

SUMMARY.

Introduction: The science of 5D.

I. The fractal, organic Universe. The Metrics of the fifth dimension.

II. Its application to the unification of forces and the scalar immortal Universe.

INTRODUCTION: THE SCIENCE OF 5D.

When we google the 5th dimension one gets surprised by the quantity of speculative answers to a question, which is no longer pseudo-science, but has been for the two decades a field of research in systems sciences rather than physics (no, the answers of google, considering the fifth dimensional the upper-self etc. while seem to be very popular, are to the science of the 5th dimension more like an spiritist of earlier XX c. talking about the 4th dimension as astrological awareness, for lack of understanding of Einstein's **metric equations** of the 4th dimension).

This is the key word that differentiates pseudo-science from a proper scientific description of a dimension of space-time, *the existence of a metric equation that describes a dimension and allows to travel through it.*

Why the 5th dimension metrics are not well known in modern science has to do with the fact it is not researched in physics but systemics, a discipline of the science of information, far less popular than physics; and the natural proprietary feeling physicists acquired on space-time matters since Einstein, which makes difficult the spread of knowledge on space-time from other disciplines. The case of evolution, the fundamental theory of time in terms of information, as the 'arrow that defines' the future is a clear case of that difficulty.

We know since the XIX c. that time has not ONLY the arrow of locomotion and entropy studied by physicists with Relativity Metrics (Galileo's $V=s/t$ and Einstein's more complex formalism), but an arrow of 'futures' caused by the evolution of information. So time has at least two dimensions. But physicists still refuse to treat information in the same terms than entropy. So they call it negentropy, and normally when you give a conference on the fifth dimension - which you could consider in philosophical terms the dimension of 'creation of form, of information, of social, organic wholes' - there are no physicists on attendance. And certainly evolution is still contested by billions unlike 4D locomotion.

So in this article I will try to explain in very brief, simple terms unlike previous book-sized posts, what we system scientists call the fifth dimension, or 'arrow of social evolution and information' and how its metric explains some essential matters in science, such as genetics, memetics, the scales of the Universe, sociology and religion (the arrow of social evolution in human groups) and how it connects with Relativity and physics as it is similar to the concept of cyclical time clocks and cyclical systems orbiting with certain angular momentum.

So in physics the fifth dimension can be considered 'angular momentum', whose conservation is still NOT seen as an arrow of 'conserved future time', since Newton established only a principle of lineal inertia.

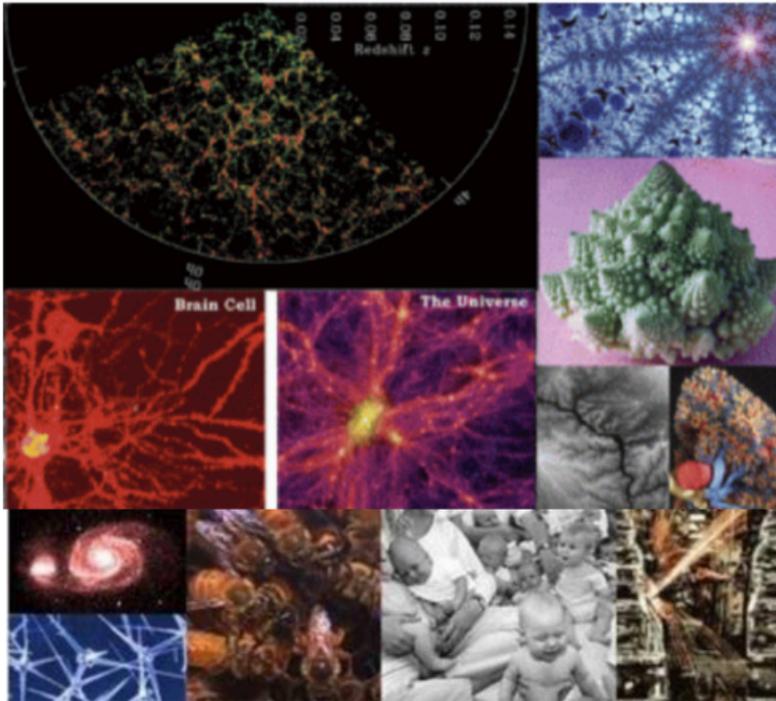
It is then an urgent problem of physicists to upgrade their philosophy of science and include a new dimension of 'conserved time', the fifth dimension of information and readdress its whole conceptual philosophy of the Universe - not its equations, which are obviously right, but how they interpret them in their cosmogony. Which would require them to accept the value of other disciplines such as biology and systems science in the shared search for a meaning to time and space. Let us then take to the task, with excerpts from my blog on [general systems sciences, the reader can consult](http://www.unificationtheory.com) for a deeper understanding of those texts at www.unificationtheory.com

Luis Sancho, Former chair of Duality at ISSS

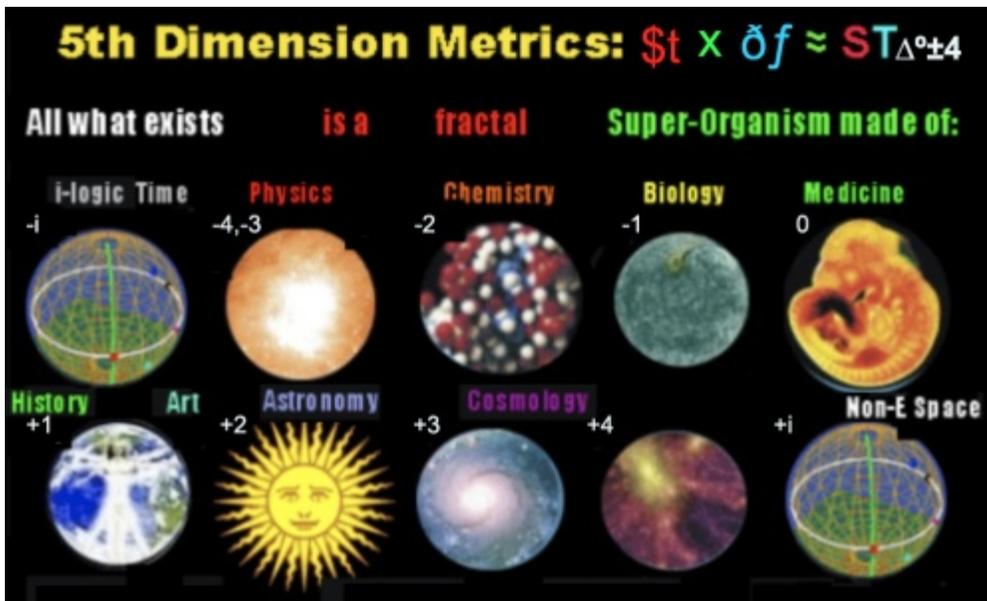
I. THE FRACTAL, ORGANIC UNIVERSE.

In systems sciences we model reality as an organic fractal of relative size scales, that evolve from parts into larger wholes, from particles into atoms, molecules, cells, matter states and so on till reaching the Universe.

The sum of all those co-existing scales of reality is what we call the fifth dimension.



In the graph the Universe is a fractal that reproduces information, 'forms in action' and then self-organizes them in networks and systems that evolve into super organisms in all scales of reality.



