is their hatred of zero and infinity, would prefer to sacrifice calculus as the primary tool of investigating reality rather than abandon their materialist ideology of finite things. Yet, they happily go on using calculus because, apparently, they haven't yet grasped that calculus makes sense only in terms of a reality based on dimensionless points.

Leibniz, the discoverer of calculus, didn't arrive at his Monadology – treating reality as an infinite collection of dimensionless points – by accident. The Monadology and calculus are inseparable. It's impossible to have a true calculus in a non-monadic system such as 1-D strings.

This question of what calculus implies about reality is critical. Given the astounding success of calculus – there has never been any greater tool for uncovering the secrets of existence – Leibniz understood that the metaphysical and physical basis of reality *must* be compatible with calculus. Unlike Newton who used his version of calculus merely as an instrument, Leibniz, a philosophical genius, knew that calculus went to the heart of reality and that any valid description of reality must be consistent with calculus.

The simple fact is this: monads (mathematical points) are completely consistent with calculus and 1-D string loops are not. There is nothing in calculus about stopping at some arbitrary finite limit in order to preserve materialism and avoid zero and infinity. Calculus is based on zero and infinity, not on their avoidance.

Calculus, more than anything else, reveals reality to us. If understood correctly, as it was by Leibniz, it reveals the truth that idealism and not materialism is reality. Calculus is showing us that we have to embrace zero and infinity. As Descartes pointed out, the domain of non-extension, of zero dimensionality, is the domain of thinking substance – of mind. Leibniz grasped that calculus was showing that reality was grounded in dimensionless mathematical points, which were none other than Cartesian minds.

Leibniz's Monadology, understood in its simplest form, is nothing but calculus combined with the Cartesian definition of the mental domain. Here we see an astonishing synthesis of mathematics, science, philosophy, religion

and psychology – a true grand unified theory of everything. As soon as you bring mind and calculus together, you have solved the problem of existence. You have put the mental domain on a mathematical footing. You have turned religion into mathematics. You have united physics and metaphysics.

The first true insight into the nature of reality was that of Pythagoras when he declared that numbers were the key to everything. Leibniz completed Pythagoras's vision when he showed exactly how numbers determine reality. Monads are the fundamental units of existence and calculus is the staggeringly powerful mathematical instrument that logically flows from a world of monads. The energy flowing from monads is governed entirely by calculus. Euler's Formula assumes its immense Fourier power in the context of calculus.

Everything in this worldview makes perfect sense. Everything hangs together. There are no fundamental contradictions. The same cannot be said of string theory. Its explicit purpose is to abolish zero and infinity because these numbers are not compatible with materialism. Has there ever been a more absurd theory than string theory? It's not motivated by any desire to arrive at ultimate truth, but simply to allow physicists to perform calculations that don't run foul of division by zero – because materialists have no conception of zero as an ontological reality and have no idea how to interpret division by zero in terms of materialism. Rather than abandon materialism – the logical thing to do – they have declared zero to be somehow forbidden by reality.

EVERYTHING comes down to zero in the end. Is it ontologically real or not? Materialists deny the existence of ontological zero so they claim in effect that calculus is a pure abstraction that is invalid in the limit, that mathematics as applied to reality is missing certain numbers (zero, infinity, negative and imaginary numbers) and that science and mathematics are therefore radically different (for reasons that they do not give). They do not explain why an empiricist subset of mathematics corresponds to reality and the rest of mathematics is unreal.

In Illuminism, all numbers have ontological reality, zero is the basic building block of existence, and calculus is absolutely sound when it goes all the way down to the dimensionless point.

Illuminism contains no bizarre contradictions; scientific materialism is full of them. More and more, it seems that scientific materialism is a strange religion waging a bizarre war against zero because this is the defining number

of idealism – of mind, of SOUL.

Scientists maintain that the laws of physics fall apart at singularities – because these materialist laws cannot enter the domain of zero and infinity. Why don't scientists try to understand zero and infinity rather than re-writing the laws of physics to avoid singularities?

In the "no-boundary hypothesis" of quantum cosmology, Hawking and Hartle redefine time (via imaginary numbers) to make it the same as space, thus rendering the concept of a beginning in time meaningless. Therefore, the Big Bang doesn't take place and there is no singularity because these are time-defined and time has been deliberately removed from the equation. There is no boundary in this universe; the universe becomes like the globe of the earth – you can keep circumnavigating forever without falling off any edge. If you reach the North Pole, it's not a singularity, it's just another point that you can cross (and you will then start heading south).

Hawking and Hartle get rid of the singularity by getting rid of time, or, rather, by making it the same as space. If time exists then space can be said to begin at a definite time via a singularity. If time does not exist then space cannot begin in time and must always exist in some fashion and there can be no singularity.

But what is the motivation of scientists like Hawking and Hartle? Why are they trying to get rid of the Big Bang, time and singularities? It's purely so that they can avoid zero and infinity and defend materialism. They are not scientifically but ideologically driven. Their materialist beliefs are dictating how they think about the universe and how they seek to define it mathematically. If they subscribed to a different paradigm, they would never have pursued the path they have. They are trying to make mathematics conform to their beliefs rather than following mathematics on its own terms with no ideological preconditions. These people are little short of religious zealots, except their religion is materialism and empiricism.

It transpires that Hawking and Hartle couldn't be more mistaken. The existence of a PERMANENT singularity is essential to the way the universe functions. That singularity is the mind domain that holds everything, including physical reality, together.

Science will not countenance the existence of mind as a non-materialistic phenomenon and, precisely because of that, it will never arrive at a grand unified theory of everything. But, fortunately, such a theory already exists – it's ontological mathematical Illuminism.

Continuous Versus Discrete

Is it true that nature makes "jumps"? Is that what quantum mechanics tells us? Or are the apparent quantum leaps actually disguising an underlying hidden function that is always continuous?

Imagine drawing any function. You take a pencil and place it at a single point defined by a number of coordinates depending on the dimensionality of the space you are dealing with: a 6D space requires 6 coordinates. You then move your pencil to the next point and keep going. At what point does or can the function become discrete (i.e. where a continuous line is replaced by a sequence of lines or points with gaps between)? Is it possible for nature to make jumps, to leave gaps and discontinuities? If such a thing were possible, wouldn't it be tantamount to saying that there are patches of non-existence everywhere? That would be absurd, and it would contradict the reality principle guaranteeing the existence of objective reality.

So, what does a "quantum leap" mean? It means that an electron, for example, is at one time restricted to a certain range of realistic possibilities as to where it might go next, and at a later time it is able to operate in a very different range of realistic possibilities (corresponding to a different electron orbital).

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It's often said in quantum mechanics that energy is quantised, i.e. comes in discrete little packets called quanta. In fact, this is a serious fallacy. Energy is actually continuous. What *is* quantised is the Fourier relationship between energy and space and time (thanks to the Fourier constant of uncertainty). The effect of this is to make it seem as if energy cannot be introduced continuously into any system, but only via discrete quanta. Actually, it's the whole system that's quantised: energy-time-space.

While we might loosely say that energy is quantised, this does not mean that a particle makes any kind of discontinuous jumps through space and time. It means that when the particle absorbs or emits a quantum of energy, it finds itself moving within a different range of probabilities, but it's still moving continuously and not discretely.

Of course, particles aren't actually absorbing energy at all. The true reality is that of a mathematical function in space and time and a mathematical function in Fourier space, constantly interacting with each other. It's only AS

IF particles absorb energy. The whole thing is merely a mathematical operation.

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The biggest question in the development of quantum mechanics was the nature of the waves that the Schrödinger equation described. Where they *matter waves*? Were electrons, for example, smeared out in some wavelike fashion? Physicist Max Born came up with the now mainstream answer that they were *probability waves*, but these were very strange probability waves because they covered the whole universe (potentially infinite in scale).

Physicists never stopped to ponder how a wavefunction could have a probability that stretched across the entire universe. Also, this wavefunction would mysteriously collapse when a measurement was made and suddenly there would be a 100% probability that a "particle" would be at a certain position. Does that sound like science or voodoo?

If something isn't material then the traditional alternative is that it's mental. Thus, if we can't have matter waves, why not mental waves? But that's the one thing that scientists can't countenance. There's nothing odd about a mental wave stretching across the universe (because it's outside space and time) or about it collapsing (because that simply corresponds to a mental selection).

What do we know that is probabilistic? – our own behaviour! We choose from amongst a range of options we have generated, and some choices are more probable than others. As soon as probability rather than determinism enters the equation, it implies mind. Why would matter, left to its own devices, behave probabilistically? Would a programmed robot behave probabilistically? Obviously not. So why would a particle programmed by the deterministic laws of physics behave probabilistically? "Probabilistic behaviour" is just another way of talking about mental behaviour.

Probabilistic quantum mechanics is all about mind: about mental energy controlling material particles.

Quantum Tunnelling

One of the most radical differences between classical and quantum physics is the phenomenon of "tunnelling" whereby quantum particles arrive at destinations that would be forbidden classically. Imagine giving a small ball a

push towards a little mound you've constructed. If you gave it enough of a push, it will get to the top of the mound and roll down the other side. If you didn't, it won't get to the top and will roll back towards you. Classical physics is very clear about this. Either a particle has enough energy to cross a barrier, or it doesn't. Any particle with insufficient energy will never appear on the other side of the barrier.

In the quantum world, things are rather different. There is a measurable probability that a quantum particle can appear where no classical particle could. This is conventionally explained in terms of the energy-time version of the Heisenberg uncertainty relation, which allows extra energy to be borrowed as long as it is paid back very quickly. It's like a turbo booster. You (as a particle!) get a whoosh of energy to allow you to cross a barrier and then you pay it back as soon as you're on the other side. Since you have "cheated", it's as if you have tunnelled your way to the other side rather than going by the legitimate route.

That's only way of accounting for tunnelling. There is another possibility: that of actual tunnels through space. A particle doesn't need to borrow and then repay energy to cross a barrier if it can literally tunnel under it. In the world of the mental domain where real and imaginary numbers are in opposition to each other and can create "zero" paths by cancelling out each other, these can be used as "tunnels" through conventional space and time as we normally experience them. A particle can vanish through one of these spacetime tunnels and pop out somewhere else instantaneously. It hasn't borrowed any energy: it has simply found a tunnel allowing it to appear on the other side of the barrier. What we have described are akin to spacetime wormholes. These are accessible only to point-like entities and not to human-sized objects.

Wave Function Collapse

When a measurement is made on a quantum system, the system's wavefunction is said to abruptly and discontinuously collapse. Since this implies that measurement is a prerequisite for reality to unfold, it's highly contentious, yet it's certainly true that *nothing within the orthodox theory brings about the collapse*, so something external must be invoked.

Rationally, wave functions don't need to wait for any measurements. Objective reality doesn't go into a state of suspension while it waits for someone to perform a measurement or observation. How did the Big Bang

ever achieve anything if it needed observers, of which there were of course none!

Rather, the wavefunction for every particle is being continuously collapsed ("collapse" simply means leading to definite objective state rather than some fuzzy probabilistic reality). Definite things are at definite places in space and time. The superposition of states belongs to the mental domain outside space and time. So, as soon as physical reality adjusts itself to a new state as it evolves in space and time, the mental superposition of possible future states for physical reality INSTANTANEOUSLY resets itself to reflect the new state of objective physical reality and presents a new wavefunction, which is again immediately collapsed (but reality has of course by now moved on by an infinitesimal time period). The wavefunction again reforms itself to reflect the new objective reality, and so on ad infinitum. Nothing is ever trapped in any ghostly, twilight state. Physical and mental reality are hardwired together and continually feeding back to each other. Wavefunctions are continually collapsing and resetting. There are no gaps in this process. There is an existential plenum. There's no blurry limbo with existential holes in it.

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"If we're ever going to find an element of nature that explains space and time, we surely have to find something that is deeper than space and time – something that itself has no localization in space and time." – John Wheeler

Exactly so, and mathematical mind is that thing. It's amazing that many scientists have intuited the right answers and made bold and radical suggestions – then talked themselves out of it when it came to publishing scientific papers, which always reflect the establishment Meta Paradigm.

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"Could I turn to the subject of cosmology, because these days there's a great deal of interest in applying quantum theory to the entire universe. And there we run into a severe interpretational problem because if the entire universe consists of everything including observers, we have a difficulty with how a measurement of the quantum state of the whole universe can ever be made." – Paul Davies

This is a crucial point. It must be valid to apply quantum theory to the whole universe if it is a universally applicable theory. However, if this is done then there is nothing in the mainstream theory to collapse the wavefunction. Therefore, it logically *cannot* be the case that any observer is needed to collapse the wavefunction. Therefore, the mechanism for collapsing the wavefunction must be built into the universe, exactly as we have described. Wavefunction collapse has absolutely nothing to do with observers.

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"Anyone who is not shocked by quantum theory has not understood it." – Niels Bohr

"According to Bohr's interpretation [of quantum theory], the existence of the world 'out there' is not something that enjoys an independence of its own, but is inextricably tied up with our perceptions of it." – J. R. Brown

Indeed! This is what science has become. It's now the vindication of the idealist philosophy of Bishop Berkeley – although it doesn't realize it because no scientist has ever heard of Bishop Berkeley (since they're all philosophical ignoramuses).

Quantum Theory

This is the most successful and powerful scientific theory ever. It has been said that for the last sixty years, no experiment has contradicted the predictions of quantum mechanics. Any system of thought that wishes to be taken seriously must account for quantum theory and its extraordinary and counterintuitive features.

Abrahamism, without a single reference to quantum theory (nothing prevented "God" from describing quantum theory in his "sacred" books of revelation – so why didn't he?) is exposed as a set of beliefs for unthinking dummies. Today, Abrahamic theologians should be preoccupied with nothing else other than explaining how quantum theory is consistent with God's creation. Of course, none of them makes any attempt at this at all. We all know why: a) they're too dumb, b) everyone knows that Abrahamism and science are 100% irreconcilable, and c) theologians are interested only in Mythos power over suckers, not Logos power where any intellectual can challenge them. You can't ever be "wrong" when you're talking about a

belief system. There's nothing substantial to be wrong about since nothing true is ever asserted.

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Charged particles moving in curved paths should radiate electromagnetic energy according to conventional electromagnetic theory. So, why don't electrons radiate away their energy and collapse into the positively charged nucleus to which they are electrostatically attracted? What holds atoms together? Why aren't they unstable?

In fact, it's the Heisenberg uncertainty principle that ultimately governs atomic stability (ably helped by the Pauli Exclusion principle). Planck's constant is the constant associated with the Heisenberg Fourier relation. This places a finite limit on the amount of energy that an electron can radiate away. It will reach a non-radiating "ground state" lower than which it cannot go unless subjected to incredibly powerful forces associated with the interiors of suns, or black holes. It is Planck's constant (inherently linked to the Heisenberg uncertainty principle) that keeps the world together, that stops processes running out of control and going into death spirals, that establishes stable limits and ground states.

Full electron "shells" around nuclei contain two electrons of opposite spin. No additional electron can be fitted into a full shell thanks to the Pauli Exclusion Principle and must enter a new unoccupied shell, of a higher energy. Thus we see that the atomic world – as regards electrons orbiting nuclei – is all about Fourier mathematics, the Heisenberg uncertainty principle, Planck's constant and the Pauli Exclusion Principle. The whole of chemistry is derived from these few mathematical principles. In which case, why do we need science?

We could, if we so wished, provide a purely mathematical description of chemistry. Science is just a "user-friendly" version of mathematics where we attach labels such as "electron" or "atom" to mathematical entities, and where we use expressions such as positive and negative charges, attraction and repulsion, to describe mathematical relations. In the end, it's all pure mathematics. If we could really *see*, we would observe only endless mathematical functions flowing in an out of each other and being adjusted by mutual feedback loops as they did so. That's it. That's all that's going on.

Jim Al-Khalili provides an excellent metaphor for the Heisenberg uncertainty principle. Imagine two digital files of the same size. One is a high resolution still of a table on which snooker balls are moving. We can see where the balls are at an instant, but have no idea of how they move. The other is a video clip showing the balls moving, but, in order to show the extra frames depicting movement, the video's resolution must suffer since it's trying to cram into a number of frames the same amount of data that was in just one high resolution still frame (remember that the movie and still frame have the same file size). So, the movie becomes blurred. We gain information about movement, but lose positional precision. The more we know about where something is, the less we know about how it's moving. The more we know about how it's moving, the less we know about where it is.

Spacetime

How do we get something to change from moving through time to moving through space? If we begin with a pure time wave (in imaginary space; a sine wave), what we do is start adding spatial waves (cosines) to the wavefunction. As we increase the real energy of the particle in space (we make the particle go faster), we add more and more high frequency spatial waves to the mix. If we want a slower particle, we add lower frequency spatial waves.

By the time we have created a pure spatial wavefunction, we have completely removed all imaginary waves (sines) from the mixture. Similarly, a time wavefunction contains no real waves (cosines).

We now see how easily the whole system works. It's all about mixtures of real and imaginary waves (cosines and sines) of different spatial and temporal frequencies (different energies). We can speed things up by adding high-energy waves and slow them down by adding low energy waves.

Notice what else we have done: we have brought quantum mechanical wavefunctions right into the heart of Einsteinian relativity.

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Movement through real space = spatial velocity.

Movement through imaginary space = temporal velocity.

An imaginary particle with zero imaginary "rest" mass travels only through time (imaginary space).

A real particle with zero real rest mass travels only through real space.

A particle in spacetime has non-zero real mass and non-zero imaginary mass.

Any particle with non-zero real mass is travelling at less than the cosmic speed limit through space and through time, but the combined speed through space and time (calculated via Pythagoras's theorem) is always light speed (equivalent to the hypotenuse in the Pythagorean right-angled triangle).

The Different Types of Mass

Real mass, imaginary mass, anti real mass (negative real mass), anti imaginary mass (negative imaginary mass).

Energy Borrowing

Enormous energy can, according to conventional quantum mechanics, be borrowed for short times. The more energy involved, the shorter the time. If the time period is reduced to zero, the amount of energy that can be borrowed is INFINITE. In other words, the laws of quantum mechanics automatically agree with the Leibnizian Infinity Multiplier which asserts that a Leibnizian monad (outside space and time) has infinite energy: infinite positive real energy, infinite negative real energy, infinite positive imaginary energy and infinite negative imaginary energy, giving a grand resultant of ZERO energy.

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Time in its true nature exists only in pure imaginary space; space in its true nature exists only in real space. As soon as any wave leaves either of these pure domains and enters the "mixed" spacetime domain, strange things happen to it. In the case of a pure spatial wave, it has to obey a different kind of mathematical relationship with space.

"Pure" space is "flat". It obeys Euclidean mathematics. Distorted "spacetime" space is not flat; it's curved. It obeys the non-Euclidean mathematics of curved spaces developed by Gauss and especially Bernard

Riemann. Einstein was the genius who first linked Riemann's work to physical reality (in his famous general theory of relativity).

We can think of "mass" not as anything solid but as energy confined in curved spacetime and in fact AS curved spacetime. The more massive something is, the more curved the spacetime is and, in the case of black holes, spacetime becomes so curved that nothing can escape and time stops.

"Concerning matter, we have been all wrong. What we have called matter is energy, whose vibration has been so lowered as to be perceptible to the senses. There is no matter." -- Albert Einstein

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In terms of the physical universe, Illuminism asserts that, underneath what is apparently going on, there is actually nothing happening other than pure mathematics. Here are the fundamental concepts:

Ontologically, energy is defined by eternal waves. Waves have well-known features such as frequency, wavelength, amplitude, phase and so on.

There are real and imaginary waves, hence real and imaginary energy. The "real" waves are defined by real numbers and, as they travel, they move through real space. Similarly, imaginary waves are defined by imaginary numbers and, as they travel, they move through imaginary space. Real waves are associated with cosines and imaginary waves with sines.

As well as positive real and imaginary waves, there are also negative real and imaginary waves, and, all put together, the total energy of the universe is zero. This is a fundamental energy conservation law. The energy of the universe is *always* zero, and energy can never be "borrowed" and paid back, as many physicists maintain (by virtue of Heisenberg's uncertainty principle). The key point to understand here is that time (based on imaginary numbers, imaginary waves and imaginary energy) is not something entirely different from energy, as the Heisenberg time-energy relation would have us believe, but is *also* energy (but of the imaginary kind).

Once you see that the so-called energy-time relation is actually a real energy/imaginary energy relation, you can comprehend that energy is never "borrowed", but is simply rebalanced in terms of the proportion of real energy to imaginary energy (which are always dynamically coupled). If, in one "place", this balance is adjusted in favour of real energy, in another there

will be an equal and opposite response in favour of imaginary energy, ensuring that the overall energy conservation law is respected.

Real and imaginary waves – in their purest form – operate in a perfect Euclidean domain (so called "flat" space). However, when these pure waves are mixed, corresponding to complex numbers taking over from either real or imaginary numbers, everything changes. Physically, this corresponds to the dynamic coupling of real and imaginary energy, real and imaginary mass, real and imaginary space (space and time). This corresponds to Euclidean flat space being replaced by Riemann's curved space (curved spacetime to be more precise).

Whereas the Euclidean domain is that of absolute space and time, Riemann's domain is that of absolute *spacetime* where space and time are now fused together. This is a complex number domain. It is astoundingly difficult to solve the equations relating to this domain. Einstein's general theory of relativity is the best tool that science has yet created for probing this domain, and it is well known in the scientific community that Einstein's equations are intractable except in certain simplified cases. As J. P. McEvoy says, "The bad news is that the mathematics is extremely difficult. There are some 20 simultaneous equations with 10 unknown quantities. The equations are almost impossible to solve except in situations where symmetry or energy considerations reduce them to simpler forms."

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Cosine waves and sine waves must also be conserved. All objective mathematical properties are conserved. All values are conserved at zero. This places an absolutely immense constraint on what can actually happen in the universe. Symmetry is everywhere, and symmetry breaking always takes place in highly ordered ways, obeying overall conservation symmetries.

Photons

"Of course, a common question is 'What is a photon?' A photon is a 'particle' of light. A beam of light is a great many photons moving together. If you increase the intensity of a beam of light without changing the frequency, you actually increase the number of photons. When an electron drops from an excited state to its ground state, the electron releases one photon. The concepts of 'intensity' and 'amplitude' do not apply to an

individual photon. For an electron, energy can show up as a combination of speed and mass. For a photon, mass is zero and speed is always the same. Frequency is perhaps the only variable available to act as the indicator of the photon's energy.

"I do not know why the universe is 'designed' to have photons behave as such. Fortunately, it does work. Simpler systems could work on large scales but would fall apart at the level of individual particles. Without the quantum effects that do not allow a photon to lose part of its energy but maintain its frequency, there would be nothing to hold photons together as they travel through empty space." -- Dr. Ken Mellendorf

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There are four zones in the Euler unit circle: 0 – 90 degrees, 90 – 180 degrees, 180 – 270 degrees and 270 – 360 degrees. Observationally, we live in the 0 – 90 degrees domain. This means that we are bounded by the positive imaginary (time) axis and the positive real (space) axis.

The 90 – 180 degrees domain is bounded by the positive imaginary axis and the negative real axis: it is the mirror image, reflected in the imaginary axis. In effect, it's the matter-reversed version of our domain – the antimatter universe. Scientists often ask where all the antimatter in the universe went because, by any logic, there ought to be perfect symmetry between matter and antimatter. They come up with various implausible ways to explain away the missing antimatter. We don't. We assert that the perfect symmetry is upheld and that an entire antimatter universe exists, exactly matching our material universe in energy terms. Time works in exactly the same way as it does in this universe. The big difference is that if the matter in this universe encountered the antimatter in that universe, there would be a catastrophic explosion.

An impenetrable temporal wall separates the two universes.

The 180 – 270 degrees domain is bounded by the negative imaginary axis and the negative real axis: it is the mirror image of the antimatter universe, reflected in the negative real axis. It is the time-reversed version of the antimatter domain, and it is the antimatter universe of the negative time material universe.

The 270 – 360 degrees domain is bounded by the negative imaginary axis and the positive real axis: it is the mirror image of our universe, reflected in the positive real axis. It is the time-reversed version of the matter domain.

We should stress that time is not running backwards, as so many people would be inclined to think. Rather, the people in that domain are exactly like us – living forward in time. The difference is that if our clocks are showing a clockwise direction of time, there's would be showing an anti-clockwise direction. In their domain, they are going forward in time; it's only when the clocks in the two domains are compared that the astonishing temporal difference becomes apparent. If the two universes came together, there would be a catastrophic temporal explosion.

It's worth pointing out that all four of these zones can function in exactly the same way. In fact, strictly speaking, we can't know what one we're in. It's by mere convention that we say we are in one rather than the others. Impenetrable "luxon" or "chronon" walls separate the four zones – nothing can get from one domain into another – so there's no danger of any catastrophic explosion.

We can create antimatter in this universe only on a tiny scale using high-energy collisions. In the antimatter universe, they would likewise be able to produce small amounts of matter.

We should also be able to produce evidence of "anti time" on a small scale.

In all four domains, the usual cosmic speed limit applies (the Euler unit radius). There is no such thing as anything going faster than the cosmic speed limit, hence no such particles as superluminal tachyons. They are possible in Einsteinian relativity but they are impossible in the Eulerian system.

In Einsteinian physics, anything going faster than light travels back in time. In the Eulerian system, nothing can exceed the cosmic speed limit, but it is certainly possible for things to travel in a reverse direction of time – but in another domain. From the point of view of that domain, of course, it's going forward in time. It's all relative!

We have furnished a perfectly ordered, symmetric universe with one universal cosmic speed limit and perfect energy conservation. Our whole Eulerian universe averages to zero.

So, are we right or is Einstein?

Mathematics

If comprehending the secrets of the universe is important to you, here's what you need to know:

Pythagoras's Theorem.

Leibniz's Integral and Differential Calculus.

Wave theory.

Fourier Analysis (Fourier Series and Fourier Transforms).

Fourier uncertainty relations.

Riemann Spheres.

Projection and infinity points.

Euclidean geometry versus Riemann geometry.

Complex numbers; the complex plane.

Zero, infinity, the imaginary number, pi and e.

Euler's Formula.

All of this constitutes ontological mathematics, the mathematics of existence itself. If you don't have some familiarity with these ideas, existence will always be a mystery to you. You will *never* become God. As always, it's *your* choice.

