

Opinion Article

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The Standard Particle Physics Model Becomes the Theory of Everything

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Abstract

This paper accesses a new way of thinking by adding relativity and bottom-up organisation to the top-down thinking of Homo sapiens in regard to the problems of the standard model of particle physics to make it more understandable. This new way of thinking changes 'why we think that the neutrinos act in such a bizarre fashion' into an appreciation of the elegance of the organisation behind the universe that Newtonian physics has always feared, but with the extensions proposed by this model, a complete modern physics emerges that could be called The Theory Of Everything. Theoretical modern physics was 'shut-down' a hundred years ago, I believe, because quantum mechanics became too bizarre on top of the 'inspired guesses' upon which much of physics has been built and this theory appears to have no unexplained enigmas and provides explanations for the 'inspired guesses' that physics has been using for hundreds of years that had been un-derivable using physics's limited understanding. So, here is the opportunity to use the power of relativity and bottom-up organisation to rebuild science using absolutes for comparison instead of measurement.

Keywords: Theory of everything; relativity; particle physics; neutrinos; standard model; creation equation

Preamble

Issac Newton was an alchemist [which lacks the organisation of chemistry] that is the mixing of ingredients together to attempt to obtain a desired result and Newton [possibly] took Galileo's experimental results [$F=mg$] and generalised them to Newton's laws of motion [$F=ma$] where F is force [governed by intention], m is mass [a combination of energy and organisation], a is a general acceleration and g is the local acceleration due to gravity. It works, but no one understands why it works! Physics and our scientific society is using a guess and the lack of bottom-up physical organisation makes the position of Homo sapiens suspect and is the reason why the world is in danger of over-population, global warming etc. Homo sapiens used technology to leave the organisation of survival of the fittest with the vague notion of improving things without understanding how the physical works and an example is given here of the hundred plus sub-atomic particles that have been found and classified, but not understood..

Preface

A new theory of relativity and bottom-up organisation has been published [1] and particle physics, cosmology, quantum mechanics etc. are hive-offs from a physics that, I believe has been hibernating for the last hundred years when Newtonian physics could not understand modern physics and left physicists floundering and retreating into

measurement. Unfortunately, this left the newer disciplines on shaky ground and to bring sense to modern physics is to challenge physics, which is difficult to do because physics is a 'club' built on agreement, not the physical, and that process is called 'peer review'. In effect, physicists vote by acclamation, on what is admissible, and not on what is physical because physics does not recognise relativity. For example, Einstein's special theory of relativity was based on the Michelson-Morley experiment that the speed of light was constant to observers, irrespective of the observer's motion and concentrates on the *effect* to the measurers and not on the relativity which is the difference between the speed of a particle and light which we shall see *defines* a particle and light.

It will be shown that relativity is the functioning of the universe and a lack of relativity is its form and that needs a disclaimer:

the subject matter of this paper is new but must be classed as an opinion-piece and cannot be classified as scientific [not being based on past peer acceptance] and is theoretical [not based on the scientific method [measurement]] and its use may conflict with peer acceptance of yourself. Secondly, the paper is, in truth, scientific because (1) it is based on absolutes [as it must for comparisons to be made], and (2) on the simplest absolutes [unlike Newtonian physics that is based on the more complicated force equals mass times acceleration]. Thirdly, mistakes [contextual] may occur because I am a generalist, whereas a specialist is a specialist [conceptual] in a subject and would not be expected to make mistakes. This state of affairs is relativity and cannot be eliminated.

That physics dislikes organisation and ignores it creates a very serious problem that physics does not seem to realise and the result has been that modern physics theory has been asleep for a hundred years and Newtonian physics, gravitation etc. are based on 'inspired guesses'.

Galileo's law of motion was possibly generalised by Newton and the reason that it does not work properly [at extremes] is because it is different [more complicated] to the absolute that this model uses, which is, *energy plus organisation is nothing* [1]. This becomes $energy/organisation = i^2$, where 'i' is the square root of (-1) compared to $F/ma = 1$ and this is the point where Newtonian physics departs from the physical and disregards relativity. The similarity is obvious, but the physical requires the use of energy [not force] because force requires a determination of 'how much' and depends on the measurer, 'ma' is an organisation and 'i squared', I believe, signifies a relativity that must always exist [both states (of 'i') are 'imaginary' without measuring relativity].