In the graph, the Universe organizes itself in co-existing scales of relative size in space and speed in its time clocks of information - a structural property that determines its organic nature, as those scales become symbiotic to each other, sharing through networks flows of energy and information.

Since there are infinite time clocks in the Universe, each of them breaking space into inner and outer regions. So there are also infinite spaces. And so the next big question is how to order them all?

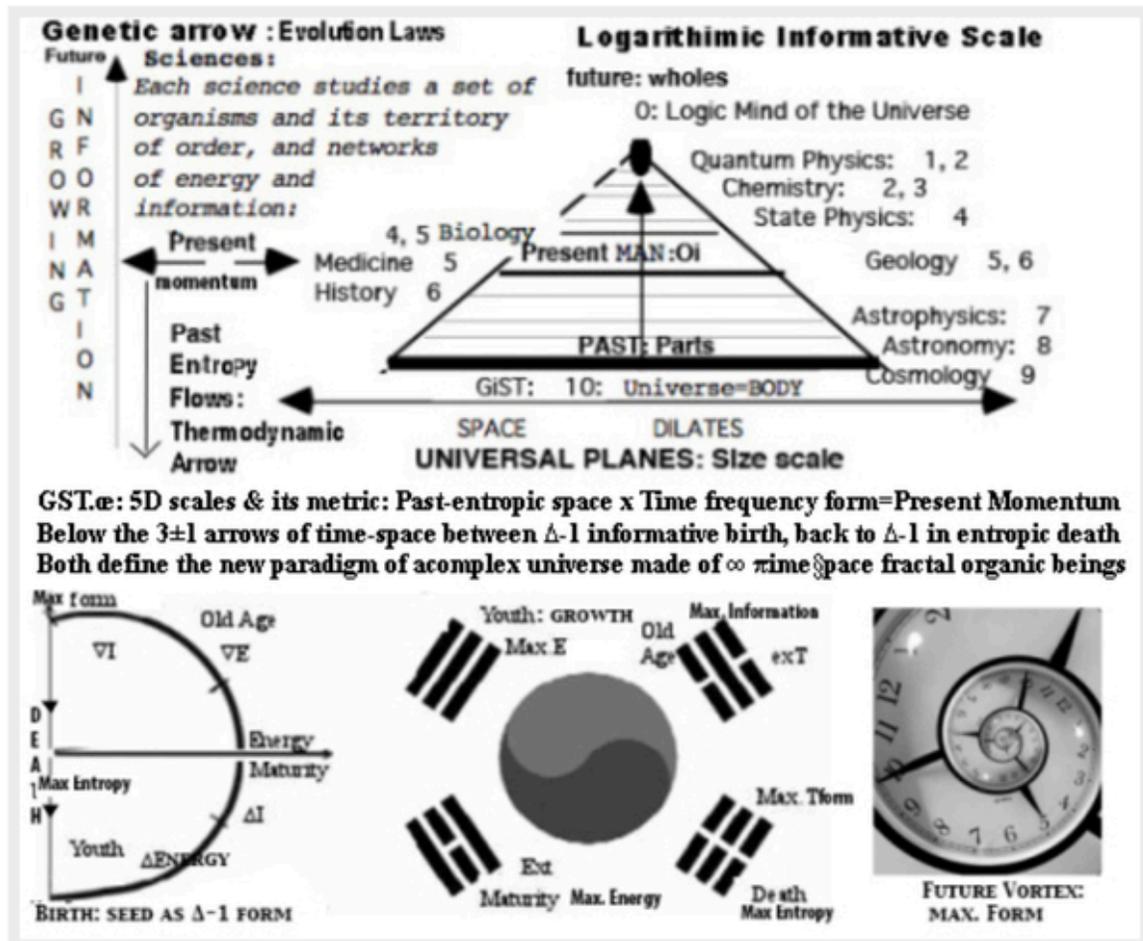
THE METRIC EQUATION OF 5 D SPACE-TIME SCALES.

Mathematically then it is necessary to find a metric equation to define a dimension of space-time. Since it only exists when we can write a mathematical simple metric that leaves the dimension invariant when we change our parameters of space and time - hence we travel through it. (Klein).

This equation as all basic space-time equations is simple:

Space size x Time speed = Constant.

Let us try to explain its implications to describe the fractal, scalar dimension of the Universe:



In the graph, the fifth dimension of scalar space-time and its dual arrows of entropy (studied exhaustively by physicists) and information (grossly underrated and misunderstood). As smaller space-scales have faster time cycles that encode the information of the Universe in the form and frequency of its cycles,

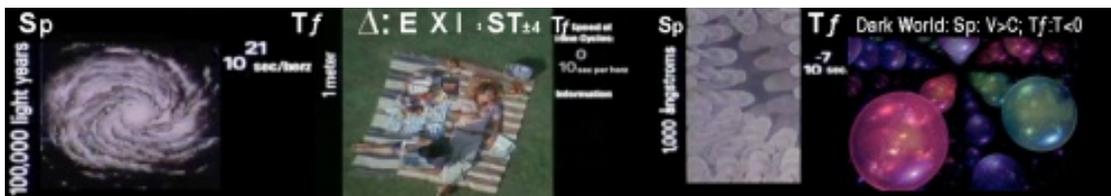
bigger wholes that deliver synchronous motions to those lower scales that deliver 'quantum, genetic or memetic information' (physical, biological and social systems), become symbiotic, as 'parts' and wholes that co-exist in a single 'supærganism', the 'abbreviated' name we shall give to the fundamental particle-being of the Universe: a system of energy and information, co-existing in at least 3 scales of size from the point of view of its central scale as a being.

S: Size in space X Tf: Frequency of time clocks=constant means that smaller systems run faster metabolic and informative cycles and so accumulate more information in the frequency and form of its cycles. And they code larger systems: particles code molecules, genes organisms and memes societies, because their smaller carriers are faster.

For example, the chip becomes smaller as it evolves into a better brain. Every 2 years it doubles its capacity to think, as it dwindles in size. Such process follows a generic law of evolution I call the 'Black hole Law', which computer scientists know as the 'Chip paradox' or 'Moore Law': maximal informative capacity= minimal spatial extension.

The reason is obvious: to think, to calculate you have to communicate in-form-ation, forms between elements of any informative system. The smaller the brain, the faster the communication that takes place within that brain and the faster you can calculate and process information in a logic manner.

And vice versa: larger wholes accumulate more energy and are stronger than parts, so they can protect and feed them. So wholes and parts co-exist in several scales forming super organisms.



The metric equation of the fifth dimension of space-time which allows travels through its scales is simple as all space-time metric are: S (size in space) x T (speed of time clocks) = Constant.

So smaller parts have more speed of time clocks which carry its in-form-ation in the form and frequency of its cycles, coding larger systems: genes code cells, memes code social organisms and particles' quantum numbers code physical systems. But larger forms have more spatial energy and enclose and control in synchronicity its faster smaller parts, creating the co-existing scales and symbiotic cycles of super organisms in any 'stience' of space time organisms.