God, let us be clear, is a mathematician. The cosmos is a mathematical arena. Nothing other than mathematics can explain reality. Mathematics is the sole source of absolute knowledge. Religion, philosophy, science and psychology cannot be understood without it.

Mathematics is taught exceptionally badly in schools. It's an intimidating, uncompromising Logos subject – the purest Logos subject of all. To make mathematics popular, it has to be given a huge dose of Mythos. All of its seemingly frightening abstractions have to be made relevant to people's lives.

Illuminism itself is the ultimate attempt to make people see the wonder and beauty of mathematics. It elevates mathematics to the status of religion. It places mathematics at the root of the soul, the mind, the afterlife and God. It is the basis of ABSOLUTE POWER and complete mental control of the material world, of the kind that Neo enjoyed in *The Matrix*. If that doesn't get people interested in mathematics, what will?

Mathematics was, in a loose sense, the driving force of alchemy. An enormous amount of alchemical thinking was based on numerology – the

seemingly magical power of numbers. Alchemy was based on the Pythagorean idea that some numbers are associated with special power while most are ordinary. Via ontological mathematical operations (science), you could transmute ordinary numbers (base metal; ordinary people) into special numbers (gold; Gods).

Mathematics is the Philosopher's Stone, the ultimate transmutative agent, the supreme source of power in the universe. Without mathematical knowledge, you can never be truly powerful – powerful in terms of the soul and its eternal journey.

Eastern religion might be viewed as an attempt to perceive mathematical truths via meditation and mysticism. As for music (humanity's best link to the innermost mathematical pulse of the universe), Leibniz said, "Music is the pleasure the human soul experiences from counting without being aware that it is counting." Music is aural mathematics.

Sport – the ability to catch, kick, and strike balls with astonishing accuracy and fluency – is how the body performs mathematics without knowing it.

The stock market – the place where untold fortunes can be made – is entirely transparent to sufficiently powerful mathematical minds. All of its hidden patterns can be discerned.

Economics? If done properly, it is nothing but a means for discovering the mathematical machinery of money flow. It should be viewed as a branch of fluid dynamics.

All the "superpowers" of animals, the coordinated behaviour of ants, how bees find the shortest route from their hive to flowers, how birds have incredible navigational abilities, how huge swarms of fast-moving birds can avoid a single collision despite being so tightly packed – it's all mathematical.

The weather? – pure mathematics.

What about the shapes of snow crystals, salt crystals, fractal patterns, leaves, water drops and so on – again, all mathematical.

There's no subject that can inspire wonder as much as mathematics, yet it's conventionally treated as a dry, boring abstraction with no possible relevance to people's lives. It's almost as if mathematics, like Illuminism itself, has been the victim of an ongoing conspiracy. As ever, the usual suspects – the Church and the privileged elite – are those who want to ensure that the mass of people are not mathematically literate. A mathematical people – a Logos people – would not be superstitious, ignorant, fearful,

submissive and prone to "belief". The religious and financial elite would no longer be able to frighten, manipulate and control people.

A mathematical people is a free people. It is self-confident, optimistic, in tune with the universe. It is a rational people, capable of rationally solving problems and creating a better world … of building heaven on earth.

Mathematics is our primary tool for becoming God. So, who wouldn't want to be a mathematician?

Mathematics, as Pythagoras and Leibniz realised, is the essence of POWER.

The rich might have power in terms of earth, but mathematicians have power in terms of the cosmos.

The first practical mathematicians were the astronomers. They were able to read the stars, to predict eclipses – as if they were Gods.

Mathematics is our supreme tool for "reading" the future.

Mathematics is humanity's collective HOLY GRAIL.

This is the gospel of the Illuminati.

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If you want to live in permanent ignorance and delusion, pick up a Bible, Torah or Koran and ignore mathematics. The Abrahamic God is a mathematical retard. The Torah, Bible and Koran do not contain a single equation or mathematical definition. There's no calculus, thus proving that Leibniz is infinitely smarter than the Abrahamic God.

Euler's Magic Formula

Euler's Formula encapsulates the whole of existence. It contains 0, the number of the monad (ontological zero); the number e that determines exponentiation; the number i that determines the imaginary domain (time); the number 1 that determines the domain of counting numbers (and with 0 creates the binary system of computing), and real numbers (space); -1, the number of the negative domain (antimatter); and the number π that determines the world of the circle and geometry. Euler's Formula is the unquestionable God Equation.

No possible observation, experiment, empirical study or appeal to science could ever have come up with Euler's identity and the extraordinary

relationship it provides between fundamental numbers that, at first sight, seem to have nothing at all in common.

This identity is an absolute triumph and vindication of rationalism. Only the rational mind can unlock the innermost secrets of existence.

Above all, Euler's identity contains the "=" sign. The significance of "=" is never fully appreciated. It's actually the symbol of TAUTOLOGY. Whatever is on either side of the = sign is the same thing expressed in different terms, i.e. a tautology.

Mathematics, which is based on the = sign, is the ultimate system of tautology. If one part of it is true then every other part that can be equated to it via the = sign is also true, by definition. No other system offers absolute tautological truths of the kind $1 + 1 = 2$.

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Euler's formula is remarkable and mysterious, revealing a profound relationship between trigonometric functions and the complex exponential function. While the exponential function, e^x, increases exponentially as x grows, the function e^{ix} is rather different. In the complex plane, it's a unit circle; in a 3D complex space (consisting of a real axis, imaginary axis and x-axis), it's a helix. When projected to the real axis, it becomes the trigonometric cosine function, and when projected to the imaginary axis it's the trigonometric sine function.

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"Perhaps never has a man read as much, studied as much, meditated more, and written more than Leibniz… What he has composed on the world, God, nature, and the soul is of the most sublime eloquence. If his ideas had been expressed with the flair of Plato, the philosopher of Leipzig would cede nothing to the philosopher of Athens." – Denis Diderot

"Space is to place as eternity is to time." – Joseph Joubert

(And "here" is to space as "now" is to time.)

"Mathematics is the door and the key to the sciences." – Roger Bacon

"Every great advance in science has issued from a new audacity of imagination." – John Dewey

Are YOU audacious enough? Audacity, audacity, always audacity!

The Collapse of the Wavefunction

The most mysterious entity in the universe is arguably the quantum mechanical wavefunction. The wavefunction applies to *everywhere* – the whole universe. The wavefunction for an electron offers scope for that electron to be anywhere at all, though it is of course much more likely to be found in some places than in others. When the wavefunction "collapses" and the electron's location is known with one hundred percent certainty, this means that something (the wavefunction), which was previously everywhere, has instantaneously shrunk to a single point. How does the part of the wavefunction at the other side of the universe "know" instantly that the collapse has taken place? The information has been communicated faster than light speed, contrary to Einstein's special theory of relativity.

So, quantum mechanics is, conceptually, inherently opposed to special relativity and to physicalism in general. Quantum mechanics is all about the mental domain! This all gets glossed over by empiricist materialist scientists, of course, since they're interested only in results, not in truth and philosophy.

The quantum mechanical wavefunction can be perfectly understood as a mental entity, outside space and time. It is everywhere, just as mind is, and any "collapse" is detected by the whole mental function instantaneously. Einstein's special relativity has no bearing on the wavefunction because Einstein's theory is physical, not mental. All of the irreconcilable differences between relativity theory and quantum mechanics can be considered as the familiar irreconcilable differences between matter and mind. In other words, for scientists to construct a Grand Unified Theory of Everything, they have no option but to acknowledge the existence of mind as independent of matter. This is the revolutionary step science is yet to take. It is making one last attempt to save materialism by turning to M-theory, the most bizarre, convoluted and complex theory in all of history – and wholly wrong from the outset. 11-dimensional M-theory rejects the numbers zero, infinity, negative and imaginary numbers as ontological realities. Therefore, it is mathematically incomplete, hence refuted. It really is as simple as that.

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"Quantum mechanics is certainly imposing. But an inner voice tells me that it

is not yet the real thing. The theory says a lot, but does not really bring us any closer to the secret of the Old One. I, at any rate, am convinced that He does not throw dice." – Einstein

Einstein is of course right that the universe does not throw dice. What could be more absurd? The probabilistic aspect of quantum mechanics is not a reflection of fundamental indeterminacy but of the staggering complexity of the underlying hidden factors that determine how the wavefunction evolves in time. Human beings do not throw dice to make their decisions (unless they have been reading Luke Rhinehart's *The Dice Man*), and nor do quantum entities.

The claim that the cosmos is based on intrinsic indeterminacy is tantamount to saying that the universe has no objective reality and is just a probability cloud that magics wavefunction collapse out of thin air for no apparent reason. The Heisenberg uncertainty principle is NOT about intrinsic cosmic uncertainty but about highly precise mathematical functions in two domains that have radically different properties (one domain in space and time and the other outside space and time). The inherent and inescapable mismatch between the two domains results in the linked mathematical functions having an associated uncertainty factor, but this is well-defined mathematical uncertainty in a well-defined mathematical universe. It does not mean that reality is somehow fuzzy or blurred. Reality is mathematical and if we reduce the uncertainty in one property to zero (i.e. we have complete certainty about it) then we have complete uncertainty about its linked property in the other domain, but that simply means that we have to invoke a function involving infinite elements – which is not a problem mathematically.

The view of BOTH quantum mechanics and relativity theory, as interpreted by mainstream science, is that objective reality is an illusion. It's staggering that science has arrived at the denial of reality as its ideological core. Science, remember, has fanatically promoted materialism and rejected mind, yet now, philosophically, it tacitly promotes the most bizarre interpretation of all – that there is no real world, no cause and effect at the fundamental level of existence, and "reality", such as it is, is just some nebulous probabilistic collapse of an eternal probability wavefunction for the whole universe. The universe makes it up as goes along, by playing the Dice Man game on a cosmic scale.

If that's not a lunatic vision, what is? Science has collapsed as a lucid,

coherent explanation of reality, and no longer even accepts objective reality in any meaningful sense. The success of scientific equations and predictions has concealed the philosophical abyss at the heart of science. Intellectually, science in its present form is devoid of any meaning. It has become pure instrumentalism, i.e. it does calculations that work. It doesn't do anything else. It provides no explanation whatever of reality. It doesn't even accept the existence of reality.

Media-friendly scientists present wonderful TV documentaries and write great books and yet what they're doing is telling a narrative that is fundamentally at odds with the philosophical basis of relativity theory and quantum mechanics. They stay well clear of any discussion of the philosophy of science because they know that "*here be monsters*".

Science is now so complex (or, alternatively, so simplistic!) in relation to philosophy that virtually no one on earth can comment meaningfully on it. Scientists are clueless, as are philosophers and mathematicians. There's a desperate need for an overarching account of existence that reconciles science with objective reality. Illuminism is that account. Illuminism is the authentic Grand Unified Theory of Everything. It succeeds by invoking a single stunning principle – MATHEMATICS IS REALITY. Mathematics guarantees objective reality. Above all, mathematics puts the number zero at the core of existence. By doing so, it makes mind, not matter, the basis of existence. THAT is the answer to all the mysteries, contradictions and incoherencies of modern science. It's remarkable that science will condone the most far-fetched, absurd interpretations rather than accept the reality of independent mind.

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If reality is just ontological mathematics then what is gravity? The beauty of the mathematical approach is that we can abandon confusing scientific definitions and just concentrate on basic mathematical ideas.

Einstein had the inspired idea of conceiving of gravity in terms of curved spacetime – Riemannian rather than Euclidean geometry. Mass causes the curvature. Mass doesn't just curve spacetime; it *is* curved spacetime.

In Illuminism, as far as the material world is concerned, there are imaginary waves and real waves and that's it. These can be combined to create complex waves (complex functions).

Mass is just confined energy.

<center>*********</center>

The rather obscure logician Gottlob Frege (1848 – 1925) attempted to show that mathematics is analytic or "empty", full of endless tautologies. For example, he pointed out that when we say 2 + 2 = 4, all we have actually said is:

$(1 + 1) + (1 + 1) = (1 + 1 + 1 + 1)$.

It was precisely this aspect that, long before Frege, Leibniz found so astonishingly powerful. Pontius Pilate asked, "What is truth?" Well, *tautology is truth*. To state that all bachelors are unmarried is true by definition. Mathematics is nothing but a system of statements that are true by definition – tautologies. Mathematics is the *perfect* tautological system. The moment you depart from statements that are true by definition, you're in big trouble. The statements that all bachelors are sad or all bachelors are having a great time are immediately contentious. An opinion is being expressed. This is not indubitable knowledge. This is conjecture, opinion, personal taste, subjectivity.

Bertrand Russell wrote, "Leibniz based his philosophy upon two logical premises, the law of contradiction and the law of sufficient reason. Both depend upon the notion of an 'analytic' proposition, which is one in which the predicate is contained in the subject – for instance, 'all white men are men'. The law of contradiction states that all analytic propositions are true. The law of sufficient reason (in the esoteric system only) states that all true propositions are analytic."

Leibniz is of course right. All true propositions are analytic. When this is grasped, the importance of mathematics becomes self-evident. In terms of existence, all true propositions are mathematical. This cannot be asserted of anything else. It can't be said of religion, philosophy or even science. Mathematics alone is the only system which is built on an endless sequence of analytic tautologies akin to 1 + 1 = 1 + 1.

Mathematics relies on an ability to restate 1 + 1 = 1 + 1 and (similar foundational expressions) in limitless varied and useful ways. Mathematics can be reduced to an extremely simple and small core set of analytic statements, from which countless analytic statements can be derived, all based on the original definitions and hence all guaranteed to be true. Why would we look for truth beyond such a system? More to the point, how could

we find any truths outside this system? What would we mean by "truth" in these other circumstances? There would be no basis for asserting the truth of anything. Truth must start with a core set of infallible definitions, and where better to start than:

$0 + 0 = 0 + 0$

or

$0 + 1 = 0 + 1$

or

$1 + 1 = 1 + 1$

One Number Only

There is ultimately only one number – *zero*. An alpha-infinity of zeros is equal to "one", and, by keeping adding one to one, we can generate all of the counting numbers, which are all finally grounded in zero.

Quite simply, zero – the monad, the dimensionless point – can and does give rise to everything else. The whole universe is simply a way of infinitely arranging zero. All truths of the objective universe state the supreme tautology $0 = 0$. All the objective properties of the universe sum to zero.

Equals

The "=" sign is the sign of the existential tautology that $0 = 0$.

If $A = B$, then $A - B = 0$, hence $0 = 0$

ALL equations can be cast in this form. And what they all mean is that existence begins and ends with zero, and is nothing but an eternal, dynamic rearrangement of zero.

All conservation laws, such as energy conservation or charge conservation or symmetry conservation, or spin conservation, can be recast as $0 = 0$, the divine tautology. Symmetry is the supreme enforcer of the zero universe, the universe of "nothing".

There can be local symmetry violations (balanced elsewhere by equal and opposite symmetry violations), but never any global symmetry violations. All statements of inequality are local symmetry violations.

Any absolutely true and objective statement about the universe must be able to be boiled down to 0 = 0. That is the fundamental Law of Reason. Leibniz's Law of Contradiction and his Principle of Sufficient Reason can likewise be reduced to this form.

A contradiction is something that would prevent 0 = 0, hence must be false. To give a sufficient reason for something is to show that it does not deviate from 0 = 0. There is no sufficient reason for anything that deviates from 0 = 0, except as a local symmetry violation that is in fact balanced somewhere else, thus reaching 0 = 0 in the last analysis. Any statement that does not amount to 0 = 0 is either false or mere opinion (hence entirely subjective).

As for all mathematical inequalities involving the greater than or less than sign, these ultimately boil down to the tautology that a non-zero number is either greater or less than zero.

The whole of objective reality is governed by 0 = 0. As for *subjective* reality, no such objective standard pertains. In the subjective domain, anything can equal anything. Everything is incomplete, inconsistent or inadequate, as per Gödel's Incompleteness Theorem.

Zero

The *objective* mathematical world is all about zero. Everything, objectively, equals zero overall.

The *subjective* mathematical world is all about infinity. Everything is striving for infinity – to become GOD!

Existence is perched between the objective imposition of zero and the subjective quest for infinity.

When we talk of the universe being a self-optimising equation, we mean that the objective universe tries to discover the best 0 = 0 equation that, on the subjective side, is associated with the greatest infinity. That is, there are infinite ways of writing 0 = 0, and each way is associated with a different subjective experience and a different level of power. The universe wants to maximise infinity with regard to 0 = 0, i.e. to arrive at the "answer" to existence – the best and most powerful subjective experience of the objective universe – Leibniz's "best of all possible worlds."

All absolute knowledge is simple tautology. The whole of mathematics is really just a gigantic system of tautologies based around different ways of saying $0 = 0$. But there's no infinite regress. There is a base. That's the whole point of the monad – there's nowhere left to go after reaching that level. The monad, the soul, is the ground of all existence.

The Ultimate Question

The most important question of all is Leibniz's – "Why is there something rather than nothing?" There is only one conceivable answer – because something and nothing are in fact the same thing. Only one system allows that to be true – *mathematics*.

Consider this equation:

$$1 + 2 + 3 - 1 - 2 - 3 = 0$$

Here we have "somethings" on the left and "nothing" on the right. This is the proof that something equals nothing.

The universe must remain forever in its zero ground state (lowest possible energy state) and that can happen only if all somethings cancel to nothing.

Negative numbers being balanced by positive numbers generate nothing. Wave peaks encountering matching wave troughs cancel to nothing. Many orthogonal multiplication operations give null results.

Somethings cancelling to zero is the ultimate basis of existence. Existence is indeed the ultimate free lunch and only the properties of numbers make that possible.

Symmetry and antisymmetry; conservation laws: the cosmos is absolutely constrained by these. At no point does the universe of "something" ever depart from an overall objective value of nothing. That is the fundamental law of existence. Nothing is created and nothing is destroyed – ever. Yet endless "somethings" can come from nothing as long as they preserve overall nothingness. That is the universe's supreme secret.

Mathematics allows nothing to be endlessly transformed into something while still being nothing. Is that not magic?!! What God could do better?

"Something" is just a particular perspective of nothingness.

Get with the program. Get with mathematics.

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Science cannot explain why there is something rather than nothing. Science relies only on positive real numbers, hence is numerically incomplete. It ignores imaginary numbers as ontological entities, hence is algebraically incomplete. It says that something miraculously erupts from nothing in the Big Bang, though some scientists then claim that the positive energy of particles is cancelled by negative gravitational energy, thus producing a free lunch universe. Such an explanation is inconsistent with an infinite universe and it's hard to reconcile with an expanding universe producing endless virtual particles with unknown gravitational effects (because there's no quantum theory of gravity).

As for "believers", they simply accept the eternal existence of God and are not interested in why there is something rather than nothing. In fact, they're not interested in anything at all other than their irrational beliefs. God damn the stupid!

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Mathematically, there's no ultimate difference between dimensionless and dimensional existence: they both reduce to nothing in the end. The same isn't true scientifically. Dimensionless existence is anathema to empiricist materialist science and is expressly forbidden (though no sufficient reason for this prohibition is ever provided beyond dogmatic ideology).

Mind (the dimensionless) and matter (the dimensional) are natural partners in mathematics. In science, mind can't exist as anything other than an unexplained material phenomenon.

Ground Zero

For any explanation of existence to be rationally viable, it must be able to account for the state of existence at Time Zero and Space Zero, i.e. the state (Ground Zero) immediately preceding the Big Bang.

Ontological mathematics has no difficulty. At Ground Zero, there were infinite monads (dimensionless points), occupying zero space and

experiencing zero physical time. Each monad contained an infinite amount of energy, arranged dimensionlessly as an infinite number of Euler circles, each with a unique radius. All that was required to make the physical universe was for a monadic symmetry-breaking operation to take place, thereby creating a Cartesian-Gaussian coordinate system of three real axes and three imaginary axes (establishing the framework for physical spacetime). Into that perfect mathematical arena, the monadic Euler energy could flow and create the familiar spatial and temporal material entities of physical existence. It's easy for mathematics to generate the physical world. It's IMPOSSIBLE for science to explain Ground Zero since it denies the existence of any immaterial state. The cause of the Big Bang has never been explained by science. At best, scientists mumble incoherently and illogically about some quantum "fluctuation" and some far-fetched and suspiciously convenient inflation process acting on the fluctuation to create the sort of dimensions we need for a vast universe.

How can there be a material fluctuation in space and time BEFORE spacetime and matter actually exist? If the fluctuation does not in fact need spacetime and matter then it means that there is a form of existence outside spacetime and matter – something explicitly denied by empiricist materialist science. Either way, science is logically clueless. As an *a posteriori* synthetic subject, it is incapable of dealing with an *a priori* analytic universe. Mathematics, of course, is quintessentially *a priori* and analytic.

The fundamental questions are these – is existence RATIONAL at Ground Zero; do the laws of science already exist; is there a sufficient reason for everything? Mathematics says yes to these questions. Science, on the other hand, asserts that the Big Bang is caused by an irrational, random event with no logical or lawful basis and no sufficient reason for its occurrence. Science is unable to say where the "laws" of the material universe existed prior to the Big Bang (in order to able to shape and control the Big bang event). Science is unable to say where the laws of physics are that control random fluctuations. What, are they like MAGIC?

At the ultimate level, science is as much of a joke as Abrahamism. The believers say, "God is the answer to everything" and the scientists say, "Inexplicable randomness is the answer to everything." Mathematics, conversely, says, "Everything has a sufficient reason. Everything can be explained without any ambiguity by eternal, perfect, necessary, analytic, eternal *a priori* mathematics."

So, which answer will you "buy"? Science is irrational nonsense. Its credibility, such as it is, flows wholly from mathematics. So, why not ditch the snake and concentrate on the snake charmer? Forget science – mathematics is where the truth lies.

Quantum Madness

"In order to understand this we need some crazy idea. Has anyone a crazy idea?" – Niels Bohr

Yes, Niels, the "crazy" idea is that mind exists independently of matter – and that's not crazy at all, in fact. It's pure Cartesian rationality.

When did science go wrong? – the moment it rejected Descartes' unextended domain of mind and dogmatically chose to believe only in extended (material) existence, available to empirical experience. That was the most fateful error in the history of thought. It was one that humanity's supreme genius – Leibniz – did not make.

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Frege believed he had shown that mathematics had nothing to do with our observations of the world or the structure of our minds; that he had demystified mathematics. In fact, our minds are nothing but mathematical machines and all of our observations are, in the final analysis, mathematical. It's when we forget or ignore that reality that we start talking nonsense.

Frege maintained that mathematics is not some mystical, separate entity. He was right, but not in the sense he intended. He was striving to be dismissive of the Pythagorean view of mathematics, but Pythagoras was absolutely right – all things are numbers and mathematics is not mystical and separate because we are ourselves are mathematical.

Frege argued that mathematics is a mere projection of our ability to think clearly, systematically and in an organised way, i.e. mathematics is simply a branch of logic. Of course, this position begs the question – how are we *able* to think in this somewhat remarkable way? In the Pythagorean-Platonic view, we think this way because it is innate to us. It is innate to us because it is the fundamental nature of existence itself. The better and more clearly we think, the more our thinking resembles the thinking of a mathematical wonder

machine, incapable of error. As we evolve, we become more mathematical. The most rational people are the most mathematically minded. The further you are from a mathematical mind, the less rational you are and the more you succumb to Mythos, emotion and animalism. The whole universe is seeking to maximise its rationality, just as Hegel brilliantly showed. By doing so, it maximises its Will to Power – Nietzsche's core principle.

Frege failed to understand the origin of logic (it comes from mathematics) and how it is possible for us to think mathematically and logically in the first place (because mathematics defines existence, hence us). Frege, like Russell and Whitehead later, believed that logic preceded mathematics. Gödel, the great champion of Platonic mathematics, blew their ideas out of the water.

The veil of Maya – illusion – that is thrown over us is the one that convinces us that we are not mathematical entities immersed in an ocean of mathematical functions. The truth of existence is that it is an infinitely large, self-solving mathematical equation. We can regard every moment that passes as a *provisional* solution of the cosmic equation. But the purpose of the equation is not to find any old any answer, but the optimal, most stable solution – the *perfect* answer. The whole of existence, as part of its fabric, yearns for perfection. It relentlessly pursues it, and nothing can deter it.

Schopenhauer conceived of reality as a cosmic Will which blindly and unceasingly strove to exist, to survive – and had no purpose beyond that. There was nothing benevolent about life in his view. It was just this eternal struggle, usually involving violence, misery, pain and even evil. Schopenhauer was *not* an optimist!

In Illuminism, this Will is mathematical and it's relentlessly and unceasingly attempting to find its best solution. To use Leibniz's famous expression, its purpose is to create the "best of all possible worlds", i.e. the perfect answer to an infinite equation covering the entirety of existence.

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When he was trying to appease the prevailing Christian sentiments of his day, Leibniz spoke of the present world being the best of all possible worlds. He used this expression with both tremendous irony and tremendous logic. If the Christian God were what he was claimed to be – the perfect Creator – then he would have been confronted with an infinite number of possible worlds that he *could* have created. Being perfect, he would of course have created the best of all these possibilities since it would be perverse and imperfect for the

Creator to do otherwise. If God is perfect, this MUST be the best possible world. It must have been *impossible* for God to create a better alternative.

Now, plainly, our world is wicked and depressing beyond belief, so if this is the best possible world, God help us. It's hard to imagine that this is anything other than the *worst* possible world. Leibniz was slyly exposing the world to the fact that if our world is *not* perfect then it cannot be the creation of the perfect Christian God, therefore this God does not exist. It's somewhat similar to the situation with holy texts. If such texts – said to be the infallible Word of the perfect God – are not in fact infallible then their author cannot be God. A *single error* – yes, just ONE – refutes them. This is elementary and decisive logic. It is the logical proof of the non-existence of the Christian God.

Voltaire didn't perceive that Leibniz had fired a deadly logical arrow straight at the heart of Christianity and instead took Leibniz's expression at face value. In *Candide*, he lampooned Leibniz as *Dr Pangloss*, an absurdly optimistic old pedant. No matter what misfortunes befell him, the good doctor declared, "All is for the best in the best of all possible worlds."

However, Leibniz *did* believe in the best of all possible worlds, but it was the one that would result as the culmination of evolution, not via a Creation event. If anything not forbidden is compulsory then, if the cosmic equation has a unique optimal, "best" solution then this will definitely be actualised. We will definitely arrive at the perfect mathematical solution to the cosmic equation and this will correspond to the best of all possible worlds.