Restrictions and Logic

The universe is a fractal generated by the [general] creation equation [*concept plus context is nothing*] through concepts and contexts [1] and a fractal has special properties in being generated by a simple equation that implies simplicity and similarity. Firstly, the universe's space must be accelerating

so that the elements of the creation equation [energy and organisation] never logically meet and the ratio of the dimensions must be considered to be absolutes to remove relativity [1]. Secondly, the speed of light is an absolute and constant to any measurer and so the acceleration [of the universe] is a hyperbola that produces initial cosmic inflation [2] and continual [latterly very small] acceleration. Thirdly, quantum gravity is similarly a hyperbola and extends from the gravity of the stars to the organisation of the atom [1, 3]. Notice that hyperbolae are necessary because reality must have continuity [otherwise magic or chaos can happen] and be unbounded [through asymptotes] because the universe is an organisation [6, 14].

Quantum mechanics remains an enigma [physics says use, but don't try to understand] and cannot be understood top-down because it derives from the bottom-up creation equation along with relativity [1]. Life gains consciousness by measuring [a requirement of affordances] and the creation equation forms the basis of thought in the brain [5] to produce the mind. According to this model, the Heisenberg's uncertainty principle is trying to measure an orthogonality [independent with entanglement] exactly, which would destroy the *logic* [independence] of orthogonality that has built the universe.

Inertia

The concept of inertia has been around for a long time [since the ancient Greeks] and according to Wikipedia little progress has been made in resolving what it is, and yet it forms the cornerstone of Homo sapiens' concept of force that requires an intention to change the situation. Many people have postulated that our laws of physics work with constant speeds [Galileo, Einstein etc.] and state the law of conservation of energy [local, physics] versus the accelerating universe [required for existence] where the energy is increasing [as is the organisation in a bigger universe]. Thus, planetary motion [circular] is simple and the attraction of gravity must equal and exactly overcome the inertia of the motion to create a stable planetary situation and this radius is a natural restriction [that the attraction of gravity and inertia of matter be the same]. The 3 body-problem contains organisation [as strange attractors] and acceleration generates 'gravity' that needs to be incorporated into the relativity of the surroundings.

'Newton's original ideas of "innate resistive force" were ultimately problematic for a variety of reasons, and thus most physicists no longer think in these terms. As no alternate mechanism has been readily accepted, and it is now generally accepted that there may not be one that we can know, the term "inertia" has come to mean simply the phenomenon itself, rather than any inherent mechanism.' (Wikipedia, Inertia) Thus, we see physics using top-down thinking [with its infinite possibilities of being wrong] that treats inertia as a concept, whereas this theory includes a context [with the surroundings] and the essence of that context is the all-pervading entanglement of the organisation and the obvious answer is [a part of] gravity. This entanglement is that required to define

an organisation, but there is another entanglement that is required by relativity, for example, hot and cold are relative, but take one away and the other becomes meaningless.

With bottom-up organisation we can be assured that there is only one answer, and that expands our mental software capability hugely [and our thinking [5]]. So, the entanglement of the creation equation is telling us that the universe is an organisation because every point in an organisation must be in communication with every other part [by definition]. Hence we have to expand the logic of yes/no to a higher level [logic of the half-truth [15]] and consider the particle [photon, proton etc.] to be composed of energy and organisation together in the one particle. If this is the case, what causes the different particles to be different and the answer must be their speed?

So, what is inertia? It appears that within an organisation a local situation can be dealt with locally, but something that involves the total organisation must be considered [as an entity] by the board. We use the same word [inertia] for businesses and institutions that have an increased inertia as the size of the organisation increases and as our universe is a simple fractal [from a simple creation equation] we should expect a similar outcome. Finally, a question has arisen in history about the assumed equality of gravitational inertia and mass inertia and it can be seen from this that they are one and the same.

Organisation of the Universe

Consider the quotation from Wikipedia: 'although the Standard Model is believed to be theoretically self-consistent and has demonstrated some success in providing experimental predictions, it leaves some physical phenomena unexplained and so falls short of being a complete theory of fundamental interactions. For example, it does not fully explain why there is more matter than anti-matter, incorporate the full theory of gravitation as described by general relativity, or account for the universe's accelerating expansion as possibly described by dark energy. The model does not contain any viable dark matter particle that possesses all of the required properties deduced from observational cosmology. It also does not incorporate neutrino oscillations and their non-zero masses.'