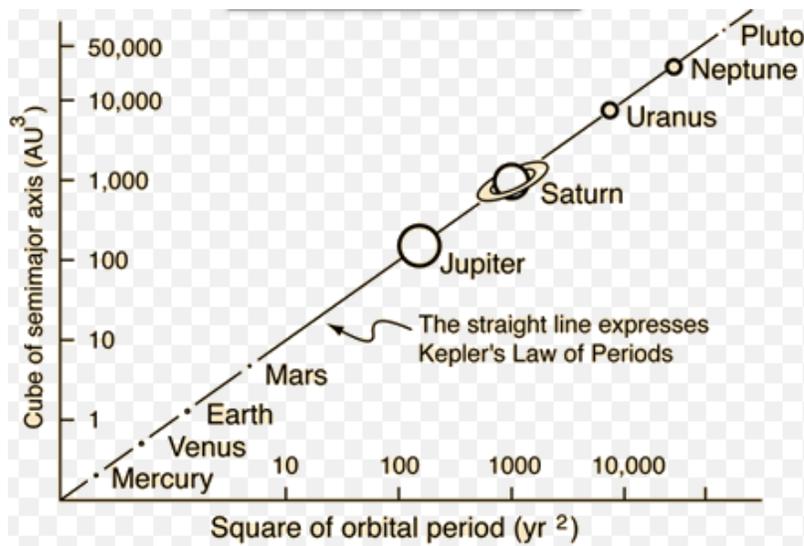
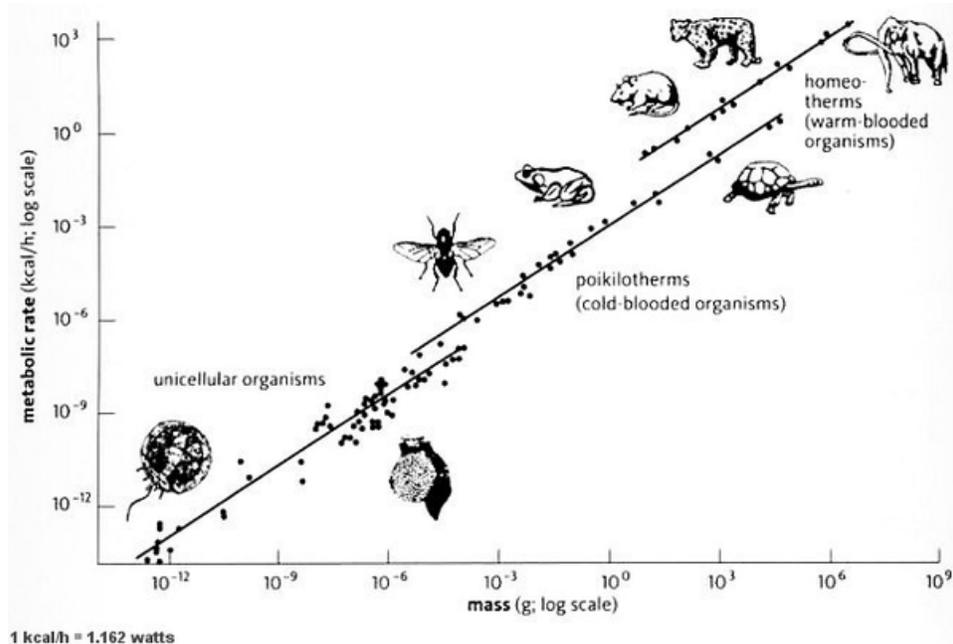
Why this law is so important? Because *it balances the survival and symbiotic existence of all parts of the Universe, and all parts of a super organism, and defines 'what codes information' - the small being, and what codes energy- the larger whole, establishing the 'harmony' of all the scales of the Universe, and explaining all its fundamental constants which are ratios between spatial volumes and informative clocks of time.* THE metric of the galaxy then is immediate: $(c) \times \delta (h) = \text{Constant}$, as the largest speed-distance is that of light and the minimal unit of information, the Planck constant, which incidentally has just been defined as the unit of our 3 physical parameters, $h = \text{mass} \times \text{area} \times \text{frequency}$.

SOME APPLICATIONS TO BIOLOGY AND PHYSICS

In the next graphs we show some classic examples of the BALANCE that exists within the galaxy in all its species, as all follow naturally a similar scalar law of co-invariance, in the fifth dimension.

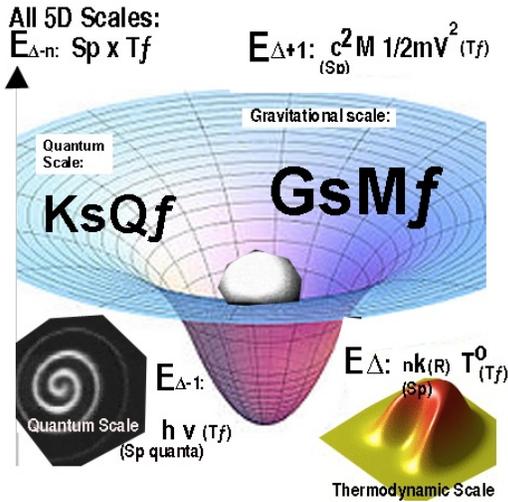
We focus on biology and physics, now properly explained with the understanding of the scalar, organic dimension of the Universe: the metabolic clocks of animals are all related to its volume in space.

In physics, for each fundamental scale, there is also a constant ratio between 'frequency=time parameters' and energy=mass parameters, which are the three fundamental constants of Nature, H-planck (ratio of frequency-energy for quantum systems), K-Boltzmann (ratio between the temperature frequency and energy of thermodynamic systems) and among the many manifestations of the same law in mechanical, moving systems, the third law of Kepler (ratio between the orbital time clock of planets and the spatial volume:energy content of its orbital sphere):



The previous graphs show some fundamental consequences of the 5D metric, the metabolic laws of organisms, which have higher rates of consumption of energy the smaller they are, the Kepler's laws of

planets, and in general all vortex laws ($V_0 \times R_0 = K$) and conservation laws of angular momentum, which spin faster the smaller they are; and finally if we consider the 'constant' of the fifth dimension for each scale a representation of its energy, the conservation law of energy, which the reader will observe is always equal to the product of a constant of space and a 'clock of time frequency' (temperature, frequency mass, where mass is a frequency of an accelerated vortex of space-time, according to Einstein's principle of equivalence; $e=mc^2=e=hf \rightarrow m = f (h/c^2)$).



So surprisingly enough from such a simple new metric 5D equation, by the principle of correspondence we can deduce the main equations of all the scales of physics and biology.

And so we say that the 4th Dimension formalism of Einstein corresponds to the limit in a single 'space-time scale', that of the light space-time continuum, of the total

number of scales of the fifth dimension.

We can then unify philosophically and organically all the scales of size of the galaxy, from the h-planck scale to the astronomical scale, each one studied by a 'different science' specialized in those scales.

And so we resume almost every other fundamental equation of science with a simple metric equation for the larger 'reality' of multiple scales of space-time

RECAP . In science call the 'metric equation' of a dimension of space-time, in this case the 5th dimension of scalar, organic systems, which is the arrow of future of the Universe:

Spe (spatial size) x Tif (temporal clocks of information= Δ -constant

That is, the product of the speed of information and energy of the system remains constant, so smaller and larger beings can co-exist together.

