

Gravity and Biology: The Ghost in the Machine Is the Dynamics of Spacetime Geometry and Its Interaction with Matter

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ABSTRACT

Gravity can explain biology. Unity is a limitation for geometries in our universe, as they share a common space defined by the Big Bang. That everything must be in motion, we must apply it in the topology. They are systems that have a common source and a compelling obligation to move until they merge. Perelman understood the extreme state of homogeneity and dynamic force of entropy, the geometries that constantly share and change its shapes due to curvature flows. This is a turbulence when we define it as the state with sufficient common energy for all the components to interact, overcoming any restriction,

even when shock waves can burn (amputate) singularities arising because of three-dimensionality. For quantum mechanics, the geometric possibilities of controlled turbulence appear as the probability cloud of the quantum electron or the integral of the Feynman trajectory or the double-slit experiment. Virtual things can happen to the particle on the way, and vacuum polarization as space geometry must account for all of them. This view becomes relevant when we have geometric turbulences in general relativity that can create many vortices of negative feedback circuits for biology. Life and consciousness is a condition in which transitions of multiple phases are continuously maintained. Space geometries and mass are related, and as components become more massive, they can pass from Schwarzschild to Minkowski geometry, allowing active geometries with greater causal order and lesser randomness, as considered by Schrödinger in his book entitled *What Is Life?*

KEYWORDS

Conserved currents, local symmetries, Minkowski space, Schwarzschild geometry, holographic principle, entanglement entropy.

1. Introduction: Biology explained as resulting from gravitation

Just as the principle of equivalence states that any point in a curved space can be approached locally by a plane, each point particle in a laminar flow can be locally addressed by a turbulent flow. This microscopic turbulence corresponds to the temperature, which is a state of thermodynamic equilibrium. Since the absolute zero point cannot be reached, nobody can leave the turbulence state: neither matter nor space. The main feature of gravity in a quantum vacuum is turbulence. This turbulence is the source of biological processes, as the Big Bang arose from turbulence. We can see turbulence in the collision of two galaxies, in the microwave radiation of the cosmic background, in chemical reactions, in the electrical activity of neural networks, in the entropy of quantum entanglement, in superposition and interference, in the transformation of geometries. If particles have all trajectories, pieces of space must have all geometries. Turbulence at the scale of Planck mass is the full activity of gravity as creative power. This is the subject that will occupy us here. Occasionally, Physics teachers say that problems in Physics are trivial or impossible, just two ways, and they immediately add that an impossible problem becomes trivial when we know the answer. To date, it would appear impossible to know how life and consciousness work, but this impossible problem has become trivial. It is amazing; we had the answer right

under our noses and we were unable to see it. The correct answer lies in a sole term: gravity. That is because gravity is everywhere. It is the fuel of the universe, and as part of the universe, life and consciousness must use that fuel to function. The vacuum compared to matter occupies 99.999% of what we call the world of reality, so the possibility that the mind comes from the energy of the quantum vacuum is 99.999% (Koestler, 1967). The Newtonian gravitational constant G determines the area and density of the information. There is active communication through space. Gravity not only transmits energy, but also creates things: virtual things can become real. Gravitation is universal, its geometric form of interaction with real and virtual particles is also universal, and everything moves because geometry is determined by gravity, including biological behavior. When we say that this hypothesis is incorrect, and that gravity is too weak to explain biology, we say that Wheeler's famous statement is not universally true: matter tells space how to curve and space tells matter how to move. This is true for a mass greater than the Planck mass, because the mass on this scale flexes the space negatively, thus generating Minkowski geometry, light speed limit, and causal order. There are random collisions on the chemical scale and this results in unique pathways with causal order on the biological scale. Thanks to that Minkowski space with causal order, biological activity can be generated. Consequently, biology not only works because of electrochemical forces, but it also needs the Minkowski

space to have trajectories with causal order. Gravity differs from the standard model, so there is Cartesian duality. The difference between mind and brain now exists between gravity and the standard model. This corresponds to what we now treat as holographic duality. This is a migration from Cartesian duality to holographic duality. There are two incompatible realities that cannot be mixed, gravity and standard model forces, although they influence each other. Biology works thanks to the forces of the standard model, and the standard model maintains the holographic correspondence with gravitation. There are many scientists involved in the development of this successful theme, but the least we can say about the better-known people is this: that Stephen Hawking and Jacob Bekenstein first connected the entropy of the black hole with the surface that covers it. Then, Hawking radiation is postulated. Next, the holographic duality of Gerard 't Hooft is proposed, and Leonard Susskind applies the string theory to this interpretation. Finally, Juan Maldacena finds the AdS/CFT correspondence ([Bekenstein, 2003](#)).

We can say that nature is so intelligent that we will never understand it. But we have the opposite possibility that the interaction in each collision is the more basic mechanism, that in a collision the first brain unit does not emerge from an isolated system, but from the unity of nature, as a spark of the natural mind. Nature has no separable parts that can be outside of itself, there are no fragments of nature everywhere.

The transport of energy has a very precise value, so that the position of a collision disappears and occupies the entire universe, since one collider measures the energy transport of the other to change the direction in a precise way. Before the collision of two particles, nature did not know what path the particles would take, but during the collision, each of the two components is seen in the other as in a mirror. If we accept as an axiom the indivisibility of the universe, every particle sees herself as the whole universe. Then, the collision of two particles is as the collision of two universes or the same universe in two positions: Two particles that each of them believes they are the entire universe. At the collision point two virtual universes face each other, but if they are the same universe, it is as if the universe looks in a mirror. The important thing here is that there can be resonance, information modulated with more information, but not only between two particles, but between two universes, or the same universe in two positions, since its position is not defined. Hegel's spirit came to indoctrinate us in this discussion. These ghosts as particles that believe they are the entire universe, because polarizes vacuum and the universe polarizes the landscape, they can see them as conserved currents that come from local symmetries. In the collision, the local symmetries interact. If they do not find a correlation with matter, they remain as failed spirits, as failed conserved currents from local symmetries. But when a set of space particles meets the smallest neural network of an insect, the dance begins between space and matter, because there is no

immobility. The bosons that have reached some material network is a surface that envelops it, because a fermionic system cannot be naked. This surrounding surface contains information and entropy generated by the network function. It happens just like our body mass that is preserved by a set of bosons even though our atoms are constantly being replaced. If we define quantum entanglement as turbulence, geometric turbulence appears through ER = EPR (wormhole equal to entanglement). The greater the entropy of the entanglement of the network, the more wormholes are in correspondence and geometric turbulence increases. In string theory, the Goddard-Thorn theorem, also called no-ghost theorem, describes the properties of bosonic strings. These are local symmetries. In theoretical physics, the term ghost is used to identify conserved currents from local symmetries that have no real physical meaning. The name Faddeev-Popov Ghosts is given to the fictional fields that originally were introduced in Yang Mills field, and later in string theory. When we dip into the Higgs ocean, the symmetry darkens, and we see two different things that are the same when we remove that ocean (Greene, 2004).

The holographic principle requires the properties of the wave. Einstein fell short by saying that spacetime exists with dynamical curvatures, not with wave behavior. The universe was born from fluctuations of the vacuum; thus, the fluctuations of the universe are elementary, like the elementary wave property of a

particle. Because the universe possesses its components by means of elementary fluctuations, its behavior must be like that of an elementary wave. The universe can behave like a series of waves, starting with small fluctuations, which in turn increase to the maximum. Then it begins to disappear and finally disappears, just like any wave packet that derives its existence from vacuum energy and that in the end must pay up the loan. James Hartle (2014) has already considered the universe as a wave: an evolutive wave function. He said that the early universe was simple, the middle universe is complex, and the later universe will be simple again. Life requires some complexity, so there is a limited amount of time for life. Because the universe is a wave, biological organisms are integrated into that wave, and all the information of the universe and of the organisms is in the same wave. The wave carries information as actor, so it is not a rigid scenario. Einstein has already changed the focus of gravity: he said that gravity is not a scenario, but the lead actor. Now, we say that gravity is the ghost, not the machine. This is easy to accept when we realize that all geometric properties of all objects do not have independent values but are rather determined by the gravitational field. In terms of biology, all structures behave in line with causal order, with logically connected parts, because the geometry of Minkowski allows precisely that: one single and defined trajectory. Nonetheless, inside the organic body, at the chemical level, there are particles colliding randomly that follow all the trajectories. If there are any doubts that the

universe is a wave, we must note the following: The general theory of relativity considers space as a dynamic curvature, and this is the property of a wave. The dynamic curvature as information must be a wave, as information is processed by waves. In any case, the Newtonian gravitational constant G guarantees the dynamic property of the wave.

To see how universal gravitation participates in biology despite being such a weak force, we must consider it in a cosmic perspective: we must look at the universal fields and not at the local molecules. The universe is not permanently flat due to the uncertainty principle of Heisenberg. How can the universe have negative and positive curvature and be, at the same time, flat, but not static? Because it is a wave. We live in rotation on the surface of our planet, and we do not realize that our frame of reference moves like a wave. We fail to notice this, because this movement is part of our components. The universe is a wave because it is an elementary wave-particle living in the multiverse, mixed with the vacuum energy. If this were not something elemental, it could not polarize the space, and it could not be linked to vacuum energy. The universe is an elementary particle in the landscape and, as an elementary particle, it is also a wave. The theory of the universe as a wave states that the universe is a wave that arises due to a disturbance. A collision among the branes caused such an event, as when a stone falls on the surface of a pond, this creates a wave on the surface of the water. When a

wave occurs in the brain, it is also a wave of much information due to a collision of something against a surface of something else. Our universe and our brain cannot have different behaviors, because they emerged from the same big bang. Another way of looking at quantum mechanics is to assume that space curvature is a quantum property such as spin. Just as the electron can have two quantum states, with an up and a down spin, the universe can have two quantum states: positive curvature and negative curvature. Not just one of them, not even a stiffness matrix, because that would be a static behavior and that is not possible. What is important about spin is that it is a manifestation of the special theory of relativity, Dirac's work consists of this, since spin is determined by the way in which the states of particles transform with relativistic transformations. Relativistic transformations mean that the space is dynamic.