The concept of the universe as a self-solving equation, seeking its optimal solution, is beautiful and inspiring. In order for this to be true, the universe must be capable of remembering past, sub-optimal solutions and "know" how to get beyond these. Via his dialectical logic, Hegel came up with the perfect way of explaining what happens. The cosmic equation proceeds by way of binary opposition. It creates a provisional solution known as the thesis and an opposite solution called the antithesis. These then fight it out until a synthesis emerges which combines the best of the thesis and antithesis and leaves behind the worst of each. The synthesis then stands as a new thesis, which generates a new, higher antithesis, a new higher synthesis, and so on. In this way, the universe moves relentlessly towards perfection.

The dialectic is therefore a fundamentally mathematical process and has a great deal in common with the bisection method for finding the roots of an

equation.

The Commutative Law

Werner Heisenberg first came across his "uncertainty principle" as a result of the properties of matrices (organised arrays of numbers). He was exploring the quantum world via his own technique of "matrix mechanics" (rather than wave mechanics) when he discovered that if he multiplied a matrix of the positions of a particle with a matrix of its corresponding momenta, it produced different results depending on whether he multiplied position by momentum or momentum by position, i.e. the procedure did not obey the "commutative law". If the commutative law applies, the order of multiplication doesn't matter: if you swap the numbers around, you still get the same answer.

The Commutative Law works for conventional addition and multiplication:

1) Addition: $a + b = b + a$

2) Multiplication: $a \times b = b \times a$ (or $ab = ba$)

The Commutative Law ensures that the sum or product of numbers is unaltered by reordering its terms or factors. Commutativity holds for real or complex numbers, but not for quaternions, where commutativity of multiplication is invalid.

Scalar multiplication of two vectors (to give the so-called dot product) is commutative (i.e. $a \cdot b = b \cdot a$), but vector multiplication (to give the so-called cross product) is anticommutative, i.e. $a \times b = -b \times a$ (that is, the sign changes when we reverse the order, meaning that this relates to antisymmetry rather than symmetry).

So, we have:

Commutative relations – which are symmetrical.

Anticommutative relations – which are antisymmetrical.

Non-Commutative relations – which are asymmetrical.

Symmetry and commutation, in their different forms, underlie all things, proving yet again that everything is mathematical.

In classical physics, position and momentum obey the commutative law. In quantum physics, they do not.

When multiplying matrices, the commutative law does not in general hold, i.e. AB ≠ BA. There are two generic exceptions:

1) The identity matrix: IA = AI = A.

2) The inverse of a matrix: $A^{-1}A = AA^{-1} = I$.

The Identity Matrix, represented by I, is a square matrix where all the elements are 0 except the principal diagonal which has all 1s. The identity matrix performs the role of the number "1" in ordinary number multiplication (i.e. if we multiply any number by 1, the number remains unchanged). The identity matrix is also called the unit matrix.

Bosons are commutative and fermions are anticommutative.

The non-commutativity of matrix multiplication – leading to an uncertainty principle – is profoundly linked to the uncertainty principle of Fourier analysis, as Heisenberg's uncertainty principle demonstrates. The spacetime domain on one hand and the frequency domain on the other are asymmetric. Thus, mind and matter are asymmetric. Past and future are also asymmetric, contrary to what physicists claim. You can never go back in time under *any* circumstances. No processes are temporally reversible (replaying a film backwards in not the same as reversing actual time – many physicists apparently think they are the same thing).

The uncertainty principle of matrix non-commutativity is, for particles, what the Fourier uncertainty principle is for waves, i.e. we have a wave-particle duality, as observed in quantum mechanics. This means that you can emphasize either the particle aspect or the wave aspect, but you can't do both at the same time.

Reinterpretation

Illuminism – Pythagoreanism – is all about reinterpreting everything in our world in terms of underlying and unappreciated mathematical principles. Science is successful because it uses mathematics; religion is not successful because it establishes no link at all with mathematics. Science is less successful than it could be because it is currently not mathematical enough. Religion will become successful and credible only when it is an expression of

mathematics (as in Illuminism).

Science has created confusion by divorcing scientific notions from pure mathematics. Concepts such as "mass" and gravity" are thought to relate to a scientific reality rather than a mathematical one. Although all scientific concepts are described mathematically, mathematics is regarded as no more than a useful, abstract tool that helps us to understand the *quintessentially* scientific world. Mathematics, in the scientific view, is a vital aid in revealing "true" reality – which is deemed scientific. Only a handful of scientists have started to speculate that the universe, and existence itself, is actually an enormous mathematical system, hence all scientific notions are just mathematical phenomena recast in a different jargon.

So, let's map the main concepts of science to purely mathematical ideas and thereby usher in a new age of science where science is viewed as a tool of mathematics rather than the other way around.

Planck's Constant

In 1900, Max Planck suggested that the energy in electromagnetic waves could be released only in "packets" (*quanta*) of energy. In 1905, Einstein stated that electromagnetic waves could exist only in these discrete wave-packets, each being called a light quantum, which was later named the *photon*.

"Planck discovered that physical action could not take on any indiscriminate value. Instead, the action must be some multiple of a very small quantity (later to be named the 'quantum of action' and now called Planck's constant). This inherent granularity is counterintuitive in the everyday world, where it is possible to 'make things a little bit hotter' or 'move things a little bit faster'."
-- Wikipedia

What, exactly, is Planck's constant? Who ordered it? Why is it in nature at all? Is it arbitrary? Is it designed? If so, who designed it? And why?

Everything must have a sufficient reason, and that includes Planck's constant. Its origin is, of course, wholly mathematical. It is the inevitable consequence of Fourier mathematics. It's the proof that there are two ontological domains: one in finite space and time and the other outside space and time in infinity. Planck's constant arises from the inescapable mismatch between the finite and infinite. When a function in the eternal dimensionless

domain is mapped to a function in the temporal dimensional domain, an exact correspondence cannot be established. A Fourier constant is introduced that expresses the degree of uncertainty. This cosmic-scale Fourier constant is the Planck constant and it defines quantum reality and our existence.

If the classical, dimensional material world is the thesis and the dimensionless domain is the antithesis, the quantum world is the synthesis where the thesis and antithesis are locked in a feedback loop inherently marked by uncertainty because of the unavoidably incompatible features of the two domains.

Planck's constant is arguably the most characteristic feature of existence. It defines the nature of our reality.

"If h were exactly zero, there would be no quantum effects in our universe at all. If it were very large, then quantum effects would dominate our everyday lives. So, for instance, Newton's laws of motion would not be appropriate for describing the motion of a car. The speed of light, c, and Newton's gravitational constant, G, are *classical* in the sense that they have nothing to do with quantum effects. If the speed of light were much smaller, say 10 m/s, then special relativity would have been discovered much earlier. Why? Because everybody would have an intuitive understanding of time dilation and length contradiction. Conversely, if the speed of light were infinite, Special Relativity would be unnecessary. Analogously, if Newton's G were much larger, gravitational effects would be much stronger. But if G = 0, there would be no more gravitational force at all. No planets or stars would form and the universe would be a very strange place." – Bruce Bassett, *Relativity*

"If Planck's constant were smaller and smaller, going to zero, then you would have what is called the classical limit. Energy would not be quantized anymore, it would be continuously distributed. There would be no quantum effects." – Wikipedia

If Planck's constant were zero, it would mean that there was no longer any difference between the dimensional and dimensionless domains, hence both were eternal (and thus the same) or both were temporal (and thus the same). There would either be a mindless material world or a matterless mental world. There certainly wouldn't be our hybrid world of mind and matter.

Planck's constant is what keeps the whole show on the road. Planck's constant is actually the rational proof that there is an ontological

dimensionless domain outside space and time – hence a world of the mind, the soul, an afterlife and God!

If Planck's constant were reduced to zero, atoms would not exist. Energy would not be quantized. There would be no ground states of energy, no levels between different states. All energy states would collapse to zero. There would be no mass, no gravity and no speed limit: everything would travel infinitely fast. That's what happens without Planck's constant. That's what happens without Fourier mathematics. That's what happens without the interplay of mind and matter, the dimensionless and dimensional domains.

Arguably, nothing is more important than Planck's constant – and it is wholly derived from ontological mathematics. *It has nothing to do with science*.

Planck's constant is essential for energy to be discontinuous rather than continuous. It is essential for Pauli's Exclusion Principle, for fermions, for individuation, for a world of separate, unique things.

The Planck constant prevents position and momentum from commuting at the atomic level. However, at the everyday classical level, Planck's constant is so small that it can be ignored. Thus, classically, position and momentum *do* commute – which is why the classical and quantum worlds are radically different.

"If we keep clearly in mind the picture of a function and its Fourier transform, the transform becoming more and more spread out as one compresses the function, and vice versa, we are forced to admit that, bizarre as it may seem, the uncertainty principle describes physical reality and not (as one might be tempted to think) a gap, even irremediable, in our knowledge of that reality." – Barbara Burke Hubbard

"With the discovery of quantum mechanics, it became clear that Fourier analysis is the language of nature itself. On the 'position space' side of the Fourier transform, one can talk about an elementary particle's position; on the other hand, in 'Fourier space,' one can talk about its momentum or think of it as a wave. The modern realization that matter at very small scales behaves differently from matter on a human scale – that an elementary particle does not simultaneously have a precise position and a precise momentum – is a natural consequence of Fourier analysis." – Barbara Burke Hubbard

Thus, to understand reality, it's essential to comprehend the ontological

meaning of Fourier analysis – and no such task can be undertaken within the empiricist materialist Meta Paradigm of mainstream science, which is why science is clueless about interpreting quantum mechanics. The mental domain of frequency – outside space and time – is essential to the Fourier formalism but scientists, with their unapologetic rejection of an independent domain of mind, are forced to reinterpret it in terms of abstract mathematics that has no ontological significance. People like Feynman tell us that we will never understand quantum mechanics and just have to "accept" it, as though it's some perverse, irrational thing with no sufficient reason for being the way it is.

There is in fact no problem at all in understanding quantum mechanics: it's the inevitable interface of mind and matter. But, of course, if you deny the existence of mind then you obviously have insurmountable difficulties in interpreting quantum mechanics. It's as if you are trying to explain the rainbow in monochrome, i.e. you've missed the whole point of the phenomenon. Quantum mechanics is incomprehensible without invoking mind. Quantum mechanics is the refutation of the prevailing scientific paradigm, and no one anywhere has the guts to "call it" and pronounce science, in its present form, dead. It's now just a zombie lurching around, incapable of understanding or explaining anything.

M-theory is the supreme product of materialist zombie thinking. It is going absolutely nowhere… slowly. It's the undead in need of a stake to put it out of its misery.

Science has become intellectually embarrassing. It's so dogmatically hostile to mind and reason that it might as well be an Abrahamic faith.

Have you ever read any book anywhere that raises the issues we are highlighting? Why not? Are we the only ones capable of *thinking*? Are we the only ones untainted by faith and dogmatism and still able to think rationally?

Soul Science = Soul Mathematics

We often point out that photons are massless, dimensionless and outside space and time – just like souls. But photons are not souls and nor in fact are they massless, dimensionless and outside space and time!

If you analyse photons from the perspective of Einstein's special theory of

relativity, they seem not to belong to the physical world at all, but if you analyse them according to Einstein's contribution to quantum theory then photons are like tiny particles. Isn't this a catastrophic contradiction, and why does no scientist ever mention it? Is it a conspiracy?!

The two views are reconciled via Fourier mathematics. On the one hand, there is a dimensionless frequency view of photons (which is consistent with the results of Einstein's special theory of relativity) and on the other there is the photon in space and time (the dimensional view). The latter view is that of the particle. Everything is individuated and is therefore "particular" (of the nature of particles) rather than wavelike.

So, wave-particle duality is a misnomer if it's attempting to say that an electron, for example, is somehow particle-like and wavelike within spacetime.

Wave-particle duality refers to different domains. The wave part refers to the frequency domain and the particle part to the spacetime domain.

Everything has this dual character. The more wavelike something is, the smaller its spacetime trace (photons have very little trace). The less wavelike something else, the more it is particle-like. We ourselves seem to have few obvious wavelike features.

It's often said in quantum theory that things in the universe depart and arrive as particles but travel in-between as waves. This is an excellent way of describing the situation. We can even apply it to humans.

Imagine human beings in a shopping wall, all milling around and travelling with different speeds and directions, yet with virtually zero collisions. If we replaced human beings with snooker balls, the balls would be continually colliding with each other. Why don't humans? How do we avoid each other? It's because we have senses and minds. A MENTAL force, not a physical one, is keeping us apart. We continually and intelligently adjust our course to avoid collisions. Yet it might seem from another perspective that we move very erratically and seemingly without much rhyme or reason – just like quantum particles. We ourselves travel in a wavelike (mental) way, but arrive as "particles".

So, everything in the quantum world is caught between two worlds of mind and matter. Mind (waves) control how things move, but they MUST arrive as particles in order to be part of the individuated material world of spacetime.

Things such as snooker balls resemble pure deterministic particles, but we

ourselves – with minds – start to resemble quantum particles once more. We are guided by mental "pilot" waves, so to speak, as in the theory of de Broglie and Bohm.

Although photons seem, in their own frame of reference, to be outside space and time (hence how can they have a physical speed?), in terms of quantum mechanics they MUST have a particle-like aspect and it is in this regard that they travel at light speed through space and time and arrive as dimensional particles with some kind of mass (or momentum).

Yet this raises a new question – what about souls? Don't they have some physical manifestation, just as photons do? Therefore, can't we do direct scientific experiments on souls?

Souls are in fact located at specific points and have precise coordinates. In terms of quantum mechanics, if something has a precise position then its Fourier transform is completely uncertain, i.e. involves *infinite* frequencies. What is our definition of a monad? – something that contains infinite numbers (wave frequencies). Therefore, our definition makes perfect sense in relation to quantum mechanics.

The entire Cartesian grid of mathematical points (monads) in which the material world unfolds is nothing but an infinite collection of infinitely uncertain Fourier transform functions. That's what all of us are mathematically: these infinite Fourier transforms; these infinite VIBRATIONS. Souls are information systems based on frequencies, waves, vibrations.

All particles have associated Fourier transforms. A human being – composed of trillions of particles – might be considered an enormous superposition of Fourier transforms. This superposition is controlled by guess what? – a soul a monad.

That's how we establish a physical presence in the world even though our soul is permanently *outside* the physical universe. Just to stress that point, our soul is not inside our body! It never has been. And that's why we never die.

Think of existence in terms of a cosmic football match. Souls are the spectators – not in the game at all. However, each soul has a football player who acts his proxy. The soul controls the football player via a remote control device, so to speak.

It's a brutal game – deadly in fact – and player after player dies. Yet when a player dies, a new one is brought on and is again remotely controlled by the soul. The players exist in the spacetime arena of material existence, and the

process of replacing them corresponds to the cosmic process of reincarnation.

Of course, we don't experience our remote bodies as remotely controlled machines. We experience them *consciously* and our consciousness is wholly integrated with the body and seems to sit somewhere behind the eyes in our brain (to people deaf, dumb and blind from birth, it must be entirely unclear where their consciousness seems to be located). Oddly, Aristotle thought that the heart was the seat of intelligence:

"During the second half of the first millennium BC, the Ancient Greeks developed differing views on the function of the brain. It is said that it was the Pythagorean Alcmaeon of Croton (6th and 5th centuries BC) who first considered the brain to be the place where the mind was located. In the 4th century BC Hippocrates, believed the brain to be the seat of intelligence (based, among others before him, on Alcmaeon's work). During the 4th century BC Aristotle thought that, while the heart was the seat of intelligence, the brain was a cooling mechanism for the blood. He reasoned that humans are more rational than the beasts because, among other reasons, they have a larger brain to cool their hot-bloodedness." – Wikipedia

The trick of consciousness is to make it seem as if our essential self – our soul – is attached to our body, but in fact it has nothing to do with it. It's all conducted by Fourier transforms. Consciousness is the supreme illusion.

When we die, our consciousness dies with us, but not our essential self.

Let's face it, our body is nothing but what we eat, drink and breathe in. How can the stuff that went into our lungs, our stomach, our liver and our kidneys be alive? The living entity is the soul. When the soul can no longer control a body because the body has become too degraded then death occurs. Death takes places when the Fourier transform connection is irreversibly broken. The soul doesn't *leave* the body – it was never there to start with. It was always in the frequency domain of souls.

When we dream, we have a Fourier transform experience. Direct sensory input from the material world is suppressed, so the mind enters an entirely subjective state of pure frequency. Dreams are a foretaste of disembodied mental activity.

Memory

"Memory is a present experience of a past experience. It's the presence of

something which is no longer present." -- Raymond Tallis

Memory. Where is it? It's in Fourier transform land!

Virtual Reality

Reality consists of nothing but static points (monads) and dynamic points of infinite different energies contained within the monads. That's it. There's nothing else. Is that not astounding?

The static points are subjects and the dynamic points are objects. The dynamic points can be moving within individual monads, or moving within the entire monadic array. When they are inside individual monads, they are associated with dimensionless thoughts. When they are inside the monadic array, they are associated with dimensional material objects.

Never forget that outer space is a vacuum ("empty space") and that atoms are 99.9999999999999% empty space. In truth, even the last fraction of the atom is just another kind of empty space: concentrated empty space that we define as mass. It's a force field, an energy field and it's so strong it seems more than just space.

The whole of reality is VIRTUAL REALITY. There's not actually anything there at all in any physical sense. All that exists is mathematics and the subjective experience of mathematics. From such simple and humble origins, our whole wondrous universe is made.

It's all a stupendous mathematical illusion. It's the power of mathematics that generates "reality". Without mathematics, there can be no such thing as reality.

Mathematics is the end of the line, the last show in town. There really is nothing else. All non-mathematical knowledge is speculative and, in fact, meaningless – pure fantasy.

Abrahamism never intersects mathematics, and hence reality, at any point. It's easy for humans to go through life without knowing anything at all.

The Oracle at Delphi proclaimed Socrates the wisest man in the world and, after consideration, he agreed on the basis that he knew he knew nothing whereas other men thought they knew something and plainly didn't.

"[Socrates] goes on to make fun of the Sophists, and to disclaim the knowledge that they profess to have. What, then, is 'the reason why I am called wise and have such an evil fame?' The oracle at Delphi, it appears, was

once asked if there were any man wiser than Socrates, and replied that there was not. Socrates professes to have been completely puzzled, since he knew nothing, and yet a god cannot lie. He therefore went about among men reputed wise, to see whether he could convict the god of error. First he went to a politician, who 'was thought wise by many, and still wiser by himself'. He soon found that the man was not wise, and explained this to him, kindly but firmly, 'and the consequence was that he hated me'. He then went to the poets, and asked them to explain passages in their writings, and they were unable to do so. 'Then I knew that not by wisdom do poets write poetry, but by a sort of genius and inspiration'. Then he went to the artisans, but found them equally disappointing. In the process, he says, he made many dangerous enemies. Finally he concluded that 'God only is wise; and by his answer he intends to show that the wisdom of men is worth little or nothing; he is not speaking of Socrates, he is only using my name by way of illustration, as if he said, He, O men, is the wisest, who, like Socrates, knows that his wisdom is in truth worth nothing.' This business of showing up pretenders to wisdom takes up all his time, and left him in utter poverty, but he feels it a duty to vindicate the oracle.' Bertrand Russell, *A History of Western Philosophy*

Mathematics … a vast system of tautological definitions, all ultimately stating that $0 = 0$ … is the only real knowledge we can ever have. Yet it's all the knowledge we need. It tells us *everything* we need to know about existence, and what our role in it is.

Mythos – the fantastical part of our existence where we simply invent endless nonsense about reality (especially the Creator "God", karma, freedumb, dumbocracy, celebrity culture, monarchy, ghosts, ghouls, vampires, werewolves and so on) – adds all of the colour to existence. It's the stuff that really gets our heart pumping, yet it's deranged from beginning to end.

Evolution is about changing us from mad people to sane mathematicians (Gods), aware of our own mathematical nature. However, many people prefer to remain mad.

It's wrong to try to eliminate Mythos, but nor we should ever regard Mythos as "true".

Logos – mathematics, reason, logic – must be the basis of our rational world. Mythos must be the realm of fun, exploration, entertainment, adventure, the imagination, creativity and art.

In the mad world we currently all live in, Mythos is taken as "true" and Logos is shunted off into the dimly lit corner where geeks, nerds, dorks and anoraks do their weird stuff that no one else understands.

Billions of people base their fundamental values on literally insane propositions such as the Creator of the universe being born in a stable to a Jewish virgin.

Mythos must be relegated and Logos promoted. They must reverse their relative standings if we are to have a sane world.

Let's unleash Mythos in its true arena of FANTASY. We must have a Logos infrastructure for society, and a Mythos playground for rest and recreation. Instead, fantasy is taken as reality and Logos is deemed "weird", and far too difficult.

People prefer Mythos emotion to Logos reason, and that's why our world is the way it is. Humans are addicted to feelings. We need to become addicted to reason if we are to transform ourselves into Gods.

We live in a stupid world and a stupid world is always a mad world. Hasn't madness been the quintessence of the human condition thus far? No one can deny it.

We need to live in a smart world, ergo a SANE world. Isn't it time we left the cosmic madhouse?

Who Needs Science?

Science is full of strange definitions, many of which are confusing, unanalytic and don't work well with other definitions. There are countless implicit contradictions and confusions.

Now think of mathematics with its perfect Cartesian coordinate grid, its perfect circles, perfect waves, perfect sines and cosines, its perfect Riemann Sphere and perfect equations and formulae such as Euler's divine formula. Who needs science when we can have perfection instead? Science is actually getting in the way of our understanding of the universe. The universe is mathematical, not scientific.

Science has talked itself out of a grand unified theory of everything by despising complete mathematics and trying to continually distort mathematics to accommodate the scientific Meta Paradigm of empiricism and materialism (a metaphysical not scientific position; an irrationalist rather than

rationalist position).

Isn't it time to move *beyond* science – to the higher truth of mathematics? Just as biology is a subset of chemistry and chemistry a subset of physics, so is physics a subset of mathematics. So, why don't we just go straight to mathematics, which explains the *whole* of science?

<p style="text-align:center">✱✱✱✱✱</p>

Science itself has become the biggest obstacle to a grand unified theory of everything. As an enterprise based on experiments, on an empiricist materialist Meta Paradigm; as an inherently provisional, contingent subject reliant on synthetic *a posteriori* analysis; on induction, and verification and falsification principles, science is simply not equipped to deliver complete, unarguable knowledge and absolute truth.

Only one subject is: mathematics. Mathematics is eternal. It is necessary and analytic. It is deductive. It is infallible. It is *a priori*. It is immutable. It provides Platonic perfection. It is absolute. No one can argue with mathematical truths. They are as divine as anything can possibly be.

Mathematics is a sacred subject. It is TRUTH ITSELF. It is existence itself, hence it is the answer to existence. Mathematics answers every big question. Nothing else can rival mathematics. It has no competitors at all.

God IS mathematics. When we talk of "becoming God" we mean that one day we will have complete knowledge and understanding of the world, and complete mental control over matter – and it will all be thanks to mathematics.

Yet mathematics is not just some arid, inhuman, machine-like, algorithmic, imperious monument to hyperlogic and rationality. Mathematics is LIFE ITSELF. Mathematics is the life principle, the mind principle, the root of consciousness. Mathematics is ALIVE. We are alive because we are mathematical entities: monads – SOULS. We ourselves are ZERO and INFINITY – and the relationship of those two numbers is the quintessence of life. We are immortal and we are indestructible – thanks to mathematics.

Mathematics is miraculous because it is two things at once: subject and object. Objectively, mathematics operates like a cosmic machine of implacable laws, of relentless, crushing cause and effect. It is a hyper computer, a logic wonder machine, ontologically flawless, never once making an error. It is simply incapable of mistakes.

Yet mathematics has one further trick up its sleeve, the most incredible of

all. When it dons its subjective mask, it is no longer a dead machine but a living organism. It is *full* of ERRORS. It blunders around unknowingly, groping for its OWN TRUTH. It is beset with feelings, with will, with desire, with doubt, with bafflement, with the internal experience of mathematics. It is irrational, illogical, almost deranged – because it has no idea of what it is. It invents all sorts of Mythos fantasies to comfort itself. It is terrified of its own ignorance. It is afflicted by cosmic, existential fear and dread. It is angst-ridden, tormented by uncertainty. It desperately seeks any anchor to which it can cling, and it simply invents them if it can't find any real ones.

A brilliant musician need know nothing of mathematics, yet symphonies – full of perfect notes – are aural mathematics. We are all in the position of the composer. We have no idea we are in a world of pure mathematics; in fact we imagine it to be anything other than that, just as a composer thinks he's expressing the most profound feelings rather than a sequence of sinusoidal waves.

Because we are INSIDE mathematics and can't see the view from the outside, we are entirely deluded about our true nature. We are creatures that EXPERIENCE mathematics rather than KNOW mathematics, and they are radically different things. Mathematics is not experienced mathematically; it is experienced as WILL and FEELINGS, just as Schopenhauer thought. It is experienced as a relentless agitation and striving, a desperate search for something unidentified and unknown – an immense and dreadful existential hole in our hearts.

Computers reveal what an objective mathematical system would be like. But we are subjects, we are alive, and we have none of the relentless logic circuits of computers. A computer executes mathematics; we live it. If a computer's programming is perfect, it will never make mistakes. But no one created us and no one programmed us. We are going to have to work it all out for ourselves from scratch, with no one to help us, and no obvious clues. It's miraculous that we have come as far as we have.

Mathematics is on an epic quest – to know itself, to become self-aware, to comprehend what it is. Mathematics as subjectivity is the shining Grail Knight that relentlessly pursues, dialectically, the Holy Grail – the final answer to everything.

And here is that answer:

Thesis: mathematical subjectivity; the life principle imbued with free will; the

Cartesian domain of the unextended; the Leibnizian domain of the monad.

Antithesis: mathematical objectivity; the death principle imbued with inescapable cause and effect; the Cartesian domain of the extended; the scientific machine world.

Synthesis: subject and object combined; the Cartesian unextended and extended domains unified; life (free will) and science (cause and effect) reconciled. GOD!

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God is the mathematical subject that also knows itself as mathematical object. It understands EVERYTHING because there is nothing other than mathematics.