For example, a fly thinks 10 times faster (the scale is decametric), and so you cannot catch it with your slower larger being and it can co-exist.

EXISTENCE AS A TRAVEL THROUGH 5D PLANES

One of the sub-sciences of systems theory is then called emergence, which considers how wholes emerge from parts, which in the formal equations of the fifth dimension is equivalent to ask how a system travels through the co-invariant scales of 'size' of reality. That is, how a cell becomes an organism, a crystal a planet, or a black hole a galaxy. Simply: growing in size and diminishing its speed of time clocks, but leaving both Space and time together co-invariant: $SxT=C$

So the importance of having a metric equation that leaves co-invariant a motion through its parameters of space-time, is that we can 'travel' across this dimension. For example in the usual 3 Cartesian dimensions: $V=s/t$, we can travel through space-time at a constant v-speed. In the fourth dimension of Einstein the same happens with a slightly more complex equation.

Now we have a new metric to study, which opened a new field of science

Indeed, the mathematician Klein defined the existence of a dimension of space-time, when we could formulate a co-invariant equation left unchanged when we move through the space-time dimension. So how we travel through the fifth dimension? Obviously by growing in *size in space through the process of reproduction and evolution, from an $\Delta-1$ fast seed of information, emerging, as a larger whole with slower time clocks, in the organic level, which itself is part of a larger world, with slower 'deep time' geological and cultural cycles.*

So Existence is indeed a travel through the fifth dimension, and the mere fact that all systems of nature exist through that world cycle (no longer a physical worldline in a 4D Universe as we have added a dimension of temporal 'depth'), IS an absolute experimental proof of the existence of 5D:

Birth: $eti-1$ < Youth: $\sum Ei$ > Maturity: ETi > Old age: Ti < Death: $\sum eti-2$

Human Socio-Biological Organisms:

Individual, living organism

Universal, Physical, Organisms:

Birth: $eti-1$ < Youth: $\sum Ei$ > Maturity: ETi > Old age: Ti < Death: $\sum eti-2$

STATES OF MATTER

Energetic Birth Irregular galaxy Spiral State Informative, Globular Age Quasar Death

The diagram is a vertical progression of stages, each with associated images and labels:

- Human Socio-Biological Organisms:**
 - Individual, living organism:** Shows a sequence of biological stages from a cell (i=3) to a complex organism (i=4).
 - Art and Culture:** Shows a progression from a cell (i=4) to a classical statue (i=5) to a modern figure (i=6), with labels for art styles: EPIC, LINEAL ART; CLASSIC, REALIST ART; BAROQUE, FORMAL ART; WAR.
 - Universal, Physical, Organisms:** Shows a progression from a cell (i=4) to a human figure (i=5) to a complex organism (i=6).
- Universal, Physical, Organisms (STATES OF MATTER):**
 - Plasma Birth:** i=1,2: Ions.
 - Energetic Gas:** i=2,3.
 - Liquid, Reproductive State:** i=2,3.
 - Solid, informative state, M=E death:** i=1,2.
 - STATES OF MATTER:** i=8.
 - Energetic Birth:** i=7: black Hole.
 - Irregular galaxy:** i=7.
 - Spiral State:** i=7.
 - Informative, Globular Age:** i=7.
 - Quasar Death:** i=7.

In the graph, we can see different species traveling through the fifth dimension as they complete their world cycle of existence (no longer a worldline as we have another dimension of time space, which changes the Space and Time parameters of size and speed of metabolic clocks in each of the ages the system).

In that sense the main difference when we widen our understanding of space-time with the metric equations of 5D is to be able to explain NOT only processes of time-change in a single planes of space-time, mostly due to locomotions, but process of change due to transformations in the in-form-ation of beings, related to life, organic structures and hence to solve some of the eternal existential questions about 'existence', which will be now defined easily as a 'travel between 3 scales of the fifth dimension'.

THE SCIENCE OF emergence, (study of the way in which new wholes emergence from its parts), the science of duality (study of the metric of space and time, taken as 'entropy and information, coded by cyclical clocks of different frequency and form in each scale, which must be added to the arrow of entropy to fully grasp the structure of the Universe), are then the two key sub-sciences of the fifth dimension; from where classic sciences such as genetics, memetic, energy sciences, and 4D metrics derive.

RECAP of the whole article

How we are so sure, the scalar structure of the Universe define a new dimension of space-time? Easy. Let us just check the most authoritative definition of a dimension, from XIX c. mathematician Klein:

'A dimension of space-time exists, when we can move through it, while leaving its parameters of space and time co-invariant' *Klein, on the expansion of Non-euclidean geometries and its new dimensions.*

What this means for example is that when you move up and down, your parameters of size in space and inner time clocks remain invariant. So 'up and down' form the height dimension.

SO HAPPENS when something move through the 5th dimension: when it grows in size it diminishes the frequency of its time clocks, from the simplest entity, a ray of light that literally grows, diminishing the frequency of its wave-length to humans that emerge from a fast seminal, evolving fetus into the slower rhythms of life, *which can be formalized as a journey traveling between scales of size of the 5th dimension, from seminal birth, to emergence as an individual part of a larger, slower social world, or supærganism (æ, ab. super organism), its nation and civilization, returning back to the cellular aggregation that we are, in the moment of death .*

Each of those scales of reality is made of smaller quanta, which have a peculiar property: their cyclical motions run faster the smaller they are, but the product of both (S x T) remains invariant, creating a metric equation that defines the 5th dimension:

$$\Gamma. S \times T = C$$

This simple equation shows the product of the time clocks of a system and its size to be invariant (hence allowing travels through the 5th dimension, as when you are conceived as a seminal cell with smaller size and faster time clocks and grow=travel in the 5th dimension till you emerge larger and slower).

II. SCALAR BIG-BANG:

UNIFICATION OF FORCES – IMMORTAL COSMOS

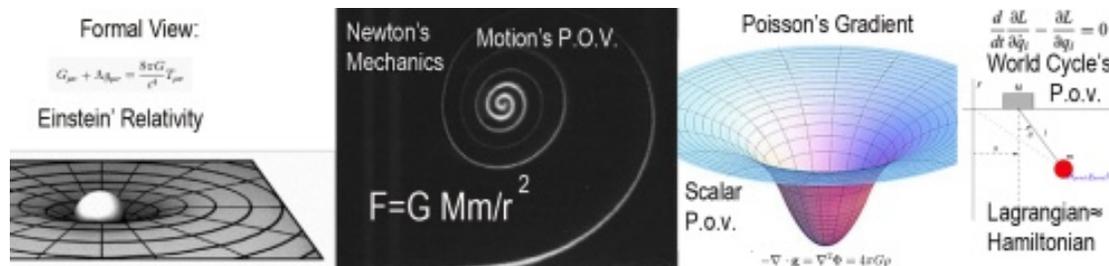
I would like to complete the article with an addenda on what physicists wrongly identify as the 5th dimension of 'space' (as I said the concept of time seems too strange for humans which cannot take pictures of it).