We have not yet left off being Aristotelian: we continue to see only molecules, friction, and not universal fields. The elementary brick is the universal field, not the isolated particle. We still see molecules instead of fields when we study biology. Although gravity is a universal force, it has not been accepted as a foundation for creating and sustaining life and consciousness. Sir Roger Penrose (2018) focuses on a quantum gravity field within the neuron that is non-computational; for him, over there is the ghost and not in the computer network of neurons constructed by the forces of the standard model. Elsewhere, David

Chalmers (2014) emphasizes that we need to focus on something fundamental and universal, and Max Tegmark (2014) argues that this is only a mathematical pattern that we need to find. Here, we will focus on these foundational ideas: something universal and with a dynamic pattern involves the geometry of space, which is gravity. The behavior of an electrochemical robot takes place in a flat and static space, so the curvature of space is not connected there, and, in that case, it does not have the ghost in its machine, because there is no blurred border to traverse between the virtual and the real: vacuum polarization does not yet possess sufficient dynamics within this robot. Its behavior is not determined by the virtual reality made of gravity, but by the standard model forces. Our error to date is to see biology without gravity, without the ghost, and this document is already trying to remedy this omission

2. The mass of Planck is the pivot from randomness to causal order

Through the entropy current, Perelman moves among all three-dimensional geometries, which corresponds to the Poincaré sphere and the Thurston geometries (Lott, 2016; Li, 2013). All geometries are transformed into the others, we see that this behavior

occurs in the Cosmic Microwave Background (CMB). This transition from all geometries is the key to understanding the origin of life. After the investigations of the CMB, we know that our universe is mainly flat (the negative energy compensates the positive), but that it can have fluctuations or dynamic curvature of 1%. At that time, 99% were routes among the geometries and 1% formed the different geometries. The important thing about these data is that the anisotropy is small. The geometric variability corresponds to 1%. There are two entropy gates: the Planck mass and the Planck length. At the value of the mass of Planck, there is a conserved current and a phase shift that represents the transition from randomness to causal order. Also, at the length of Planck, we are moving from the landscape (virtual things) to our universe (real things). We say that there is a movement near a point, a stream, because nothing can be in absolute immobility after quantum mechanics.

In the Galileo inclined plane, an object passes from a state with greater potential energy to another with less potential energy. The opposite happens in biology, it is an inclined level of ascension because the kinetic energy of the standard model of chemical reactions becomes the potential energy of the gravitational potential of the center of mass of biological organisms. In metabolism, there is an anabolic process: an object passes from a state with less potential energy to another with greater potential

energy. The collisions of the molecules that form the substrate generate a product of greater mass, creating a polymer with a center of mass that can perceive gravity, and this center of mass can have a causal path. Here we can observe that two fields are connected to each other and that not only a mass increase occurs to feel the gravity. This is the borderline where the components, when their mass increases, pass from a predominance of randomness to another predominance that is completely different of slow trajectories with causal order. This latter is thanks to the fact that these components, due to the increase of their mass, can feel the negative curvature of the Minkowski space. Because the mass of the Earth creates the Minkowski-negative curvature, we need to use the Earth's mass to walk on a path with causal order. By means of the mass it is a phase change of space, a state change that involves universal gravitation, moving from randomness to the definition of trajectories. Just as the kinetic energy of fire can change the phase of the water, which becomes vapor, so does the potential energy of the mass to change the phase of the space by increasing its curvature. When the components polymerize, they acquire a greater mass, which intensifies its interactions with the vacuum, since mass-energy generates dynamic curvatures in it. This means that any particle can interact with others to be part of a larger team, and thus can be part of a biological structure; but, only if they have an accessible source of energy.

The approach to the problem that we want to solve is found in the first chapter of the book “*What is Life?*” by Erwin Schrödinger (1944). This problem consists of how to go from a random microscopic state to an ordered macroscopic state, with the purpose of obtaining more causal order and less randomness by means of a change of scale by the increase of the mass. The answer for Schrödinger is that order appears when mass increases due to the agglomeration of the particles, because the heat chaotic motion is surpassed: “Only in the cooperation of an enormously large number of atoms do statistical laws begin to operate and control the behavior of these assemblies with an accuracy increasing as the number of atoms involved increases”. We have two scales, one of these much smaller compared to the other. Since molecular masses are very small, gravity can be dispensed, this corresponds to the compression of the dimension in which gravity is applied. Two spatial plus one temporal dimension is sufficient for molecular collisions to convert the substrate into product. Hence, we have the holographic duality: two regions, one without gravity (without biology but with chemistry), and the other, with gravity and biology. The important here is the emergence of gravitation and biology from quantum mechanics. This means the emergence of mathematical behavior: when mathematical behaviors arise for big things it means that small fundamental things are involved, and vice versa (Walker, 2012; 2017). Nevertheless, the biochemistry scale can use the dimension in which the gravitational force is

applied: the strength of sedimentation. Thanks to the centrifugation devices, increasing the gravitational force, we can separate biochemical components.

The problem is to pass objects from one scale to another, and the solution is to use the harmonic oscillator. It is easier to lift a heavy package onto a truck by means of a Galilean inclined plane than directly by means of a vertical trajectory. The inclined plane is included in the vehicle if it is a wave. All the vehicles that are a wave (the waves of the sea push), are also inclined planes that can lift and transport the goods. So, the scope here is that the mechanism of life can be explained by the harmonic oscillator model. The universe as a wave function is like a mill wheel, which performs the work circularly in each round. When applying the Heisenberg uncertainty principle, the following deviations must occur:

$$1 = c^2 t^2 \pm x^2$$

Parallel geodesic paths intersect on a spherical surface at the predominantly random microcosm, and are full of kinetic energy on the smallest scale:

$$s^2 = c^2 t^2 + r^2$$

And, overcoming this scale in which our internal components live, we find ourselves living as a complete organism in the Minkowski geometry, thanks to the greater scale where more mass and gravity allows the development of causal order:

$$s^2 = c^2 t^2 - r^2$$

Lagrange mechanics, unlike Hamiltonian mechanics, is compatible with the theory of special relativity, a dynamic space, and is behind the Feynman path-integral approach to quantum mechanics. It is a hybrid wave for quantum biology against which a hybrid weapon match, due to the possibility of interrupting the stationary action, just as a rabbit is removed from its cave by terrorizing it making noise. The biological transformation can be done by a mass increase at the Planck mass point. Such an oscillator needs a candidate as a point of support to maintain its fluctuations. The response is that a good candidate can be the Planck mass. The scale of the Planck mass can be the gate to transit from randomness to causal order. We consider that there is an oscillation between spacetime scales, between microscopic and macroscopic objects, using Planck mass as a pivot. Archimedes said: "Give me a place to stand, and I shall move the world". The starting point for the arising of life and consciousness is the Planck mass, it is the lever of nature, the scale in which the inorganic matter becomes organic thing acquiring gravity. Our universe resembles a ball bouncing on the ground, it fluctuates as a wave between its potential and kinetic energies, and the mass of Planck acts as the place to stand. For the moment, let us consider this point as the gate where the inertial mass transforms into the gravitational mass, where the collapse of the wave function take place, and where all the trajectories collapses in only one: the superposition is in the particles whose mass is

smaller than the mass of Planck, and the contact that produces the decoherence corresponds to the objects whose mass is greater than the mass of Planck. And, through this point passes the entropic current of Perelman. A conserved current arises from the source of symmetry between kinetic and potential energy, according to Noether's theorem. Just as the Schwarzschild radius and the Compton wavelength coincide in the Planck mass, all geometries are superimposed as well, because, in general, $x = \lambda$. Gravity can collapse the wave function because it is related to consciousness. Gravity is the active container in which the virtual particles become real.

Entanglement entropy is encoded in dynamical properties, since fluctuations are elemental. DNA, like a toy landscape, uses data from DNA storage to produce cellular components. From the evolutionary point of view, stability alternates with mobility, precisely like electromagnetic waves do between potential and kinetic energy. How can antagonistic curves, positive and negative, occur in a single object as the spacetime of our universe? One explanation is that it varies as an elementary property. To explain its existence from the void, like the virtual particles, our universe must be an elementary wave-particle that lives in the landscape, and the total of its energy must be zero, at least in the long term. There must be a compensation between total positive kinetic energy and total negative potential energy.

The type of vacuum that arose from the Big Bang determines all the properties of our universe, including living things. Also, we should consider that the vacuum is an indivisible part of the universe as background energy, and we ourselves also have emptiness as our main component. It is time to think about our genesis as a state that is indivisible with the universe, because indivisibility is the main characteristic of an elementary wave-particle. The universe and living things work together as single wave-particles. We can see the electromagnetic package but not the gravitational one. The moment (and the Planck moment) is a virtual package that occurs when energy is transferred from one object to another. This is related to gravitation because it is Einstein's equivalence principle. It could be a cloud of virtual gravitons. But, we want to see it as Newton's gravitons (defined as two masses in relation to the Planck mass squared), $Mm / (m_{\text{Planck}})^2$, where $(m_{\text{Planck}})^2$ is the Planck mass squared. From Heisenberg's uncertainty principle we can have the Newton's gravitation formula (Haug, 2018):

$$\frac{Mm}{(m_{\text{Planck}})^2} = \frac{\Delta E \Delta x}{G} \left(\frac{G}{\hbar c} \right)$$

To date, it has been considered that life derives only from electrochemical reactions, that the relationship between electrochemical forces and gravity is minimal and incidental, and that the gate from chemistry toward biology is a local one not involving the entire universe. Without demanding the force of gravity, no global mechanism is involved, only local electrochemistry.

From now on, contrariwise, the assumption is that electrochemistry and gravitation move together, considering the Planck mass and the Planck momentum as a pivot between the kinetic energy of the microcosm and the potential energy of the macrocosm. The universe as well as the human being, as the same elementary particle, is sailing in a storm of virtual particles, itself having its origin as one of them.

The center of mass of the planet is sensitive to all movements of living things, no matter how slight these movements are, all metabolic movements have their gravitational counterpart in the planet center of mass near the Planck scale. We are protected by the mass of the planet as a turtle is protected by its shell. If protection is given, the gravitational force is present in all biological movements. Since gravity is the only gateway to vacuum energy, we (our Universe) can emerge through this door. The characteristics of the vacuum energy of our universe were established in the Big Bang, and from there all the properties of living beings were unleashed, so that all the geometric properties of that vacuum are the cause of life in this universe.

3. The two scales

If we conduct a simulation of life and consciousness, will this simulation have also life and consciousness? Yes, if we are managing universal

fields, not local particles. We seek an outdated hypothesis for this in isolated atoms, but universal fields comprise the most fundamental things in nature. For this reason, we cannot see the confrontation of the electromagnetic forces against the gravitational forces at the smallest point (between two point-particles without structure). We must take a big picture. Metabolism is a set of photons that prevents biological organisms from collapsing in the planet's crust. This appears like what happens in the stars. In stars, electromagnetic waves caused by heat are confronted against gravitation. One of these two forces prevent the star from collapsing, while the other is precisely what collapses the star. These two forces work on two very different scales. However, they have the entire universe as collision point, and only the universe can interact on two separate scales as a property of the whole system. The position of the collision point is blurry because the value of transmitted energy is accurate. To illustrate this difference in scales, let us perform a mental experiment. In free fall, gravity disappears. Now, we consider the opposite: turn off all the forces of the standard model. Here, we have an imaginary red switch that disconnects all the forces, except gravity. When we turn off the switch, in this thought experiment, Newton's universal gravitational energy is left alone:

$$mc^2 = G \frac{M m}{R_{Schwarzschild}}$$

If we figure $F r = m c^2$, there directly appears a half of Schwarzschild's radius:

$$R_{Schwarzschild} = \left(\frac{G}{c^2}\right) M$$

The Newton and Einstein equations, which are the most accepted formulas because they provide a true description of reality, bring us to the event horizon. Some route at the event horizon is performed from the equation of Newton as a smooth orbit of an ordinary planet. We know that time becomes a space in the horizon of events, and that has consequences. If there is no running time, then energy disappears as a conserved set, according to Noether's Theorem. That is a source of virtual particles. If we carry out r equal to Planck's length, and m equal to Planck's mass, the Newtonian gravitation equation refers to the biological scale of the Planck mass related to the foamy space of the Planck length:

$$l_{Planck} = \left(\frac{G}{c^2}\right) m_{Planck}$$

These is

$$\frac{\text{Biological Planck mass}}{\text{Foamy Planck length}} = \frac{c^2}{G}$$

as well as

$$\frac{\text{Gate complexity at Planck mass}}{\text{Gate complexity at Planck length}} = \frac{c^2}{G}$$

then, we have

$$\frac{\text{Virtual particles from Planck mass}}{\text{Virtual particles from Planck length}} = \frac{c^2}{G}$$

And, finally

$$\frac{\text{Entanglement entropy from Planck mass}}{\text{Entanglement entropy from Planck length}} = \frac{c^2}{G}$$

Newtonian constant G is interpreted in General Relativity as a coefficient of elasticity of space: without this constant, there would be no waves of space. If it were zero, then the space would not dynamically respond to the presence of mass. Thus, it would be a type of rigid container. It could have curvature, but it would be static. We can conclude that the universe can oscillate thanks exclusively to Newton's constant G . Apparently, Newton's equation not only describes the orbits of the planets. Also, the amoeboid movements of our universe, which can be observed projected on the event horizon. This is a nest made of space that gives a homeland to mass. This is also about how many different parts of a system know about each other. Currently, there is a way of saying this, according to Maldacena and Susskind (ER = EPR): how much EPR-entanglement is in *the boundary*, in which they are in correspondence with how many ER-wormholes that are in the geometry of *the bulk* (Maldacena, 2015).

Now, we must make an announcement that casts a spell on us. Here is the final verdict: It is not

necessary to disable the forces of the standard model to witness the collapse, in the event horizon, of each of the bodies with mass. Newton's equation of universal gravitation does not need to turn off the forces of the standard model to be obeyed in nature. The formula for gravity is valid at any time, and in any place. What does it mean that any object, due to its mass, is stamped on the event horizon? It means that this object has already crossed the line of the event horizon. And here is the main question: What the most appropriate place to create life thanks to the infinity of its spatial patterns? Precisely, where the curvatures of space are infinite, and that is in the black hole. Therein, space tells matter what to do in infinite patterns. All the possible curvatures of space are precisely in this background that tends toward infinity. If space is the main protagonist, as well as if the vacuum space is the origin of all reality by means of the virtual components, we find there all the scripts that can be carried out in the universe. There are all possible dynamic curvatures that supply function to things, as well as all possible positions that furnish any structure. Near the black hole, all the possible curves of space can be accumulated: it is the original source of all spatial curves, the origin of all, including the Big Bang. We know that the tidal forces are basically of two types: those that extend space, and those that compress it. In our universe, we are now able to see both: some dimensions are stretched due to an accelerated expansion, and other dimensions are compacted, according to string theory. Thus, everything takes place

in the process of making spaghetti. This is the spaghettification process, stretched and compactified dimensions, and we are already experiencing both. At present, we think that these processes are not related. Our brain hides the truth to avoid panic. But these are true signs that we have already passed the horizon of events and that we are falling into a black hole in the direction of singularity. We have already crossed the Rubicon, the Firewall ([Almheiri et al., 2013](#)): *Alea iacta est* (The die is cast). The truth is that we cannot be outside because the Big Bang is trying to suck the space that surrounds the universe, because the Big Bang is a black hole (it is a wolf with the skin of a sheep). This is the cause of the increased redshift. The singularity orbits the universe and accelerates space, or there are two universes (maybe two multiverses like mirror images, also two landscapes), like two Hawking radiation particles: one on each side of the event horizon. Thanks to this, that we are inside the event horizon, we can have access to as many curvatures necessary for space to tell matter how to handle electrochemical elements so that it can generate life and consciousness. If we were old for a sufficiently long period, there would be a time when we see our feet moving away from our heads at the speed of light. The universe is falling into a black hole that surrounds the universe, and we are inside, falling toward singularity. I should not say that I should not worry because I am very far from the side of that part of the universe that is falling into the black hole. This statement is not true, because the universe is only one

thing. To the contrary, the universe is part of me, the edge of the universe is like my feet and I already feel that my legs are becoming spaghetti, while the frontier of our universe, which is expanding, runs away very quickly. Since my size is that of the entire universe, it will take a long time for myself to be fully, completely, immersed in the singularity, along with the entire universe, as just one thing. It is a fact that the edge of the universe does not lie within our visual horizon, it is the beginning of a waterfall. At the other end, on the Planck scale, the edge of the universe becomes frothy. It is the end of the same waterfall: we are not in calm waters, but in the middle of the fall, and mathematics alone does not prove physical truth, they only reveal the consistency of a formalism.

4. To explain biology we need to focus on the mass of Planck

Mass of Planck corresponds to the scale in which the quantum description of gravitation is embedded in the classical vision. It appears when we balance the Schwarzschild radius with the Compton wavelength. It conjugates two things: the mass sufficiently large to have gravity, and sufficiently small not to stop quantum fluctuations. It can be a zone of space where the gravitational force and the uncertainty of Heisenberg

affect the mass at the same time. When we focus on Planck's formula for energy and Newton's equation for universal gravitation, we can see that.

From

$$\hbar\nu = \frac{GMm}{x}$$

If we do

$$x = ct$$

We get a unit value according to \hbar :

$$\hbar = \frac{G}{c}Mm$$

Because this is equal to:

$$1 = \frac{Mm}{(m_{Planck})^2}$$

We can see fluctuations if we make $M = m$:

$$\hbar = \frac{G}{c}(m \pm \delta m)^2$$

As well as:

$$Mm = (m \pm \delta m)^2$$

This is trivial, but fundamental, because intelligence and logic correspond to a later result, the evolution of the brain. The main feature of a progressive system is that it has an iterative pattern: matter does it with itself. From the Schwarzschild

formula, we can make the following arrangement when the mass corresponds to the mass of Planck:

$$\hbar = \frac{1}{2}px$$

Or:

$$\hbar = \frac{1}{2}p_{Planck} l_{Planck}$$

As well as:

$$\hbar = \frac{1}{2}p_{Planck} R_{Schwarzschild}$$

The above relationships are also obtained from the harmonic oscillator. It is noticeable that the \hbar constant of Planck is related with a constant at the human scale, the Planck momentum, and with a constant at the Planck scale, the Planck length. Planck mass also is related with the interference between two masses:

$$\pm m_{Planck} = \sqrt{Mm}$$

If we measure the Planck mass with enough accuracy, we can have a mass uncertainty large enough to match the mass of an organic body

$$(m_{Planck} \pm \delta m_{Organic})^2 = \frac{hc}{G}$$

This is a positive value that is the square of the Planck mass

$$(m_{Planck} \pm \delta m_{Organic})^2 = (m_{Planck})^2$$

The organic mass is influenced by gravity. Gravity causes the mass to follow unique causal trajectories. This is due to Minkowski geometry, which corresponds to the presence of the mass, because mass alters spacetime. We can observe this pivot performance by the following definition in a correspondence formula between the two scales:

$$(m_{inertial})(m_{gravitational}) = (m_{Planck})^2$$

As the gravitational mass increases, the inertial mass decreases. The mass of one biological organism can be considered as a very small piece of the Earth's mass. In this scale, the transition from the inertial mass to the gravitational mass occurs. A molecular part of the Earth, which is an inertial mass, becomes a gravitational mass: the mass of an organic body that remains as part of the planetary mass. In the photoelectric effect, electrons are released from the surface of a metal, and this is due to the action of photons, which can move a certain amount of mass. Now, we may consider that something equivalent happens in living organisms: a body mass is released from the surface of the planet. Gravitational force from the planet is counteracted by electromagnetic force from the biological metabolism. This body mass of organic beings remains near the surface of the planet, as something akin to tiny satellites, due to the action of a set of photons that corresponds to this metabolism. These remain separated from the planet simply because they can walk here, and there, over the

surface of the planet, like a very short orbit that continually brushes the Earth's crust, without mixing with it. Like an electron whose mass cannot be mixed with the mass of the atomic nucleus. And, we can have the following:

$$x\lambda = (l_{Planck})^2$$

This is the x-space, and the tic-tac λ -clock: time becomes space, ceases to have periodicity, and acquires circularity.

$$\frac{x\lambda}{(l_{Planck})^2} + e^{i\pi} = 0$$

We can give the possibility that randomness is defined in a single thing if we give it the value of the unit. And when the sum is zero, we think it looks like a loan that we have to pay after use. At the beginning, at the Big Bang, there was a loan that must be paid up in the end. Here is an example of what nature can do with loans related to biology. Harvey S. Leff (2002) suggests that photon gas can be a reach supplement to the ideal gas, and a vehicle for introducing today Physics concepts. An example of a photon gas is cosmic microwave background radiation. Other is a photon gas that is more concentrated in a bubble that may correspond to a black body, but that, for now and for our purposes, corresponds to a human body. Here they are two containers for photons: one the universe and the other, the metabolic body. Photons can leak out through a small opening in the solid walls or can leak out slowly through the entire surface that

surrounds the metabolic body. Throughout this area, there is a flux of energy in watts/m² that corresponds to σT^4 , Stefan-Boltzmann constant σ , and Kelvin T. This result is the well-known energy flux from a black body, but also applies to a metabolic body, as we will now see. Let us consider the temperature of the human body as 34 degrees Celsius, considering an average including the peripheral, and not only the internal, temperature. This is 307 K and T^4 is 8882874001 K⁴, σ is 5.67×10^{-8} W/m²T⁴, and σT^4 is 503 watts/m² or 100 watts/0.2 m². Our skin is two square meters in area, and the interpretation may be that 10% (0.2 m²) conveys the flux but 90% isolates us in relation to the flux of energy of 100 watts from metabolism. Everything works fine, even if it is rapid accounting.

5. The true Kafkian metamorphosis

When the universe is one, nothing can be separated from this single object because there is no other place where this separate part can be located. Under this condition, there is only one conclusion: the self of a person and the self of the universe coincide, and the universe is a "bit" of information in the multiverse that would be the computer: zero or one, I live or I do not live, it exists or it does not exist. There are no intermediate parts, we exist as a universe or not

at all. The virtual world of the personal ego is the landscape, since this is the virtual world of the universe. Metamorphosis by Franz Kafka tells the story of a salesman who is transformed into a huge insect. Here we do not become an insect, but into a universe, because our body is the universe itself, and we must attempt to adapt to this new state. Let us remember that the ego, the self-conscious, does not fight against the universe but against the void and has the universe as a protective shell, as a body mass, thanks to which we have not been sucked by the emptiness at this time.

If we thought we could not experience what happened to the salesman in the Kafka piece, we were wrong, because now we are living transformed in the whole universe. How did this happen? The main argument is the following: The universe cannot be divided into small pieces, because we cannot place these pieces anywhere other than in the universe itself. Therefore, we cannot take away the universe, as we take off our shirt and throw it into the laundry basket. The whole forms a compact unit, we and the universe: its mass is our mass, our atoms came from any place of the cosmos. Encouraged by the infinite negative sea hypothesized by Dirac, we dare to say that the non-living part of the universe is like a non-living part of a turtle, like its shell, but the idea is more primary. Let us focus on the simplest model. In a trajectory of an electron, when the direction changes, we say that this change is related to the emission of a photon. The

electron represents the universe, including the mass of all living beings. In a collision the behavior of the biological organism is included, because from there arises the acceleration (the decision and the execution of a change of speed) which is the curvature of the space. This is a body mass that moves by its metabolic energy, which is a photon or a set of photons, which in turn correspond to endothermic or exothermic reactions, a chemical reaction that emits or absorbs photons as heat or work. That is the common mechanism by which the directional change was made, achieved through the relationship with a photon or a group of photons. Although these are photons of metabolism, we wish to present an analogy with the component of a screen: a pixel. The pixel is a physical image that we want to consider as a fundamental component of a language that relates to the area in which the information about a black hole is stored, the screen that envelops the physical process. This is an interaction that is defined as consciousness, because the change of direction is possible because, thanks to the interacting virtual photon (the photon in contact with the vacuum energy), the particle knows where to go, again thanks to the photon as a pixel in an image of only one pixel, and the entire sequence of images will correspond to the particle behavior. If this particle did not know where to go, its trajectory would be random, but there is only one path if possesses a causal trajectory. Since photons are both particles and antiparticles, the point of collision, the pixel, is the sink as well as the source. This means that the pixel can go

from the vacuum toward the collision point or be born at the collision point and move away toward the vacuum.

When we define an object as elementary, through its contact with the energy of the vacuum, we need gravity. This is the door to contact the universe with vacuum energy, so universal gravitation is an elementary object and therefore cannot be fragmented: gravity is the real object closest to virtual reality. As a field, a wave, it is something that carries information and that occupies the entire universe. We have already said that some physicists think that the participation of gravity must be minimal because it is an extremely weak force. Notwithstanding this, there is an argument that we must consider for understanding the importance of gravity: it is our way of communicating with virtual particles. The ghost that organic beings have is only gravity, because it is the connection with the energy of the vacuum, in which virtual particles live. Spacetime is the component most associated with creative or destructive processes, because it is the component with greatest proximity to the Big Bang or black holes. The explanation we propose in this article is to focus on the universality of gravity so that it is no longer foreign to biology. There is a borderline, and this is gravity, through which possible things, virtual particles, become real. Photons are never alone: they are always accompanied by spacetime, and vacuum polarization. If Wheeler's famous aphorism must always be fulfilled, biology needs gravity: the biological

mass must always show the space how it must bend, and the space must always show the mass-body center of organic beings where to go, including conscious behavior. The electrical charge of the molecules is moved by the photons. Since the particle has a mass, the photons must move it. This is the inertial mass, which in turn coincides with the gravitational mass. This is our biggest challenge: to see how the acceleration of metabolic photons is related to the dynamics of space and time. And our hypothesis is that this happens at the scale of the Planck mass.

We must consider the universe's mass as part of the mass of ourselves. The universe is the machinery that helps us fight against the energy of the void. Thanks to the mass – mainly the universe's mass – the void does not instantaneously consume us. The life and the mind work thanks to universal fields as universe behavior, not as isolated objects. Vacuum energy made us appear from the Big Bang, but now the same vacuum energy wants to make us disappear, like any other virtual particle that appears at the beginning and that then necessarily must disappear in the end. The force exerted by the mass of the planet on a particle with the mass of Planck is the same as the force that a particle with the mass of Planck exerts on the mass center of the planet. Therefore, from the perspective of the center of gravity of this particle, this force is not negligible because it is that which produces

a causal order and that is the definition of a single trajectory.

6. The source of biology

The source of biology is the source of everything that exists, since biology is no exception. Here it is two atoms, between them there is an imaginary line. These two atoms are the machine, and the line made of space is the protagonist actor. It is difficult for us to accept that this space between two atoms is not a stage but the main actor. This connecting line is not rigid, but it is the component where the acceleration is located. The controller is not in both centers, but in the line between them. Space is the means of communication between two masses. Here is the *sancta sanctorum*: If uncertainty is information, then the source of information is Heisenberg's uncertainty relation, when it refers to the behavior of the space as follows:

$$\Delta p_{Planck} \Delta R_{Schwarzschild} \geq \hbar$$

When gravity and uncertainty are involved, the origin of life must come from the management of quantum and cosmic energy (Planck and Newton formulas):

$$\hbar\nu = G \frac{Mm}{r}$$

We arrived at the following conclusion:

$$\frac{1}{2} R_{Schwarzschild} = \frac{Mm}{(m_{Planck})^2} \lambda$$

In this way, we have the following uncertainty relation:

$$\Delta p_{Planck} \Delta \left[\frac{Mm}{(m_{Planck})^2} \lambda \right] \geq \hbar$$

The Schwarzschild radius defines the geometric turbulence of our space as the Planck scale defines the measure of uncertainty. In 1923 Heisenberg received his doctorate in Munich with a thesis on the turbulence of fluids. This historical fact makes us believe that the fluctuations Heisenberg thinks are conceptually based on a deep notion of elemental turbulence. The heat and geometric turbulence are related, since the entropy and the surrounding surface cannot be separated. Hawking said that if we do not explain the center of a black hole, the mystery of the origin of the universe remains unsolved, because they are mathematically equivalent. The answer is the information and entropy generated by the movement of the space geometry: the geometric turbulence. According to Carlo Rovelli (2015), John Wheeler saw quantum space as a cloud of different superimposed geometries, like a quantum electron, which is exactly one cloud with different probabilities, and perhaps not far from Grigori Perelman's idea of the thermodynamic geometric flow.

Spatial symmetry is generalized to achieve the geometric turbulence that becomes the strongly iteration process, with the result that much of the complex structure of chemical processes are deeply associated with the formation of logic structures in the biological behavior. There is an elementary geometric fluctuation in space that defines the mutual behavior of two mass centers. This is the source of information and the source of life and consciousness. Understanding the formation of biological systems is synonymous with the understanding that the relationship between two masses is not a rigid connection. We always must repeat it until it is known to us. Connections are not the scenario, but the main actors in spatial geometry. The gravitation connection between two masses is the first point of a source of brain function in general, the mind that tells them how to move, it is the acceleration, it is the space dynamic curvature. Again, we say something that totally distorts our mind, that the Newton's formula for universal gravitation is not a stage but a main actor.

The relationship between heat and space is given in elemental form, because everything in the world of quantum mechanics vibrates, nothing remains static, including the geometry of space. The inability to immobilize something in one place is one of the fundamental properties of quantum mechanics. The exact position of the event horizon can only be determined if these microscopic fluctuations of the gravitational field do not occur. Therefore, it can be

said that the event horizon fluctuates like a hot body. These quantum fluctuations require a correlation between the interior and the exterior of the event horizon, it is the gravitational heat that is coupled to the hidden part of the event horizon. This gravitational heat of atoms from space in turn correlates with the heat due to the movement of material atoms. Since symmetry arises between the gravitational heat and the heat of matter, there is a conserved current according to Noether's theorem. In a biological organism, biochemistry is performed in Schwarzschild geometry to create random collisions, but the anatomy requires Minkowski geodesic paths.

The main component of a collision is the act of power transmission. To be a real object, it is necessary to have energy that tells us where and when something is real, so that the amount of energy management justifies the maintenance of reality. In case of a collision, the transmission of energy allows the change at one point. Martin Heidegger said that language is the home of being but, according to John Wheeler, information is a more appropriate home to conforming to the real, because the language is contained in the information. In addition, we can say in general that entanglement entropy and complexity are the source of all real things. Existence is given by the First Law of Newton, which has two components: internal and external forces, standard model forces and gravity, the boundary and the bulk. In the collision, space and photon play the role of the decision mechanism. Atoms

are the machinery, the empty space between them is the driver, that is the main actor that drives the machinery. Hence, Newton's formula for universal gravity is the script. If we combine Newton's equation of gravitation with the Planck's equation for quantum mechanics, we obtain the following:

$$P = \frac{1}{r^2} \hbar c^2 \left(\frac{Mm}{(m_{Planck})^2} \right)^2$$

As electrical energy, the gravitational force becomes the P rate at which the body mass transfers the energy like another solar system. The result of the calculations is reasonable for biology if we consider M as the body mass of a human being and a smaller mass m , as the Planck mass. The square of the distance comprises the fine-tuning for fluctuations. This equation connects the mass of Planck with the Planck constant, and this is the equation of the atmosphere of the real, like:

$$P = \hbar \nu^2$$

as well as

$$P = \hbar (\nu \pm \delta \nu)^2$$

Addition and subtraction, the vibration behavior, after the Heisenberg uncertainty. Frequency is color, such as energy level, pixel color. In the photoelectric effect, a particle becomes independent thanks to the photon collider; with the same mechanism, an organism separates from the Earth's crust thanks to its metabolism, which is a set of photons.