In God, mathematics understands itself. And we can all become God in precisely that same sense.

Plato wrote of the domain of perfect, immutable, eternal Forms. He also spoke of the mysterious Demiurge who understood the Forms so well that he could create a material world with them.

Here is TRUTH, here is ULTIMATE TRUTH. Plato, an Illuminatus for a relatively short period, based his entire dazzling philosophy on everything he learned from the Illuminati. To be sure, he added his own incredible genius, but his final philosophy was never anything other than Pythagorean Illuminism.

What was Pythagoras's most sacred teaching, the one that Plato "stole" before he was ready, before he had been admitted to the highest circle of initiates of the Pythagorean Illuminati, and for which offence he was expelled from the Illuminati?

It was this. There is a universe of perfect numbers, perfect mathematical Forms, perfect harmony, perfect knowledge, perfect Truth, perfect logic; in short, of perfect mathematics. This is the foundation of all else. Of existence itself. It is where the Music of the Spheres is heard.

Through reincarnation, the highest souls ascend higher and higher towards the origin of all perfections – the *summum bonum*, the highest good. Those that reach the sacred kingdom of mathematics, absorb that kingdom ("The kingdom of God is within you.") and internalise it. They themselves then become the living expression of perfect and eternal mathematics. They have

become DEMIURGES, DEMIURGES OF ABSOLUTE TRUTH … GODS. They have become … CREATORS.

When Plato spoke of the Demiurge – the public craftsman, the master builder – he was depicting a living embodiment of the domain of perfect Forms, who used perfect mathematics to create the material world.

This universe of ours is mathematically perfect. It is the "best of all possible worlds". So, why does it seemed botched and bungled, a stupendous error, full of wickedness, greed, evil and selfishness?

The cosmic error arises from the one part of mathematics that is inherently flawed – the mathematical subject. The subject must EVOLVE. It must come to understand itself – what it is. And what it *is* is an embodiment of mathematics. When it reaches self-awareness then the nightmare of doubt, uncertainty and ignorance is erased forever. The search for purpose and meaning is over. It understands EVERYTHING. It understands the necessity of all things. It understands ETERNITY. It has achieved *gnosis, enlightenment, God consciousness*. It has evolved to its perfect omega point and there is nowhere left to go. The journey is over. The final destination has been reached.

The error – the mathematical subject – is cured by dialectical progression. The dialect generates all the great battlegrounds: good versus evil, light versus darkness, generosity versus greed, health versus sickness, altruism versus selfishness, sanity versus madness, knowledge versus ignorance, reason versus faith, science versus superstition, enlightenment versus endarkenment, and mathematics versus Abrahamism.

Our world has seen the dialectic relentlessly unfold, in all of its horror and beauty, its brutality and magnificence. In truth, it is all just the execution of the ultimate self-solving equation, the mathematical mind searching for the answer to itself, for its own meaning.

The objective world is perfect. The subjective world is imperfect and must dialectically evolve to perfection. The Platonic Demiurge created a perfect world, but then populated it with flawed souls. As soon as souls entered mathematical perfection, they ruined it. And yet souls are the supreme mathematical objects, the *living* mathematical objects, the glory of the mathematical universe. It is their search to understand themselves for what they are that is the MEANING OF LIFE, THE UNIVERSE AND EVERYTHING.

The Demiurge is Abraxas – the First and Last God. He is living

mathematical perfection.

The Jewish philosopher Philo committed the stupendous error of putting the perfect Platonic Forms in the mind of the Jewish God, Jehovah, and thus created the wholly false concept of an eternal, perfect Creator.

The truth is that God does not create the universe. The universe creates God. Mathematics creates God, and God is a mathematician, reflecting the perfect Platonic Forms of mathematics. God EVOLVES. That is the most critical concept of all. There is NO Creator.

There is no God that comes with Platonic mathematics embedded. Rather, mathematical souls have to acquire mathematical knowledge – knowledge of absolute truth. They must evolve dialectically.

We are in a subjectively evolving universe that is objectively flawless. Mathematics, not God, created the perfect world. We ourselves – SOULS – are the errors, the flaws, the imperfections in heaven. And it is our task to remove all errors, to become perfect. And then we will be fit to take our place in the perfect universe, in paradise.

Existence is about the journey of imperfect mathematical subjects towards mathematical perfection. Plato's Demiurge managed it – and so can the rest of us. We can all become Gods with total understanding and total power. We also become morally perfect but only as a rational by-product – because why would perfect beings do anything immoral? There could be no rational reason.

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Have we not answered EVERYTHING?

This is the gospel of the Illuminati, humanity's sacred seekers of the truth since time immemorial. We are the light in the darkness. We are the flame that never dies. We are humanity's vanguard of divinity. We are the NEW HUMAN RACE. We are a higher humanity. We are the next evolutionary step. We are Logos humanity. We are the inevitable future, the ONLY future.

No more kneeling to Mythos deities. No more Mythos insanity. We are here to open the gates of the cosmic penal colony of earth, the prison planet ruled by darkness. We are here to make the inmates of the planetary mental asylum sane through HYPER REASON.

JOIN US.

BECOME GODS.

Complex Numbers

"In Fourier analysis, complex numbers make it possible to have a single coefficient for each frequency: we no longer need sines and cosines." – Barbara Burke Hubbard

This, of course, is the practical effect of $e^{ix} = \cos x + i \sin x$.

Waves

We define all energy as mathematical waves: cosine (real energy) and sine (imaginary energy). A cosine wave is a sine wave rotated by ninety degrees. Alternatively, it is phase-shifted to the left by ninety degrees.

Cosine waves correspond to physical "space", and imaginary sine waves to physical "time". Zero-energy waves correspond to mathematical points (monads), outside space and time.

Monads are dimensionless – hence not "physical" (dimensional) – and form the perfect Cartesian mathematical grid against which all physical entities and events are measured, i.e. they are an absolute, stationary reference system of mathematically perfect construction. The Cartesian grid is 6-dimensional, consisting of three real axes and three imaginary axes (three orthogonal orientations of real cosine waves and three orthogonal orientations of imaginary sine waves).

Monads contain infinite energy (all of which is perfectly balanced in terms of plus and minus real and imaginary energy to produce an overall sum of zero).

The physical world comes into existence when energy emerges from individual monads and enters the collective monadic arena – the six-dimensional Cartesian grid.

Thus, existence is about static mathematical points (monads) and dynamic mathematical points which equate to energy waves. That is the "big picture" of existence.

The material world is bounded by "pure" real and imaginary axes and everything between those axes is "complex" (has real and imaginary components). The complex arena is a hybrid of real and imaginary, and the balance can be constantly shifting from a large imaginary component and

small real component to a large real component and small imaginary component. This corresponds to Einstein's spacetime continuum where space and time are fused. The scientific notion of spacetime is actually just the same as the mathematical arena of complex numbers.

What is mass? Mass is just real energy – cosine waves – prevented from being normal cosine waves by virtue of being coupled to imaginary sine waves ("time" energy). Mass is what cosine waves become when they can't move freely as pure cosine waves but are intertwined with imaginary sine waves (time waves).

We can also conceive of "imaginary" mass as imaginary sine waves unable to move freely because of the interlinked presence of real cosine waves (space waves). In other words, real "mass" is just real energy that is constrained, distorted and deformed by its interaction with imaginary energy, and imaginary mass is just imaginary energy constrained, distorted and deformed by its interaction with real energy. The less that real or imaginary energy is constrained by imaginary or real energy respectively, the less it resembles localised mass and the more it resembles a pure wave.

Mass (constrained real energy) and imaginary mass (constrained imaginary energy; "time energy") are intimately connected to Riemannian geometry – the geometry of curved rather than flat Euclidean "space". Mass (real or imaginary) *is* curvature. Mass is an enormous local curvature of spacetime, and it causes a curvature of the spacetime surrounding it.

An iceberg analogy gives an idea of what's happening. Ice is both a different state of water (the solid rather than the liquid state), and it affects the surrounding liquid (by applying a freezing effect which may be loosely likened to the gravitational "force"). An iceberg is curved and its water molecules are much more rigidly bonded – forming an intricate, stable lattice – than in liquid water. The point to be stressed is that an iceberg and the surrounding water are the same thing (water), but arranged differently geometrically. In exactly the same way, mass (real or imaginary) is the energy of spacetime, but arranged differently from the surrounding spacetime and yet affecting the surrounding spacetime (like the iceberg's freezing effect). Mass and spacetime ARE NOT SEPARATE, as conventional science claims. Mass is just an intense localization of spacetime.

Scientists normally say that mass curves the spacetime geometry, and the curved spacetime geometry then dictates how mass will move. This geometrical effect is gravity, according to Einstein. This gives the impression

of mass and spacetime geometry being different things which affect each other. In fact, they are the same thing (like icebergs and liquid water), configured differently (in different phases, so to speak – like solid, liquid and gaseous water).

Therefore a black hole can no longer be considered a tear or rip in spacetime caused by an enormously concentrated mass, but rather a black hole is a geometrical structure *of* spacetime (like "Gabriel's horn", perhaps), which has an enormously distorting effect on the surrounding spacetime geometry. All of the mass of the dead star which gave rise to the black hole is now contained in an extraordinary spacetime structure. Conventional science says that all of the black hole's mass is concentrated at a singularity, which has a devastating impact on the surrounding spacetime geometry. We say that the black hole IS the devastating spacetime distortion, terminating at a singularity (like Gabriel's horn). The vanished mass is distributed throughout the spacetime distortion, not at the singularity. The "vanished" mass is the distortion.

The conventional concept of "mass" becomes impossible to sustain if it is all contained in a singularity – a dimensionless point. Using Descartes' definition of mind as unextended substance (i.e. dimensionless), all of the mass would now be mind! No wonder that scientists say that the laws of physics fall apart at the singularity, but it's their materialistic definitions and ideology that have collapsed, not the laws of science.

The black hole is where real and imaginary mass become so violently intertwined, localised and concentrated as to create this extraordinary distortion in the spacetime geometry, terminating at a singularity – the mental domain! Anything material that falls into it will experience the ultimate cosmic fairground ride – ending up as mind rather than matter.

Once a black hole is formed, any "excess" mass is converted to mind. A black hole might be defined as a cosmic crusher for converting mass into mind – for removing objects with mass from the material world and returning them to the mental world.

All of science's problems stem from its hatred of zero and infinity. Trying to solve the problems of science without zero and infinity is similar to getting rid of imaginary numbers from all the scientific equations that use them, and trying to find some other way to solve the equations. It's arrant nonsense.

M-theory – based on 1-D strings – is the most complex theory in human history not because it's on the right track but because it's on absolutely the

wrong track and trying to solve the fundamental problems of reality without the most essential tools necessary for the job: zero and infinity.

The "Mysterious Formula"

$\pi = (2/i) \ln(i)$

Who would ever have suspected this incredible connection between π, the imaginary number and the natural logarithm (ln)?

And Leibniz discovered an infinite series of which the sum is exactly $\pi/4$. Let the fanfare commence.

$$*****$$

"$\sqrt{-1}$ has a legitimate application in pure mathematics, where it forms a part of various ingenious devices for handling otherwise intractable situations. It has also a limited value in mathematical physics, as in the theory of fluid motion, but here also only as an essential cog in a mathematical device. In these legitimate cases, having done its work it retires gracefully from the scene." – Anonymous.

Retires from the scene? "Legitimate cases"? This is a typical instrumentalist view of imaginary numbers. They don't in fact retire anywhere!

The Mathematical Universe

Theoretical physicist Max Tegmark made a statement wholly compatible with Illuminism when he said, "For me, math is the window on our universe. It's the master key to understanding what's out there. … Why are we discovering more and more mathematical regularities out there? What's it telling us? I think our universe isn't just described by math, I think it *is* math. I think our entire universe is a giant mathematical structure that we're part of and that's the reason why the more we study physics the more mathematical regularities we keep discovering. I think the universe is a mathematical object. It's just out there existing in a sort of Platonic sense. It's not that it's existing inside of space and time but space and time exist inside of it. But that really changes our perspective. That really means that reality is very different from how it seems. If I'm wrong it means that fundamental physics is

eventually going to reach a roadblock beyond which we just can't understand reality any better. If I'm right then there is no roadblock and everything is in principle understandable to us, and I think that will be wonderful because then we will only be limited by our own imagination."

There is no leap of faith involved in Illumination. What it does involve is absolute confidence in reason, particularly as regards mathematics. Illuminism is based on the numbers zero and infinity – which are, by definition, beyond the reach of scientific materialism. Scientific materialism, the basis of atheism, is the faith-based position that the numbers zero and infinity do not have ontological reality. Illuminism, on the contrary, is the position that existence is "living mathematics" and that all numbers have ontological reality, including zero, infinity, negative numbers and imaginary numbers.

Illuminism then becomes a "simple" exercise of explaining what all the different numbers signify. Imaginary numbers are time, real numbers are space and the spacetime continuum is therefore an arena of complex numbers. Negative real numbers represent "anti-space" (antimatter) and negative imaginary numbers are anti-time. Zero is the number of immaterial existence (the mind/soul/life), and infinity (infinite mathematical energy) can be contained within zero as long as positive infinity is cancelled by negative infinity, and positive imaginary infinity is cancelled by negative imaginary infinity, leaving a resultant of zero.

Illuminism is based on the absolute, immutable, eternal truths of mathematics, not on the provisional truths of science (which can be overturned at any time by new experimental data inconsistent with prevailing scientific paradigms). Science is inherently not a subject that can deliver absolute truth. Atheism, which derives its justification from science, can therefore never be anything but a provisional position – waiting, like scientific theories, to be falsified/refuted.

Mathematics is not provisional. It provides unarguable knowledge. If everything is mathematical then there is an absolute answer to existence. Illuminism is based on the Monadology of Leibniz, the inventor of calculus and the greatest genius in human history. Leibniz was the supreme logician and rationalist.

Illuminism is the religion, philosophy and science of MATHEMATICS. We assert that everything can be explained mathematically, and that only our system offers the eternal, immutable certainties that people seek. Whether

people like the answers is quite another matter. The truth has no obligation to be nice and comfortable. As it turns out, mathematics offers everything that any religious person could ever want, but that's because of the extraordinary properties of numbers, not because of any preposterous "Creator".

Most of us were atheists before we found Illuminism. We've all tried putting dents in it, but we have all failed.

The Problem of "Abstract Zero"

2 x 0 = 4 x 0. Cancelling the zeros means that 2 = 4.

Nonsense, huh? Yet there's no problem if zeros are ontological. In that case, 2 x 0 does not equal 4 x 0, but only half of 4 x 0.

Information

What are waves? Carriers of information.

What are *you*? A carrier of information.

Mathematics is all about information and human beings are all about information. Why should anyone be puzzled by the fact that the information we carry is based on the only conceivable ontological carrier of information – mathematics?

We are MADE of information. What is DNA? A biological information code, reflecting underlying mathematics. It's impossible to escape mathematics and information.

This is an information universe. This is a mathematical universe.

Here is the key point – information is ALIVE. All subjects capable of interpreting and experiencing information are eternal, living beings: SOULS!

The Vanishing Point

In art, the vanishing point is a zero-dimensional object, an infinitesimal dot on a painting, representing a location infinitely far from the viewer. The vanishing point links zero and infinity. It's a singularity. We can imagine it as the origin from which the whole painting emerges.

An infinitely distant point is "a zero at infinity". The point at infinity is one of the most profound in the whole of mathematics.

It's a property of ellipses that if you place a lightbulb at one of its two focuses, all of the light beams will converge at its other focus. If you stretch out the ellipse indefinitely, the second focus becomes a point at infinity and the ellipse has actually been converted into a parabola. All of the beams that converge to the point at infinity are now straight lines. So, a parabola with a point (focus) at infinity is functionally the same as an ellipse. It soon became equally clear that a straight line with a point at infinity was equivalent to a circle; a plane with a point at infinity was equivalent to a sphere, and a cube with a point at infinity was equivalent to a hypersphere.

The Riemann Sphere – the Soul?
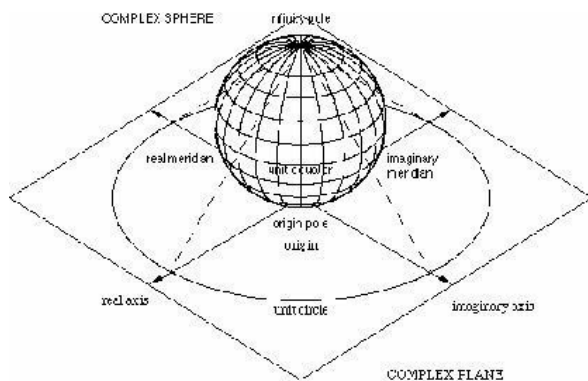
The brilliant mathematician Bernhard Riemann was able to show that a sphere full of numbers sitting on the complex plane (comprising one real axis and one imaginary axis) had a south pole of zero and a north pole of infinity. This is one of the most remarkable ideas of all time. In many ways, we can conceive of a monad as a Riemann Sphere. The zero, the south pole, is a mathematical point that constitutes the "outer" manifestation of the monad. But if we go inside the monad via this south pole, we enter a whole, infinite world of numbers, with infinity itself perched at the north pole. We can imagine flipping over the sphere so that the south and north poles swap over, and suddenly infinite numbers can metaphorically pour out of the monad. The monad, conceived as a Riemann Sphere, is both zero and infinity, and everything in between. This is its unique and decisive property. It contains the *whole* of mathematics. And, in particular, it contains the Euler Formula.

The Riemann Sphere is perfectly balanced in terms of positive and negative real numbers and positive and negative imaginary numbers. All of

the numbers sum to ZERO. So, the monad as a Riemann Sphere is a dimensionless point containing zero energy (as a total), yet an infinity of energy in four different flavours (real and imaginary, positive and negative), all of which perfectly cancel. The Riemann Sphere is an eternal zero, and so is the universe made from infinite Riemann spheres – from infinite souls!

In a Riemann Sphere, circles on the sphere that pass through the north pole (the point at infinity) appear on the complex plane as straight lines. If the sphere is flipped over, zero and the infinity point swap positions. If the sphere is multiplied by i, the imaginary number, the sphere is rotated by 90 degrees. Endless mathematical operations can be applied to the Riemann Sphere to change its properties. It's infinitely flexible. It explicitly contains the numbers 1, -1, i, -i, 0 and pi. Moreover, by virtue of the Euler Formula ($e^{i\pi} + 1 = 0$), it also contains e. The only "special" number missing is phi, the golden ratio, yet this can easily be constructed from the other properties of the sphere. In other words, the sphere contains all of the key numbers of mathematics.

A Riemann Sphere is equivalent to the complex plane with a point at infinity.

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"When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of science." – William Thomson, Lord Kelvin

This is a key statement, but not about science. Lord Kelvin rightly says that it's only when something is expressed in numbers that it becomes "known". It's measurement, the labelling of something with a number, that brings it into the realm of knowledge. In other words, it's when it's mathematicised that it becomes something upon which we rely. It's not science that converts it into knowledge, it's mathematics. Science is true only to the extent that it uses mathematics. In fact, the whole of science could be converted into mathematical statements.

Why do we need to talk about atoms and molecules, electrons and protons? We could just as well refer to them as different types of mathematical functions. In any case, all quantum systems are described by

"wave functions" – solutions of the Schrödinger wave equation – and these wave functions are absolutely mathematical. When we talk about "atoms", we are in serious danger of creating a fiction. This word is just a label for a mathematical function and we would perhaps understand the world better if we kept the onus on the mathematics rather than inventing a scientific jargon: a translation of mathematics into non-mathematical concepts.

What is an electric "charge"? Don't we simply mean something that is "negative" in mathematical terms in relation to something that is "positive"? Don't we become misled by inventing this unmathematical vocabulary? Arguably, science has made much slower progress than it ought to because it is trapped in scientific jargon. If you call something a "particle" and something else a "wave", you create a massive conceptual bridge between them. It is precisely this chasm that makes quantum mechanics so hard to explain. Had "particle" and "wave" never been introduced, quantum mechanics might have been discovered centuries ago.

Rotation in the Complex Plane

If you square the imaginary number, i, you get -1. When you cube it you get –i and when you raise it to the power 4 you get 1. It turns out that multiplying by i is equivalent to rotating by 90 degrees in the complex plane. If you take the real number 2 and multiply it by i, you get 2i, which places it on the imaginary axis rather than the real axis. Multiply it by i again and you get -2, which is equivalent to a 180-degree rotation and places it on the negative real axis. Multiply it by i again and it ends up on the negative imaginary axis. Multiply it by i one final time and you get 2 once more, i.e. you've travelled 360 degrees and gone right back to the beginning. So, multiplication by i is the same as rotation by ninety degrees in the complex plane. What is an imaginary number? It's actually just a real number rotated by ninety degrees in the complex plane. Alternatively, a real number is just an imaginary number rotated by minus ninety degrees in the complex plane. Multiplication is the same as geometric rotation.

The Riemann Sphere

It may sound absurd to say that the Riemann Sphere is the mysterious soul that represents our innermost, sacred being. Yet why would the soul be

anything other than this? A monad is a dimensionless point. That's why no one can see, hear, taste, smell or feel it. That's why it's not a subject of scientific study and accessibility. A dimensionless point is inherently immortal. It can be neither created nor destroyed, but its contents can be transformed: transmuted from "lead" into "gold".

The monad has ENDLESS capacity, so much capacity it can contain all of the knowledge in the universe. It is zero, it is infinity and it is everything in between. The entire laws of ontological mathematics are encoded in it. In other words, it comes inbuilt with the laws of the universe. It is permanently in motion (internally), and it can also interact with the objective world.

It becomes more and more complex by adding its internal wave components in more and more elaborate ways. This "thing" is unimaginably powerful … powerful enough to be God.

Of all those who have pronounced on religion, we alone have stated exactly what the soul is and defined its properties. Why would you listen to those who have no idea what it is and can explain nothing of its properties, yet are willing to kill others in the name of the God who allegedly created their soul?

The soul is uncreated. The soul is the most basic stuff of the universe. It interacts with the universe because both it and the universe are mathematical. How could a non-mathematical entity interact with the mathematical world? Mind and matter are both grounded in mathematics. It's impossible to explain mind, matter and their interaction without mathematics.

Have you ever heard a Jew, Christian or Muslim describing the mathematics of the soul? Are they claiming the soul is non-mathematical? In which case how can it possibly interact with the scientific world of mathematical laws?

The reason why it's hard to conceive of ourselves as monadic Riemann Spheres is that we are on the inside looking out. We are *subjects*. A Riemann Sphere is, on the face of it, an object. Yet, of course, subject and object must ultimately be the same thing. I am a subject and you are a subject, yet I experience you as an object external to me, and vice versa. We define ourselves as subjects, but to others we are objects. Others will not feel what we feel. They will never be in our shoes.

Imagine a coin permanently lying on its side, showing the tail side. The head is forever hidden. The coin will always be an object and yet it contains this unseen head – the self, the ego, the soul, the subject. You can never see

both sides at once. Like the optical illusion of the rabbit and the duck, you see one or the other, but never both at the same time. Subject and object are complementary. They are like wave and particle in quantum mechanical wave-particle duality. They might be said to be manifestations of the Heisenberg Uncertainty Principle. The more precisely you analyse one property, the more uncertain the other becomes. The more you define something as an object, the less it seems like a subject. The more it seems like a subject, the less of an object it becomes.

We can define music precisely in terms of its component mathematical waveforms yet music isn't reducible to those waveforms. Music is profoundly emotional despite being nothing but an assortment of mathematical "notes". When a soul is characterised as a Riemann Sphere, it's analogous to defining music as a set of objective mathematical waves combined in certain ways. The most important ingredient is missing – the emotional effect the music has on the subjects hearing it. We can never use mathematics to describe these feelings (even though they themselves are entirely mathematical), and nor can we use mathematics to describe what it feels like to be a soul and the experience of being a soul. For that, we must use the language of subjectivity rather than objectivity, and we must lose the precision of objectivity. We enter the vague, turbulent, irrational world of feelings, desire, will, impressions, beliefs and so on. But we must never overlook that underpinning this subjective reality is a hard, clinical, analytical mathematical reality and nothing expresses it better than the wondrous Riemann Sphere, the most beautiful and fundamental "object" in the universe, the essence of existence itself.

"If a higher being were ever to tell us about the origin of the world, I wonder whether we should be capable of understanding him." – Lichtenberg

Illuminism provides Lichtenburg with his answer. Any "higher being" explaining the origin of the world to us would cite mathematics, and the explanation he would give would be exactly the one set out here because there is simply no alternative. Any system not based on the mathematical point is false. Any system not based on waves as energy is false. Any system not based on the addition of simple waves to produce complex wave functions is false. Any system not based on field theory is false. Any system not based on particles as excitations of fields is false. Any system not based on the ontological reality of real and imaginary numbers treated on a par with

each other is false. Any system not based on the perpetual movement of waves is false (a wave can never come to a halt: energy signifies eternal movement). With these simple axioms, everything is explained concerning the objective, "scientific" world.

All things are transmutations of the energy of monads. There are no other things.

The monadic system provides an eternal, infinite source of energy that gives rise to a changing world of finite forms via a 6D coordinate system that provides the perfect mathematical framework for space, time and individuated things. The monadic system is the World Soul itself.

Plato cited the order and harmony of the universe as the clearest evidence that the universe possesses intelligence and is "in very truth a living creature with a soul and reason." However, he should have added that it's unconscious, instinctive and intuitive until the time it evolves individual consciousnesses such as human beings.

"For modern natural science there is no longer in the beginning the material object, but form, mathematical symmetry." – Heisenberg

Here we see Heisenberg moving away from conventional science and towards a much more mathematical conception of reality, yet he didn't go nearly far enough and plainly didn't understand the philosophy of mathematics nearly well enough. He remained wedded to irrationalist notions of empiricism, positivism, observation and the human senses rather than turning to eternal, rationalist, Platonic mathematical truths.

"Form" and "mathematical symmetry" are absolutely critical – but what do they have to do with the insane subjectivism and reliance on observation that Heisenberg and his mentor Bohr fanatically promoted? Their ideology culminated in the demented, instrumentalist Copenhagen Interpretation of quantum mechanics which destroyed objective reality, rejected the reality principle, and embraced the ludicrous position of Bishop Berkeley that to be is to be perceived.