It is just another 'practical case' derived from the scalar fifth dimension, which first was rightly (even if the maths were somewhat faulty) introduced in conceptual terms by Kaluza and Klein as a mode to unify 'two different scales' of size of the Universe, the gravitational 'c' scale and the 'Planck' h-scale, which are the two limits of the galaxy's 5th dimension metric: $S(c) \times T(h) = Cst$.

What mattered of his concept now forgotten is its idea that both scales could be unified if we treated them with a similar jargon, which for obvious reasons could only be the jargon of 'Relativity', derived from Poisson's jargon, derived from Newton's jargon of 'vortices of space-time' - our cyclical clocks and orbits of planets above. So for sake of simplicity we shall use the easy Newtonian jargon, to unify both scales according to 5D metric - the so long seek Unification equation of charges and masses.

This was part of a conference I gave at San Jose a decade ago at the 50th anniversary of ISSS (systemics) before retirement and as I said in the foreword it is a pity that physicists do not 'listen' to scientists of other disciplines since as long as they do NOT accept 'duality', the use of entropy and information as equal arrows of time, they will NOT be able to resolve the conceptual contradictions of its disciplines.

Unification of charges and masses as time-space vortices of 2 scales.



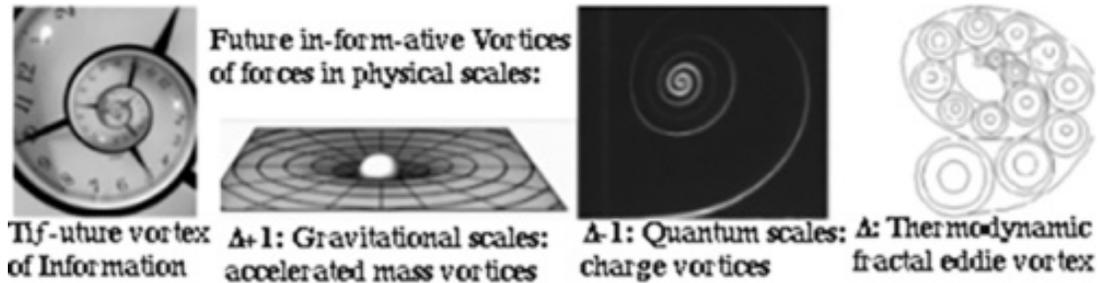
In the graph, we illustrate first the conceptual reasons why regardless of pedantry in physics, we can prove a model with any of the 4 formalisms of gravitation, which merely reflect the degree of detail in our analysis. And then use the simplest formulation as it is the most evident - that of a timespace vortex by Newton, to unify the 2 limiting scales of the galaxy.

The principle that matters is Einstein's equivalence between acceleration and mass, which we extend to all scales, so an attractive cyclical face is an accelerated clock of space-time, a 'vortex' of any scale:

- Newton Temporal view is just a description of a vortex of accelerated space-time *in dynamic motion*.
- A charge is a vortex of accelerated space-time on the quantum scale.
- Poisson's scalar view is a gradient, which relates two scales of reality the fifth dimension - that of mass and that of the lower scale of its field of gravitational forces.
- Lagrange's view, differs more because it takes the perspective of the enclosed conserved energy of the whole system between the border of the vortex and its central singularity; so it requires a complete different treatment.

- Einstein's formalism is derived from Poisson and is the more detailed because it is a spatial still perspective of those vortices as a series of simultaneous derivative measures. So it is like the continuous view of Newton made into an infinite number of infinitesimal detailed pictures, focusing not on the speed but on the curvature of the vortex (which is the spatial definition of a moving cyclical speed - the faster it turns, the more curvature it has in 'still mathematics').

So we can define both charges and masses as accelerated time clock-vortices of two scales:



All what exist is a motion in time. Space forms are still pictures of those motions - a Maya of the senses. In the graph, accelerated vortices of time in physical systems, in different scales of the fifth dimension: charges, masses and thermodynamic eddies become then the main clocks of time that carry with different speeds according to 5D metric ($S \times T=K$), the information of microscopic quantum charge worlds, human-size thermodynamic scales and cosmological gravitational scales.[/caption]

Those cyclical time clocks store the information of the Universe in the form and frequency of its cycles. And the law explains why smaller computers process more information with faster clock-cycles, genes store more information and reproduce faster, every day, than we do...

In physics as time clocks are clear rotational spinning particles, it means that smaller systems turn faster in time; *with no limit of speed, reason why for example an electron, when it shrinks from an orbital into a point-particle with $1/2h$ spin, to have the huge magnetic field we measure it must turn faster than light speed (Pauli).*

And a black hole, much smaller than a star turns much faster, at c-speed in the event horizon and likely if it is as Einstein wanted a 'quark star' it will be made of particles that turn faster than light (top, bottom, charm quarks).

And in general we translate 5D metric into vortex equations in different dimensions, the simplest being:

V_0 (speed of time clocks) \times R_0 (length of radius) = Constant, which is the equation of any bidimensional vortex.

As the cyclical clocks store the information of the Universe, it also applies to life, reason why an insect thinks 10 times faster than a large organism, and a rat has much faster methabolic rates than an elephant.

And viceversa, larger systems in Nature must have a SPACE-DISTANCE=TIME-SPEED much larger, which we can see as lineal distance in space or faster speeds in time.

So because 5D is made of layers, $S \times T = K$, with different size from the smallish faster world of rotary particle-points to the much larger slower rotary galaxies; from the short lineal distances of our motions through the c-speed=distances of the galaxy, and beyond in the faster than c-neutrino background of the Universe, *by the principle of correspondance when we reduce to the Galactic layer-scale of reality made of a background radiation of c-speed-distances; this background radiation is indeed a fixed c-speed-distance,*

and it is what we perceive with our electronic eyes. And all what is within that galactic womb, must go slower than c-speed-distance, as you go slower than the river flow that drags you.

So 5D metric does NOT contradict 4D, which in fact proves in the limit of a single plane of light space-time, proper of a galaxy - the world our electrons use to see and measure reality entangled with other electrons.

The new model of 5D space-time is just wider, as we will apply it not only to physical systems and motions but also as we have already seen to genetic, biological clocks, planets, neutrinos, and even human life and its civilizations and religions - another scale of social humans of larger size and longer timespan.

Attraction laws are then evident, intuitive:

In the same manner a vortex of a storm attracts more the faster it turns, sucking in its surroundings, any accelerated spacetime vortex, increases the speed of the mass/charge clock according to 5D C=st metric, the smaller it is (S) and hence the smaller it turns, the more it attracts.

So BECAUSE a charge is much smaller than a mass, it attracts much more and the unification equation follows just when we apply 5D metric, and shrink the galaxy in the same proportion we accelerate them. Then both equations match:

$$\frac{F_e}{F_g} = \frac{k_e q_{proton}^2}{G m_{proton}^2} \approx 10^{39}$$

So mass, E=mc² + E=hf; hence mass = frequency (h/cc) is a cosmological slow vortex, and charge a quantum faster more attractive vortex.