The mixture of the Planck and Einstein equations results in the following formula:

$$\hbar\nu = mc^2$$

Here we can achieve the following:

$$hP = E^2$$

This reminds us of the relationship between work and voltage, where R is the electrical resistance, P is work during a certain time, and V is the voltage.

$$RP = V^2$$

Corresponding to energy, we see what happens to space:

$$k\nu = x^2$$

where we have

$$k = xt$$

Where the k is also an action (an action of the universe), in which in turn we can find a relation with the Hubble constant

$$H_0k = x$$

In this way, we see that reality is not something that we can possess by isolating and imprisoning it, but that it is the transition of something. All this is consistent with quantum mechanics: something becomes real only when it interacts with something

else. Only with geometric turbulence do we exist. This explains why the existence of something remains constant, thanks to the fact that speed is in accordance with energy transfer, and they remain constant under conditions of isolation according to Newton's First Law, and in a coherent state according to quantum mechanics. We have the following:

$$H_0 x = c$$

If the Hubble constant H_0 is v , and x is λ , these are like

$$v\lambda = c$$

Where the frequency and wavelength must agree to maintain a constant common value. If it is a geometry that oscillates, an oscillating frame of reference, we cannot feel the oscillation because we are part of it. We see with Euclidean eyes, and with these eyes the straight line does not seem straight in non-Euclidean frame of reference. However, if the geometry does not correspond to the Euclidean properties, the terms straight line and curvature may be equivalent, because it defines the shortest way. If the wave is the shortest path, it is a geodesic straight line. In a wave, the curvature is not constant: it can be positive or negative. In this manner, the sum of the angles of a triangle would not be a constant either, because geometry is the one that oscillates. The space vibration corresponds to the role that performs the first actor. The space behavior is the performance of the actor. The oscillation of spatial geometry is the wave that

conveys information and the ability to be real things if one of the components can communicate with another. Interestingly, since the photon is both particle and antiparticle, we can perceive it as an alternating current in which the source and the sink alternate.

7. Space performance in particle collisions

If matter can generate computational processes, also space. We can ask ourselves how far the dynamics of space are coming, and the answer is that it can be compared to a Turing machine. We assume that this is possible if we consider an iterative plane, the dynamics of a surface, which corresponds to a toroidal surface. According to the considerations of Bronstein cited by Rovelli (2015), a point of space has all the possibilities without us measuring it, but if we try to measure it, we would have to use an energy that would turn it into a black hole. Each point in space can have, according to Einstein's equivalence principle, a curvature from zero to infinity, which also corresponds to certain acceleration. At a fixed distance from a constant mass, as orbital trajectory, the position behaves analogously to energy, since the force is constant. The interesting thing is that, in this case, the speed of a space point has a behavior analogous to electrical energy, but in this case, it would be a gravitational force in

correspondence with a local cloud of virtual photons related to the acceleration of the material object that makes the space curvature. In orbital trajectory, matter can produce computational processes, and space can also do it because it can be iterative.

Here is the argument that we must consider because it is related to the Turing machine. If reality is information and the space of the universe is the reality that drives matter, it must be information. We have seen that reality is defined by the transport of energy. If both the universe and information are the most basic objects, then the universe is a wave, because information is a wave. General relativity considers curved and dynamic space, which means that it is like a wave, and since information is handled by waves, space must be considered a wave with information. It is often said that the universe is a computer; thus, the universe as a computer is a Turing machine: the tape is the spacetime and the head is the mass, as a reading and working mechanism. On the tape are found the commands that the head reads, and the head writes its indications on the tape, as in Wheeler's famous aphorism where the mass gives directions to space, and space in turn gives directions to the mass. When we see the functioning of the brain using PET-images, the activity that is generated resembles the formation of bubbles in a container with boiling water. We think that this mechanism is useful because nature uses it to create phase changes. To raise this model to experimental consequences, we can consider that it is

a fact that axons have a Frequency Modulation (FM), in contrast to synapses, which have Amplitude Modulation (AM). The bubble of boiling water has a discontinuous component, which is the gas, in contrast to the component with continuity, which is the liquid. The transition from AM to FM and vice versa corresponds to the phase change between liquid and gas or vice versa. The consideration of how these images are formed has given rise to considering the Turing machine as the information flow developed by a collision. This comparison implies that if the collision is in contact with the energy of the vacuum, this Turing machine also. Metabolism can be compared to an acceleration machine that produces collisions, and the collision itself can be compared to a Turing machine. We have in mind the finding of similarities with a biological mechanism that generates a negative feedback cycle, which confers stability on the system, and that has three components: sensor; integrating center, and effector (Cannon, 1929; Ricklefs et al., 2000). Biological organisms disturb the geometry of space through metabolism and genome. To observe these geometry disturbances, we must emphasize the following facts. Like any other accelerator machine, metabolic machinery disturbs vacuum space, of course not by nuclear forces, but by chemical interactions. It is a very tiny vacuum-disturbance, but it is a disturbance nonetheless. Moreover, the genome modifies space geometry through mass changes, also deriving from chemical interactions: mass vanishes, as the bond energy between molecules, as the covalent bond, is

constructed. This is because the chemical components have more mass when they are separated than when they are forming a polymer. If mass vanishes, also the space curvature vanished that corresponded to this mass of covalent links. The heat that is generated because of chemical covalent bonds is an exothermic reaction; it corresponds to a loss of the mass from some chemical bond. The curvature of spacetime differs due to the interaction with heat or with the mass corresponding to a chemical bond. The metabolism as a set of photons corresponds to a field that occupies the entire universe, where virtual photons from interactions emerge. The metabolic mass requires continuous energy consumption to maintain continuity in the soft polarization of empty space as a chain of tiny collisions. Similarly, unique collisions in particle accelerators, not gently but strongly, polarize empty space.

Now, we will see that spacetime, during a collision, plays a role that resembles the behavior of a Turing machine. We simplify this by affording it three components: an input collider; an interaction collider, and an output collider. These colliders will act like the heads of Turing machine. To see how colliders work, we will take a sheet of paper instead of the tape of the Turing machine. Let us draw a horizontal line starting at the left edge of the paper. Also, the sheet of paper has the vertical dimension, so the line can go up and down. The interaction of these two orthogonal dimensions corresponds to the collision that supplies

the change of direction. The result establishes the exit point on the edge opposite to the entrance, which corresponds to the edge on the right side. The particle enters through the left side and exits through the right side. Now, let us transform this flat surface into the surface that surrounds a torus. The interesting thing here is that the movement on this surface presents something akin to asymptotic freedom and confinement. On the toroidal surface, one dimension is the input, the other generates the change in the original trajectory (acceleration), and the result of the interaction of these two dimensions is the value of the output altered by the memory stored on the sheet, the instructions of the tape of the Turing machine. Although there is no input or output on the toroidal surface, only the circles are repeated; this fact of circularity generates an additional mechanism that consists of connecting the output to the input, enabling a feedback loop. The toroidal surface is equivalent to a Cartesian plane with two axes: that of kinetic energy, and that of the potential energy, which defines the output path level by mean of interactions with some database. Phases of horizontal or vertical ways, such as liquid or gas, possess only two options, as in the formation of bubbles in boiling water. It can be also defined a lattice on the toroidal surface or making a groove to be used to reproduce music, as in the grooves used in the old LP vinyl records. Here, it is the biological Turing machine: the metabolism as input, the cell as output, and in the middle the memory of the DNA. Toroidal surface corresponds to a flat surface, but not rigid.

Because the uncertainty principle of Heisenberg does not maintain that single state indefinitely, it will fluctuate, from the positive curvature related to a spherical surface, to the negative curvature related to the toroidal surface with multiple holes (multiple genus), at least more than two holes. The sphere with zero holes corresponds to a surface with positive curvature. The donuts with a single hole correspond to a surface without curvature. The donuts with two, three or more holes correspond to surfaces with negative curvatures. It is like a door that opens and closes: when it is open, innumerable components pass by, virtual particles appear due to the polarization of the vacuum, but none pass by when it is closed. When the door opens, the holes pass as if they were particles of space. Thus, a sphere becomes a donut, and a donut with a hole turned into a donut with many holes. As Dirac postulated a sea of antimatter, we can now postulate a sea of genus, a donut in contact with the sea of genus becomes negatively curved, acquire many holes: the outer edge of the Poincaré disc. This is the oscillation that proceeds from reversible biochemical randomness to the non-reversible causal order in biology thanks to Minkowski geometry.

The following analogy of bubbles in boiling water can become a useful hypothesis, which has already been applied to strong nuclear force. The Turing machine could behave like boiling water: deep in the water of a cup over the fire there is the formation of bubbles. Let us assign to these bubbles three

components: the phase of conversion from liquid to gas; the phase of conversion of gas into liquid, and the amount of gas inside the bubble, like the warehouse that gives it its size and defines its activity. The first is the input component, the second is the output component, and the third is the storage component. Note that there is binary output as gas or as liquid. With a small mass, gas or liquid molecules are formed randomly, but when the mass or density of interactions increases, for example, through a neural network aimed at directing the collisions, causal order is promoted by the Minkowski vacuum. Now we wonder whether it would be very exaggerated to postulate that one of these Turing machines be used to solve the problem of the confinement of quarks, and not only that of the life and consciousness problem. We must recall that nature has no complicated logic processes, it only indiscriminately repeats the same few and simple strategies that it has. The Turing machine tape behaves like a toroidal surface, where it has two-dimensional paths, input and output that memory can change, with deviations from Heisenberg's uncertainty principle, which render the management of information dependent on the holes. With zero holes it is the spherical surface behavior, with one hole it is the flat plane behavior, and with two holes it is the hyperbolic surface behavior.

We can identify three phases of atoms of space according to the way they behave: as a gaseous zone in the microcosm; as a solid-state zone in the

macrocosm; and as a transition zone, a liquid behavior, of the space on the scale between Planck mass and Planck momentum. Here are waves, in a liquid state, better management of information based on the dynamics of spacetime. In addition, the solid zone contains long-lived space curves, because space, the macrocosm, is related to the largest mass accumulations. In contrast, the gas zone contains short-lived space curves because the space in the microcosm is related to the very rapid mass accumulations and dilutions. In a form equivalent to atoms of matter, the atoms of space also must present phases like the three states of matter: gaseous; liquid, and solid. The basis for this is the holographic correspondence, since the number of states of the matter in *the boundary*, obeying the standard model interactions, coincides with the number of states of spacetime in *the bulk*, obeying the gravitational interaction which is the curvature of spacetime. This theory deserves attention because the polarization behavior of space through matter implies that the phase changes of matter must have the corresponding phase change in space. Polarization of the space must be present not only in the gaseous state of the isolated particles, but also in the liquid and solid states, because matter is always surrounded by space, it is never naked. Its corresponding space, bound as it is to the mass of the atom, must have a dynamic that corresponds to this fact that is the phase. To this, we must add a nonlinear interaction of the space with the space itself when energy increases. Like the curvature

of space, the creation and destruction of intermediate particles from the vacuum energy tell matter and the electrical charge (energy) where to move. The conglomerates of molecules, meaning the formation of binding particles, must be related to the dynamics of the space.

8. Lonely dancer finds a partner

Why do we go beyond the metabolism and beyond the genome? Why do we need gravity when electromagnetic forces can explain life more than enough? Because Wheeler's famous statement is in everything, must be applied in biology: matter is connected to universal gravitation, so the electrochemical forces must consider this inertial and gravitational shift of state to perform cellular function. The set of metabolic photons can never be a solitary dancer, dancing on a flat space, because metabolism is enveloped by gravity. Metabolism and brain patterns, like accelerated machines, act on the spacetime dynamics, and spacetime in turn triggers virtual particles with causal behavior in this accelerated system with metabolic machinery. If it does not work at the speed of light, it is because it is braked by inertial mass, and inertial mass is equivalent to gravitational mass, acceleration equals space curvature. We must

think of the organism not only as a set of particles interacting among themselves, but also as a set of particles that interact with the space that contains them, since no particle is isolated, but is within a sea of virtual particles. And the polarization of space can explain the source of virtual particles, perhaps ghosts, but also controllers. The trajectory acquires many possibilities, such as ghost roads. We must accept that we are mainly composed of emptiness, and that our fundamental brick is not a particle but a field. In this, lies the fun of all this reasoning. This is a Copernican revolution that states that life not totally rotate with its center in the electromagnetic forces. This is because the future is determined not only by local components from the past, but also by non-local components at the present that blanket the whole universe. This new actor is the spacetime dynamics. Physically, information comes from a wave that engages in interference with another wave. Electromagnetic packages do not work on a flat ground, but on a Galileo inclined plane. This renders the packages' behavior nonlinear. The nonlinearity of gravitation must be considered: if gravity generates more gravity, and if information possesses a gravitational component, information can also generate more information. When a certain critical amount of energy is exceeded, information generates more information, the rich become richer, as in the brain network.

Considering spacetime as a wave of information coupled to electromagnetic interactions, it resembles

the appearance of particles in an accelerated frame. If we consider the functioning of our brain as an accelerated system, our neural activity that generates our thoughts may emerge as an additional temperature emanating from such a mechanism. The Fulling-Davies-Unruh effect is when an accelerated observer sees particles of spacetime as radiation of the black body, where an inertial observer does not see them. The virtual vibrations corresponding to the polarization in the surrounding frame are like synchronized shakes that roll to improve their function of swinging. The electromagnetic forces allowing the brain to work on a wavy background improve its performance. In general relativity, there is no locality for energy, so the universe carries out the work as a whole system. In this case, energy management is a matter of the whole, because it is a universal business. In an extreme form of thinking, considering the universe as an elementary particle implies that biological organisms do not have an internal structure independent of the whole. When we consider the universe, then life together with the universe are affected by external forces such as virtual particles, compacted dimensions, vacuum energy, and the landscape. Considering the whole universe, life comes to be under the application of external forces, borrowed as a small big-bang package from an external bank. If the isolation of the universe is transcended by the application of Newton's First Law, it can generate a phase transition corresponding to the interference of two wave functions: one real – the universe wave function – and another virtual – the

vacuum polarization wave function. This is the coverage of Newton's First Law applied to our universe as one component of the landscape among a myriad of other components. A point particle emits and receive photons and gravitons; these live outside because they are zero-dimensional; moreover, photons and gravitons live in scales very far from each other, and the simultaneous action of photons and gravitons could not occur unless the fundamental building blocks of nature were fields spread throughout the entire universe.

A robot will be like a human being until its brain interactions entail such an entanglement that they achieve correspondence with the geometry of space and virtual particles. Electrochemical forces work on a horizontal surface, but Heisenberg's uncertainty converts an immobilized surface into a fluctuating one, the latter corresponds to a wave because an unstable surface can behave as a wave. It is not more human when it is far from the substrate, the vacuum; contrariwise, it is more human when the substrate can enrich it with more virtual reality. Whenever there is molecular interlacing, there is a geometric connection in the space between molecules. When we achieve the connection with gravity in a robot, it becomes touching virtual particles, and one of all possible paths may collapse to generate the behavior of a ghost inside the robot. These possibilities arise because gravity is the only means of connection with the landscape.

We are accustomed to seeing a divided world. On one side, we see the evolution of chemical reactions by electromagnetic forces, and these do not give a care about the Wheeler's aphorism for biological organisms. Chance and necessity, from Jacques Monod, do not consider gravity. That is why Monod is stuck in the closed space of the chemical reactions, and he does not know from whence some phantom could arise. Monod's perspective, without gravitation, contrasts with that of Penrose, which includes gravitation in such a possible explanation. In this work, we want to emphasize that the electromagnetic forces of the metabolism of biological organisms require gravity to function properly. However, as we have said repeatedly, these two forces remain at extremely distant scales. Therefore, this should be considered as a work of the entire universe whose basic elements are the universal fields and not the independent molecules.

Experimentally, astronauts can live and argue perfectly in a state of weightlessness. There can be some answers: that this hypothesis is not valid and that the acceleration of gravity is not necessary, or that the gravitational acceleration necessary to overcome randomness and obtain some causal order is minimal, since it is in the horizon of events, or it requires only space and not time, as indicated by the Newtonian gravitational equation, or that gravitational acceleration and electromagnetic acceleration can be used interchangeably, since we have Einstein's equivalence principle between acceleration and gravitation. There is

another possibility: that gravitational force has been used in phylogeny. So, in ontogeny, only an inherited electromechanical mechanism absent of gravity is used.

Another possibility is that gravitation has only intervened to form the atoms with which we are made. Hydrogen atoms were formed in the Big Bang, heavier atoms were formed in the stars, and on the death of the big stars, atoms heavier than iron were formed. In all these mechanisms, gravity has intervened as the main creative force of atoms that organic beings possess. They are the relics of gravity work. So, if we are made up of atoms, then we are indirectly formed by the atomic factory of gravitation. In the belly of our universe our components have arisen, thanks to which we now have a functional structure, albeit fleeting. The atoms in the planet are the same as those in the organisms that, through metabolism, can live temporarily separated from the Earth's crust. They are shared atoms, which also share the center of gravity, and that are protected by the same space envelope.

The Planck mass is a transition point, such as the freezing point of water molecules when the water turns into ice. Space-time underwent a phase transition when particles gain more mass than the mass of Planck. This phase transition is not a change in the way the molecules are arranged inside the material but concerns a change in the fabric of spacetime: the causal order appears by means of single paths of each

package of matter from random collisions of internal chemical components. The empty space becomes Minkowski space. This phase transition of the empty space may appear invisible to us, but it does have a physical reality. It surrounds us all the time, just as the air we breathe, because it supplies us with an environment with causal order. As we reduce the volume of space, we lose the possibility of sedimentation and, with this, causal order vanishes, because the acceleration of gravity given by the mass of our planet no longer influences where the particles with little mass and little space move. On the contrary, spacetime gains in dimension when its components leave the random collisions and obtain a single path through the acquisition of more mass than Planck's mass.

9. A story of surgeons dissecting non-curved and curved space

Although we cannot separate things that are interacting, we can do this conceptually. The fields, which are the interacting elemental components, fill the entire the space. The separation between flat and curved space is the separation between the forces of the standard model and gravity. When we separate the bosons without mass and the fermions with mass, we

also separate both spaces: the plane and the curved. In a thinking experiment here, we have a surgeon; this surgeon will separate the bosons from the fermions.

We see ourselves as did the English physician William Harvey ([Shackelford, 2003](#)), who dissected a body to understand how a system in motion works, studying the kinetics of blood circulation. This is like dissecting a wave, a group of electromagnetic waves, the forces that ultimately carry out the interactions corresponding to the maintenance of biological functions such as life and consciousness. First, we must have a concept prior to the operation to find the object that we want to examine. This is an attempt to make the concept of interactions corresponding of life and consciousness so simple that we can reduce it to a single photon. This photon can be a mechanism that performs an interaction, as well as one that makes an image, the single pixel. So, the pixel is in correspondence with the change of movement of the electron, which represents the body mass. The photon represents the flow of energy within the body mass. We are thinking of a collision in which the particle corresponds to the body mass and the mind (the driver) corresponds to the photon that interacts. Thanks to this photon, the system at the point of collision knows where to go and executes the change of direction. Before the interaction there are two separated particles, but during the collision, these form a unit whose identity is conferred by their communication with the vacuum energy, since this

photon is a virtual particle that appears and disappears. The photon is the messenger from the vacuum energy. Therefore, this photon, and so the pixel, and so the mind, is the virtual particle that arises from the quantum vacuum. What we dissect in the end would be the vacuum, virtual particles against the real world. This is the same phenomenon as that which occurs in a big collider whose energy polarizes the vacuum. The big collider dissects new particles from the vacuum.

Here, in a thought experiment, we find the first-ever dissection conducted to separate the two major components of the living organism: fermions, separated from bosons. Non-curved space represented by bosons without mass, and before such a dissection, a human being who will serve as a control experiment, to expend their metabolic energy, undertakes the task of running 300,000 km, corresponding to theoretically circling the planet 7.5 times. This human being can theoretically perform this in nearly 80 years running 10 km daily. After this, such a person would die as an elderly man. Meanwhile, in another person who will serve as an experimental object, after dissection, when photons are separated from fermions, the set of photons can run for a second the same distance. This is like a virtual particle that appears and then vanishes, or like a particle formed by a collider-accelerator, possessing a half-life of one second. The set of metabolic photons behave like only one single photon, because they are bosons. The pack of photons that are

separated from matter travels in a second the same distance that travels in 80 years when it is connected to matter.

To observe a vacuum, we must focus on matter. Now let us conduct a real, not a fictitious, operation that separates two particles with a mass equal to the mass of Planck. Let us start with Newton's equation for universal gravitation, seeing it as energy, which is equated to the energy in the Planck formula for quantum mechanics, with the object of seeing the minimal action:

$$\hbar\nu = G \frac{m_{Planck} m_{Planck}}{r}$$

From here we have the following equivalent equation:

$$\frac{r}{\lambda} = \frac{G}{\hbar c} (m_{Planck})^2$$

We can see that we have the set of constants that corresponds to the mass of Planck:

$$(m_{Planck})^2 = \frac{\hbar c}{G}$$

We can close:

$$\frac{r}{\lambda} = \frac{G}{\hbar c} \frac{\hbar c}{G}$$

and

$$r = \lambda$$

This is the exchange of two geometries. In this case, r corresponds to the Schwarzschild radius and λ to the Compton wavelength. In this scale of the Planck mass, equality between wave and particle occurs. This scale is the bridge to go from one to the other:

$$R_{Schwarzschild} = \lambda_{Compton}$$

We are accustomed to considering that the route has the following direction: the radius of Schwarzschild and the wavelength of Compton become substrates whose product is the mass of Planck. But now the process is in the opposite direction: from the Planck mass emerges the wave-to-particle passage. The scale of the Planck mass corresponds to a frontier: on one side we have a wave that crosses two slits and creates interference, while on the other side we have a particle that follows a single path. Where mass increases, the defined trajectory is recorded. If we relate the mass of the planet to that of Planck, we have the following, according to Planck and Newton:

$$\hbar\nu = G \frac{m_{Planck} M_{Earth}}{r}$$

From this we can deduce the following:

$$\frac{R_{Schwarzschild}}{\lambda_{Compton}} = \frac{G}{\hbar c} m_{Planck} M_{Earth}$$

Finally, we can have:

$$\frac{R_{Schwarzschild}}{\lambda_{Compton}} = \frac{M_{Earth}}{m_{Planck}}$$

And when we bring that relationship into a generalized state, we have:

$$\frac{R_{Schwarzschild}}{\lambda_{Compton}} = \frac{M_{gravitational}}{m_{inertial}}$$

That interaction between kinetic (inertial) and potential (gravitational) energy reminds us of the behavior of an electromagnetic wave. If the mass is smaller than the mass of Planck, the energy of inertia predominates, but when it is larger, it becomes a gravitational mass embedded in a Minkowski geometry.

We see entropy if we see vacuum. There is another aspect to consider: this transition zone that goes from randomness to causal order. This is the relationship of entropy to the area that is related to the Schwarzschild radius. From:

$$mc^2 = \hbar\nu$$

and

$$x = \frac{G}{c^2}m$$

we have

$$x = \frac{G\hbar}{c^3} \left(\frac{\nu}{c} \right)$$

that is the same as:

$$x\lambda = (l_{Planck})^2$$

And from here, we can have:

$$\frac{x\lambda}{(l_{Planck})^2} = \ln \Omega$$

If we make $S = 1$. If the probability is one, it will be certainty: the deleted information becomes new information. Where the relationship of the area of the event horizon with respect to the Planck area is the S-entropy:

$$S = \ln \Omega$$

This is close to the Bekenstein and Hawking formula for a black-hole entropy:

$$S = \frac{x\lambda}{(l_{Planck})^2}$$

The letter Ω corresponds to all the microstates into the one object, all of which have the same probability of appearing. The genome, as well as economic capital, have properties running a path that are not interchangeable: once the component that is to be changed is selected, the change, once effected, may lose the possibility of having another alternative route. Any part affects everything, any change in the wavelength of Compton or in the radius of Schwarzschild affects the entire surface, as well as the entropy. Moreover, each component of π endlessly participates through action or omission. Just as a bank loan generates possibilities, the same loan also generates the opposite result: the collection of money corresponding to a loan that is due causes damage

equivalent to the damage caused in a war. When the genome or financial capital behaves like gravity, it is the most powerful behavior; it is the process that comes closest to creating a singularity, where the rich get richer. This powerful machine has a zone of confused legality: is it the interest payment, the spoils of a financial war? Banks have realized that this is the most powerful behavior to increase the most valuable assets, because this is the behavior of the genome, which becomes a monopoly and reaches life and consciousness. It can be said that this system applied to biological evolution eliminates all the people of a generation to charge the people of the next generation more loans that must be paid with more and more profits. These are the loans to the biology that nature makes. The new individuals have improved, but they must pay more interest for the improvement received, because they have received a more expensive loan that they must pay. Thanks to the fact that the genome behaves as a toy landscape, the loan corresponding to life and consciousness was achieved with a loan from metabolism. The energy consumed is the payment of the loan in installments. Maybe it will not be necessary to sign something like the declaration of economic independence, such as that of the Founding Fathers for political independence, since the Internet, with the development of blockchain or other systems, will manage the genome as well as the economic transactions: agreements, ownership, product tracking, identity, and many others.

When the mass is conglomerated through the metabolism, these particles are attracted to the planet's gravitational pull. The planet is supported by the sun. In turn, the sun is protected by the galaxy. We can go on until we find the main container through the expansive edge of the universe, which corresponds to the horizon of events, since the centrifugal velocity of space in this extreme region reaches the speed of light. But is the limit of the universe contained within something? Is there a container that contains this borderline? Here is the answer. The following reflection is important, but scary, so we must keep it half-hidden. All the space of the universe cannot surpass the horizon of the events, because the universe operates under the horizon of events, and the universe has never overcome it. What does this mean? The shock wave, which corresponds to the outer edge of the universe, is trapped in the black hole that is the Big Bang. The Big Bang will always remain a black hole because it was born from a very tiny place with everything inside. How can the universe escape from a singularity (the Big Bang was one singularity)? It does not matter whether it expands; the space from the Big Bang, as the space from a black hole can never leave it. Our Big Bang never can surpass its event horizon, because at the beginning, it had all its mass in the smallest possible space: an equivalent to the singularity of the black hole. Nothing can escape from the singularity, and the Big Bang was a singularity: How we can escape from that singularity? The source and the sink are inside, they never come out: The Big Bang and the black hole are the source

and the sink of our universe. There is not a bounce, it is better to say that any geodesic coming from singularity returns to it, as there is no possible exit when the geodesic pathway lies within a black hole. Everything that comes from the singularity of a black hole cannot overcome the horizon of events. So, if the Big Bang is a singularity, everything that comes out of it cannot overcome its horizon of events and must fall by force. The matter from the Big Bang behaves like in the myth of Sisyphus because nothing can escape from one singularity, and indeed the Big Bang is a singularity. This is Sisyphus trying to climb a rock that inevitably must fall. Much ado about nothing. This is a great deal of excitement about something common, because our universe is just another virtual particle that emerges and then disappears. All virtual particles correspond to the myth of Sisyphus, the banking system demands the repayment of the loan. Also, real particles.

10. Internal components can generate resonance and endosymbiosis

Every day we use the technology that is derived from quantum mechanics as something external to us, pretending that we are not personally involved in quantum mechanics. From the de Broglie wavelength

equation, if momentum corresponds to a human being, their mass and their speed, the wavelength is at the Planck scale. In this regard, the question is: are we waves or not?

From

$$\lambda = \frac{\hbar}{mv}$$

If $m = 100 \text{ kg}$, and $v = 1 \text{ cm/s}$, then $\lambda = \hbar$. This means that we live as wave matter at the Planck scale, because it is what corresponds to a human.

The wave-particle concept is based on the core of quantum mechanics. However, we are now not afraid to know that humans are also waves. We need to seriously think about what the consequences are. These waves are not like very tiny wrinkles, that is, only a very small part of our body, but the exact opposite. My material wave is myself; it is my ego in a complete form. De Broglie waves of humans do not live in a smooth Hilbert space, as Schrödinger waves do, but in a bubbling space of virtual particles on the Planck scale. The spacetime is foamy and bubbly where the universes are constantly born and die, as many little Big Bangs and black holes.

To make matters worse, people share the same point in Planck space with all the aliens in the universe. That is because they have the same momentum as us, so they also must exist as stationary de Broglie waves

and live their corrugated reality connected to us. This happened in the biblical Noah's Ark, a nest crammed full of all the living beings of the cosmos. We should not say that quantum mechanics does not affect us because we are big. To the contrary, because we are a big particle, we must be a small wave. As waves, we live at the beginning of the universe because the beginning is on the Planck scale. Now we remain as waves at the beginning of the universe, without being swept away by the expansion of time and space. But as particles today, we live far from the Big Bang. Life on the Planck scale means touching the boundary from which the virtual universes emanate.

Shakespeare's Hamlet is a play within which there is a guilty act that is in turn recreated by theater actors: actors who represent actors. The quality of the execution determines the effectiveness of the murder investigation, because there must be maximal similarity between reality and fiction. The phenomenon of iteration works in a virtual reality to achieve an improvement of the machinery of reality. It is a message consisting of two parts: one is the real message, but the other is a virtual message that can make a change in the real message. The virtual world creates a phenomenon with redundancy in the real world, because reality changes with something virtual. Real things can change through non-real things. This means that a real system can be modulated by something that is not real, produced by the same real system. An electron changes direction because it

creates a virtual particle that is a photon. As a system takes on a greater mass, it will also be able to generate movements within its components that can make changes to the overall system. Waves are modulated by other waves just as there are cells that invade other cells to play games.

11. The Minkowski vacuum is an oasis of causal behavior in a vast desert of randomness

If we were to overcome the maximal speed, we would travel back in time. Thanks to maximal speed, we have causal order. There are two paths: randomness or causal order. Now, let us imagine Darwin trying to figure out what of two kinds of mechanisms nature is using: causal or random? He has two options. It could be a very complex mechanism that comes from a source that works with causal order. Or, contrariwise, it is the most extremely rough mechanism created by the simplest source that everyone knows. If we consider energy as a criterion of existence, the internal mechanism is the kinetic energy, and the external mechanism is the potential energy. According to the Newtons First Law of motion only external forces can made acceleration on the body mass center. Internal forces generate the temperature distributed in the whole body without translation of the

mass center. From a mathematical point of view, it is a wave and its derivative, which is, in turn, another wave: two behaviors with symmetry, from which a phase-shift arises. Just as Darwin experienced religion as an obstacle, now we encounter our greatest obstacle: the belief that the universe mechanism has plenty of causal order, as rational. Our obstacle is to consider it as a species of a brain. Our universe can be rational in a limited manner, because only the Minkowski space possesses trajectories with causal order. It hurts to leave the common rationality, we do not live happily without finding some explanation. We see patterns everywhere, all due to the dopamine in our brain. The rational path is only isochronous geodesics in the Minkowski space.

Something can appear or disappear, such as phase shifting, by means of being differentiable. This shift between position and its derivative, between stability and change, can be the root of Darwinism, in the sense that evolution can occur when these two components are possible: stability and change, a function running and its derivative as its counterpart and its complementary part. In this fashion, life is developed by means of the most basic criterion of existence, energy, through the mechanism of an oscillator with components of potential and kinetic energy. The culmination of this oscillation will be the cell formed by the interaction between DNA as the source of potential energy, and metabolism as the source of kinetic energy.

Two hypotheses are defined. One is that life and consciousness arise from complexity mediated by the powers of the standard-model interactions, and gravity playing a minimal role. The other hypothesis presented here is that gravity plays a major role. This second hypothesis entails the aggravating circumstance that the universe falls into a black hole, which connects it more with the landscape: this latter hypothesis moves the universe away from the real particles to form part of the virtual particles. The farthest galaxies are moving away at speeds close to that of light, their redshift is so extreme that we cannot see them because their wavelengths are so large that it is beyond the possibilities of current technology to detect them. No more information can emerge from that horizon, which is falling into a black hole. If a part is falling, everything is falling, because it is indivisible. If it could be cut, we could have two universes. If we could cut it, we would let one-part fall into the black hole and the other part not fall. Being an indivisible object, it must be an elementary particle, which means that it is in close contact with vacuum energy.

12. Symmetry of the cosmos as part as the biological machinery

The current strategy of Big Science is to break objects to obtain the smallest particle, which would afford us the ultimate explanation, thus a more

fundamental point of view. But this method fails on the smallest scale because the mass of indivisible particles is linked to a vacuum field that encompasses the entire universe. The most basic structure considers the properties of the universe, not the properties of an isolated particle. If the universe is the most basic thing that emerges from the Big Bang, biological organisms must seek the explanation of their existence in this fundamental object as an indivisible whole. The properties of the universe, including the properties of the living beings, were determined by the type of vacuum that was established in the Big Bang. The universe does not exist unmasked but surrounded by the cloud of interaction with the energy of empty space, because polarizes the space. Our nightmare is that we could visualize our body as one elementary wave-particle immersed in the sea that is empty space. The universe exists as an ameba in the intestinal fluids that moves both randomly and with causal order.

The following is the perspective that provides the best explanation: the struggle of living beings is not against the universe; the fight is against the vacuum energy. This is the main idea of this presentation. This makes a change in the approach to the problem, because the focus must be on the vacuum, not on the matter. The final bill must be paid to the vacuum company, not to the universe business; the universe's debt also must be paid to the vacuum. It is the price of the Big Bang, which must be paid to the vacuum energy. The universe pays when it disappears.

Steven Weinberg (1993) relates to us a metaphor. He says that, just as Siegfried was able to understand the language of the birds after bathing in the blood of the dragon he had killed, we can now understand the language of atoms by means of the standard model. Continuing with this metaphor, we can finally add that we can also speak the language of the basic energy of the vacuum state, the landscape's language, the ultimate language beyond the atoms, the language of vacuum polarization, the language of virtual particles, our origin and our destination. Our body has some atoms that were once found in a dinosaur, or that much earlier roamed the cosmos. Reductionism leads us to seek the foundation in the smaller components, but when we end up in the vacuum, it turns out that ultimate reason corresponds to the universe as an indivisible whole, just as an elementary particle of the landscape obeying the Heisenberg uncertainty principle. If it is an elementary particle, it is also a wave. Small fluctuations allow the creation of galaxies. Energy from the sun makes a brief stop at the metabolism of the plants, then makes another stop in the metabolism of animals, and ends as the heat of the planet. These metabolic photons are traveling throughout the solar system, not only throughout our body. The goal of this paper is to consider our universe as a particle with zero total energy, arising from the quantum vacuum with a cloud of virtual particles. And, we humans form part of these clouds of virtual particles.

As the universe, living beings originating from virtual particles from the vacuum, must all the time be fighting against a return to the vacuum energy. The structure of the universe is part of us and, as does the skin, protects us like a shield. The universe, like any other virtual particle, comes from vacuum, and is made of vacuum. Humans, as part of the universe, come from vacuum, and simultaneously vacuum comprises their main component. Like the turtle and its shell, every human being is protected by an external shell that is the mass of the planet, which provides protection and stability in order not to be drawn out by the vacuum energy. As part of the solar system, we are connected to the energy from the sun. The sun's energy is like the liver, a battery which provides us with energy, and it is part of us. Our liver stores and expends the glucose supplied by photosynthesis, which takes place thanks to solar energy.

13. Conclusion

If brain activity were limited to a non-gravitational plane space, it would not have a complete connection with the virtual particles. The negative curvature of the space allows trajectories to have causal order and rational behavior. This is because the components

have acquired more mass, but not so much that inertia against motion is a problem. By incorporating the polarization of the vacuum, the ego of an individual, according to Newton's Third Law, remains connected to the ego of the universe.

In Michelangelo's painting of the Sistine Chapel, God uses a small piece of empty space to almost touch the tips of Adam's fingers. His touch polarizes the emptiness. The polarization void defines the interior space, which in turn defines the universe in the Big Bang. Metabolism accelerates particles, which interacts with gravity. Metabolism, as a field, interacts with the entire universe. The loan that is shared with the universe is necessary to operate the biological mechanism. This loan was no exception: we are faced with the reality that everything that can happen really happens: all virtual particles can become real. In fact, it happens again and again, infinitely many times, and the exception could be that this phenomenon may be stopped. It is not possible to stop the realization of all the possibilities of the landscape. Therefore, a person dies, they leave a universe that was their body mass, but the vacuum energy as a bank will supply him with another universe that will be their new body mass as a new loan that must be repaid some time later. If the vacuum energy bank continues to operate, these loans will not stop: business is business. Monique Pinçon-Charlot said that 85% of people own 50% of the world's wealth and that, next year, this will be reduced to 60%, and wealth will continue to accumulate in the hands of

fewer and fewer people (Pinçon-Charlot, 2018). This is like the black-hole dynamics. Those warrior people who jealously postulate that the ultimate explanation lies only in electrochemistry have killed the inclusion of gravity in biology, because they have attributed to its strength too much weakness, not the loan capacity: “Thou art rash as fire to say that she was false. O, she was heavenly true!” (Emilia to Othello about Desdemona’s purity). In the Poincare disc, the edge is not part of the disc, so we see ourselves as something more than the standard model forces and gravity of our unique universe: the universe is our reality, but the multiverse and the landscape, the quantum vacuum energy, is the virtual reality of our ego. If that is not true, it is at least a great archetype of that of the Carl Gustav Jung archetypes for the collective unconscious, a common pattern thinking for all humanity based on the new perspective that was demonstrated by Perelman and must be incorporated into the theory of general relativity.

14. Addendum: Our fringe science

The atoms were not loved when Boltzmann taught thermodynamics. Now, we love them, we love our subsoil of elementary particles, which are a point without structure and consist mainly of emptiness. But, we have not yet decided to concentrate on the void and

we cling to the atoms. We are in a highly turbulent vacuum that is absorbed without regression by the singularity, and thanks to the turbulence, biology appears through the Big Bang. Soon we will aware to get used to living in this geometric turbulence and we will love it. History repeats itself with the advance of science.

15. Bibliography:

Almheiri A, Marolf D, Polchinski J, Sully J. Black Holes: Complementarity or Firewalls? arXiv:1207.3123 [hep-th]. Last submission Sat, 13 Apr 2013 00:39:27 GMT (46kb, D). <<https://arxiv.org/abs/1207.3123>> Accessed date: October 7, 2018.

Bekenstein JD. Information in the holographic universe. Scientific American 2003; 289 (2): 58-65.

Cannon WB. Organization for Physiological Homeostasis. Physiol Rev. 1929 (July 01); 9: 399-431. <<https://www.physiology.org/doi/pdf/10.1152/physrev.1929.9.3.399>>. Accessed date: October 7, 2018.

Chalmers D. How do you explain consciousness?
Published on July 14, 2014.
<<https://www.youtube.com/watch?v=uhRhtFFhNzQ>>
Accessed date: October 6, 2018.

Greene B. The Fabric of the Cosmos Space. Time and the Texture of the Reality. 2004. El tejido del cosmos. Espacio, tiempo y la textura de la realidad. Drakontos Bolsillo. Primera reimpression en México: abril de 2018. ISBN: 978-607-747-371-8.

Hartle J. The Quantum Origin of the Universe (SETI Talks). Published on June 10, 2014.
<<https://www.youtube.com/watch?v=kvFyu7A8o7E>>.
Accessed date: October 6, 2018.

Haug EG. Newton's Gravity from Heisenberg's Uncertainty Principle an In-Depth Study of the McCulloch Derivation. March 3, 2018.
<<http://vixra.org/pdf/1803.0045v1.pdf>>
Accessed date: October 7, 2018.

Koestler A. The Ghost in the Machine. Penguin Group, 1967. 1990 reprint edition. ISBN 0-14-019192-5.

Leff HS. Teaching the photon gas in introductory physics. Am J Phys 2002;70(8):792-797.

Li X-D. From the Boltzmann H-theorem to Perelman's W-entropy formula for the Ricci flow.
arXiv:1303.5193v1[math.DG] 21 Mar 2013.

Lott J. The work of Grigory Perelman. Published on December 2, 2016.

<<https://www.youtube.com/watch?v=nOsYQtGBi68>>

Accessed date: October 6, 2018.

Maldacena JM. Física Teórica. Geometría y entrelazamiento cuántico. Investigación y Ciencia. Número 470. Páginas: 74-81. 100 años de Relatividad General. Noviembre 2015.

Penrose R (Sir). From Cosmology to Consciousness. Conformal Cyclic Cosmology. Published on February 3, 2018.

<<https://www.youtube.com/watch?v=tzGT8VruvC4>>

Accessed date: October 6, 2018.

Pinçon-Charlot M. “Hay una guerra de clases de los ricos contra los pobres”. Published on June 6, 2018.

<<https://www.youtube.com/watch?v=00MutggXZjo>>

Accessed date: October 7, 2018.

Ricklefs RE, Miller GL. Homeostasis depends upon negative feedback. In: Ecology. WH Freeman editor, 2000. ISBN: 978-0716728290.

Rovelli C. La realidad no es lo que parece. La estructura elemental de las cosas. Tusquets Editores, SA, 2015. Barcelona, España. ISBN: 978-607-421-815-2.

Schrödinger E. What is Life? The Physical Aspect of the Living Cell. Cambridge University Press, 1944. United Kingdom (UK). ISBN 0-521-42708-8.

Shackelford J. William Harvey and the Mechanics of the Heart. Oxford University Press, 2003. ISBN: 978-0195120493.

Tegmark M. Consciousness is a mathematical pattern. Talk at TEDxCambridge. Published on June 30, 2014. <<https://www.youtube.com/watch?v=GzCvIFRISIM>> Accessed date: October 6, 2018.

Walker S. The Algorithmic Origins of Life. SETI Talks. Published on November 27, 2012. <<https://www.youtube.com/watch?v=dPil4nYD0Vg>> Accessed date: October 6, 2018.

Walker S. A Universal Theory of Life: Math, Art & Information. Talk at TEDxASU. Published on May 8, 2017. <<https://www.youtube.com/watch?v=kXnt79JhrbY>> Accessed date: October 6, 2018.

Weinberg S. Dreams of a Final Theory: The Scientist's Search for the Ultimate Laws of Nature. Vintage Books, February 1, 1994. New York. ISBN-10: 0679744088. ISBN-13: 978-0679744085.

16. Disclaimer

The exact assignment of bibliographic references was not possible because the initial and evolutionary contact with the ideas expressed here was due to generalized access to the media, mainly for dissemination of scientific knowledge, not for the original sources. In addition, there is such a well-known knowledge that it is superfluous to quote it.

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