The question of 'Why there is more matter than antimatter?' is peculiar to the Big Bang theory of creation and comes from the postulation that pure energy erupted and coalesced into all manner of matter and antimatter, but this theory uses the creation equation that produces a fractal with only one type of organisation [as we find] and that is the simplest situation [Occam's razor or principle of least action] and there is no reason to consider anti-matter unless we create both at the same time.

Newton considered the 'steady state' planetary motion and the simple attraction while Einstein added 'curved' space as two aspects of gravity that gave the correct magnitude according to Eddington's measurements [twice the attraction] and to obtain this result he must have used an 'inspired guess'. The postulated 'curved' space is top-down thinking

because the dimensions used in this theory are energy, organisation, time and distance which form two relativities [concept-context] where energy and time are concepts and organisation and distance are context and are simple because distance divided by time is a constant [for all light (energy and organisation)]. Thus space-time might appear to have significance but it is the division that removes the relativity.

Gravity is the effect of three factors, firstly a concept which is the acceleration as can be seen in elevators, expanding universe, orbits and rotation of the planet and secondly, the context is the relativity [attraction] of two bodies as the [mathematical] product of quantum gravity [the division of the sum of energy plus organisation by the separation [1]] which produces the derivation of Newton's law of gravitation ['an inspired guess' by Newton] that is derived for the first time in [1] and yet we have been using it for hundreds of years! Note that quantum gravity is [effectively] zero in the stars but organisational as the separation decreases [possibly quarks]. Thirdly, as the restriction that defines an organisation (universe)]. Note the multiplication [relativity] and division [excluding relativity] are available for use in mathematics but are an integral part of the physical.

'The universe's accelerating expansion as possibly described by dark energy' is readily explained by the logical restriction [not dark energy] of the continual existence of the creation equation [1], above and consequently there is no need for a 'dark matter particle'. Remember that the universe is an organisation [context] and not 'real' [concept].

The Special Case of the Neutrino

We need to consider that the speed of light is an absolute [constant to a measurer, [1]] and that means that a particle has a speed that is always less than the speed of light and this is the relativity between energy and particles to keep them apart at all times and to recognise them organisationally because they are composed of the same things physically [energy and organisation], but have different roles to play in the overall organisation of the universe [see Einstein's special relativity]. The ratios of the dimensions create the form of the universe [1], thus, the universe can account for particles and energy as concepts, even though they are basically the same [composed of energy and organisation] but what about the 'leftover bits' that are called neutrinos? Logically, neutrons are a means to an end and the neutron is useful in the nucleus but must decay to the more useful protons and neutrons outside of the nucleus. Neutrinos were discovered as the need to 'hide' and 'dispose of', much like modern garbage, the 'bits' that were not necessary to the functioning of everything and this was effectively done by them being nonreactive, but they must be taken into account [for gravity]. What logical speed could they have to differentiate them from organisation [classic particle] and energy [classic photon]? This is important because there is (apparently) no other way to differentiate the third type of particle because the continuum is apparently complete from zero to the speed of light.

In other words, and making it as simple as possible, physicists use their mind-brain to differentiate between photons and particles because they call them energy and particles, but they are the same thing because that is the wave-particle duality and the difference is their speed. Everything is composed of energy and organisation as an orthogonality within each particle because they are entangled, but independent, so, the 'standard particle model' becomes the 'standard speed model'. In other words, 'they concluded that it was not necessary to try to understand, for example, why light behaved sometimes like a particle and sometimes like a wave. For them, there was *no profound hidden reality* in the mathematical formulas. This is what is now called the *Copenhagen interpretation*.' (Our Cosmic Origins, Armand Delsemme, p 256) This is not correct because the '*profound hidden reality*' is the creation equation but it is correct, that the wave-particle duality is a half-truth [15] and that 'quantum theory, although exact, is still incomplete' (p 256) by showing entanglement [relativity]. This is the moment when it is realised that modern physics should not be based on energy [alone] and so keeping what we call particles and energy separate, but the speed is what separates them in the accounting of the organisational solution in which we live. This is the important point [context] in the concept of Einstein's special theory of relativity which expanded the obscure notion that the speed of light was constant to any observer [Michelson-Morley experiment] and this effect [same speed to any observer] is explained in this theory. In other words, Einstein used the result [of the Michelson-Morley experiment] whereas I'm explaining why it occurred.