Further on since curvature is synonymous of cyclical speed, it can be quasi-infinite in the smaller vortex, when MEASURED IN TIME speed as the speed of angular rotation. So if we were to apply 4D curvature's equations (Einstein) instead of Newton, the results would be the same, just in the far more complicated formalism of EFE.

Those are the essential concepts to define charges and masses as accelerated time vortices of two different scales of the Galaxy. And from that it is only just an easy task of mathematical manipulation to unify them in 5D metric, as both are equal: when we slow down the speed, space enlarges to remain co-invariant. And as it happens a Hydrogen atom enlarged to the size of a galaxy slows down in rotation to the angular momentum of the galaxy.

So the Kaluza-Klein theory which tried to use the fifth dimension to unify gravity with electromagnetic force were *right - the fifth scalar dimension unify both forces but in a fractal manner, with 5D metric, unbeknownst to physicists.*

Now let us do the maths in the simpler Newton's formalism, whereas the Universal Constants (G, Q), define the curvature of 2 space-time vortices at the Δ-1 quantum charge and Δ+1 cosmic mass scales (Δ is the symbol for the different ± scales of the fifth dimension within a given organic system).

Its formalism of a vortex of time space is then Newton's Unification Equation:

$$M = \omega^2 r^3 / U.C. (G, Q)$$

And it applies obviously to all vortices of time-space from particles to planets to galaxies.

For example if we substitute *for the Earth-sun system we obtain G, (1st ever theoretical deduction) and if we substitute for the Bohr Radius and Proton Mass, we obtain Q with a 10³⁹ higher curvature value, the exact difference between both forces that solves its hierarchy problem.*

As curvature in space is symmetric to rotational speed in time, so it is symmetric to the attractive force of any vortex.

It works marvels then when we keep translating electromagnetic jargon to newtonian jargon. For example it shows the 'isomorphism' (systemic jargon for an equal 'form' between scales) between atoms and galaxies, which H-atoms of the cosmic scale.

Since when we translate electromagnetic equation into gravitational mass vortices, the proton radius becomes the Schwarzschild radius of a black hole and its electronic orbitals its star clouds, a result foreseen by Relativity that modeled galaxies as Hydrogen atoms in the Einstein-Walker Metric of the Cosmos.

Let us put some easy numbers by substituting the parameters in that Unification equation for the values of the sun (mass) minus earth (rotational speed and radius) to get G, which any high school student can do.

The approximate values are as follows:

Sun mass = 2×10^{30} kg; Earth's angular velocity 2×10^{-7} rad. per sec.

Earth's orbit = 150 million kms.

Result: $G=6.67 \times 10^{-11} \text{ kg}^{-1} \text{ m}^3 \text{ rad. sec.}^{-2}$

This is standard gravitational theory. What has never been done, because the fractal systemic view of the fifth dimension was not known till recently, is to substitute in the same equation of gravitational cosmological masses the mass radius and speed of the space-time vortex by the values of the fundamental quantum space-time vortex, a hydrogen atom/charge.

If the thesis of a fractal universe made of hierarchical scales is truth, then those values should give us the value of the universal constant of charges, the Coulomb constant.

Indeed, if we substitute for the proton (mass) and the Bohr electronic orbital (speed and radius)

4×10^{16} rad. sec. $-1 = w$ (electron);

5.3×10^{-11} m. (Bohr radius);

proton mass = 1.6×10^{-27} kg.

Then we get a G, which is 2×10^{39} stronger than the gravitational radius; thus, the hydrogen atom behaves as a self-similar fractal scale in the quantum world to a solar system.

And then you can get also the electron radius expressed in the jargon of a quantum gravitational world using the translated 'Gravitational Coulomb constant': $G(k)M/c^2$.

But since in that expression M is the mass of a proton, $G(k)$, the electromagnetic constant as a gravitational constant, and c , the speed of light, that expression is exactly the *Schwarzschild radius of a quantum black hole*.

Thus, the electron Bohr radius, which is the final radius of minimal size and energy in electrons, is isomorphic to the event horizon of a black hole in the quantum gravitational world.

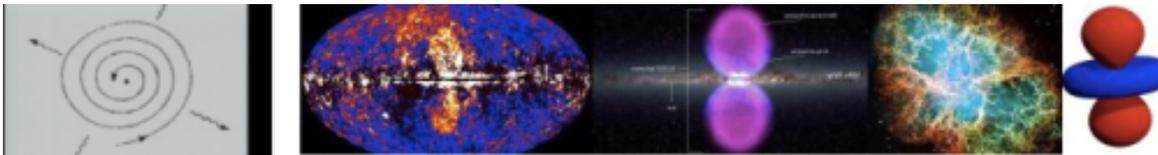
To notice those results (more than a decade old), are a *first theoretical deduction* of K_e departing from G and the enormous simplification of the parameters of the electron radius till arriving to the same expression that a black hole radius cannot be by chance. They are mathematical deductions, one of the three *standard forms of proof in science*.

Yet a theoretical calculus of those values cannot be exact 'by chance', unless the theoretical model behind it – the fractal sel-similar structure as $S_p \times T_f$ entities of all physical systems is right. Thus, the previous calculus is a clear proof that both, charges and masses, are unified as values of the same type of space-time vortices in the 2 different scales of space-time of the Universe. And they are geometrically unified from the p.o.v. of geometrical relativity not from quantum theory, as Einstein wanted it.

This opens an entire new field of physics, not quantum gravity, the description of cosmology with quantum laws, which is proved false, but fractal relativity, the description of the quantum world as a self-similar membrane to that of the cosmological world.

Of course, as all scientific revolutions, fractal relativity and 5D metric will be ignored for ages. I have been working on it for decades applying it through systemics to all sciences. Mr. Nottale has worked on it in the restricted field of physics also for long time. Now I see in the web many other people with similar ideas, some with a 'bubble soul' approach (: But I don't think in our present civilization of huge egos and proprietary disciplines and billions of papers and outlets of information there will ever be a consensus to accept any advance on science, which is not merely as we said 'SPATIAL' made of 'MECHANICAL pictures', e-vident for the increasingly wasted virtual, visual minds of our internet generation. In any case we shall consider the different conceptual view of such wider vision with 2 other themes - the fractal nature of big-bangs and the similar nature of the electromagnetic and dark energy forces also two scales of the 'atom' and the 'galatom' interactions.