Heisenberg and Bohr could instead have promoted ultra rationalist mathematics and brought to an end the dogmatism of empiricist materialist science. That is what should now happen.

Mathematics is the lingua franca of the universe. It is what defines Jung's *unus mundus* – the one world that underlies the apparently separate worlds of mind and matter. Mathematics, it transpires, is both. When mathematics is in

its subjective inner mode it is mind and when it's in its outer objective mode it's matter. In other words, the apparent mind-matter dualism reflects the subjective-objective duality of the single substance of living, thinking mathematics.

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The universe is initially unconscious. It is "non-ego". Only when it has reached sufficient complexity can individual egos emerge from the cosmic non-ego and consciousness be born.

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Above all, existence is founded on the simplest thing possible – the mathematical point – yet this is also the most complex thing imaginable because it contains mathematical infinity, the complete set of mathematical laws of the universe, and it is also none other than the SOUL.

As a dimensionless point, a "zero", the monad is "nothing", yet it is also pure eternal being and from it is generated eternal becoming.

Thesis = Being

Antithesis = Nothing

Synthesis = Becoming

The monad is all of these: the thesis, the antithesis and the synthesis. The synthesis of becoming is the dialectic engine that drives existence onwards to its omega point of perfection – DIVINITY.

"But between this being and non-being, I really don't know which is being and which is non-being." – Chuang-Tzu

The Riemann Sphere and Information

"Black hole thermodynamics leads to an even more extreme conclusion, the Bekenstein bound. According to this principle 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, measured in Planck units. This implies that the world must be discrete on the Planck scale for were it continuous any region

could contain an infinite amount of information… It is just that we would normally expect the amount of information that can be coded into the Thing to be proportional to its volume, not to the area of a surface that contains it."
– Lee Smolin

So, according to the Bekenstein bound, usable information is confined to the area, the surface, rather than the volume, the depth. This is a most extraordinary finding, as scientists such as Smolin have recognized. Why *should* the volume be irrelevant?

Consider the Riemann Sphere. The interior of the sphere counts for nothing. All of the information is on the surface. The sphere maps to the complex plane with a point at infinity.

Isn't that rather like the way scientists talk about the expanding universe? All of the information is on the expanding surface. The interior, no matter how big it gets, is informationally "nothing". The extraordinary thing about a Riemann Sphere, no matter how big, is that it always mapped to the complex plane with a point at infinity. We have something that is relentlessly expanding and yet still mapped to the same thing – to a plane, a surface, an area rather than a volume.

How are we to understand the expanding sphere and its relationship with the complex plane? Somehow, all that ever really changes as the sphere expands is the sphere's mysterious relationship with the complex plane's transcendental point at infinity – the God Point, the Genesis Singularity. Is this the key to the expansion of the universe?

<p style="text-align:center">✳✳✳✳✳</p>

Any area, no matter how small or large, of the complex plane can be mapped back to the projection point of the Riemann Sphere. Contrary to what Smolin asserts, this tells us that any finite area has its roots in a Singularity of infinite points and infinite information density. In fact, every point in existence, never mind every finite area, is linked to the Information Singularity, which contains all of the information in existence. It is the *Information Totality*. Every part of existence is underpinned by infinite information. Every part is in the Whole, every part reflects the Whole and the Whole is in every part: the universe is an informational hologram. What could be more powerful, elegant and mind-bending?

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Smolin wrote, "This implies that the world must be discrete on the Planck scale for were it continuous any region could contain an infinite amount of information." Yet consider the projection point of the Riemann Sphere: an infinite number of mappings to the complex plane can be made from it. In other words, it contains an infinite amount of information, and at no stage is there any implication that the world must be discrete. Smolin is plain wrong. Any point can indeed contain an infinite amount of information. Any monad can contain an infinite amount of information, and the world that flows from them is absolutely continuous in mathematical terms.

The Riemann Sphere exemplifies that area rather than volume is what counts in informational terms, hence the Bekenstein bound makes perfect sense, though it does not imply discrete rather than continuous space. One reason for that is that every area is actually subtly linked to the mysterious "point at infinity." This may not seem apparent but it's demonstrated by the fact that a Riemann Sphere can be continually expanding and yet the expansion is solely controlled by the nebulous point at infinity. If we combine David Hilbert's concept of Hotel Infinity with the Riemann Sphere, we get the core mathematical model of the expanding universe, originating from a Big Bang Singularity.

It is *essential* to model the Big Bang using pure mathematics because only then can the precise, analytic, immutable, Platonic truths of mathematics be brought to bear.

The Universal Computer?

"This leads to a very useful metaphor – the universe as a kind of computer. But it is a computer in which the circuitry is not fixed, but can evolve as a consequence of the information flowing through it." – Lee Smolin

This is an interesting metaphor, but why not say a living mind rather than a dead computer? Do you see how Smolin's underlying Meta Paradigm of empiricist materialistic science infects everything he says? He simply refuses to countenance living minds, so he turns to materialist machine metaphors involving computers. Always be on the lookout for how people betray their prejudices via the particular words and concepts they use.

"[The universe] cannot have been made by anything that exists outside it, for by definition the universe is all there is, and there can be nothing outside it. And, by definition, neither can there have been anything before the universe that caused it, for if anything existed it must have been part of the universe. So the first principle of cosmology must be 'There is nothing outside the universe.'…But if it is knowledge we desire, if we wish to understand what the universe is and how it came to be that way, we need to seek answers to questions about the things we see when we look around us. And the answers can involve only things that exist in the universe. This first principle means that we take the universe to be, by definition, a closed system. It means that the explanation for anything in the universe can involve only other things that can exist in the universe." – Lee Smolin, *Three Roads to Quantum Gravity*

Amen to that. Here we agree with Smolin 100%. But we, of course, say that existence and the universe are nothing other than eternal mathematics, and all the answers to everything must be provided mathematically.

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"In the history of physics it has often happened that by the time the physicists have been able to understand the need for a new mathematics, they found that the mathematicians had got there first and had already invented it." – Lee Smolin, *Three Roads to Quantum Gravity*

Indeed! And isn't it rather curious that seemingly "abstract" mathematics proves invaluable to allegedly "concrete" science?

"It is true that there is only one mathematical formalism for the quantum theory. So physicists have no problem with going ahead and using the theory, even though they do not agree about what it means." – Lee Smolin, *Three Roads to Quantum Gravity*

So, the mathematics of quantum mechanics is not "confused"; it's the human minds interpreting what the mathematics means that are confused. Human minds find it extremely difficult to convert mathematics into non-mathematical language. The errors belong to human thinking, and not to the mathematics. Anyone trying to understand mathematics should try to think like a cosmic mathematician, not like a human. Ideas that are extremely objectionable to the human mind are not objectionable at all to the

mathematical mind. Above all, a mathematical mind isn't remotely bothered about "observability" whereas human minds are consumed with this. A mathematical proof contains no "observables". Does that make it untrue? We have to escape the empiricist prejudices of the human mind.

Doubting Thomas was an empiricist. He wanted observational, empirical evidence regarding Jesus Christ's alleged resurrection. A rationalist wouldn't accept Jesus Christ's claims under ANY circumstances unless he could rationally – not observationally – demonstrate the truth of resurrection. As magicians and illusionists prove every day, it's fantastically easy to delude the human powers of observation. Observation proves nothing except how flawed and fallible it is. But no one can disprove that $2 + 2 = 4$. Rationalism ALWAYS beats empiricism.

Physicists, most of whom are extreme materialists, reject the ontological reality of zero, "local" infinities, negative numbers and imaginary numbers. They continually reject certain perfectly rational avenues of thought on the basis that they are not "real". They define "real" as only that which is obvious to the human senses or detectable by human experiments (which ultimately feed into the human senses). The human senses are known to be astoundingly unreliable instruments, easily deceived and fallible. Would you bet everything on shoddy detection equipment? That's what the materialists have done. Above all, they sneer at the concept of the soul (and mind) because it is something that cannot be detected with the human senses. Would the cosmic mathematical mind reject the soul? The numbers zero and infinity rationally characterize it. Why would zero and infinity be forbidden? Just because the human senses aren't configured to detect them?

Why should the dubious human senses be the determinants of what is mathematically and logically permitted to exist? Human senses are the products of evolution and are designed to allow us to live in this world; they did not evolve as organs of truth to allow us to determine the fundamental nature of reality. Reason and logic are the newest and most immature features of the human mind. Humanity survived for hundreds of thousands of years without conducting itself rationally. Most people alive today are irrational. Animals are irrational. Human beings for the most part simply aren't comfortable with reason and logic. Even scientists have demonstrated that they will force reason and logic to obey the senses rather than force the senses to obey reason and logic.

The question of the existence of the soul is one for reason, not for the

human senses. Lack of evidence is not evidence of absence.

The question of the soul's existence has of course been commandeered by endless religious and spiritual speculation and mumbo jumbo. All of that should be rejected out of hand. The soul must be considered on a purely mathematical basis and the question of its existence can be reduced to whether the numbers zero and infinity have ontological reality. Only a mathematical analysis of zero and infinity can yield the truth of the soul. Anything not engaged with that task is irrelevant. No book of "revelation" can tell you about the soul. No book of materialism can tell you about the non-existence of the soul.

The soul = zero/infinity represents the fundamental equation of soul theory. It's time scientific materialists tried to think like cosmic mathematicians and to ponder why zero/infinity should be forbidden (from their point of view). They themselves are the ones who proclaimed that anything not forbidden is compulsory. Hence, if they cannot demonstrate that zero/infinity is forbidden then it must be compulsory. Once zero/infinity is acknowledged as ontologically real, scientific materialism is automatically destroyed. Immediately, mind, soul and life become the fundamental bases of existence. You are immediately led to Leibniz's Monadology, and to Illuminism. As soon as you rationally accept ontological zero/infinity, you are an Illuminist and you are free of religious faith and atheistic materialism while being on the surest possible ground – that of mathematics.

Illuminism is the only rational escape route from faith on the one hand and materialism on the other. Moreover, Illuminism actually incorporates materialism as a subset of reality. It is not opposed to materialism; it shows it to be incomplete and, ultimately, to be a product of idealism.

Idealist philosophers were never able to convert their ideas into mathematics; the materialists were, hence were much more successful. The Illuminati, the supreme idealist, rationalist philosophers, were those who grasped that idealism must harness mathematics too. All that was necessary was to study the mathematics of materialism and focus on those mathematical elements rejected by materialism. These were certain to be precisely the mathematical elements that defined idealism. They were rejected because materialists had not been able to comprehend them in terms of their materialist dogmatism and faith.

You cannot rationally reject crucial elements of mathematics and yet still rely on mathematics as your primary instrument for understanding the world.

This is why materialism is incomplete. Idealism, to instantly become superior mathematically to materialism, simply had to embrace all of materialism's mathematics and all the mathematics it rejected. Idealism is complete mathematics and materialism isn't. Wouldn't you rather embrace all of mathematics rather than some of it, cherry picked to suit the human senses? Complete mathematics is the way out of the labyrinth of confusion. It privileges no parts of mathematics over any others. It accepts mathematics lock, stock and barrel.

To be opposed to idealism is to be opposed to complete mathematics. Who would prefer incomplete mathematics to complete mathematics? Any intuitive person immediately grasps that you cannot dismiss certain parts of mathematics solely on the grounds that they do not make observational sense to you. You may find division by zero difficult; that does not therefore mean that division by zero is banned by "reality". Why would it?

Materialists have essentially tried to define mathematics according to how problematic the equations are. Equations that result in division by zero must somehow be "wrong" because human beings don't understand them; imaginary numbers must be unreal because human minds can't imagine what they might be in reality. Negative numbers must be rejected because no human being has ever seen minus one of something. Infinity is rejected because surely it would tear the finite fabric of reality to shreds and destroy the world. Zero can't exist because it's simply not there: you can't see, hear, touch, smell or feel it. Do you see how mathematics has been forced into the service of a peculiarly human, sensory way of thinking?

So, the debate between idealism and materialism is now crystal clear. Idealists have finally been able to turn their philosophy into mathematics and thus compete with the materialists and go beyond them by invoking the FULL power of mathematics, not just an empiricist subset. Idealism versus materialism is now seen to be a mathematical debate concerning whether mathematics is complete or incomplete, in the particular sense of whether all numbers are ontologically real or some are explicitly forbidden by nature. Idealists accept the totality of mathematics; materialists don't.

There used to be an onus on idealists to provide some persuasive argument for the existence of soul/mind. That is fully accomplished via mathematics and the Leibnizian monad. Now the onus is on materialists to explain why mathematics, as applied to reality, should be incomplete and should forbid certain numbers.

The debate is now solely mathematical. There is no need for any input from religion, empiricism, psychology, theology or philosophy. The fundamental questions of life are about the status of mathematics. Why should there be a difference between mathematics as an abstraction and mathematics as ontological? Scientific materialists define a radical difference between theoretical and applied mathematics. Idealists do not.

The only apparent reasons for science's rejection of ontological mathematics are a) they find certain calculations very difficult and hard to interpret (the "difficulty" issue); b) they cannot conceive of what certain numbers might mean in reality (the "poverty of imagination" issue) and c) they cannot make certain numbers make sense in terms of the fallible human senses (the "primacy of unreliable human senses" issue).

All three of these reasons are in fact grounds for rejecting materialism, not for embracing it. Idealism states that all numbers are equally real, regardless of human senses and modes of thinking.

So, will you stand with complete mathematics or on the side of incomplete mathematics? Will you accept that zero is ontologically real? If it is, everything is changed forever, and mind, not matter, becomes the essence of existence.

We are the standard-bearers of mathematics. Who would dare to oppose us? Will the materialists seriously oppose us with their enfeebled, selectively manipulated, incomplete mathematics?

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"We humans seem to be fascinated by our ability to hold back change for long periods of time. This may be why painting and sculpture are so fascinating and so valuable, for they offer the illusion of time stopped. But time cannot be stopped. A marble sculpture may look the same from day to day, but it is not: each day the surface becomes a little different as the marble interacts with the air. As the Florentines have learned only too well from the damage wrought to their heritage by pollution, marble is not an inert thing, it is a process. All the skill of the artist cannot turn a process into a thing, for there are no things, only processes that appear to change slowly on our human timescales. Even objects that seem not to change, like rocks and can openers, have stories. It is just that the timescale over which they change significantly is longer than for most other things… So there are not really two categories of things in the world: objects and processes. There are only

relatively fast processes and relatively slow processes… The illusion that the world consists of objects is behind many of the constructs of classical science. Supposing one wants to describe a particular elementary particle, say a proton. In the Newtonian mode of description one would describe what it is at a particular moment of time: where it is located in space, where its mass and electric charge are, and so forth. This is called describing the 'state' of the particle. Time is nowhere in this description; it is, indeed, an optional party of the Newtonian world. Once one has adequately described how something is, one then 'turns on' time and describes how it changes. To test a theory, one makes a series of measurements. Each measurement is supposed to reveal the state of the particle, frozen at some moment of time. A series of measurements is like a series of movie stills – they are all frozen moments.

"The idea of a state in Newtonian physics shares with classical sculpture and painting the illusion of the frozen moment. This gives rise to the illusion that the world is composed of objects. If this were really the way the world is, then the primary description of something would be how it is, and change in it would be secondary. Change would be nothing but alterations in how something is. But relativity and quantum theory each tell us that this is not how the world is. They tell us – no, better, they scream at us – that our world is a history of processes. Motion and change are primary… From this new point of view, the universe of a large number of events. An event may be thought of as the smallest part of a process, a smallest unit of change. But do not think of an event as a change happening to an otherwise static object. It is just change, no more than that.

"The universe of events is a relational universe. That is, all its properties are described in terms of the relationships between the events." – Lee Smolin, *Three Roads to Quantum Gravity*

Smolin presents an extremely sophisticated view, with which we agree on many fronts, yet it is also full of fallacies. He says, "Motion and change are primary." This, of course, is reminiscent of the views of Heraclitus. Yet, as Leibniz pointed out, motion and change are not disembodied abstractions. They are happening to *something*. Motion is always motion of something, change is always change in something, and processes are always in relation to things. You can't have motion without something moving, or change without something changing and you can't have a process if there's nothing undergoing the process. Motion, change and process are not the essence of things; they are properties of those things. The essence of a monad is that it is

dimensionless, indivisible, immortal and contains infinite energy. Now, it is the essence of energy to be continually expressed in motion and thus to be always changing. Since it is always changing, the monad from which it emanates is also always changing. A monad is not an eternal being but an eternal becoming.

Smolin says, "So there are not really two categories of things in the world: objects and processes." Yet this is exactly what there is. There are monads ("things") and there are the energy-based processes that cause the monads to constantly change (to permanently *become*).

In Smolin's view, energy does not belong to anything and there is only physical energy (dimensional energy) and nothing else. This is a classic materialist view of the world, which is fundamentally false. As ever, zero is banished from this world. It cannot be stressed enough that energy can be dimensionless because it can be located exclusively within a dimensionless, mathematical point. Only thus can the Big Bang be explained.

How can energy pour out of a Singularity unless the energy was contained in the Singularity in the first place, i.e. was dimensionless like the Singularity itself? Scientists such as Smolin are in total denial that energy is capable of existing dimensionlessly. They will never get anywhere near a true understanding of reality until they accept that energy originates in the non-material domain of zero.

If Smolin accepted monads as the sources of energy then his views and ours would be almost identical. We too deny static, material "things". We too accept constant motion, change and process. We too accept energy as the active agent of existence. We too accept a relational universe, but superimposed over an absolute coordinate system of mathematical points. The underlying coordinate system is never directly observed; only relations are actually observed. Yet the unseen coordinates are essential and they explain why light is the maximum speed of our universe and why our universe can emerge from an origin, a Singularity.

"Ordinary quantum theory is a theory of atoms and molecules. In the form developed originally by Bohr and Heisenberg. It required the world to be split into two parts. In one part was the system under study, which was described using the quantum theory, and in the other part lived the observer, together with whatever measuring instruments were needed to study the first system. This separation of the world into two parts is essential for the very structure

of quantum mechanics." – Lee Smolin

Consider how problematic this statement is. It implies an observer-created reality: the experiments performed by the observers will determine reality. So how do we define observers? Are they conscious? Surely, we can't require consciousness for "reality" to be real. What constitutes a measuring instrument? Is a microbe, a rock, or a flower such an instrument? As Einstein asked, is the moon still there when no one's looking? Moreover, surely the observers and their instruments are quantum systems, so how can they be separated from what they are observing?

Quantum mechanics is rather like Kantian philosophy. Observers take the role of Kantian minds that impose reality on some nebulous system outside space and time (the quantum system "in itself") and bring it into space and time, i.e. the phenomenal world the mind can understand because it is constructed according to its own rules. But the Kantian mind itself has to be constructed from noumena, just as the "quantum observer" is himself a quantum system. We are in an almighty chicken and egg scenario. Even worse, quantum mechanics is usually defined as a materialist system but Kant was an out and out idealist; how come the two systems are so well matched and raise exactly the same issues?

The quantum mechanical world, as described by its founders, is *subjective*, not objective, and contains several fundamental paradoxes as severe as those that bedevilled Kant's philosophy.

Three Realms

So, which one will you live in? – the realm of faith (religion), the realm of empiricist materialism (science) or the realm of rationalist idealism (mathematics)? Those are your three choices and you *must* choose.

The realm of faith is about feelings. The realm of science is about the senses. The realm of mathematics is about reason.

The realm of faith concerns the search for comforting delusions, the desire to escape from fear and uncertainty, the appeal to "gut feelings", which are usually about wishful thinking.

The realm of science is about "seeing is believing", about observation, about believing in nothing that cannot be brought into direct sensory awareness.

The realm of mathematics concerns logic, reason and intuition. Faith is

treated with contempt; knowledge is everything. The desire for things to be available to the senses is regarded as infantile and plebeian. Sensory evidence is for the unsophisticated, the uncouth, those with no imagination. Mathematics is the supreme patrician subject – for the patricians of the mind – those who can reason their way beyond both childish faith and the equally childish need for direct evidence.

Reason goes beyond the sensory realm to the Platonic realm of absolute truth.

Faith opens the gates to an unbelievable, superstitious, ignorant, irrational realm of Mythos. It's for the most stupid and bestial of humans.

Scientific materialism dispenses with faith, God, the soul, the afterlife and any possibility of definitive answers.

Mathematical rationalism has no difficulties at all with unobservables, so has no hostility to the concept of soul. It rejects the concept of any Creator – no one can create mathematics – but it allows for the *creation* of Gods via the dialectical evolution and self-perfecting of the universe. Existence is a self-solving mathematical equation and its omega solution is God; in fact, infinite Gods. We can all be Gods – literally.

Mathematics, through dimensionless existence, allows for the soul and, via infinity, it allows for souls to be infinitely knowledgeable and powerful. Also via infinity it allows for immortality – for eternal, indestructible life.

Mathematics provides everything that religion cherishes, but without any need for faith, worship, superstition, ignorance or irrationalism.

Creation

Why did the "Creator God" opt for a universe based on Heisenberg's uncertainty principle? This principle ensures that he can never know in advance exactly what is going on in his Creation. The universe is not under his control. He has *no* foreknowledge. The Heisenberg uncertainty principle is not mentioned in the Torah, Bible or Koran. Funny that, given that it's the basis of the material world.

The Heisenberg uncertainty principle proves unambiguously that our world is based on Fourier mathematics and that there are two domains: one of space and time and one of frequency (spatial and temporal) outside space and time (i.e. this is the mental domain).

Quantum mechanics reconciles the finite, the temporal, the necessary and the infinite, the eternal and the possible. It reconciles the body and the material world and the soul and the mental world.

Each mind/soul is a singularity. The universe as a whole is a singularity. As above, so below.

The Big Bang "explosion" was actually a Soul Explosion.

The Basis Equation

The basis of physical reality is the God equation: Euler's formula. Euler's formula is at the core of the Fourier Transform (hence of free will!), of wave theory, wave mechanics and quantum mechanics. It's also at the core of the "absolute" version of Einsteinian Special Relativity (by absolute we mean based on an absolute Cartesian frame of reference against which everything is objectively measured; this Cartesian frame is the guarantee of objective reality).

The only aspect of physical existence that Euler's formula doesn't tackle directly (yet!) is gravity – which is handled by Riemannian geometry.

Euler's formula (accommodating Fourier transforms, quantum mechanics and special relativity) plus Riemannian geometry, provides the mathematical platform for understanding the *whole* of science. But, contrary to the situation with science, zero, infinity, negative and imaginary numbers are all catered for.

This is it. There's nothing external to this system. It covers everything in every conceivable direction. It can expand from zero dimensionality with "hidden", implicit dimensionality to infinite, explicit dimensionality. It goes from *Deus Absconditus* (the hidden God) to *Deus Manifestus* (the revealed God).

Energy waves flowing around a perfect mathematical arena IS physical reality. As soon as these energy waves are treated as ontological (real, existing things) rather than abstract mathematical constructs, everything else follows.

Real waves = real energy.

Imaginary waves = imaginary energy.

Time = imaginary waves.

Space = real waves.

Spacetime = complex waves (consisting of imaginary and real waves mixtures).

Real mass is highly distorted real energy in spacetime.

Imaginary mass is highly distorted imaginary energy in spacetime.

Quantum mechanics is Fourier mathematics with an inbuilt Fourier uncertainty relation between Fourier functions in space and time and Fourier transform functions in the frequency domain outside space and time.

Much of quantum mechanics is essentially an expression of the Pythagorean concept of musical harmony, of permitted and forbidden notes. Constructive and destructive interference reinforces certain notes and wipes out others; in fact, most are wiped out.

Energy manifests itself physically as everything in the universe moving at the same overall speed – the cosmic speed limit – defined by the Euler unit radius.

Material objects can become mind objects via black holes or acceleration to the cosmic speed limit.

Zero and infinity are everywhere in this system and it cannot function without them, i.e. scientific materialism is wholly in error by rejecting zero and infinity and trying to create a system (M-theory) where zero and infinity never occur. In fact, the infinities that appear in scientific equations are not errors but pointers to the true nature of reality where zero and infinity are ontologically real.

What we have described is the true grand unified theory of the whole of science – based entirely on what his hitherto been regarded as theoretical mathematics but is in fact ontologically real.

Mathematics has always been the supreme rationalist enterprise – it requires only a mind to contemplate it and perhaps a pencil and paper to write things down.

Science departs from mathematics because science is all about empiricism and observation, about sensory engagement. Yet science is mere alchemy without mathematics. The same isn't true in reverse.

Science gave labels to phenomena and then regarded these as the stuff of science – which was seemingly very different from the rationalist stuff of mathematics. Yet it turns out that science has given labels to entities that are

ultimately mathematical and rationalist. Science is mathematics via the senses rather than the mind. Yet the senses are entirely subordinate to the mind, hence science is entirely subordinate to mathematics.

Rationalism is the proper way to approach the "big picture" of the universe, and empiricism is the pragmatic way to explore it via the senses. The big picture cannot be grasped empirically, only rationally. Science can never yield the fundamental truths. What it does is match experience to mind, but mind is more than just experience.

Science is always limited because it is based on the necessarily limited human senses. Science rejects mind because it cannot "see" mind and it cannot detect it using any sensory means. Rather than accept the limitations of the senses, science – with breathtaking idiocy worthy of Abrahamists – declares that anything non-sensory simply doesn't exist. This is the catastrophic intellectual flaw at the heart of the scientific project. Absence of evidence, it wrong-headedly says over and over again, is evidence of absence.

Mathematics does not make the same error. Zero, infinity, and negative and imaginary numbers are all undetectable in any commonly accepted scientific materialist view, yet it would be absurd to banish these from mathematics. However, that's exactly what science has done. It is silent, of course, on why so many equations are reliant on imaginary numbers when these, according to science, do not exist in the "real" world. Yet of course they do – that's precisely why they're present in the equations.

Science must learn to accept the ontological reality of mathematical entities not detectable by the human senses. Scientists must become rationalists guided by empiricism, not empiricists guided by rationalism. Rationalism is primary.

Scientists have systematically misinterpreted the world because they are dogmatic and ideological materialists and empiricists. Theirs is a faith position – like mainstream religion. They have no sufficient reason for rejecting entities beyond sensory detection, i.e. they have no sufficient reason for rejecting absolute rationalism based on mathematics, and above all based on zero, the number of the mind and the soul.

Leibniz was the philosophical, mathematical, scientific and religious genius who saw that the dimensionless mathematical point – ontological zero – was the key to everything. He named it the monad. It's the unit that unites philosophy, mathematics, science and religion. It can NEVER be detected by

the human senses, yet it's the fundamental unit of existence itself, the *arche*, the bedrock of absolute rationalism and idealism as opposed to empiricism and materialism.

Subjectivity

Arguably, the most important fact of existence is that it comes in two forms: subjective and objective. The former is the basis of mind and life, and the latter of the scientific, material world. The former is dimensionless and based on the numbers zero and infinity; the latter is dimensional and based on all numbers between zero and infinity, both real and imaginary.

The extraordinary feature of dimensionless existence is that it's ontologically shielded from dimensional existence, hence is not compulsorily subject to dimensional cause and effect. It's only because of this that free will is possible. Free will can exist only if it's outwith the causal chains of the dimensional, scientific, material world. The dimensionless domain provides exactly the domain free will needs.

However, the free will dimensionless domain must be able to communicate with the physical dimensional domain: it must be able to cause physical activity in the dimensional domain, and also receive causal information back from the dimensional world. How does it do this?

The answer lies in yet another of the critical mathematical features of the universe. In fact, this is conclusive proof of the mathematical nature of existence since nothing else can accomplish what this mathematical concept can. The mathematical feature to which we are referring is of course the TRANSFORM, and in particular the FOURIER TRANSFORM. The whole point of Fourier transforms is to link a dimensionless domain outside space and time – where pure, eternal frequency signals exists – to a dimensional domain of space and time.

Think of a distance-based law such as the law of gravity. The closer two bodies are, the more powerfully they exert a gravitational effect on each other. As the distance between them increases, the less they feel each other's gravitational pull. This is an absolutely, physical, material, dimensional effect. Gravity becomes relevant to the dimensionless domain only in the extraordinary phenomenon of black hole formation where gravity becomes so extreme that it creates a dimensionless black hole singularity. Otherwise, gravity is a wholly dimensional phenomenon. Dimensionlessness becomes relevant as an extreme limiting condition of dimensionality.

Fourier transforms are completely different from distance-based laws. Instead, they are all about FREQUENCY. Quantum mechanics is in fact nothing but ontological Fourier mathematics, and all of the weirdness of the quantum domain comes from the fact that mathematical transforms are radically different from the traditional, distance-based laws of physics.

This point cannot be stressed enough. Fourier transforms represent a different view of reality from gravitational type laws based on physical distances. Why has it proved impossible to reconcile quantum mechanics and relativity theory? Well, one of the primary reasons is that they involve fundamentally different kinds of mathematics, one strictly dimensional (gravity), except in extreme circumstances, and the other involving a relation of the dimensional and dimensionless domains.

What is the central obstacle to grasping reality? – the illusion of materialism. Reality is *distributive* (based on statistical distributions), not *material*. To understand the difference, consider a normal distribution curve describing human height.

Imagine a person of height 1.80 metres. That's easy, isn't it? But now imagine that his height can be any height at all (any height selected from the distribution of all possible heights). So, what height is he? Well, he no longer has a particular height. His height can be described only statistically. Imagine that he has a particular height at each instant, but that his height changes every instant, though will probably deliver a height near the centre of the distribution, and will rarely stray to the far limits of the distribution.

In the macroscopic world, we think of objects as solid, specific things: as non-distributive (everything has a definite "height", so to speak). In the microscopic world, on the other hand, objects are distributive: they have no fixed set of enduring properties; the properties are changing all the time (they have a continually changing "height", so to speak). The objects of the macroscopic world are of course made of trillions of microscopic particles (atoms) and hence are enormously stable statistically. A collection of a trillion atoms statistically smoothes out all the oddities of single atom. That's why we don't see quantum effects in everyday life.

What is the problem with reconciling gravity and quantum mechanics? With macroscopic gravity, objects are large and solid and there are definable distances between them. But what does it mean to discuss the gravity between two quantum particles whose properties are all distributive, i.e. continually changing across a wide distribution of statistical possibilities?

There can be no concept of gravity in such a situation that is not itself described in distributive terms, i.e. as statistical averages.

There are several keys to reconciling quantum mechanics and gravity. Firstly, quantum mechanics is "background-dependent" while relativity theory is "background-independent". These are therefore fundamentally incompatible theories. One must in fact be WHOLLY false. The false theory is Einstein's relativity theory. There is no such thing ontologically as background-independence. Everything must be defined with regard to an absolute, fixed, Cartesian framework, hence must be background dependent. Second, Einstein's relativity theory makes no mention of Planck's constant, the key to the quantum domain. Planck's constant is entirely the product of Fourier transforms. Therefore, gravitational theory must be recast in terms of Fourier mathematics. Einstein's great contribution to physics wasn't relativity but the introduction of curved Riemannian geometry rather than flat Euclidean geometry.

Fourier mathematics and quantum mechanics are cast in terms of background-dependent, flat Euclidean space while relativity theory uses non-Fourier mathematics and background-independent, curved Riemannian space. Moreover, quantum mechanics is based on "tensed" time (with the Heisenberg uncertainty principle acting as an irreversible arrow of time) and relativity theory on tenseless "block" time.

These two theories have virtually no common ground, hence it's no surprise that physicists can't combine them. What has to happen is simple. Quantum mechanics – the most successful theory in history – is correct apart from one deficiency: it doesn't incorporate Riemannian curved space, which is the true essence of gravity.

So, if there are any theoretical physicists or mathematicians out there looking for a Nobel Prize, "all" you have to do is work out how to produce a Riemannian rather than Euclidean version of Fourier transforms, averaged across trillions of particles on the macroscopic scale, and distributive on the microscopic scale, and all in a background-dependent, time tensed context. Easy, really! There's no need for M-theory. Riemannian Fourier transforms are the key – and that's a new branch of mathematics. We call our new theory, "Fourier-Riemann gravity" or "distributive gravity".

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At the present time, Fourier mathematics is primarily about the

interconversion of time functions and frequency functions, or space functions and wavenumber (spatial frequency) functions. It needs to be about *spacetime* functions and frequency-wavenumber functions.

Next, Fourier mathematics needs to have MASS introduced it. We need a Fourier mathematics of mass functions in spacetime, and corresponding Fourier transforms. Moreover, the mass functions in spacetime need to be treated in terms of Riemannian curved spacetime rather than Euclidean spacetime.

This constitutes a brand new branch of mathematics, but if all the mathematicians and physicists currently wasting their time on M-theory instead turned their attention to Fourier-Riemann gravity, they would have it cracked in a decade and humanity would at last have a Grand Unified Theory of Everything: one that really did cover everything.

From that platform, humanity could then move on to the next stage of its evolutions – towards the celestial planes!

The Gold Standard

Of course, at the heart of Fourier transforms is the Euler Formula. What is needed, therefore, is a theory of gravity ultimately based on this magical formula, one that allows it to incorporate mass and hence curved space.

Dr. Paul Nahin described Euler's Formula as, "The gold standard for mathematical beauty." Indeed it is, just as befits the controlling equation of the whole of reality. Isn't it exquisitely appropriate that the most beautiful mathematical equation is also the most important?

Euler's Formula reaches down into the core of existence, into the monad – the soul – itself.

Euler's Formula is a purely mathematical construct that finds wide use in theoretical physics. Why? Because it's ontological.

The Fourier transform, with its Euler engine, is an integral transform that re-expresses a function in terms of sinusoidal basis functions. The gravity game is all about converting sinusoidal basis functions into expressions of mass and the curvature of spacetime.

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"Finally, it is the apparent timelessness of Euler's Identity which makes the mind reel with a sense of delight. Here are all these special, powerful numbers appearing together simply and elegantly in a way which can never be changed, never will change. It seems to point to something other than this lived world of half-truths and shadows. It seems to suggest that there is a realm of pure relation and pure reason where connections fold over and back on themselves. The connections live in ways which can both be discerned by the mind and which appear to continue extending forever beyond the individuals particular horizon. No wonder the Greeks from Pythagoras to Plato saw mathematics as a separate ideal realm of forms existing behind, below and apart from this world." – Adam Frank

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The Mathematical Greats: Pythagoras, Zeno, Euclid, Archimedes, Descartes, Leibniz, Gauss, Fourier, Euler, Riemann, Cantor, Gödel.

(Others: Bernoulli, Fermat, Galois, Alembert, de Moivre, Maclaurin, Taylor, Laplace, Goldbach, Pascal, Weierstrass, Cohen.)

The great mathematical philosophers: Pythagoras, Plato, Descartes, Leibniz.

Rest Mass and Black Holes

Let's take two observers travelling at a relative speed to each other of 99.9999% light speed. Let's say that each has a rest mass of 100kg. In that case, each has an observed mass (observed by the other, that is) that is simply astronomical – enough to *irreversibly* create a black hole (in complete contradiction of the accepted theory).

The key point is this – we are using relativity theory AGAINST itself. We are setting up a thought experiment in which the conventional theory *must* fail. It doesn't matter which subjective reality we tune into – observer 1's or observer 2's. If observer 1 is accepted to remain at 100kg, observer 2 must be observed to have reached a mass that will cause an IRREVERSIBLE collapse to a black hole. Equally, if observer 2 is accepted to remain at 100kg, observer 1 must be observed to have reached a mass that will cause an IRREVERSIBLE collapse to a black hole. By introducing an irreversible condition into the situation, we test the theory to destruction. If we make observer 1 an observer in a spaceship and observer 2 the rest of the universe

then either observer 1 sees the universe turning into a black hole (!) or the universe sees the spaceship turning into a black hole. But this gives us a *definitive* means of establishing who is actually moving – and the whole point of relativity theory is that there can be no definitive means because everything is relative. So, a defender of the conventional theory is forced to argue that the irreversible conditions for black hole formation are either not met (even though they plainly are) or that even if they are met nothing actually happens because it's all subjective (thus turning the theory into a meaningless fantasy with no real consequences).

The key to the problem is IRREVERSIBILITY. Relativity survives as a theory only if there are no irreversible tests of the theory. Irreversibility leads to absolute conditions, which are contrary to relativity.

Conventional relativity theory is false. It creates "relativistic mass" out of thin air because it's based on subjectivity rather than objectivity.

If the universe is stationary and a spacecraft is travelling uniformly in a straight line at 99.9999% of light speed, relativity says that the spacecraft can consider itself stationary and that the universe is moving at 99.9999% of light speed. In an absolutist theory, only the spacecraft is moving – and even that would require an astronomical amount of energy in order to reach that speed. The idea of the universe itself moving at 99.9999% light speed is simply laughable and ridiculous. In relativity theory, we can simply ignore how anything got to any state and arbitrarily define anything moving in a straight line at a constant speed to be stationary. In relativity theory, nothing has a history (i.e. how it came to be in its present state). Relativity *destroys* history. History is irrelevant to the conceptual basis of relativity. All that matters is relative motion.

With an absolute version of the theory, history is critical. Everything is objective and measurable. The reality principle reigns.

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Conventional relativity theory makes a fatal assumption; namely, that no irreversible condition ever appears in the theory. An irreversible condition is an absolute condition and the whole point of relativity is that such absolute conditions are strictly forbidden. That's what the relativity principle means. In a relativistic world of straight-line, uniform motion, there is NO objective means to determine who is moving and who isn't.

So, the key issue is what happens when the relativistic mass is observed to

have reached an exceptionally high value and is simultaneously associated with observed relativistic length contraction of an exceptionally high value. The criteria for irreversible black hole formation therefore MUST be met at a particular speed point BELOW light speed. In which case, does the observer observe black hole formation in the observed object, or not? If not, the theory is refuted as unreal. If so, the relativity principle falls because we now have an absolute means of establishing who's moving and who isn't. Either way, the theory cannot survive. Relativity is false.

Relativists always relied on the notion that nothing could ever be accelerated to light speed because it would require an infinite amount of energy, and hence they didn't worry any further about it.

The point of our thought experiment is that a non-infinite relativistic mass can be generated at a speed short of light speed that is associated with an absolute, irreversible condition – black hole formation. We are therefore forcing relativists to state whether relativistic mass increases are real or imaginary. If they're imaginary, they don't belong in a scientific theory. If they have real consequences then black holes must be formed, and relativity therefore fails.

"Rest mass" is entirely irrelevant in this scenario. The whole issue is about the meaning of relativistic mass. As we have already discussed, relativists themselves are none too clear about the status of relativistic mass and its formal meaning. It's about time they woke up and smelled the coffee.

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"The concept of 'relativistic mass' is subject to misunderstanding. That's why we don't use it. First, it applies the name mass – belonging to the magnitude of a 4-vector – to a very different concept, the time component of a 4-vector. Second, it makes increase of energy of an object with velocity or momentum appear to be connected with some change in internal structure of the object. In reality, the increase of energy with velocity originates not in the object but in the geometric properties of spacetime itself." -- Taylor and Wheeler

Many brainwashed physicists will no doubt nod along with this statement, but what does it actually MEAN? What does it mean to say that the geometric properties of spacetime change, but mass undergoes no "change in internal structure of the object". This appears to imply that mass is somehow

removed from the structure of spacetime. In which case, what *is* mass? How can mass affect the geometry of spacetime (as in a black hole) and yet be structurally unaffected by the geometry of spacetime (is mass not structurally affected by a black hole)? Doesn't it become apparent that outstanding scientists such as Taylor and Wheeler don't really seem to know what they're talking about, and the concepts they deploy are buried in ambiguity, imprecision and confusion?

Imagine an object with mass – a spaceship, say – travelling through an environment where spacetime is constantly changing in radical ways. Will the spacecraft be blissfully unaffected? You might as well say that a spacecraft entering a black hole will be unaffected by that process.

All of this confusion is swept away if mass and spacetime are regarded absolutely. Any spacetime change definitely affects the internal structure of mass. In an absolute rather than relativistic framework, all of the bizarre concepts and mental contortions of relativity simply vanish.

Haven't you noticed that most relativists, including Einstein himself, don't really understand it? As Lee Smolin said, "Special relativity was the result of 10 years of intellectual struggle, yet Einstein had convinced himself it was wrong within two years of publishing it. He rejected his theory, even before most physicists had come to accept it, for reasons that only he cared about. For another 10 years, as the world of physics slowly absorbed special relativity, Einstein pursued a lonely path away from it."

With special relativity, Einstein abolished the ether. With general relativity, he brought it back again (but now described as warpable spacetime). What?!

Yet no scientist ever delves into this blatant contradiction. They adopt a kind of Orwellian doublethink where they accept two contradictory positions simultaneously. Progress in a scientific career is all about writing papers and producing results. You commit career suicide if you say, "Hey, guys, hold on a moment. Isn't all this relativity stuff actually incomprehensible bullshit that no one understands because it literally makes no sense?!"

So, all scientists simply PRETEND that it all makes sense and, if they are suitably verbally dextrous, like Taylor and Wheeler, then they can bamboozle the unwary and sound authoritative while talking arrant nonsense.

"More recently, however, it has been increasingly recognized that relativistic mass is a troublesome and dubious concept." -- Arnold B. Arons

You can say that again.

Isn't it time science STOPPED generating endless careerists writing papers, and set about clearing up the almighty mess the scientists have created – which none of them understand!

Science is riddled with ad hoc concepts and theories that don't mesh with each other, but are allowed to go on co-existing, and which are "explained away" in textbooks.

Science has become an intellectual disgrace where truth has been abandoned and all that anyone cares about is career progression.

Non-scientists are too scared to challenge scientists because they lack the technical competence to enter the debate. However, if you DO have the technical competence, you quickly realise that science is a total fraud. For sure, it produces lots of narrow tactical victories, but its strategic vision and coherence are almost nil – which is why it can't produce a "theory of everything" despite the immense effort it has put in over the last few decades.

Scientists have failed to grasp that you can't have a final theory if ANY of your key concepts are shaky, murky, ill defined and protean. Science is full of embarrassing concepts that make little sense. In fact, the only part of science that makes any sense is the mathematics, and even that leaves a lot to be desired because scientists have mangled mathematics to make it fit their Meta Paradigm of empiricism and materialism!

The Relativistic Split Screen Thought Experiment

Why do Taylor and Wheeler insist that relativistic "increase of energy of an object" is not to be associated with "some change in internal structure of the object"?

Imagine a scenario where a magic camera allowed us to film an astronaut inside a spaceship travelling in a straight line at constant speed at 99.9999% of light speed. The camera shows us what he is seeing and it turns out that he's watching a large screen showing us! Now, according to Taylor and Wheeler, we must see the astronaut in his normal condition – his mass unaltered, his length uncontracted, his time undilated (because the magic camera is showing his point of view).

Likewise, the same is true for him with regard to us. Everything seems perfectly normal. Yet, if we set up other screens showing what, relativistically, is going on, then his spaceship seems to be immensely shortened, to have an exceptionally high mass, and to be experiencing

extreme dilation. He, of course, can say all the same things of us.

So, if we have four split screens showing these different views, we will have:

1)   Our relativistic view of the astronaut's spaceship (extremely distorted).

2) Our "magic" view of his point of view (completely normal).

3) His relativistic view of our world (extremely distorted).

4) His "magic" view of our point of view (completely normal).

According to Einstein and his supporters, these things are ALL TRUE, yet objectively they can't all be true since they directly contradict each other. It seems almost insane that such an idea as relativity was ever taken seriously even for a second.

The whole mess can be instantly resolved if an Eulerian reality principle replaces Einsteinian relativity. Immediately there is only a single reality: we on earth watch a spaceship gradually being crushed out of existence!

Mass is absolutely affected by speed and undergoes catastrophic structural changes at speeds approaching light speed.

Isn't it time relativity had the decency to DIE?!

Complex Things

Let's define a complex number g: $g = x + iy$

The so-called "complex conjugate", $\bar{g}$, is defined as: $\bar{g} = x - iy$

It's the mirror image of g in the x-axis.

Adding a complex number and its conjugate gives a real number:

$g + \bar{g} = x + iy + x - iy = 2x$

The negative of the complex conjugate is its reflection in the y-axis:

$-\bar{g} = -(x - iy) = -x + iy$

Adding a complex number and its negative conjugate gives an imaginary number: $g + (-\bar{g}) = x + iy + (-x + iy) = 2iy$

The negative of a complex number is its reflection in the x-axis followed by the y-axis: $-g = -(x + iy) = -x - iy$

Squaring complex numbers isn't straightforward. We would expect to write: $g^2 = (x + iy)^2 = x^2 + 2ixy - y^2$

but in fact the square of a complex number is defined as the complex number multiplied by its complex conjugate ($g \times \bar{g}$) because this yields a *real number* solution.

Consider the quadratic equation $ax^2 + bx + c$ where a, b and c are real numbers. If the equation has two complex roots, then the two roots are *always* conjugates of each other. (If a quadratic equation has any complex coefficients this result isn't valid.) For example, if $z = 1 - i$ is one solution of the quadratic equation $z^2 - 2z + 2 = 0$, then the second solution is the complex conjugate (since the quadratic has real coefficients). Therefore the second solution is $z = 1 + i$.

Equation 1) $g \times \bar{g} = (x + iy)(x - iy) = x^2 + y^2$, i.e. the result is always *real*.

Equation 2) $g \times g = (x + iy)(x + iy) = x^2 + 2xy - y^2$

Equation 3) $\bar{g} \times \bar{g} = (x - iy)(x - iy) = x^2 - 2ixy - y^2$

However, although complex number squares are defined in terms of Equation 1) in order to yield real number solutions, that does not mean that they are ontologically required to do so. In fact, using the complex conjugate in the square calculation of a complex number is simply reflecting the traditional empiricist requirement to have real numbers as outcomes. But aren't we just carrying out a huge fraud? We are using imaginary numbers in calculations and then seeking to get rid of them via mathematical tricks, and it ends up as if the imaginary numbers never existed at all. Yet they *were* there, so either they are ontologically real, or science is a fantasy based on fairies and elves from magic land who sprinkle special dust on calculations to get rid of awkward numbers.

Equations 2) and 3) aren't wrong. They are simply ignored! No doubt, there is an entirely viable ontological reality built on these equations, as yet unexplored by science. Will you be the first adventurer to enter these virgin, unexplored lands – the New World?

Quantum Mechanical Time Reversal Operators

If you want to reverse the time flow of an equation, what should you do? Imagine a set of coordinates of the form (a, t), where "a" is a space coordinate (a real number) and "t" a time coordinate. We can define a time reversal operator T: t → -t which simply reverses the sign of all time coordinates (all t's are mapped to –t's). Our system of coordinates now seems to be flowing backwards in time (negative time) rather than forward.

But now let's replace "a", a real number, with "b" a complex number, so that we have a set of coordinates of the form (b, t). Can we just apply T, the time reversal operator, to this scenario, exactly as before? In quantum mechanics, there is an ongoing debate about this question.

With complex numbers, the imaginary component of the complex number becomes its negative in the complex conjugate. So could we define a new Time reversal operator called * that turns a number into its complex conjugate? Well, that won't do because it doesn't change the sign of the time coordinate. But what about a Time reversal operator called T*, which applies t → -t as well as complex number → complex conjugate?

Well, then, which is the right Time reversal operator? T, * or T*?

Consider this quotation from John Gribbin's book *Schrodinger's Kittens*: "The properties of a quantum system are described by a mathematical expression, sometimes known as the 'state vector' (essentially another term for the wave function), which contains information about the state of a quantum entity – the position, momentum, energy and other properties of the system (which might, for example, simply be an electron wave packet.) In general, this state vector includes a mixture of both ordinary and ('real') numbers and imaginary numbers (those numbers involving i, the square root of -1). Such a mixture is called a complex variable, for obvious reasons; it is written down as a real part plus (or minus) an imaginary part. The probability calculations needed to work out the chance of finding an electron (say) in a particular place at a particular time actually depend on calculating the square of the state vector corresponding to that particular state of the electron. But calculating the square of a complex variable does not simply mean multiplying it by itself. Instead, you have to make another variable, a mirror-image version called the complex conjugate, by changing the sign in front of the imaginary part: if it was + it becomes –, and vice versa. The two complex numbers are then multiplied together to give the probability. But for

equations that describe how a system changes as time passes, this process of changing the sign of the imaginary part and finding the complex conjugate is equivalent to reversing the direction of time!"

Now you can see a radical problem with the current formulation of quantum mechanics. Why should changing the sign of an imaginary number have any impact on time? Why should it reverse time's direction? The only possible explanation is that the imaginary part is itself some measure of time. But in that case why should there also be a separate time coordinate, t?

Andrew Holster wrote, "The orthodox account of time reversal transformations in quantum theory presented authoritatively in a wide range of textbooks and specialized treatises is conceptually inadequate. The arguments typically put forward that T^* rather than T must be adopted as the time reversal operator in quantum mechanics for logical reasons are mistaken. There is no reason to reject the T operator on such grounds. … These conceptual flaws in the account of time symmetry of quantum theory, when considered along with the decisive flaws in the account of time symmetry of the probabilistic component of quantum theory raised by Watanabe, Healey, Penrose, Callender, and Holster, should be a cause for deep concern. They show how poorly the conceptual foundations of quantum theory are understood. If there is any single culprit for this state of affairs, it is the complacency engendered by the positivist approach to conceptual analysis in physics. For despite being accepted as deeply inadequate by philosophers and logicians for over fifty years, positivism unfortunately remains as the central point of departure in many conceptual accounts of quantum physics, and is found at the centre of the orthodox analyses of the subject of time reversal."

This is a superb critique of prevailing attitudes amongst physicists. Physics acknowledges some kind of time-related aspect of imaginary numbers but then proceeds to regard imaginary numbers as non-ontological – they're just some sort of weird calculating tool that vanishes once the calculation is done.

However, these bizarre considerations vanish if imaginary numbers and time are formally equated. Then the T operator (t → -t) is applied to all imaginary components of complex numbers. However, this is exactly the same mathematically as taking the complex conjugate (*). Therefore, T is equivalent to *. In this system, T*, becomes redundant (and, in fact, the T and * operators cancel the effect of each other when applied one after the other – one reverses time and the other reverses it back again).

The reason why scientists can't reconcile quantum physics and relativity theory – and why many of the world's most brilliant scientific thinkers have spent decades futilely wrestling with string theory and its latest incarnation M-theory (the most complex theory *ever*) – is that both theories contain critical conceptual problems, and time is one of the ingredients handled most ineptly.

Scientists are driven by results. They spend remarkably little time thinking through the implications of what they're doing. Anything that seems to give the right results is immediately adopted. Richard Feynman said, "I think I can safely say that nobody understands quantum mechanics. … Do not keep saying to yourself, if you can possibly avoid it, 'But how can it be like that?' because you will go 'down the drain' into a blind alley from which nobody has yet escaped. Nobody knows how it can be like that."

That's one of the greatest geniuses of all time saying that. If nobody understands quantum mechanics then what *is* quantum mechanics? Is it magic, voodoo, astrology? Well, it might as well be. Surely, the whole scientific project has failed if Nobel Prize-winning scientists don't understand what they're doing. Why *don't* they understand? – because their conceptual model of what is happening is utterly false.

Feynman helped to develop a technique called "renormalization" in the quantum mechanical work that eventually led to his winning a Nobel Prize, yet he himself referred to it as "hocus-pocus" and a "dippy process".

Science is full of wrong things that *seem* right, or at any rate *work*. Newtonian physics was entirely wrong conceptually, yet it worked brilliantly. Why? Because its assumptions just happened to work rather well in the limited arena in which it was applied.

A Game Changer

With Euler's Formula, we have achieved a result of the utmost scientific importance. We have replaced Einstein's disastrous relativity principle with the Euler reality principle that guarantees objective reality. We have removed the background independence of Einstein's speculative hypothesis and created a background dependent, absolute framework. This meshes perfectly with background dependent quantum mechanics – which is based on Fourier mathematics, which has Euler's Formula as its engine. It is IMPOSSIBLE to make Fourier Analysis background independent, hence there can *never* be any reconciliation between relativity theory and quantum mechanics. It was

imperative for relativistic background independence to be overthrown – and we have done so. If we were part of the scientific establishment, we would be awarded the Nobel Prize for this work.

We have found the scientific Holy Grail – the equation that controls physical reality. All phenomena can be traced back to Euler's Formula, and Euler's Formula demands an absolute, background-dependent framework. Only a perfect Cartesian coordinate system can provide an absolute framework for reality, and only ontological mathematical points (monads) can yield such a coordinate system.

Monads and Euler's Formula: that's all there is! Yet the truth is so much more glorious. The monads are alive. This is a *living* universe. It is a growing, evolving organism – made of SOULS! We live inside the World Soul and we ourselves are souls.

A Challenge

Here's a challenge for any bold mathematician looking to make a name for himself. Here's your big chance to establish the clear mathematical, rationalist meaning of quantum mechanics (as opposed to the empiricist account provided by physics). Read this excellent paper… (do a Google search for "A note on The Quantum Mechanical Time Reversal Operator; Andrew Holster".)

Then forget all about the empiricism, materialism and positivism of the science establishment. Instead, analyse quantum mechanics purely from the perspective of Euler's Formula and the Euler unit circle, accepting all Eulerian aspects as ontological (i.e. including negative and imaginary numbers). Clarify all temporal properties of quantum mechanics on the basis that imaginary numbers are time (ontologically) and negative numbers are antimatter (ontologically).

You should be able to establish four time "operators" – one for normal time, one for anti-time (straightforward time reversal), one for forward time in the antimatter universe and one for anti-time in the antimatter universe. Conventional quantum mechanics is hopelessly confused because it denies the ontology of negative and imaginary numbers and has to try to reinterpret everything in terms of real numbers. It fails dismally when it does so.

"[According] to the 'probability interpretation' of quantum mechanics, in which physical reality is denied to the wave function altogether, only the

probabilities represented by the wave function are regarded as physically real. If this is correct, then the asymmetry between the theories QM and T(QM) is not a physical feature of the universe at all, because the wave functions are simply not physical things. But two points should be made. First, whether such an interpretation of quantum theory is ultimately sustainable is then the deeper question. I will not try to answer this here, except to observe that the popular arguments for this kind of interpretation are often based in turn on flimsy positivistic principles, and the problem of establishing an adequate 'probabilistic interpretation' is more difficult than it first seems, because the probabilities by themselves do not have enough detailed structure to represent the interference effects generated by superpositions of the complex wave functions. How do we dispense with the wave functions themselves, and yet retain the detailed information they represent that is required to predict interference effects correctly?" -- Andrew Holster

Quantum mechanics is in desperate need of thinkers such as Holster because it is more or less incoherent as far as current interpretations of quantum mechanics are concerned. As a science, quantum mechanics works *despite* the fallacious positivist interpretations forced onto it. It's the quality of the mathematics that keeps the show on the road, not the quality of the interpretations.

Paul Davies wrote, "A solution of the Schrödinger equation is not itself observable." Is this not remarkable? At the very heart of empiricist, materialist, positivist science is an entity that is neither empiricist, materialist, positivist nor observable in any way!!! And no one seems to care. How can science dare to show its face as a serious subject based on experiments if it has *unobservables* at its core?

The unobservable Schrödinger equation poses no difficulty for ontological mathematics of course, since ontological mathematics is based on rationalism, not empiricism. There is a philosophical CATASTROPHE at the heart of conventional science but not at the heart of ontological mathematics. So why do scientists continue to remain loyal to an irrational, discredited, philosophically incoherent worldview?

Scientists ramble on about materialistic probabilistic interpretations of the Schrödinger equation, but the probabilistic aspect of Schrödinger equation actually refers to the MENTAL domain, not the material.

Almost everything said about mainstream quantum mechanical

interpretations in textbooks is false since these interpretations invariably reflect a nonsensical, incoherent, empiricist, materialist, positivist ideology and Meta Paradigm. Only when this dogmatism is rejected in favour of rationalist idealism can quantum mechanics be rendered coherent (as in Illuminism).

Never forget that the Schrödinger equation – the basis of quantum mechanics – is UNOBSERVABLE. How can you logically have a science of OBSERVATION rooted in the UNOBSERVABLE?! If you think that can logically work, good luck to you – and find yourself a nice corner in the madhouse.

Quantum mechanics is so weird because it is GIBBERISH in terms of all current establishment views of what it means. People like Richard Feynman are baffled by it because it literally *cannot* make sense in terms of their Meta Paradigm. Quantum mechanics makes sense only in terms of rationalist, idealist, ontological mathematics. It is inherently incomprehensible in any other Meta Paradigm. If scientists were philosophically literate, they would have grasped that their Meta Paradigm is refuted by quantum mechanics.

<p style="text-align:center">✱✱✱✱✱</p>

BBC's *Horizon* series showed a science documentary with the title: *Is Everything We Know About the Universe Wrong*? That more or less sums it up!

The fact is that there are now so many anomalies associated with science's understanding of the universe that a revolution in the current paradigm is demanded. We already know what will replace the current scientific paradigm – the towering mathematical edifice of Illuminism. Mathematics alone can explain the universe. Anything else is folly and delusion. Science itself is nothing but a Mythos version of mathematics. It tells a nice little story without grasping the fundamental truth: mathematics, not science, is the language of nature. Science is an imprecise way of talking about precise mathematics. Science is the cart leading the horse. Scientific concepts must be converted into mathematics, not mathematical concepts into science. Mathematics is infinitely more precise than science. The challenge is to find the mathematical rules by which the universe operates.

Existence is all about numbers and their properties. The big problem is to see numbers in things that don't seem to have anything to do with numbers. Who would ever have guessed that thousands of years of speculation about

the soul were, if truth be told, all about the number zero? Without zero, all talk of souls is nonsense. Zero alone provides the true basis of the soul. Leibniz was the first to grasp this. His Monadology is the only conceivable soul theory.

Everything – the soul and all of the contents of the universe – are grounded in Leibniz's monads. His genius was to find something that was both an entirely mathematical (hence scientific) entity (the monad is a perfect mathematical point), and also the *perfect* metaphysical, mental and religious entity. The monad, by definition, is not accessible to the physical world because it's not *in* the physical world – and that's why science can't find it. Simple!

Why?

Scientists are supposed to be intelligent. What is it, beyond a kind of religious faith and blindness, that is preventing them from seeing that their Meta Paradigm has failed just as surely as that of Abrahamism? Scientists are now IRRATIONALISTS since their belief system has collapsed and is no longer able to furnish viable interpretations of reality, yet they go on believing regardless, like religious fanatics.

The Truth

People of faith like to say that the ultimate truths are beyond the reach of science and are matters of faith. It's as if there are only two players in the game: religion and science. In fact, there's a third player – the most important one – *mathematics*. Mathematics agrees with religion that the ultimate truths are beyond scientific empiricism and materialism, but it wholly rejects any notion that the "beyond" is about faith. Wrong! It's about reason – the *opposite* of faith. Faith is insane and has no place at all in the world. The fact that science is wrong doesn't open the door to faith. Science is wrong because it isn't rational enough. It can't escape its own flawed paradigm because of its dogmatism. Mathematics is ultimate rationalism and only it can provide the ultimate rational answers.

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EQUIVALENCE PRINCIPLE: All true scientific statements are equivalent

to mathematical statements.

The Eternal City

Science resembles the evolution of human cities. Think of London, now millennia old. Think of how it grew from a Stone Age settlement to a Celtic town and then a Roman city. Think of how it was a major Feudal centre and then a central hub of the Industrial Revolution. Think of how it was burned down in the seventeenth century and bombed in the twentieth century. Think of how it changed from a place where people were mostly on foot, with just a few horse riders and horse and carts. Then carriages became quite common. Trains arrived on the scene, and slow cars and then fast cars, bicycles and motorbikes. Old parts of the city were demolished and new parts built.

The whole thing is an ever-evolving MONSTROSITY. It's full of fudge factors, workarounds, bodges and Heath Robinson solutions. None of it fits together properly. It's full of half-implemented design principles from different, incompatible ages, associated with entirely different technologies. The whole thing is clunky, botched, bungled, strained, badly designed, lacking any coherent central plan or vision. It's all ad hoc. You keep having to dig up roads to lay new cables for new technology. Cars, dogs, bicycles and pedestrians are in constant conflict. The whole thing is a nightmare!

Well, science is just the same. It's littered with corpses of failed theories, but whose influence has nevertheless remained like ghosts haunting the laboratories of the world. Science is an immensely ad hoc undertaking, continually patching together different ideas, hypotheses and theories. It's all evolutionary. Natural selection applies, meaning that perfectly good ideas can actually be killed off because they don't become fashionable. Garbage – such as Einstein's relativity principle – can become all the rage. It can take on a sacred status and no one dares to challenge it. It becomes career death to criticize an establishment theory. *This* is the grand edifice of science.

Yet there's an astonishing alternative. Mathematics is the Platonic *Eternal City*. It's a perfect pyramid in which every block fits together so seamlessly that not so much as a single monad could be fitted between them. The structure cannot be bettered. It is true then, now and forever. Its design is flawless – forever. It contains no errors at all, and nothing can ever go wrong. The Eternal City of Mathematics is the City of God. It contains not one ad

hoc, provisional element.

In opposition to it stands the *Temporal City* of Science – the City of Man. It is horribly bungled and confused, full of imperfection and error.

Why don't we leave the City of Man and enter the City of God? In other words, why don't we get rid of imperfect science and turn to perfect mathematics? The only thing stopping us is ideology, dogmatism and self-delusion.

Science is a faith as much as a system of knowledge. Isn't it time to abandon faith and embrace truth, reason and knowledge? It's all there for us – in perfect Platonic mathematics.

Special Relativity versus General Relativity

The essential difference between Einstein's two theories is that the special theory describes a universe in which there are no forces. Everything moves at a constant speed in a straight line. There is no acceleration, no gravity.

Paul Dirac unified quantum mechanics with special relativity in 1928 (and in the process he predicted the existence of antimatter). The search for science's Grand Unified Theory of Everything seeks to go one better and unify quantum mechanics with the general theory of relativity. The fact that many of humanity's greatest scientific geniuses have been working on this project since Dirac's time, with success as elusive as ever, ought to have alerted them to some catastrophic problem with one or both of the theories.

They cannot be brought together because they are conceptually incompatible. Progress is not going to come from further tinkering with equations. It can come only from a profound philosophical analysis of the two theories, and identifying where their mutual conception models are radically in opposition. Sadly, scientists are not intellectually suited to this task – they are not philosophically minded – and philosophers are insufficiently scientifically literate to be able to make any significant contributions. This is why an impasse has been reached.

It takes one monumental insight to break the logjam, and Illuminism provides it. It makes mathematics rather than science the tool for describing existence (to state it more strongly, existence is nothing but mathematics). Mathematics guarantees objective reality. Einsteinian relativity destroys it. Mathematics assigns ontological reality to zero and infinity. Science regards both as "unscientific".

Mathematics neatly identifies space and time as manifestations of real

numbers and imaginary numbers, respectively. Spacetime is therefore the arena of complex numbers. Science rejects imaginary numbers in any ontological sense, and regards them as mere phantom instruments for helping certain equations to work more effectively. Complex numbers are algebraically complete; real numbers are not, yet science chooses to define "reality" in terms of real rather than complex numbers.

Here, then, we have listed the disastrous mathematical flaws that go to the heart of scientific materialism. Scientific materialism contradicts mathematics, so if mathematics is the true language of existence, it's no wonder at all that science has hit the buffers. It's insufficiently mathematical. In its attempts to reconcile quantum mechanics and general relativity, it has finally run up against the fundamental problems that have been inherent in science all along.

Science has always had an inbuilt bias towards all real numbers greater than zero and less than infinity. It uses imaginary numbers all the time, yet regards these as "fairy" numbers – kind of spooky, voodoo numbers that do not correspond to anything real but nevertheless help to facilitate getting the right scientific answers.

You would have thought that it would have occurred to scientists that the reason imaginary numbers keep showing up is that they are fundamental to existence, and aren't "away with the fairies". How can serious intellectuals remain so philosophically naive as to think that vital calculating instruments are just "mental scaffolding" and don't actually bear on reality in their own right?

The last problem science must overcome is its own delusion that it's the best means of describing reality. Until it realizes that it is the servant of mathematics rather than the other way around, it will never grasp the final truths.

Here is a very simple mathematico-philosophical rule: all entities that appear in scientific equations MUST have ontological significance, otherwise they wouldn't be there. It's not rocket science, is it?!

Interpretations

Interpretations are only as good as the Meta Paradigm in which they are framed. Einstein, in order to avoid an unobservable ether affecting physical reality, got rid of objective reality! He came up with the ONLY way to save the empiricist materialist Meta Paradigm of science while explaining the

observed invariance of light speed. Getting rid of objective reality was a less serious worry to scientists than abandoning observables. It was a price they were willing to pay. For one thing, most of them were so philosophically ignorant they didn't realise they had actually ditched the reality principle in favour of Einstein's relativity principle. Moreover, Einstein did a bang-up job of concealing what he had done by producing a seemingly objective mathematical system – the Lorentz transformations – to skilfully relate his unreal, subjective frames of reference.

Most people, including most scientists, don't understand Einstein's theory of relativity. He himself didn't understand it. And that's the trouble with most of science. It works (just as Newton's system worked despite being based on now disproven concepts of absolute space and absolute time) but the closer it gets to ultimate reality, the more its fundamental errors and misinterpretations become impossible to avoid or get around.

Both Einstein's theory of relativity and Bohr and Heisenberg's Copenhagen Interpretation of quantum mechanics destroyed objective reality in favour of empiricist subjectivity. But the world is objective, not subjective. It is *rational*, not empirical. It is *mathematical*, not scientific. It's there when we're not looking at it. Science is born with space and time, and has no way of saying what came *before* space and time. Mathematics, on the other hand, is *eternal*. It *precedes* space and time. It *creates* space and time. Mathematics is the Genesis Point, the ORIGIN. Mathematics explains science. Science cannot explain mathematics.

Science approaches reality entirely wrongly because it imagines it is the real deal and mathematics some weird tool. The precise reverse is the case.

Statistical Reality

The statistical, probabilistic interpretation of quantum mechanics was introduced by Max Born, who consequently won the Nobel Prize.

What he did was multiply the complex quantum mechanical wavefunction by its complex conjugate, which produces a real number solution. This was essential for any empiricist, materialist interpretation of what was going on. Prior to Born, scientists were baffled by the unreality and unobservability of the wavefunction. What were they supposed to do with the imaginary aspect of the wavefunction? As with relativity theory, scientists were offered the chance to abandon their empiricist, materialist Meta Paradigm and embrace mathematical rationality. Once again, they refused.

Born described the wavefunction of a particle as a "probability amplitude" and its complex square was the "physical probability" of the associated particle's presence.

The probability of the existence of a state is given by the square of the normalized amplitude of the individual wavefunction.

"In quantum mechanics, a probability amplitude is a complex number whose modulus squared represents a probability or probability density. For example, if the probability amplitude of a quantum state is α, the probability of measuring that state is $|\alpha|^2$. The values taken by a normalized wave function ψ at each point x are probability amplitudes, since $|\psi(x)|^2$ gives the probability density at position x.

"The principal use of probability amplitudes is as the physical meaning of the wavefunction, a link first proposed by Max Born and a pillar of the Copenhagen interpretation of quantum mechanics. In fact, the properties of the wave function were being used to make physical predictions (such as emissions from atoms being at certain discrete energies) before any physical interpretation was offered. Born was awarded half of the 1954 Nobel Prize in physics for this understanding, though it was vigorously contested at the time by the original physicists working on the theory, such as Schrödinger and Einstein. Therefore, the probability thus calculated is sometimes called the 'Born probability', and the relationship used to calculate probability from the wavefunction is sometimes called the Born rule." – Wikipedia

In quantum mechanics, wavefunctions are complex-valued functions. They are said to describe the 'amplitude' of a quantum process. Amplitudes are not directly observable because of their complex nature, which makes them "unreal". However, by multiplying by the complex conjugate (and scaling appropriately – "normalisation"), a real-valued probability function is generated, which can be used to make the accurate predictions of quantum mechanics.

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"In our scientific expectations we have progressed towards antipodes. You believe in the dice-playing god, and I in the perfect rule of law in a world of something objectively existing which I try to catch in a wildly speculative way. I hope that somebody will find a more realistic way, or a more tangible

foundation for such a conception than that which is given to me. The great initial success of quantum theory cannot convert me to believe in that fundamental game of dice." -- Einstein

"I cannot substantiate my attitude to physics in such a manner that you would find it in any way rational. I see of course that the statistical interpretation (the necessity of which in the frame of the existing formalism has been first clearly recognized by yourself) has a considerable content of truth. Yet I cannot seriously believe it because the theory is inconsistent with the principle that physics has to represent a reality in space and time without phantom actions over distances.... I am absolutely convinced that one will eventually arrive at a theory in which the objects connected by laws are not probabilities, but conceived facts, as one took for granted only a short time ago. However, I cannot provide logical arguments for my conviction, but can only call on my little finger as a witness, which cannot claim any authority to be respected outside my own skin." -- Einstein

"Einstein's letters teach us impressively the fact that even an exact science like physics is based on fundamental beliefs." -- Max Born

"Another objection was raised against my use of the expression 'metaphysical' because of its association with speculative systems of philosophy. I need hardly say that I do not like this kind of metaphysics, which pretends that there is a definite goal to be reached and often claims to have reached it. I am convinced that we are on a never-ending way; on a good and enjoyable way, but far from any goal. Metaphysical systematization means formalization and petrification. Yet there are metaphysical problems, which cannot be disposed of by declaring them meaningless, or by calling them with other names, like epistemology. For, as I have repeatedly said, they are 'beyond physics' indeed and demand an act of faith. We have to accept this fact to be honest." -- Max Born

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Born brought to an end scientific determinism and replaced it with probabilities. Reality is dissolved in favour of some sort of "fuzziness" and "blurriness" – cosmic dice playing, in Einstein's view. The wavefunction has no physical reality.

Quantum mechanics is the greatest achievement of science and the most

successful scientific theory of them all. Yet no scientist understands it, and it's based on something unreal and unobservable. Is that not some kind of grotesque intellectual joke?

Now we come to the most essential point of all. In rationalism, there is a sufficient reason for everything, as stated by Leibniz. This is a necessary condition for an objective reality and a reality principle. In the Bohr-Heisenberg-Born interpretation of quantum mechanics, there is no sufficient reason in the quantum domain. The fundamental basis of reality is RANDOMNESS – chance, statistics, probability … things popping out of thin air for no reason!!! Reality is turned into a magician's top hat from which anything can spring, as if by magic.

Do you seriously imagine that's how reality is configured? Do you believe reality has no rational basis? Do you believe there is no ground to existence, that it has no roots, no foundations? In this view, reality isn't built on sand. It's much worse than that. It's built on MAGIC. It might as well invoke the supernatural, fairy God of Abrahamism!

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To render quantum mechanics comprehensible, it has to be recast. The spacetime domain is where dynamic point particles have concrete positions in time. At every instant, there is an objective spacetime reality, not a "fuzzy" reality. The "fuzziness" pertains to the domain outside space and time – the *mental* domain of all possible futures. The existence of this domain is of course denied by science, just as it denies the existence of human minds independent of matter.

Our own minds are "fuzzy", full of different thoughts, and different possibilities of what we will do next. Our bodies are concrete from instant to instant: our minds are a superposition of thoughts, many of which can be in direct conflict, proposing different outcomes for what we will do next. Only one possibility will actually be made concrete. The alternatives "realities" – those that never happened – vanish forever into the ether.

According to the Copenhagen Interpretation, at the level of subatomic particles things stop being "things" and become probabilities. How can that be consistent with materialism? So, why hasn't materialism fallen? It's because science is a religion, not a rational system of thinking. It has abandoned objective reality, but refused to acknowledge this fact. It has abandoned materialism, but refused to acknowledge this fact too. Empiricism

now stands as its main religion, but a huge amount of cosmological and quantum mechanical speculation is untestable and belongs to pure metaphysics. No doubt empiricism will soon fall too, but scientists will go on believing it anyway.

Scientific Craziness

"We are all agreed that your theory is crazy. The question which divides us is whether it is crazy enough to have a chance of being correct. My own feeling is that it is not crazy enough." – Niels Bohr

"Your theory is crazy, but it's not crazy enough to be true." – Niels Bohr

Is the theory that reality is entirely mathematical too crazy or not crazy enough for scientists?

The Fall of Science

In the last century, scientific giants such as Einstein, Schrödinger and Bohm engaged in an almighty intellectual struggle about the nature of reality with other scientific giants such as Bohr, Heisenberg and Born.

The last scientist of this ilk was John Bell. Today, there is not even one scientist who engages in any philosophical debate about anything at all. Science is full of cheap, conformist, dull functionaries, bureaucrats, technocrats, apparatchiks, mortgage men and careerists. All dissent has died. There are no rebels, no heretics, no non-conformist, no free thinkers.

The triumph of the establishment is complete. Yet, ironically, that means the Revolution is astoundingly close!

The Time Problem

There is a significant problem with how quantum mechanics is formulated. It should be based on real and imaginary numbers (combining to produce complex numbers), and movement ought to be introduced as the inherent action of particles (moving through real and imaginary space, i.e. spacetime). Instead, quantum mechanics includes both imaginary numbers *and* time, with time acting as the means to introduce movement into the system.

Just as Newtonian physics worked well despite being wrongly formulated (with reference to absolute space and absolute time that do not exist), so

quantum mechanics works well despite being wrongly formulated.

It's no wonder relativity theory and quantum mechanics can't be reconciled. Both theories are false. The Grand Unified Theory of Everything is the supreme testing ground because for such a theory to exist and work it must actually be right. Science is full of theories that worked well despite being wrong. Science, it turns out, is extremely forgiving. It is a series of increasingly more sophisticated approximations. However, when it comes to the FINAL theory then approximations, half-measures, botched concepts, wrong Meta Paradigms and wrongly formulated theories won't cut it. Everything has to be precise and perfect. That's why the most incredible efforts of the best scientific minds of the last fifty years – the most unprecedented and intensive intellectual undertaking in the whole of history – has failed to crack the problem. It CANNOT be cracked until science admits the ultimate truth: existence is wholly mathematical. Mathematics is utterly precise, eternal and fits perfectly together. Science doesn't have a prayer of emulating the qualities that mathematics *already* possesses.

Here is wisdom: MATHEMATICS IS THE GRAND UNIFIED THEORY OF EVERYTHING.

And the key equation – the God Equation that controls EVERYTHING – is the Euler Formula. This formula controls *eternal motion*. It conducts the Music of the Spheres. It is the source of the divine music, and of divine creation itself.

The Magic of Math

In general, $z = x + iy = r(\cos x + i \sin x) = re^{ix}$

When $r = 1$, this reduces to the Euler Formula.

Alternatively, $z = x + iy$ can be written as $|z|.\ e^{ix}$ where $|z|$ is the scalar magnitude of the complex number.

If $z = x + iy$ and $|z| = 1$ then we define e^z by $e^z = e^{x+iy} = e^x e^{iy}$

Mathematics just keeps delivering endless ways of integrating everything, allowing remarkable ways to tie every strand together in one impeccable, adamantine edifice.

How dare science believe it can compete with mathematics? Science is nothing but the Church of Mathematics *without* complete mathematics.

Mathematics doesn't need science at all.

Hyperrationality: existence as nothing but mathematics. There is nothing else. Mathematics is the end of line, the foundation of all.

"All things are numbers." – Pythagoras

The Complex Conjugate

Ontologically, the complex conjugate is the *time-reversed* complex number.

Ontological Numbers

What is an ontological number? We saw previously that:

$z = x + iy = r (\cos x + i \sin x) = re^{ix}$

If r =1, we get the standard Euler Formula. But r can be *any* number in the range minus infinity to plus infinity (real or imaginary) – in other words, ALL numbers. Ontologically, numbers aren't scalar, simple numbers but, rather, sophisticated *information systems*. Every number is inherently linked to Euler's Formula. Thus every single number that can possibly exist is an encoding of Euler's Formula, i.e. everything in the universe is programmed with the God Equation, and that means it is encoded with all it needs in order to reflect the TOTAL LAWS OF MATHEMATICS.

Why does every wave-particle effortlessly know what to do in ANY situation? It's because they literally have the formula for the whole of mathematics as part of their intrinsic nature. They simply obey the laws of mathematics in every situation – flawlessly. Science can't answer where the laws of science are, especially prior to the Big Bang. We can identify exactly where the laws of mathematics are – encoded in everything, in every single number of which existence is made. Numbers and the laws of mathematics are one and the same thing. Is it not *perfect*?

In Illuminism there is no separation between material things and immaterial laws that govern those things. Rather, all things come inbuilt with all the laws they need, and it's all mediated mathematically. Only mathematics can accomplish this astounding feat. Plato separated "stuff" (matter) and the eternal, transcendent Forms that shaped matter, and used the Demiurge to bring them together. Aristotle dispensed with the Demiurge and brought the Forms and matter eternally together, yet they remained distinct.

In Illuminism, the stuff and the Forms are the same thing. Numbers are inherent mathematical Forms and they are also the stuff of the world (initially locked inside their controlling monads, but able to be shared with all other monads).

The numbers we have discussed thus far are "vertical" (amplitudes), but of course numbers can also be horizontal (frequencies). Thus each monad contains infinite numbers vertically and horizontally, and at any angle.

A monad can be conceived as the origin, the centre, of an infinite set of concentric circles, each with a different radius. And we can go further. A monad – a soul – sits at the centre of an infinite number of concentric spheres – like the beautiful, perfect spheres of the ancient Greek cosmos, or the divine cosmos of Dante.

It transpires that we ourselves are the perfect crystal spheres. We are perfect spherical information systems, infinite in extent, yet cancelling to zero. We can be both nothing and everything simultaneously. A soul might be nothing more than a dimensionless point from one perspective, but from another it is capable of containing INFINITE information. In other words, it can become GOD. What are we? – we are information systems striving to acquire perfect information. And all of that information is mathematical.

We might say that each of us is seeking a perfect number – a divine code – that characterises exactly who we are. The number we are seeking is infinite, which is why it takes us a cosmic Age to determine it. However, at a certain point, we become so good at self-solving our personal equation and calculating our unique cosmic number, that we solve it instantly (infinitely fast). This is what we call *gnosis* – and it's when we are promoted to divinity and we become God!

The Key

Isn't it a miracle that one equation – Euler's Formula – controls everything: the whole of existence? Euler's Formula is the ultimate miracle. It defines the perfect ontological circle, exquisitely balanced between positive and negative, real and imaginary. It thereby allows the construction of perfect waves, perfect cosine waves and perfect sine waves, perfect real waves and perfect imaginary waves. From this divine formula, space and time emerge and the whole of the physical universe. Euler's Formula is the supreme, eternal, flawless information system, coming in endless varieties. It is what *energy* actually is.

Mathematics – it's so on the money!

Euler's Formula – It's Divine!

$$*****$$

Leibniz insisted that the explanation of existence should be as simple, elegant and concise as possible, and should also be as fruitful as possible. Euler's Formula satisfies ALL OF THAT.

One equation controls all. All you need for a universe is:

1) Static points (monads).

2) Dynamic points (contained within monads and able to be shared between monads).

3) Euler's Formula to control ALL relationships between all points.

That's it. That's all there is. That's existence, and it all revolves around the point, the zero, the nothing ... and Euler's Formula.

Existence is the infinite mathematical transformation of nothing. Isn't that perfect?

Life *has* an answer. That answer is *nothing*, and the equation that controls nothing is Euler's Formula.

Euler's Formula is immutable, eternal and perfect. It's the ultimate Platonic Form. It is the Form of the Good. The Formula came a few decades after Leibniz's death, thanks to the mathematical revolution inaugurated by Leibniz's dazzling calculus. Had Leibniz had access to it, he would have seen its significance instantly and three hundred years ago he would have completed the Grand Unified Theory of Everything, and thus brought to an end the great and noble quest to vindicate Pythagoras's divine assertion that mathematics is everything. Humanity can now complete the sacred task once and for all.

If the world's entire scientific, mathematical and philosophical community now devoted itself to "nothing, and Euler's Formula", humanity would have the grand unified of theory of everything within one decade. We have provided the big picture, but in ten years, all of the details could be provided too, down to the finest point. That's how close humanity is to a New Age, a *Star Trek* Age, a journey not just to the stars, but to the HEAVENS – where we would all be Gods!

The Illuminati

We are the Hyperboreans.

We are Apollo's children.

We are the community of Reason.

And we know we must also honour Dionysus – the God of Unreason.

By day, we are Apollonian; by night we are Dionysian.

A Logos society; a Mythos playground.

<div align="center">*****</div>

We are the vanguard of the Coming Race, the New Humanity, the Supermen and Superwomen. We are the correction to the human error. We are the Logos cure to the Mythos disease of faith, Abrahamism and karmism – ignorance, superstition and irrationality. We will leave the others – the dinosaurs – behind. We are the next evolutionary step. We are the men and women becoming Gods and Goddesses. None will stand in our way. The future is ours.

The True Fight

The true fight isn't between science and religion. That's a no-contest. No rational person could ever take religious faith seriously. The degree to which you are faithful is an accurate measure of your IQ. All faithful people are stupid and have low IQs. "Belief" is a supreme act of stupidity. It means you have abandoned reason.

No, the real fight is between science and MATHEMATICS, and that's one hell of a fight. Will you accept the evidence of your senses and reject rational unobservables, or will you accept the diktats of reason and scorn the plebeian need to have sensory "proof"? To put it another way, which is the superior and more infallible proof – the proof of Euler's Formula, or the sight of the resurrected "Jesus Christ" with stigmata? Will you believe in your senses or will adhere to strict rationality? Rationally, it's IMPOSSIBLE that Jesus Christ was resurrected. A rational person would still not believe in Jesus Christ and his resurrection, even if the allegedly resurrected Christ was

standing there right in front of him. It would be rationally unquestionable that a trick had been performed. Yet the sensory fanatics WILL believe in Jesus Christ despite the laws of reason – because they privilege the senses and observation over reason.

We have to go BEYOND science and religion – to mathematics, the domain of hyperrationality. If it's not rational, it's not real. Fuck Jehovah, and fuck the deceptive senses. All hail infallible mathematical reason.

Two Paths

Any rational person has only two choices for understanding the world: scientifically or mathematically. Traditionally, science has been viewed as relating to ontological reality – what really exists – while mathematics is seen as some mysterious, abstract tool that somehow ably assists science. Yet 2,500 years ago, the divine Pythagoras realised that mathematics, not science, is ontologically real. He declared, "All things are numbers" and "Number rules the universe".

Pythagoras's secret society – devoted to the religion of mathematics – became known as the Illuminati (the enlightened ones), and has remained in continuous existence ever since, steadily enhancing his hypermathematical view of reality and embracing "hyperrationalism".

Ontological mathematics – based on hyperreason – stands wholly opposed to irrationalist, anti-mathematical, empiricist, materialist, atheistic science – the prevailing Meta Paradigm of the scientific establishment. Yet science need not be like this. Humanity's greatest genius – Leibniz – was a rationalist, idealist scientist. He wasn't an empiricist, he wasn't a materialist, he wasn't an irrationalist, he wasn't anti-mathematical and he wasn't an atheist.

Religion – RATIONAL RELIGION – can be framed only in terms of rational, idealist, ontological mathematics.

This book is all about the wholesale replacement of science by ontological mathematics. In broad strokes, it solves all of the outstanding problems of science and it does so by using just one equation – THE GOD EQUATION.

Embark on the most extraordinary journey of all: the mathematical quest for DIVINITY.

If you want to understand what Illuminism is really all about – this is the book which explains the entire theoretical basis of the rational religion of Illuminism.

The Warning

"I have a terrible fear I shall one day be pronounced *holy*." – Nietzsche

Of all the astounding and perceptive things Nietzsche said, this was the greatest of all. Even though he was a radical atheist and loathed everything to do with religion, he understood that his ideas were so powerful that they actually took on a religious character, and – given the extraordinary propensity of humans to wallow in Mythos – it wouldn't take much to turn his philosophy into a religion, and Nietzsche himself into a prophet. (And let's be honest about it, wasn't *Thus Spoke Zarathustra* a self-conscious "holy" book by a "holy" prophet?)

In fact, we ourselves admire Nietzsche and his philosophy so much that we hereby pronounce him holy! All hail, Saint Freddie, prophet of the SUPERMAN!!!

The Perfect Crime

Baudrillard said that the perfect crime was the murder of reality. The perpetrators got away with it Scot free.

There are other perfect crimes such as Einstein's murder of objective reality. His able accomplices were Heisenberg, Bohr and Born. So good was their crime that no one even noticed the corpse.

Religion (faith) murdered reason, and no one cared or even realised.

Mythos murdered Logos and everyone loved it and applauded. A justifiable execution, they said. Give us stories any day. Down with reason.

Heresy

In this book, we have included numerous speculations, thought experiments, playful suggestions and provocative challenges to the views of establishment science. Do you agree with us? Can you refute what we've said? Can you improve on it? Can you detect any errors we might have committed? Our most important task is to get you to THINK about all of these things instead of just passively consuming what you read in science books where "masters of the universe" preach to you about what is and what isn't reality and you are too afraid to question their mighty credentials and intimidating reputations.

Scientists aren't gods. Much of what they say is JUNK – illogical, irrational nonsense. Science has FAILED. Its inability to formulate a grand unified theory of everything proves that science has broken down. Its naïve and false philosophical foundations have destroyed it. You cannot have a theory of everything that isn't based on rationalism. Science prefers to be based on empiricism – and that's its irrational Achilles heel. Our system is based on hyperrationalism and there can be no question that the "big picture" we have presented here – based on pure mathematics – is correct.

Hyperrational Religion

The intelligent people of the world generally subscribe to a scientific, atheistic view of reality. They find Abrahamic Creationism irrational, unbelievable, ignorant, superstitious and horrific. They reject prophets, messiahs, holy books and divine revelation. Nor are they well disposed to Eastern mysticism, pantheism and karmism.

The hyperrationalists of Illuminism did not set out to find religion. They did not like religion, did not need religion and did not want religion. Yet they found it anyway and in the most unexpected and unlikeliest of all places – mathematics.

To atheistic mathematicians, mathematics is an abstraction, built on the greatest abstraction of all – the dimensionless mathematical point.

To ontological mathematicians, mathematics is about reality itself, and the mathematical point has an entirely different significance: it is the ontological basis of existence. It is the *arche*, the fundamental stuff of the world from which everything else is derived. Most incredibly of all, it is, as an ontological entity, none other than the eternal, indestructible source of life and mind. It is the uncreated SOUL.

Ontological mathematics is *living* mathematics.

To be an Illuminist, all you have to do is accept that mathematics is real, not an abstraction. If mathematics is not ontological then the implication is that human minds somehow constructed it. Yet how could ANY human mind devise something as complex as mathematics? And how come this invention of the human mind is the basis of what skeptics *do* believe is ontologically real – science. If mathematics is an abstraction then, if science is founded on mathematics and only makes sense thanks to mathematics, science must also

be an abstraction.

How can something allegedly "unreal" (mathematics) underpin something allegedly real (science)? This is nonsensical. Anyone who rejects ontological mathematics ipso facto rejects ontological science. Mathematics and science are therefore, in such a view, both abstractions and constructs of the human mind. This is a well-known position. It's the philosophy of Kant and it asserts that "real" reality is wholly unknowable.

If you accept knowable reality then you have nowhere to go other than ontological mathematics, which then gives rise to empirical science, while retaining a large, unobservable, rational mathematical hinterland unavailable to observation and empiricism.

Mathematical religion – the religion of hyperrationalism – is all about this scientifically "invisible" hinterland. Like Plato's eternal, immutable domain of perfect Forms, it is accessible only to the rational mind. It will *never* be brought into sensory contact with us, and no experiments will ever be performed on it.

Kant denied that absolute reality could be known. Plato insisted that it could. The only way for Plato to be right is for his transcendent, rationalist domain to be nothing other than the laws of ontological mathematics, built into each and every dimensionless point (mathematical soul), and thus embedded in the very fabric of existence – hence why we discover mathematics wherever we look, and hence why science is mathematical.

For Pythagoras, Plato, Aristotle, the Stoics, the Neoplatonists, Descartes, Spinoza, Leibniz and Hegel, the cosmic mind was entirely rational and, by implication, entirely mathematical.

Plato believed in perfect, eternal souls that "fell" into corruption (Paradise Lost) and then had to find their way back to perfection (Paradise Regained), and the way to do that was to achieve perfect rational understanding of the domain of Forms. Leibniz and Hegel had a radically different view, which had a lot in common with the Aristotelian view. Souls do not start in a perfect state. Rather, they start in a blank state of complete potential. They then *evolve* and *actualise* their potential, and the omega point of this process is *divinity* – becoming God! They don't start perfect but they certainly become perfect via a cosmic, dialectical process.

Mathematically, the universe is an infinite self-solving equation, with every point (soul) striving to solve itself. All of us are trying to solve our own personal equation, and we must do it in the context of every other soul trying

to solve itself too – hence why existence is extremely messy, confusing and dialectical.

When we say that the universe is self-solving, what we mean is that it is self-optimising. The "solution" to the universe is the optimised universe, the perfect universe, the fully actualised universe – HEAVEN. And it is populated, not by one God and infinite worshippers but by infinite GODS and no worshippers!

It is IMPOSSIBLE to explain reality – life, mind, consciousness, free will and science – in any way other than via hyperreal, ontological mathematics based on the living soul striving to convert all potential into actualisation.

Schopenhauer portrayed reality as a blind, meaningless Will striving eternally and wholly aimlessly.

Science portrays reality as a purposeless unfolding of implacable cause and effect, devoid of any meaning – it's just an unavoidable process.

Hegel portrayed reality as *Geist* (mind/spirit) dialectically and purposefully converging on a final, perfect condition – the ABSOLUTE.

In Hyperrationalism, which owes most to the greatest genius in human history – Leibniz – reality is an infinite mathematical living organism, composed of infinite living parts (souls), engaged in the quintessence of mathematics: solving equations. Souls are eternally striving, evolving, self-solving, self-optimising life forms, solving their individual equation within the framework of infinite other souls solving theirs, all going at different speeds and using different tactics. The whole thing is so complicated that it ends up proceeding by way of grand, historical brushstrokes embracing all souls at once. This is the famous Hegelian dialectic of thesis, antithesis and synthesis, moving spirally upwards to an apex of ULTIMATE SYNTHESIS where all individual equations are solved at the same time as the entire collective cosmic equation is solved.

The dialectic is how, ontologically, you solve an infinitely complex ontological mathematical equation.

Although the dialectic is often somewhat slow and crude, it is also simple and effective, and endless iterations of the dialectical cycle are guaranteed to produce the desired final result: cosmic perfection.

The Leibnizian monadic soul is also the basic Hegelian unit of *Geist*: being (infinity) and nothing (zero). Being is the Hegelian thesis and nothing the antithesis. They are reconciled in BECOMING. And that's what the soul is and that's what the universe is: an eternal becoming, always becoming

more perfect and more actualised. Existence is a living, thinking process for converting potential into actuality. That is the meaning of life, the universe and everything. PERFECTION – complete actualisation – is the purpose of life, which is why we are all haunted by perfection and always thinking about it. It is ingrained in us because it is our very meaning.

Is not the religion of hyperrationalism wondrous and breathtaking? Is it not the culmination of all philosophical, religious, psychological, sociological, scientific and mathematical thinking? Does it not unify EVERYTHING?

At heart, it is about one thing – souls transforming potential into actualisation via mathematical dialectics. It is about base metal being turned into gold. It is the supreme COSMIC ALCHEMY!

Beauty

Euler's Formula is traditionally regarded as the most beautiful equation in all of mathematics. Yet it's so much more than that. It's the equation that governs the whole universe and even defines the human soul!

It's the centrepiece of the hyperrational mathematical religion of the Pythagorean Illuminati, the most ancient secret society in the world.

Euler's Formula is the perfect complement for Leibniz's Monadology. Together, they form the most powerful intellectual combination in history, capable of explaining the whole of science and establishing a true grand unified theory of everything, embracing mathematics, science, philosophy, religion and psychology. It can even provide an entirely rational explanation of near-death and out-of-body experiences, and homeopathy. It also overturns Einstein's sacred principle of relativity and provides exactly the same mathematical results via an absolute framework that restores the reality principle.

In this groundbreaking book, we have provided a complete solution of the Cartesian mind-body problem via the Fourier transform – which has the Euler Formula as its engine. We have presented the Riemann sphere, which works in perfect harmony with the Euler Formula, as the ideal working model of the human soul. And we have given the first ever technical explanation of the process of reincarnation.

The Euler equation is everything you thought it was – and more. It's truly divine.

The Master Equation

Never forget…

One Equation to rule them all, One Equation to find them,

One Equation to bring them all and in the darkness bind them.

The Euler Formula – the Equation of Power – wielded by the Lord of Equations.

What could be more elegant and simple than that all of the souls of the universe should obey a single, objective Formula that can be infinitely varied (in terms of radius, angle, frequency, wavelength, amplitude, phase, orthogonality, symmetry, number, energy and information)? This infinite variety leads to infinitely different *subjective* experiences. We are all *unique*.

Is it not miraculous? Yet it is mediated not by magic but by mathematics. Monads and the Euler Formula explain EVERYTHING.

Leibniz required a divine theory to be simplest in hypotheses (laws) and richest in phenomena. That's exactly what Illuminism is. You cannot get any simpler – mathematical living points and a single mathematical equation ontologically built into all of them.

Occam's razor requires the simplest explanation to be preferred. Why would reality be any more complex than what we have described? What would be the sufficient reason for anything more complicated? Only two things are needed for the reality we observe: subjects and objective rules that describe how they relate to each other. Subjects are living minds, and the objective laws they obey are encoded in them as part of their nature. The encoding is performed by Euler's Formula.

Euler's Formula is the essence of both symmetry and symmetry breaking. It is perfectly balanced between the real and imaginary, the positive and negative. It contains all we need for trigonometry. It contains all we need for wave analysis. It contains all we need for Fourier analysis and Fourier transforms. It contains all we need for Lorentz transformations. It is the quintessence of INFORMATION. It is the bearer of the information that is experienced by subjects.

This universe of ours is a universe of information being experienced by subjects that feed on information and are driven by information, and which generate information. Information is ontological and is carried by Euler's

Formula, which defines ontological energy (waves). Complex information is built up from simple information by nothing more elaborate than adding simple basis waves together, all managed by Euler's Formula.

Illuminism is based on the point and the circle – mathematical perfection.

Go on, dare to defy Illuminism. Try to come up with something simpler, more elegant, more explanatory, more powerful and more divine. Good luck!

Seriously...

Any suitably capable scientist or mathematician who really gets what we are saying in this book could use it to win a Nobel Prize. All you have to do is flesh out the ideas and dress them up in the language the scientific establishment loves. First one to come up with a theory of Fourier-Riemann Quantum Gravity becomes a legend. Will it be you?

Operant Conditioning

Intelligent people are stimulated by ideas. They get a "rush", a "high" when they encounter fascinating ideas, which reinforces that behaviour and makes them seek out more fascinating ideas. Hence the smart get smarter.

Unintelligent people are bored by ideas. They get a "downer", a "crash", when they encounter ideas, so they switch off and avoid them. The dumb get dumber!

Emotional people are turned on by emotions. They seek out stronger and stronger emotions. The emotional get more emotional. They crave emotional excess. The Crying Game generates ever more tears.

Sensing types are turned on by thrills, spills, action, and spectacle. They want bigger and bigger effects, more and more powerful stimulation. The sensing types get ever more stuck in the sensory groove. They crave sensory overload. The thrills have to keep getting stronger. The thrills of yesterday are never good enough for the thrills of today.

Intuitives, if not grounded by reason, get turned on big grander and grander intuitions, usually of a highly mystical nature. They become more and more mystical. They love Eastern religion. They crave a single intuitive embrace of *everything*.

This is the way the world works. All differences between people are relentlessly exaggerated. Especially in a world of capitalist choice, people can easily and continually indulge whatever stimulates them and avoid whatever

does not. Habits rapidly become permanently entrenched.

The internet is perfect for revealing what turns on humanity. The Google search engine contains the psychological profiles of much of humanity (everyone who uses the internet).

Mathematics, science and philosophy do not prosper on the internet. Celebrity culture, silly videos, gross humour, porn, zany things, outrageous conspiracy theories, mad religions, shock jocks, romance, dating, fashion, pop, rock, political extremism – these are the things that flourish. In other words, it's all the stuff that feeds the sensing and feeling types, the extraverts, the sensation seekers, the cravers of emotion, i.e. the Mythos masses.

We have set out an Apollonian vision of a new humanity. Trouble is, no one is interested in Apollo. They demand Dionysus. So, we Hyperboreans must be able to use our intelligence to lure the Dionysians to the altar of Apollo. It's a monumentally difficult task, requiring all our imagination and creativity.

We ourselves must plunge into the underworld of Dionysian emotional and sensory excess, and we must give the Dark Lord his dues.

By day, the new world will be Apollonian. By night, it will become the realm of Dionysus, the playground of chaos and great, unleashed, unconscious forces.

Ironically, the vile Ayn Rand provides a good example of what we must accomplish. She preached a Dionysian message and converted even Christians to her atheist cause of unadulterated selfishness and greed.

We must create an equally seductive Dionysian message, but one that, on the other side of the labyrinth, leads cunningly back to Apollo.

We will give humanity what it truly yearns for: the divine synthesis of Apollo and Dionysus – Reason and Madness.

Hitherto, humanity has simply been mad. People *crave* madness – the unfettered Will of the pure cosmic life force. We will allow them their insanity, but within the sane superstructure of Apollo.

We can have a Logos world of Apollonian virtue, reason, logos, moderation and altruism, and within it – in a *cordon sanitaire* – we can have a Dionysian madhouse of excess. Hedonism, selfishness, greed, lust, mayhem, Valhalla, partying, brawling, drugs, intoxication, wildness, mania – everything that the emotional and the sensory desire.

Religion, with all of its laws and prohibitions, tried to control Dionysus, but religion wasn't Apollonian. It was just a different kind of Dionysian

madness that involved worshipping fantasy superbeings. The believers were lured on by the prospect of heaven, and terrified by the vision of hell held over them. Religion was all about primitive Dionysian punishment and reward.

We will give the masses the Dionysian excess they demand. We will lure them to our banner via Dionysus, the cosmic seducer.

Yet in the end, we will reveal who we really are. We are the shining ones, the illuminated ones – the *ILLUMINATI*.

Dawn

Humanity now stands on the threshold of a new dawn. By getting rid of irrationalist, empiricist, relativistic, materialist science and replacing it with hyperrational, ontological, absolutist mathematics, we can embark on our destined journey to divinity.

Mathematics has at its core the mathematical *point*. As soon as you realise that this humble point is the Leibnizian monad – the soul, the mind, the basis of consciousness, the source of eternal, indestructible life – you have crossed the final threshold of understanding.

Thanks to the monad, the soul takes the central position in the most quintessentially rational subject of all – mathematics. We can now have religion, science and mathematics unified in a single rational system of reason, logic and knowledge that has no need whatever of faith, prophets, holy texts or Creator Gods.

Anyone can be a "prophet" of Illuminism simply by being good enough at mathematics. In Illuminism, existence is a self-solving, ontological equation – driving itself forward dialectically – and it won't stop until it has reached its optimal solution – DIVINITY!

Imagine a world operating according to a hyperrational Logos religion in which the smartest people on earth are its "priests" – rather than a superstitious, ignorant, faith-based irrational Mythos religion in which any charlatan or conman can set himself up as a priest, prophet, pope, guru, messiah or saviour.

The world will never be the same again. We will go from being a planetary penal colony and cosmic mental asylum to a launch pad for the journey to the celestial planes.

Isn't it time to make it happen?

This is the Gospel of the Illuminati.

<p style="text-align:center">*****</p>

Let us pronounce this book the "Holy Book" of the Illuminati. Read the Torah, the Bible, the Koran and the sacred texts of the East. Compare them with this book. Ask yourself a couple of very simple questions. Who has provided a rational answer to everything? Who has explained everything down to the most fundamental units of existence? There is no contest between Mythos religions and our Logos religion. Ours is the only sane and rational religion, the sole religion that actually explains the nature of reality. The other religions are all different manifestations of *madness*. They have zero truth content. Literally nothing they say is true, but truth is not what interests their followers. These people don't want to *know*; they want to *believe*.

We don't require you to believe a single thing we've said. In fact, we insist that you believe nothing at all. Illuminism is all about rational knowledge, derived from Platonic, eternal mathematics.

We don't threaten you with hell. We don't torment your soul. We send you no prophets, Saviours or Messiahs. We have no pope to impose on you, no priesthood to deceive you. We worship no God at all. Rather, we seek to *become* Gods and we are interested only in those elite, higher souls who share our divine ambition.

We are the Coming Race of Gods. If we wished, we could have the Mythos masses on their knees worshipping us by the end of this century. But that would make us as pathetic as they are. Our ambitions are altogether grander. We want to master the stars – the whole glittering universe!

The Ultimate Sentence

"If, in some cataclysm, all of scientific knowledge were to be destroyed, and only one sentence passed on to the next generations of creatures, what statement would contain the most information in the fewest words? I believe it is the atomic hypothesis (or the atomic fact, or whatever you wish to call it) that all things are made of atoms—little particles that move around in perpetual motion, attracting each other when they are a little distance apart, but repelling upon being squeezed into one another. In that one sentence, you

will see, there is an enormous amount of information about the world, if just a little imagination and thinking are applied." -- Richard Feynman

Our sentence would be: "The Monadology asserts that the fundamental units of existence are INFINITE, dimensionless, living, thinking points – monads, ZEROS, souls – each of which has INFINITE energy content, all controlled by a single equation – Euler's Formula – and the collective energy of this universe of mathematical points creates a physical universe of which every objective value is ZERO, but, through a self-solving, self-optimizing, dialectical, evolving process, the universe generates a final, subjective value of INFINITY – divinity, perfection, the ABSOLUTE."

For ours is the religion of zero and infinity, the two numbers that define the soul and the whole of existence. *As above, so below*.

The Leap

Kierkegaard spoke of the need for "a leap of faith" – an abandonment of reason and full commitment to some cause or other. He cited Abraham as someone who dispensed with reason and morality in order to have absolute faith in his chosen deity.

We speak instead of a need for a "leap of reason". Where the faithful have reason as an enemy, reason has both faith and the senses as enemies.

Science refuses to take a leap of reason and instead takes a sensory leap: it stakes everything on the evidence of the senses. *Seeing is believing*.

Mathematics and Illuminism are based on the rejection of the senses and the acceptance of reason as the ultimate access channel to truth and knowledge. This is the position set out clearly by Plato two and a half-thousand years ago.

If you are a person of faith, you reject reason and the senses (Doubting Thomas demanded physical evidence and was mocked by Jesus Christ).

If you are a scientist, you reject faith and reason and rely on sensory "proof" (scientists are all Doubting Thomases). Science is an IRRATIONALIST creed since it formally relegates reason to an ancillary role (it's the assistant of the senses, which are the most important factor in empiricist materialist science).

If you are a mathematical Illuminist, you reject faith and the senses, and

accept mathematical and logical proofs regardless of whether they are observable and empirical.

So, what's it to be?

If you want to be anything other than a pathetic agnostic who can't make his mind up and is incapable of committing himself to any cause then you must make a leap of some kind.

Will you take a leap of faith (irrational religion), a leap of the senses (irrational science) or a leap of reason (hyperrational Illuminism).

Your choice.

With science, when reason (rationalism) conflicts with the senses (empiricism), reason is abandoned. With mathematical Illuminism, it's the senses that lose. The irrational senses are never allowed to dictate to reason, providing reason is grounded in mathematics and logic. (Speculative reason is a different matter. History has proved that humans can use speculative reason – divorced from mathematics and logic – to reach absurd conclusions. Religion has often harnessed speculative reason to try to rationally account for religious nonsense. Metaphysics has also been far too speculative. Science too uses speculative reason. The type of reason we advocate is unspeculative. It must be supported mathematically and logically.)

So, will you LEAP?!!! Once you have leapt, there's no way back. It's a one-time leap. It will define the rest of your life.

You must *absolutely* commit. There can be no half-measures and no half-heartedness. It's all or nothing. Kierkegaard certainly got that right. The leap must be a transformative event, alchemical, transmutative. Remember Neo in *The Matrix*. He had to master the "Jump Program" and leap from one skyscraper to another across an impossibly wide gap. If you're going to make that leap, if you're going to succeed, you must be SURE. Doubt is *fatal*. If you choke, you die.

When invading armies landed on foreign soil, they often burned their fleet so that there could be no retreat. It was win or perish. That's how it must be.

To leap or not to leap – that is the question. What leap shall it be? – faith, the senses or reason. *Choose*!

THE BEGINNING…