I want to make it clear that, in this model, the universe creates two things [for relativity] such as energy and organisation [with the restriction of acceleration], or photons and particles with the restriction of speed because they are created out of nothing and they need restrictions to ensure that they continue to exist. This is another variant of the logic of the half-truth, below, where true-false is held open logically, by shimmer [wave-particles], acceleration [universe] or speed [particles] because the speed of light is an absolute and everything is relative to the absolutes. This agrees with the relativity of everything [context] and the form of the universe is the lack of relativity formed by the ratios of relatives. In other words, we view a universe composed of restrictions because that is the only way that we can view relativities and this is similar to Socrates problem [of judgement, loyalty etc.] that we [ourselves] must impose restrictions [consider the question to obtain affordances]. Thus, a model of the particles can be made by comparing them to the photon's speed [an absolute] instead of the standard model's strange assemblage.

Let's look at the logic of the half-truth [true, false, true and false at different times, chaos] and that seems to consider all possibilities, but ' true and false at the same time' is not 'chaos' if true and false 'shimmer' so fast, from one to the other that it makes no difference to the final result. This 'shimmer' is, I believe, the wave-particle duality that we see in the macroscopic [Davisson and Thomson were awarded the Nobel Prize in 1937

for experimental verification of wave property of electrons by diffraction experiments' (Wikipedia)] and is, I believe, the structure of the photon and the source of de Broglie's waves in matter [similarity in a fractal]. So, how does the universe make the neutrino different to the particle and photon speed-wise? Notice that there is an 'asymptotic gap' as the speed of a particle approaches the speed of light that is always empty because it is an asymptote. If the 'leftover bits' were stored just below the speed of light, the problem would be solved. 'Out of sight, out of mind', but still contribute to gravity.

Consider that 'neutrinos typically pass through normal matter unimpeded and undetected. Weak interactions create neutrinos in one of three leptonic flavours: electron neutrinos, muon neutrinos or tau neutrinos, in association with the corresponding charged lepton. Although neutrinos were long believed to be massless, it is now known that there are three discrete neutrino masses with different tiny values, but they do not correspond uniquely to the three flavors. A neutrino created with a specific flavor has an associated specific quantum superposition of all three mass states. As a result, neutrinos oscillate between different flavors in flight. For example, an electron neutrino produced in a beta decay reaction may interact in a distant detector as a muon or tau neutrino.' (Wikipedia, Neutrino) This seems to agree with the proposition that I put forward, that they travel near the speed of light, but why do they change form?

Spin

'Why' is not used extensively in physics because physics neglects relativity and relativity provides the 'spring-board' to answering that question. Physics uses top-down human thought to imagine what particle do, and not what the physical does, so, the universe, in it's necessarily simple form could use the gap in the asymptote to accommodate the neutrinos left over from reactions in an 'out of sight, out of mind' way. Is this possibility justified, and what does physics say about it? 'Louis de Broglie postulated the wave nature of electrons and suggested that all matter has wave properties. This concept is known as the de Broglie hypothesis, an example of wave-particle duality'. (Wikipedia) 'Bohr model or Rutherford-Bohr model, presented by Niels Bohr and Ernest Rutherford in 1913, is a system consisting of a small, dense nucleus surrounded by orbiting electrons—similar to the structure of the Solar System, but with attraction provided by electrostatic forces in place of gravity.' (Wikipedia) 'Spin has some peculiar properties that distinguish it from orbital angular momenta'. (Wikipedia, Spin (physics), Quantum number) 'For photons, spin is the quantum-mechanical counterpart of the polarization of light; for electrons, the spin has no classical counterpart'. (Wikipedia, Spin (physics)) 'The Pauli exclusion principle is the quantum mechanical principle which states that two or more identical fermions (particles with half-integer spin) cannot occupy the same quantum state within a quantum system simultaneously. . . . Fermions include elementary particles such as quarks, electrons and neutrinos.' (Wikipedia, Pauli exclusion principle)

Clearly, spin is useful in physics, but, to my mind it is misleading and complicated and I would like to go back to the Bohr atom and think of de Broglie waves defining the energy of each orbit and instead of considering two 'spins' to explain the Pauli exclusion principle, I prefer the wave-particle approach that the electron in orbit has the energy corresponding to the associated standing wave and further, that a standing wave contains a relativity that allows two standing waves to occupy the space of one, and that seems a better explanation for two electrons to occupy the same orbit. I say this because two waves, in different directions, seems similar to two 'spins' [and is a simpler concept and does not require a 'law'].