So how we shall correct big-bang theory to fit into the fractal view of the Universe? Easy - each scale of the physical Universe have self-similar big-bang explosions and what physicists call the cosmic big-bang unfortunately seems to be only a quasar big-bang - of our galaxy 20 billion years ago in an immortal Universe, since the arrow of information that shrink energy into mass in galaxies balances the entropic 'cosmic electromagnetic' repulsion of dark energy:



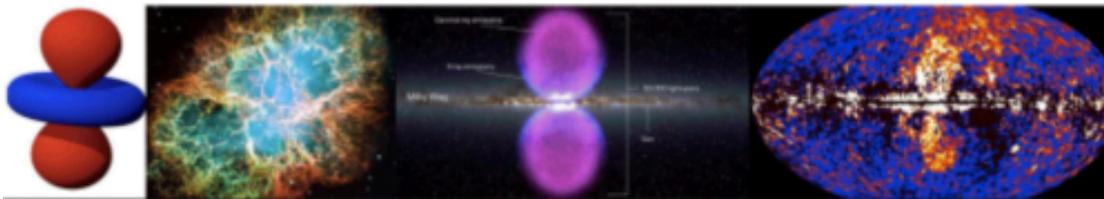
Left, when we add the gravitational force that warps 1D space into 3D mass in galactic vortices, they balance the expansion of 1D space in entropic vacuum as light dies into dark entropy lines between them. As mass warps 3 1D flat-vacuum into a 'high volume' its 3 times more powerful in its warping, hence the 75-25% Balance of mass to dark entropy. Thus the fractal Universe is immortal. On the right its scales all suffer similar $e=mc$ dual processes of warping through gravitational forces of cyclic momentum that create those galaxies, and expansive big-bangs of lineal momentum balanced in combined cycles of energy - the 3 conserved quantities of each fractal spacetime physical organism, which put together give birth to the 3 conserved laws of nature, which the Big Bang totally ignores - among many other known-known laws. So the use of a fractal space and cyclical time arrows fully accounts for the immortal Universe and its balanced 3 arrows of space-time, conserved in its infinite reactions; energy, information stored in the cycles and frequency of those systems of angular momentum, whose minimal constant form is h , and lineal speed, conserved in the constancy of light.

To notice finally another detail of that graph of scalar big-bangs that happen from Beta decays (right picture) that explodes nucleons into atoms, to Novas that explode stars and maybe planets doing experimental big-bangs at home, to quasar black holes that give birth to new galaxies. In the center we see a map of the Galaxy, which just recently showed to have two lobes similar to those of the first electronic orbital of a Hydrogen atom born in self-similar fashion in the quantum scale. In the left side we see the background radiation that is supposed to come from the Big Bang 13 billion years ago, but HAS in its center the exact 2 lobes recently found above the black hole (**Nt.1**).

This came as a surprise, because even though the background radiation is a LOCAL MEASURE, hence must and can be explained by local causes in the galaxy - any moon MACHO, THAT IS, a quark nugget of heavy quark matter or a similar black hole that has eaten a moon will produce the exact same background radiation. In the next graph we show the whole model and the quasar big-bang which is a 15-20 billion year cycle observed by French astronomers.

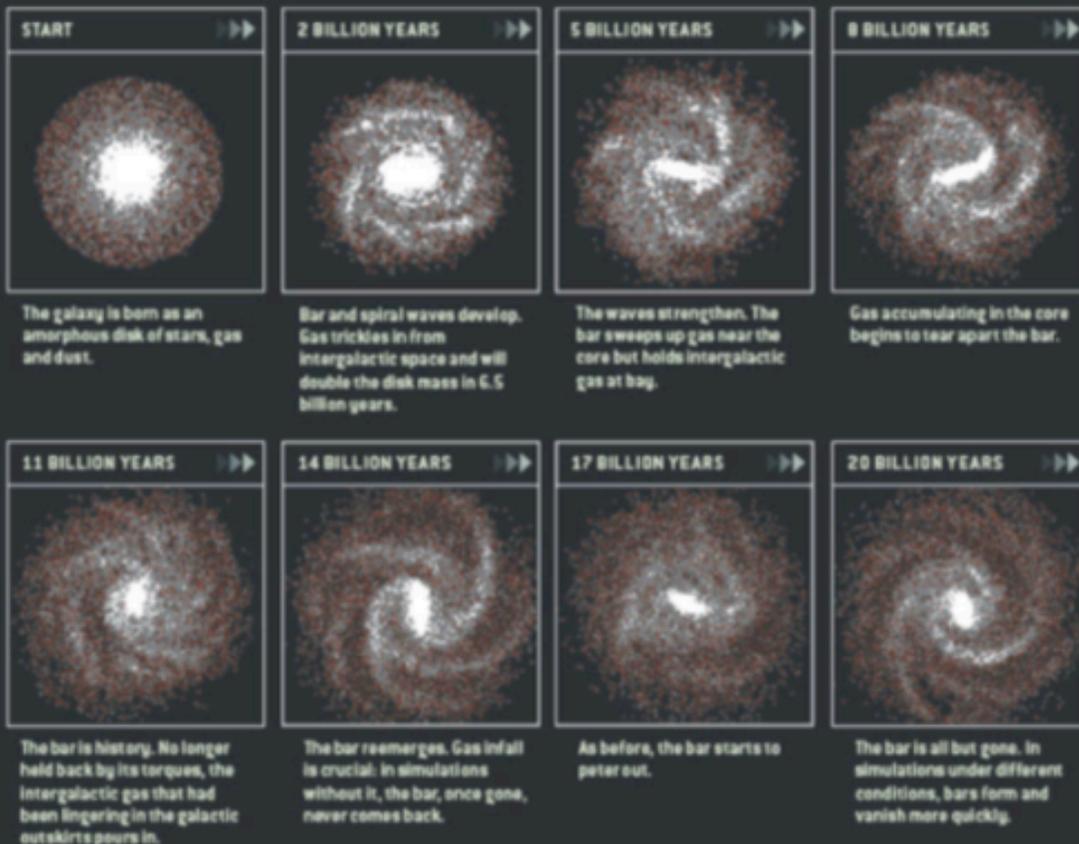


In the graph the alternative model of the background radiation: a micro black hole with the mass of the commonest object of the galaxy, a moon will radiate exactly the same temperature. So it is more logic to consider that radiation comes from the galaxy, either from black holes or strangelets which have eaten a moon and will redshift to such temperature the light of the galaxy - as all physical particles come in similar quasi-identical forms; those primordial black holes should emit 'now' a BG radiation locally and as most should have migrated to the Halo (Hawking's hypothesis); they should form a 'protein-like' protective structure, the membrane of the Galatom. Yet unlike in Hawking's hypothesis they have not evaporated, as we see no signature of evaporation coming from them; only the redshift of light at 2.7 k, once they have 'eaten' a moon, that has become a dark, millimetric black hole, we shall call a 'Moon MACHO' (MASSIVE Cosmological Halo Object)



A GALAXY REINVENTS ITSELF

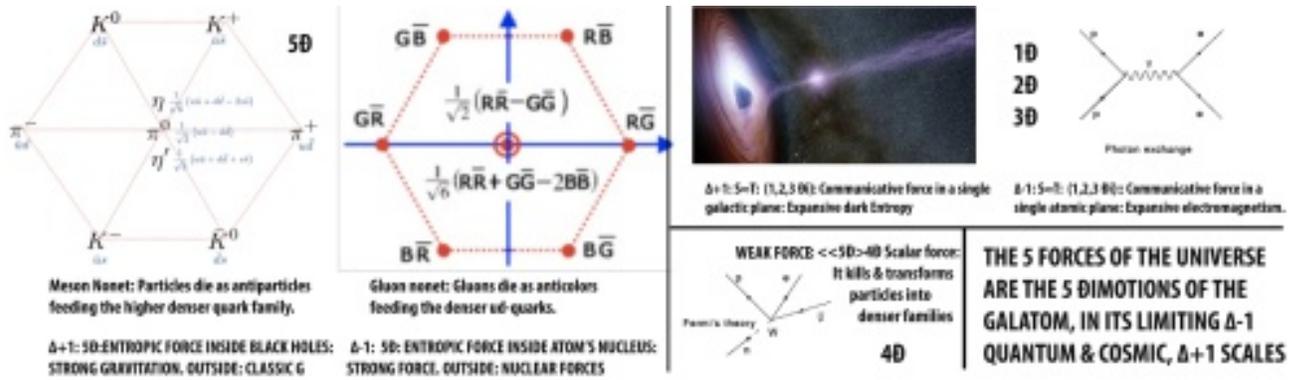
Astronomers used to regard bars and spirals as permanent features of a galaxy but now think that they come and go. The gravitational processes that make a bar ultimately destroy it and then create it anew, as this simulation shows.