The Trinity

The view through this model allows an explanation of the apparently unusual behaviour of the three types of neutrinos in that they change between themselves. The same logic of the half-truth, as above, allows them to appear as three particles, but one at a time, presumably because there is no way that they could appear as three separate particles because there is only one [simplest logical] available speed channel. Thus, it is logically possible and necessary that they 'shimmer' between themselves, and it shows the same mechanism as the wave-particle duality as would be expected in a fractal. No doubt this 'shimmer' of different particles was disconcerting to observers, but logically, it has to be [for simplicity], and being in an asymptote makes 'shimmer' easy because the three types of neutrinos differ in mass and are otherwise similar, then being close to the speed of a photon and its mass required to be practically zero, the speed determines the particle, which is in line with what I am saying [that only one channel exists no matter the flavour]. In other words, their momentum [mass times speed] as a measure of their energy is the multiplicand of a particular speed [close to the speed of light] and necessarily tiny mass, so it is again, the speed that is the decider of the particle. No wonder that physics has had difficulty measuring their masses! The logic behind the above is simply, that it works, and requires the simplest operation [energy and organisation-wise].

The Elegance of Organisation

Consider the quotation, 'information remains bewildering, partly because it crops up in different guises in so many scientific fields.' This wariness of organisation defines Newtonian physics and is possibly the reason for its consideration of energy on its own, but organisation is necessary because, as the quotation says, it is in everything and also in an extended science because it is the essence of emotion to ourselves through affordances as well as the description of neutrinos with its elegance in the use of speed to delineate the particles. Of course, the true elegance is the creation equation that generates the universe that shows the relationship clearly. In other words, organisation need not be feared when it is understood, even though it appears difficult at first sight and it has a beauty that is shown by this

consideration of neutrinos. Consequently, the magnitude of the importance [concept] and the involvement [context], that can be engendered by a change of software [in the mind-brain] indicates the need to delineate a new Homo, not only because of the promise that a new way of thinking produces, but as a goal to work towards [due to relativity [4]]. For example, consider the benefits that have accrued to us through technology [materials engineering] and that social engineering [7] is equal in size and waiting to be discovered, and, more to the point, might save our civilisation from the unregulated application of technology that is causing problems.

Dealing with Infinity

The universe is necessarily a simple place [fractal, similarity] and is based on hyperbolae because they combine simplicity with continuity [necessary for reality] and they contain the ability to handle infinities [that are needed in an organisation for growth, if need be] that need to be understood as necessary for organisations and not the dreaded infinities of mathematics and the case of neutrinos highlights that the universe is comfortable with infinity and that it is our use of mathematics that is causing the problem because mathematics has problems. Organisation has a 'gravitational' effect [as well as energy] and also has an 'inertia' in time [as well as in distance, above] so that any change in organisation takes time and, in a fractal, the same could apply to the subatomic particles, but as physics dislikes organisation and concentrates on energy [classical particles], it tends to 'find' [splits off] particles that may not really be particles, but 'transitions', and as such, do they deserve recognition as particles?

Consider 'the W bosons have a magnetic moment, but the Z has none. All three of these particles are very short-lived, with a half-life of about 3×10^{-25} s. Their experimental discovery was pivotal in establishing what is now called the Standard Model of particle physics.' (Wikipedia) 'The muon is an unstable subatomic particle with a mean lifetime of 2.2 μ s, much longer than many other subatomic particles. As with the decay of the non-elementary neutron (with a lifetime around 15 minutes), muon decay is slow (by subatomic standards) because the decay is mediated only by the weak interaction (rather than the more powerful strong interaction or electromagnetic interaction)' (Wikipedia, Muon) Tau leptons have a lifetime of 2.9×10^{-13} s and a mass of 1776.86 MeV/c² (compared to 105.66 MeV/c² for muons and 0.511 MeV/c² for electrons). Since their interactions are very similar to those of the electron, a tau can be thought of as a much heavier version of the electron.' (Wikipedia, Tau (particle)) Further, 'only first-generation (up and down) quarks occur commonly in nature. Heavier quarks can only be created in high-energy collisions (such as in those involving cosmic rays), and decay quickly.' (Wikipedia, Quark, overview) Further, 'the very-short-lived hadrons, however, which number 200 or more, decay via the strong force. This force is so strong that it allows the particles to live only for about the time it takes light

to cross the particle; the particles decay almost as soon as they are created.' (Britannica, Subatomic particles) Notice that organisation solves this need for 'forces' and 'gluons' and generalises the problems by using contexts instead of just concepts.

Quantum gravity [energy plus organisation divided by separation] is a hyperbola approaching zero as the separation of two pieces of matter becomes infinitely large and organisation at the other end [zero separation] with the quarks and their fractional charges. Clearly, quarks could be considered to be organisation, especially as they strenuously resist being on their own and form a separate subgroup within the standard particle model. In other words, if there is no movement between two 'things', they are not particles, but an organisation, such as the quarks appear to be. Clearly, as we see in a fractal, an organisation is a number of things that work together, hence the neutron is not a particle but a 'transporter' of quarks until it is in the nucleus.

Another example lies in the currently held view of the discontinuity at the so-called Big Bang with its cosmic inflation problem and an increasing dark energy accelerating the universe versus this model which is a fractal model where the acceleration of the space from time zero is extremely large [hyperbola with time] and thus contains the concept of cosmic inflation together with the continued expansion [acceleration] of the universe. Any concept of infinity must be tempered with the time element of the 'inertia' of logic, space, time and organisation because an organisation considers possibilities not probabilities and we did pass through the creation unharmed.

The Theory of Everything

My aim is to extend Newtonian physics and, at the same time suggest a simplification to the standard particle model which appears to be a 'dog's breakfast' of particles and predictions, and that might be what specialists want, but the rest of us deserves a rational approach and the standard model could do with a little revision and I suggest the following:

Concept: Everything is relative and *energy plus organisation is nothing* is in everything, so this is a table of operations categorised by the *organisation of speed* [tier one] and lifetime, energy etc. [tier two], the necessary acceleration of the universe produces the interconnectedness in everything [that affects everything as gravity], internally as quantum gravity [(*energy plus organisation*) divided by *separation relative to something else*] and entanglement [relativity].

Context: plus [tier 1]: quarks up and down [*no speed*]
proton, electron [*less than light speed*]
neutrinos assorted [*near light speed*]
photon [*light speed*]
gravity [*infinite speed*]

Plus [tier 2]: bosons, muons, taus, neutrons and other quarks etc. [*organisation changelings*]

Any suggestion of gravity waves or gravity particles presupposes finite speeds which are not allowable because there must be a defined uniqueness [cannot be two different answers in a given situation] in an organisation and is the reason behind the logic of the half-truth [15]. Perhaps it is easiest to think of gravity as a product of relativity [concept in a fractal] and the quantum gravity as the context, but however we consider it, it's speed of action must be fast enough to keep the organisation unique. I believe that there is good reason to believe that the universe is an organisation [6, 14] and astronomy doesn't help by looking farther and farther back through stronger telescopes and finding more stars at greater distances, but are those stars really there, or are they the stars that had to be there if the universe was constructed of the minimum energy [principle of least action] for us to be here 13 billion years later? The fractal nature of the universe is size independent [there is nothing to compare our universe with] and coming from nothing it could be minute.

Conclusion and Prediction

Physics is a 'basket case' without legs to run by being based on measurement [Francis Bacon], the 'clubbiness' of peer review excludes the grasping of the new concepts of relativity and bottom-up organisation resulting in a weak brain whose top-down thinking [from poor organisation] 'closed-down' theoretical modern physics a hundred years ago. This theory explains the enigmas and gives reason to why the speed of light is constant to any measurer [the instigator of Einstein's special theory] as well as cosmic inflation, derives the law of gravitation, explains emotion [affordances], organisation etc. and is a logical extension and 'fixer-upper' of the 'inspired guesses' of Newton, Einstein, Born, Pauli and many others and allows the introduction of [basic contextual] new ideas [which is logically impossible in cloistered disciplines]. As an example, the reference [1] has been challenged as 'risky', dangerous and an 'opinion piece' in spite of it clearly saying so in the first sentence, so, the essence of the paper] is included below because it's [breath-taking] elegance is extended here.

It could be said that physics is the handmaiden of science and also to social science [because it often includes fundamental physics, for example neuroscience [1], goals, thinking and emotion [4, 5], addiction [16, 17] etc.] and a necessarily important part of this theory is organisation and how it pertains to society and our well-being [7, 8, 9, 10, 11] and further to enable Homo sapiens to survive the transition [12, 13] to a Homo completus [that has been called the Second Coming [18]] without another Dark Age [where we appear to be heading]. The counter-part to materials engineering [arising from measuring physics] is social engineering [from a social science with absolutes] that is needed to make the so-called science that we use into real sciences that are based on absolutes for the simple reason that measurement will fill in the gaps [context] but never lead to theories and theories are the software of the brain and directly increase intellect [5, 18] and are particularly simple and similar in a fractal.

The Form of the Universe

The following important section appeared in the October issue, 2020, of *Mind and Society* [*Can Affordances Save Civilisation?*] as an opinion piece deriving the affordances that are fundamental in recognising the organisation in the mind-brain, the creation of emotion and leading to the functioning of the mind. However, it has been questioned as whether it is scientific because it challenges both the scientific method and scientific principle [see disclaimer]. The following excerpts are vital to the derivation of this theory and to make access easier because original papers can be difficult [and I am reminded of reading Lorentz' original paper on the Lorentz contraction many years ago].

Relativity is the functioning of the universe and a lack of relativity is the form of the universe and a lack of relativity is easily created [and our understanding of the universe] by the ratios of the dimensions [energy (E), organisation (O), time (t) and length (l)] created by expansion. The five absolutes are firstly, the sum of energy and organisation is always zero [from the creation equation *energy plus organisation is nothing*], secondly, energy and organisation are necessarily created as infill to balance the necessary acceleration [for the creation equation to exist] of the universe [E/t+O/t, all volume], thirdly, the constant speed of light [with respect to any measurer] is l/t (all E and O) and fourthly, quantum gravity is E/l+O/l (all t).

Other orthogonalities [independent, but entangled] are created that operate similarly to the absolutes, such as that the speed of a particle and the speed of a photon must not be the same [Einstein's special theory of relativity] and Heisenberg's uncertainty principle, below, that tests the orthogonality of the creation equation and the dimensions. It is also important to note that other entities are products of the space, such as gravity, entanglement and logic from the creation equation and do not have speed restrictions such as the speed of energy and organisation. This theory explains cosmic inflation as well as predicting its form because the speed of energy and organisation is constant [an absolute] within the space and thus the form is hyperbolic explaining cosmic inflation at very small time and the accelerating universe for all time, decreasing, but never zero.

Gravitation [in one dimension] is the [mathematical] product of the two [quantum gravity] absolutes [where mathematics is built on multiplication (relativity) and division (removing relativity)]:

$E(\text{mass}1)/l \text{ times (for relativity) } E(\text{mass}2)/l \text{ plus } O(\text{mass}1)/l \text{ times (for relativity) } O(\text{mass}2)/l$

Notice the product of the absolutes, so that the universe records our measurement, and that the 'inverse square law', as it is usually described, is inappropriate [one mass, charge etc. can not exist] and is actually derived from the absolutes and relativity and the 'plus' in the creation equation stands for all relationships [physical, logical, orthogonality etc.] between two entities.

'As with the Schrodinger equation itself, we still have no fundamental way of deriving Born's rule.' (*Beyond Weird*,

Phillip Ball, p 41). This is not surprising because Born's rule requires the same derivation as the law of gravitation. 'If the amplitude of an electron wavefunction at x is 1 (in some units), and at y it is 2, then repeated experiments to determine the electron's position will find it at y four times (2x2) more often than at x.... How did Born know this? He didn't. Again, he "guessed"'. (p 41). In every oscillation between a wave and particle [wave-particle duality], the particle has to reappear somewhere, and it appears with a probability dependant on the square of the amplitude of the wave because there is obviously relativity [the square] between the wave and particle.

'Heisenberg's uncertainty principle.... This restriction on precise knowledge does *not* apply to all pairs of quantum properties. It applies only to some, which are said to be "conjugate variables". Position and momentum are conjugate variables, and so are energy and time (although the uncertainty relationship between them is subtly different from that between position and momentum) ... I have never found an intuitive explanation of what makes two variables conjugate'. (p 150) The universe is created from an orthogonality [independent, but entangled at the origin] of energy [momentum] is a concept and organisation [position] is a context and trying to measure an orthogonality [measuring each exactly is the same as between the two] is logically impossible because it is a restriction on the creation equation [independence]. Energy is a concept and time is also a concept and do not involve the creation equation, but energy, organisation, volume and length are dimensions and must be orthogonal so that ratios can uniquely define absolutes.

Fifthly, the role of Occam's razor and the principle of least action are crucial to the understanding of the functioning of the universe and the latter asks 'why does light travel in a straight line?'. Newton's laws of motion say that a photon *must* travel in a straight line otherwise the laws do not work and so misses out on vital information and is, again, 'up in the air'. I believe that the answer is that there has to be a unique answer and the only unique answer in every case is the minimum and the organisation that belongs to the minimum energy is the most efficient organisation. I can say this with conviction because if either energy or organisation were not at a minimum, there would be two solutions at the same time and this would cause chaos in the functioning of the universe. This last sentence questions whether our universe is "real", although derived from nothing is a bit of a difficulty, but then, what or where do we expect it to come from and suggests that it is an organisational solution based on possibilities created by measurement? Measurement is the 'motif' and must be accompanied by a question [affordance] in our organisational universe and corresponds to a business that supplies goods with the motif of money.

If there is a creation equation, as I propose, the universe must be a fractal and everything in it must conform to certain simple rules. Adam Smith was the first to realise this in Economics, where an 'invisible hand' works so that what is good for the individual, is good for the economy. Clearly

everything shows this form of the universe in its use and as an example, let's look at Euler's equation, which is claimed by Mathematics as the enigmatic relationship between the fundamental mathematical quantities π , e , i , 1 and 0 , though what 1 has to do with the others appears a little strange. However, as a description of the physical universe, it makes more sense because it determines the form of the universe [(e to the power i times $\pi + 1$) = 0 can be written (e to the power i times $\pi + e$ to the power 0) = 0 , which is an expression of orthogonality and describes an expanding [e, simple interest expansion] sphere [π] from 0 symmetrical [i] through the centre]. This 'subsuming' is the expected result in a fractal and Euler's equation appears enigmatic because of the appearance of 'i' [the square root of '-1'], but its appearance becomes obvious due to relativity. Consider the quotation "wavefunctions generally contain 'imaginary' numbers – one involving the square root of -1, which is not something that has a physical meaning" (p 53). I am drawing attention to it because it shows the current confused thinking of physics, in that 'i' is an operator from quantum gravity [E/I+O/I for all t] because relativity is shown by '1' and '-1' from the inverse square law and that must be generated by 'i' and that is why "wavefunctions generally contain 'imaginary' numbers" because 'i' [and every number] is not only a number [concept], but also an organisation [context] and quantum gravity is the 'spread' from the atom [quarks] to gravity [in galaxies]. In other words, 'i' is imaginary, and does not exist, because relativity always exists and not because it does not make sense in mathematics.

So, Newtonian physics is a creation of the mind and has nothing to do with the physical [except that it uses the absolute force/mass = acceleration] until this general mathematical physics is used and then it can be seen that additional information is created from measuring organisation. For example Einstein's Special Theory of Relativity shows that there is a simple relationship between mass, length and time, but this is incomplete because the above says that energy, organisation, length and time are simply related through the ratios that destroy relativity [note that mass is energy plus organisation for completeness]. Einstein was looking at the relativistic changes, and clearly, organisation must be included, whereas the absolutes looks at the things that don't change [invariants of the universe]. Notice that we have just extended Einstein's special theory of relativity and also that information [concept] is necessarily constrained to the speed of light, something that has been a conjecture, also, Einstein's theory shows the orthogonality of the speed of light and mass and what happens as in Heisenberg's uncertainty principle when challenges to the fundamental structure of the universe are attempted. It is also important to realise that the dimensions are independent, but entangled organisationally.

Measuring organisation such as beauty, music, religion, buildings and parades etc. creates energy that we release as laughter, in extreme cases [good joke], dance energy [foot-tapping] or just feeling emotional energy of appreciation [Mona Lisa painting possibly due to the golden triangle ratios]

due to the affordances that convert the organisation of the surroundings [given the measurer's questioning] to emotional energy in the mind-brain that allows for decision making via the mathematics of concept-context. Thus, social engineering is necessarily orthogonal to material engineering and is the key to controlling our civilisation and preventing a (so far) inevitable break-down. Newtonian physics is convenient for us in our world, but does not consider the physical host that we live within [as parasites], and it behoves all good parasites to understand and consider the health of their host, for to kill their host is to die as well.

"New Think" [concept] is a new complete way of thinking [5] that uses the simplicity and ease of use of top-down traditional Newtonian physics with the bottom-up of the creation equation, relativity and the restrictions and a general mathematical physics [context] that creates a description of everything. This is not the 'law' of everything that requires peer review, it is literally everything and raises our thinking to a new level because a complete physics generates a social engineering [orthogonal to technology] that, in a fractal, offers improvements in personal, group and country involvement.

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