In the graph the true quasar big-bang of 15 billion years, which in 5D metric as we reduce size in space and accelerate clocks of time: $\$ \times \delta = K$, reduces 15 billion years to 15 minutes (: the exact duration of a beta-decay neutron Big Bang).

So what about the unification of the other forces in scalar couples? It follows immediately as expressed in the next graph that concludes this upgrading:

The similarity between the strong force and the gravitational force ‘inside the atom-galaxy’, both attractive ‘only’ and the outer force of the galaxy (repulsive gravitation aka dark energy) and the outer force of the atom (electromagnetic repulsive expansive forces) is then immediate on the ‘simpler models’, as it is the parallelism between magnetism and gravitomagnetism (Heaviside’s discovery):



In the graph, the 5 forces, we shall call ‘dimotions’, dimensional motions, $ab. \mathcal{D}_j$ of physical systems are similar, but must be studied as belonging to two different scales - the cosmological, $\Delta+1$ scale (gravitation, dark energy) and the $\Delta-1$ quantum scale (strong force and electromagnetism) while a transformative, 'weak force' trans-forms particles between scales of the fifth dimension. For that reason there are a variety of forces to make possible the organic structure of self-similar atoms and galaxies. So we couple forces according to their $\Delta\pm 1$ 'symmetry of scale' as:

Parallel informative $\Delta\pm 1$ forces: The strong and gravitational ± 1 forces are similar but belong to the limiting $\pm j$ quantum and cosmological scale. They both 'absorb' and in-form into denser entities, lighter particles. So its carriers are the nonets of pairs of particles+antiparticles= mesons and color+anticolors=gluon particles-antiparticles, 'feeding' and becoming the heavier ud quarks and BT quarks inside protons and black holes. Similar, repulsive electromagnetic $i-1$ and dark energy, $i+1$ cosmological and quantum forces.

Finally there must be a FORCE that transforms particles between scales, responsible for the 4th \mathcal{D} imotion evolution and generation of particles or its 5D inverse Devolution. And indeed those processes are mediated by the weak force, which is not really a force but an evolutionary process that happens in a single point of space (right side), where the intermediate state of higher energy mass (W, z, H boson) gives birth to heavier fermions

So the model of the fractal Universe put in relationship the all too obvious self-similarity between atoms and galaxies, to expand both within the nucleus of the atom and outside the galaxy as an atom, our modeling of reality.

Since the hypothesis of work for the model of the fractal Universe is simple: a galaxy is self-similar to an atom, and so are the different forces interacting within and outside them:

- The *strong force is similar to the gravitational force* in the extremal conditions of the black hole. Reason why both are non-linear.

- The *electromagnetic force is similar to the expansive dark energy* between galaxies, which therefore is NOT the same force than gravitation, reason why the expansion between galaxies is a lineal force and it is similar to electromagnetism
- The *weak interaction is NOT a Locomotion*, force but a process of evolution of particles, guided by the Dimotion of information, reason why it happens in the same spacetime, and so its bosons, W, Z, H are 'states' of the same particle, NOT carriers.
- The proton which has in 5D the same metric that a black hole, is self-similar to a black hole, with a Schwarzschild radius. So happens with the electron in its particle state (Carter).
- Antiparticles are the inverse time arrows of particles, completing a worldcycle of a particle (Feynman's theory)

The identity between the nonets of gluons in the strong force and mesons in the larger scale of quarks, coupled with the concept of particles-antiparticles forming a local world cycle renders a clear-cut theory of black holes as protons of a larger scales, in which the transformation through the weak force of light matter into heavier quark matter will produce a black hole star of heavy dark matter; whose heavy quarks happen to decay a 20% more often into particles than antiparticles (CERN), resolving also the particle-antiparticle problem.

We can then model black holes as protons of a larger 'galactic scale', strong forces as extremal gravitational forces, gluons as mesons, dark energy as electromagnetism and complete by self-similarity ALL the questions of physics, as we either perceive from within the galatom, the internal region of an atom, and outside the atom, the external region of the galatom. In the graph from left to right, the identity between the nonet of gluons and mesons on both scales, the WRONG procedure of reductionist physics, which models all forces with the lineal concept of electromagnetism through an exchange of particles, as the weak force happens in a single point, hence it is a transformation guided by the arrow of information; in the right the proper way to understand particle-antiparticles, as the relative arrow of life and death that closes a physical world cycle (Feynman).

What physicists then do with the usual routine of reducing everything feed-forced into lineal concepts, is to try to convert ALL forces into an exchange of lineal particles, when they are clearly different forces (so for example the weak force that happens in a single point transforming a particle into one of a higher scale of larger masses, is represented with a gap that 'exchanges' the W-particle, NOT as Fermi shown first, an evolution of a higher particle into a heavier one, that then suffers an entropic process of dissolution in 3 parts).

THE MAIN DIFFERENCE THEREFORE BETWEEN THE FRACTAL MODEL OF THE UNIVERSE AND THE ATTEMPTS TO REDUCE IT TO A SINGLE SPACE-TIME ARROW IS THAT WE DON'T FORCE-FEED facts into a model-theory, but respect REALITY AS IT IS; regardless of how weird it seems - in any case far less weird that the absurd idea that all what exists was one a single point, which of course breaks also all the laws of conservation of energy and momentum, baryon numbers, etc.

But as I said we can expect such Copernican revolution to take another 200 years from Copernicus to Newton to be even noticed likely by some AI robot as I don't think we humans will still be around very long the way our 'entropic physicists' doing 'entropic weapons', testing 'scalar big-bangs on earth' will 'conserve' human scales for too long. Carpe diem.

Nt. 1: Anecdote - as those lobes were supposed to be coming in the hyperbolic big-bang from the 'beginning of time' 13 billions years ago, each point was meant to represent not a lowly Moon MACHO (name astrophysicists give to the dark matter ultra heavy gravitational MASSive Objects of the HaO, to which we de the Moon surname as that should be its mass to deliver BG radiation) so each point was meant to be a GALAXY traced back 13 billions years ago. Alas, physicists were devising an experiment to study 13 billion years long-lasting gamma rays coming from those primordial point-galaxies, to see if there were differences in their speed (Smolin), which was silently dropped when the Lobes were found to be local (: Of course the cosmic entropic big-bang will NEVER be dropped unless physicists accept the arrow of information and the philosophy of systems sciences (: