

## Article

# Aether: The God of Physicists (Part II)

Laurent R. Duchesne\*

### ABSTRACT

In this four-part article, I argue, as many others do, that the aether is the physical but non-material substance from which the universe came to exist. To exist, things must be in spacetime, but the aether is not in spacetime, it is before spacetime. It is, but does not exist as matter. It is all permeating and non-dimensional; it is inside and between particles; it is everywhere. Everything is made from it, even the space that surrounds us. It is indivisible, or it would not be the aether as it was defined thousands of years ago. Wholeness in space and time is what allowed Nature to evolve. Holistic awareness, or self-reference, emerges from an inward necessity which is satisfied as information is chosen from the context in which a system evolves. Human consciousness evolved from the same holistic awareness property all matter has shown to possess. Human consciousness is spacetime dependent, just like matter. No brain equals to no human consciousness.

Part II of this four-part article includes: 3. Space is Material; 4. Aether and Information; 5. Process and Continuity; 6. Reality as Process; and 7. Gravity, Inertia, and Mass.

**Keywords:** Aether, immaterial substance, human consciousness, physics, God.

## 3. Space is Material

### The Smallest Wave

Most scientists agree with Max Planck in that quanta are the smallest measurable energy amount or quantum of action, and that Planck's constant 'h' relates the energy in one quantum of electromagnetic radiation to the frequency of that radiation. That all of matter's spectral properties and patterns can be explained in terms of exact multiples of a basic minimum value, and that thanks to the determination of 'h' we can now conceive order at the quantum mechanical level.

Many also agree with Louis de Broglie in that every object in motion would move in a wave and is accompanied by a wave. Also, that he showed that electrons traverse an integral number of wavelengths for each complete orbit of an atom, and that the quantization and structure of quanta will always depend on the properties of their source and the objects with which they interact.

Quanta are measurable amounts of cycling spacetime. In reality, there are no more spinning

---

\*Correspondence: Laurent R. Duchesne, Independent Researcher. E-mail: [cyberdyno2@gmail.com](mailto:cyberdyno2@gmail.com) Note: This series of articles are based on the author's book entitled "Aether: The Physicalists' God" first published in 2009 and revised in 2016.

particles than there are wavefronts. A quantum of action (quanta) appears as a very small region of fluctuating, process independent space.

There are no point particles. A point particle must be internally static, with no internal time, and that is not possible. Points do not occupy space, they do not exist. Which is why the physicist refers to these as 'point-like' particles. The point being just a mathematical convenience.

Each particle, even the smallest, is in constant internal motion, vibrating. Each particle possessing its own internal time and wavelength. For this reason, it is not possible to get rid of uncertainty at a spacetime level. This is one of the reasons why sometimes we need to round up measurements to no less than 4 decimal places in order to more accurately describe reality.

Planck's constant is closely related to a particle's wavelength. It is from this relationship that wave-particle complementarity and the non-commutativity between momentum and position emerge as properties of space and matter, and as proof of the inseparability of quantum processes. Momentum and position do not commute because subatomic particles cannot be seen as standing and moving at the same time. Energy is constantly flowing in and out of the system as matter continuously feeds from empty space.

The fundamental particle should then be described as a small spherical region of pulsating spacetime whose diameter equals one Planck length ( $10^{-33}$  cm). And space can be described as packed-full of particles, or as a sea of randomly fluctuating particles. This is why space is considered by today's physics to be grainy quantum matter, each grain having its own internal motion, or cycle. Some having a diameter as small as one Planck length, billions of times smaller than any neutron or proton.

Each object, regardless of size, is accompanied by its own particular matter wave. Therefore the concept of a superwave function, where various particles are described by a single wave-function, applies.

## **Gravitational Aether**

The aether I believe in is akin to Basil Hiley's pre-space and Einstein's gravitational aether, a realm where the concepts of motion, therefore extension, are not applicable. Motion and space come with spacetime, not before.

What we call free space or absolute space, complies with Einstein's aether. This aether is similar to Newton's absolute space but with physical properties. It is where the laws of electromagnetism -- ratios like permittivity and permeability -- are determined. It is not bound by the rules of spacetime and exists independently from spacetime. It is before spacetime, just as your absolutely free of EMR and establishment accepted, free space.

Newton's absolute space, an empty plenum, a void which he considered to be real, was the seed to Einstein's aether. But he saw that, for Newton's view to be correct, objects would have to be

perceived as really separated, related only by their macroscopic mechanical interactions (Billiard Ball model). In Newton's view there would be no need for the principles of equivalency and relativity to accurately describe this universe, but scientific facts say we need relativation.

In reality, time and space are related. Einstein's geometrical principles sprang from the same concept of unity and wholeness implied in most of Mach's ideas. In Mach's view there is reciprocity between space and matter. This unity and oneness which distills from the GTR, is the philosophical basis for Einstein's holistic views.

Without an aether there can be no spacetime because there can be no continuity, hence no causality, nor process. This is also what Mach had realized. Resistance to motion, he thought, could only be the product of unity among all objects. He believed that there is a constant dependence (reciprocity) between matter and the space that surrounds it, and that this unity could only be explained by an all pervading aether. But in those days, most scientists preferred to call it by names like absolute space, free space, inertial space, momentum space, the gravitational ether, or the quantum vacuum. All of which refer to the same empty space. Now, they are either calling it the Higgs field or Dark Energy.

### Spacetime

In spacetime, there is no such thing as a *perfectly flat vacuum*. A few decades ago, as scientists were trying to measure the temperature of space, they found that it was noisy and full of radiation, or quanta. Scientists then, started to call space by names like cosmic background radiation (CBR) and zero point energy (ZPE), which is akin to John A. Wheeler's pre-geometry, or Quantum Foam. Later, they discovered that throughout the observable universe, the CBR's minimum temperature is almost uniformly set at about 2.7 K (Kelvin). Meaning that it probably is isotropic and homogeneous, that the universe looks and behaves the same everywhere.

Spacetime is a medium with mechanical properties (pressure and density). It is observable, hence measurable, and unlike Einstein's aether, possesses material, or mechanical properties. Space is matter, the aether is not.

Spacetime is made from many different types of particles. Some resist compression, or exhibit negative-gravitation, and some are infinitely compressible, and exhibit positive-gravitation.

Boyer, et al., described the ZPE as fundamental to spacetime, and thermal radiation as a product generated by the motion of ZPE particles, which in turn were buffeted back into motion by this thermal radiation which they themselves had produced. Thus providing the basis for a perpetual motion system and solving the riddle of the apparently infinite energy coming from empty space.

Now, if space is shade from particles, then it may be subject to changes in pressure and density, like a gas. Therefore if space particles carried by matter waves continuously condense into material objects, that would mean that the closer you get to the object, the denser the space

would be as a function of the object's mass and radius, explaining why gravitic pressure in space flow theories still obeys the inverse square law.

From Relativity we get that a physical system accelerated through space has the same equilibrium properties as an unaccelerated system immersed in a gravitational field. And as Timothy Boyer showed, a physical system accelerated through space has the same equilibrium properties as an unaccelerated system immersed in thermal radiation at a temperature above absolute zero. And at a temperature of absolute zero, a harmonic oscillator in a resting frame of reference, or moving at a constant velocity, is subject only to zero-point oscillations. In an accelerated inertial frame the oscillator responds as if it were at a temperature greater than zero.

As an object accelerates through space, there is an EMR exchange between the object and space as a mechanism in Nature there to maintain thermal equilibrium between the accelerating object and the space that surrounds it. Nature, in order to maintain thermal equilibrium, uses this mechanism, now known as Timothy Boyer's thermal equilibrium radiation, or Unruh-Davies radiation.

When an object is just sitting, but immersed in a gravitational field, what's being accelerated in relation to the object is its surrounding space.

And this is how gravitation is explained: just as photons can be moved by electromagnetic forces, space particles are carried by matter selective, inwardly flowing, quantum matter waves (Gravitons?) in a gravitational current. Space flow manifesting as gravitation. It is material space flowing into matter, and this flow is caused by the force of gravity. Gravitation as described by the inverse square law, because space becomes denser and pressure goes up as space matter gets radially closer to the source of the gravitational force.

## 4. Aether and Information

Plato was wrong in believing that there is a separate realm for Ideas and Forms to be stored at.

According to today's physics, as the first fields appeared, information also appeared. There is no meaningful information below the Planck scale. The aether is where the strong and weak nuclear forces, and the magnetic, electric, and gravitational fields emanate from as autopoiesis occurs, in spacetime.

In this view, only some of the information about the present environment, about the present inertial state, comes from the aether as it rules the whole universe, all at once, with just a few fundamental laws (constants, or hidden dimensions... passive information). Thanks to this oneness quality of the aether, the inertial state can be registered instantaneously, allowing all kinds of emergent geometrical forms to observe themselves in wholeness and be self-reflective. Every object existing as a solid body is coupled to a matter wave. Information about the object's surrounding environment being picked and brought in by each object's particular pilot wave. Their displacement through space being accurately and effectively described by mathematical wave functions.

But how could information contained as all kinds of geometrical relationships, that are evident or real only in spacetime, be formed, stored, and accessed by process at a sub-quantum level? It is not, information is always material, and can only exist above the Planck scale. Information is mostly transferred by matter as either sound waves, light waves (colors, shapes, depth), and other forms of vibration. Existing as EMR and matter waves, information can be quantized, formed into particles or wave packets, while transferred unaltered through vast spaces at almost the speed of light.

When we think about the infinite capacity of EM waves to store and propagate information (Television, cell phones, radio, and all forms of EMR), we have to ask ourselves why would we want to go sub-quantum when quanta and hyperspace provide us with such a rich structure? In hyperspace, different objects can occupy the same space, this is why EM waves have a virtually infinite capacity for information storage.

Everything is connected by light. There are matter waves and EMR between you and everything around you, flowing from and into everything, including yourself. EMR bouncing off everything, carrying information regarding each surrounding object's objective state, as matter waves bring needed information about the environment.

The medium in which any given self-organized system develops is full of information which the system needs, and will use, in order to maintain itself. Matter is not different, it can be defined as self-organized, and the medium in which it develops as full of information in the form of EMR. Any given neutron will need to extract from hyperspace only the information neutrons need to support their structure as time goes by. That is, neutrons will mostly use information that is meaningful only to neutrons.

During its existence, a particle retains more information about the past (a history) than it has about the future, creating an information potential (a pressure with a direction), thus the emergence of a quantum potential. From this potential we can partly derive the particle's future. (Yakir Aharonov's teleological state vector, which he probably derived from David Bohm's equations.)

For any process to continue to evolve as a whole, there must be a function of internal oversight. And that is what we have in matter, a self-reflective mechanism in the form of a spherical standing wave, which is only possible when all the parts are interconnected. We know this needs to be a non-local function, and this function is only possible because of that oneness quality coming from the aether scale. It works like a hologram, where each point knows where all the other points are, and where state is instantaneously reported throughout the system. Thanks to this oneness, all kinds of emergent geometrical forms are observed in wholeness as a self-reference mechanism inherent to all matter.

It was from analyzing this holistic awareness function of Nature that David Bohm conceived his quantum potential (Q) concept. At the same time he explained EPR type phenomena (entanglement, non-locality, FTL communication), this self-reference function was defined by his quantum potential concept as a holistic awareness function of matter. The aether being what allows EPR type phenomena to take place.

EMR was, and still is, the most used means of information propagation and natural communication within and between spatially separated objects.

Already existing information leads to the creation of more information. And this information can only be stored as matter, it can only exist in material form, e.g., DNA.

### **Logos and Nous**

Zeno and Democritus were correct, there is a non-material aspect to reality that is not subject to change. That should have been the ultimate truth. The aether has no means for storing meaningful information, but it contains the ratios... the constants... the law. Ratios... real but non-material quantities... the tools of logic... the gears of physical reality.

Logos is the driving principle behind Nous, the controlling principle in the universe. It is before Creation. Logic (Logos) is before knowledge (Nous). It is the passive information embedded in empty space, or in the aether. And all matter, or active information, follows this passive information. Logos represents the ratios, the physical constants (logoi), and as many ancient philosophers already claimed, it is not subject to change the way matter is.

Stephen Hawking once said, matter swallowed by Black Holes is lost information. So, if this were true and this were a cyclical universe, all information would then be lost with each contraction, or crunch... but not Logos. (Hawking later changed his mind.)

When we ask: what came first, Mind or matter? We must first clarify what do we mean by Mind. If Mind represents logic, we can then say that Mind came first, but if we take Mind to be synonymous to intelligence, or knowledge, then Mind came after. See, in terms of philosophy, we have a problem with semantics. The term Mind can lead to confusion -- many confuse it with human thought, or consciousness. We should continue to use the original terms, namely: Logos and Nous. Logos for logic, and Nous for intelligence, or knowledge. Logos and Nous, instead of Mind and matter. Why change the terms our ancestors were already using?

I agree with Heraclitus, materially speaking, the aether (Logos) remains unchanged. The aether acts as a traffic light directing energy flows, which always does exactly the same expected things. It simply reacts to forces coming from matter, or Nous, as Hegel and Anaxagoras called it. In their view, Nous is the universe and it evolves as it learns.

Aether (Logos) only holds the law, what becomes is matter itself. The aether cannot learn, but it can be in different states. It thinks through matter, thanks to matter, but once that matter is gone, it returns to a singularity... or to being just aether, but in a different state.

Quantization and organization of particles in hyperspace is determined by the exclusive dimensions (information) of a myriad of interacting matter fields, which originate from already existing matter, dead or alive. This means, there is no information being projected into spacetime from Plato's Ideas realm, the information comes from an already existing reality, at the spacetime level.

I believe there is Logos (aether), then there is Nous (the universe). Logos being passive information, and Nous, active information. [Brahman and Prana in some Eastern philosophies.]

Most of the information about a material system is contained within the system, but not all. Passive information, which is mostly related to the momentum and location of the particle in that part of the world, is instantaneously registered throughout the system. There is information constantly flowing in and out of every wave-particle system, as self-reference and autopoiesis take place. That is where Cramer's Transactional Interpretation and Wheeler's Delayed Choice, or back-action come from. But for the metric to have these wholeness properties there must be a unity, and this unity can only come from the aether's oneness. Information has a speed limit, but not state. Information can be transmitted by material mediums and then stored as matter in spacetime, but thanks to the aether, state is instantaneously registered throughout the system.

In a computer, you need a CPU, a hard drive, and some RAM to make it work. The CPU is the place from where the flow of information is controlled, but the information itself is contained in a hard drive. In this world, the aether is the place from where the flow of information is controlled, while the information itself is contained in matter, as matter.

Compared to our brains, RAM in a computer is where each program processes its particular information, while our brain is where we process our individual information. We have the human brain then serving as a natural, state of the art interface between the aether and every living human being, just as there is an interface between the CPU and every program living inside a computer. In other words, we are the programs inside the computer... or the universe.

## 5. Process and Continuity

*"Reality is not about things, it is about process" --- Lee Smolin*

Process happens because of the rules of Thermodynamics and the motion caused by the electromagnetic properties of the aether. It was from this motion that order arose as random events started to replicate themselves, giving rise to cause, time linearity, and meaning to their movements.

Before there can be any meaningful process or causality, there must definitely exist continuity. Because the aether is one, it brings unity and continuity of process. Its main function is to support spacetime as a unified whole, as a continuum, providing wholeness and interconnectedness.

The aether is motionless, therefore changeless. It has no parts, and there is no process within it. Most of the process occurs at the hyperspace and spacetime levels. Motion, time, extension, size, a beginning with an ending, are all non-applicable notions, and yet everything, from quanta, to space, to galaxies, emerge from it. It is nothing in particular, but has the potential to become anything.

If you stop an atom from spinning, it disintegrates. Materially speaking, all there is, is process. Anaxagoras was right, just as Hegel, B. Russell, Whitehead, and Einstein were. They saw that continuity is as essential to process as discreteness and particulation are. Logically, this continuity, this unity, can only be provided by an all pervading aether.

Heraclitus maintained that everything is in a continuous state of flux, or change, but Parmenides rejected this view by saying that, for there to be change, a substance would have to transit through nothingness in order to become something else. He thought that the basic substance must never undergo change. Process, in Parmenides' view, was incompatible with being, but there is process because there is aether, even though the aether itself remains unchanged. Now, Basil Hiley says -- *being is a relative invariant in the overall process of becoming*.

In hyperspace, there is mostly disordered motion, there is no significant order nor process coming from it. Therefore it can be interpreted as discontinuous and acausal. Motion with no time-line to follow... until ordered by fields emanating from already existing, self-organized matter. Spacetime, on the other hand, as the size scale gets larger and indeterminism fades out, follows the rules of determinism and causality.

Objective reality is a continuous, self-maintained, thermodynamically open process developing in a sea of discontinuities (Wheeler's Quantum Foam). Atoms are open thermodynamical systems, there is always energy/information being exchanged between matter and the environment. The same can be said about biological systems: they are open energy dissipating systems restricted by the laws of Thermodynamics.

There is a physical relationship between the substrate at a sub-quantum level and the objective universe. David Bohm called it Quantum Potential (Q). The concept of potential, in both cases,



electrodynamics and Bohmian mechanics, represents a non-local connection between the non-dimensional aether and spacetime. In Bohm's view, mind and matter draw information and energy from their common background through a process of quantum decoherence where Nature can take a look, through wave superposition, at a number of possible outcomes, all at once, as it chooses what it needs. Emerging from all this, we get wholeness, non-locality, non-linear parallel information processing, and very high degrees of order and complexity.

Take a look at waves as an example of non-linear process and you will see that, thanks to wave superposition, you may have one simple wave which could be contained as a whole within a more complex wave, which may in turn be contained as a whole within an even more complex wave... to infinite complexity (Fourier). Because in hyperspace more than one object can occupy the same space, and because of the aether's oneness, activity within hyperspace does not depend on linear time; wave superposition can be a non-linear, parallel information processing mechanism.

A particle maintains its shape and internal structure, as it moves through space, by keeping intact the geometrical relationships that exist between its parts and the environment. As process moves forward, particles must continuously reset their geometrical structure, having to continuously process all kinds of already existing and relevant information in order to continue their existence. They are in fact information... active information. Thus, there is no significantly ordered information contained in hyperspace, just randomly fluctuating quanta which is ordered as wave-particle systems move through it. Space is full of energy in complete and utter disorder, and fields are simply ordered space. Order, or information, is what allows particles to form as 3D space.

Reality is the process from where the objective universe emerges, but the real, the eternal, is the substrate. As a particle moves through space, it does not displace it, it ordines it. This means that what is really moving through space is an organizing process; matter as active information trying to maintain the geometrical relationships between its structural parts.

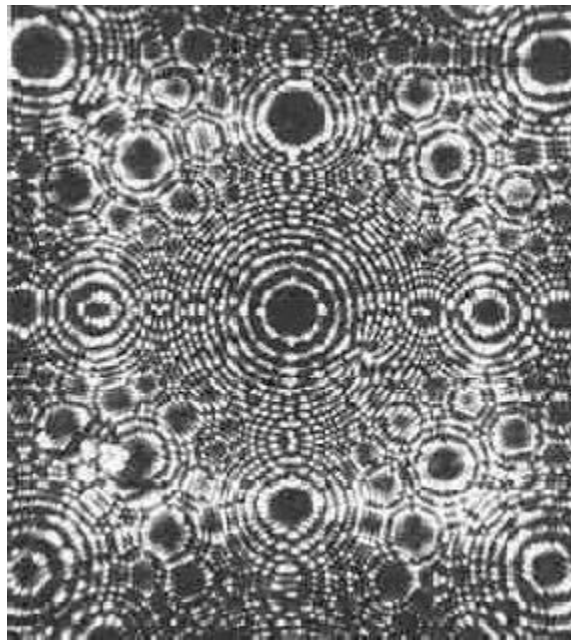
As you move, that which was a second ago is no longer, it is gone forever. No particle can remain floating in space unchanged and immutable. No process means no objective reality. For any object to continue to exist it must always be internally changing and adjusting to each new position in space. If you were to stop its internal motion, or process, it would disintegrate into quantum matter bits (Q-bits) in a very wide radiation spectrum.

The information contained in a particle's pilot wave (morphic field) is what particles need and use in order to continue being what they are. For example, a neutron uses only the information it needs for it to continue being a neutron. Particles, through a process of wave superposition and quantum decoherence, receive, select, and integrate into their wave packet only that information which is important, or meaningful to them.

## 6. Reality as Process

Matter is a continuous, time dependent, self-organizing process. Particle-wave systems, as they move through Wheeler's Quantum Foam, will continuously re-ordinate the space that constitutes them. These systems must be in constant motion, continuously processing space in order to continue their existence. If motion were to cease, they would simply disintegrate.

You could compare the movement of matter through the aether to the movement of waves in a pond in the sense that, what is really moving is the form, the information that gives its particular shape to the waves. Reality is like a wave propagating in water... the form moves, carrying information, as water molecules are left behind. As we displace ourselves, it is the information that constitutes our material body which is really moving, the underlying medium stays virtually unchanged. The particle is more like a pattern of motion than a solid, permanent, and space independent thing. Picture the rings that form and spread outwards after you throw a rock in the water, now hit rewind and picture the rings moving back, inwards, towards the rock. The particle represents actuality, as they the inwardly flowing waves bring information about the past, about what already happened to the particles around it. The rings going towards and outwards the rock being, in reality, spherical. It is a self-reflexive spherical standing wave that is constantly feeding the particle information about its inertial frame and environment, as a trajectory develops in relation to the surrounding space.



Inside Matter (crystal lattice)

The black dots now seen as the energy source, and the space between them as Einstein's spacetime.

Order arose from interactions within chaos, giving rise to self-dependent, separated cybernetic systems, which in turn evolved to take full advantage of matter's properties. After billions of years interacting with each other, just so Nature could continue to improve its methods to use information to its advantage as a tool against entropy and disorder, these systems evolved into

human brains for the purpose of experiencing/perceiving/measuring existence from a 4D perspective. Why? Because all thermodynamic systems tend to move towards thermal equilibrium, and in doing so, they interact, forming physical geometrical relationships in the process, which are then preserved in matter and are accessible by these cybernetic systems, when needed, as they evolve towards stability and thermal efficiency.

Hyperspace is filled with information bits, matter precursors, a pre-geometry comprised by material units of information which exist in chaos and are ordered by logic and activity into spacetime. But for natural reasons, i.e., energy conservation laws, everything that comes into spacetime must be registered and energetically measured before it can materialize.

As the quantum matter that constitutes it flows radially from hyperspace towards its center in spacetime, there has to be a quantum measuring process used to register the particle's location and momentum in relation to the rest of that inertial frame before it can crystallize. Thanks to wholeness, each particle senses the other and their relation to space, building an information network filled with geometrical relationships (spacetime), which are in turn used as the future is built on the already existing information.

Information emerges from and is preserved as matter (e.g., DNA). The components, the ones generating this information, are all floating in and interacting with space as particles, molecules, galaxies... brains... all of which continuously exchange information as they continuously emit and absorb electromagnetic radiation. EMR is one of the tools which Nature has been successfully using since the beginning of time to overcome space-like separation between objects in order to evolve as a whole.

The aether helps maintain the relations that give shape to a particle as it moves, but that information stays always bounded by the laws of spacetime. For example, virtual particles that pop-up from hyperspace into spacetime are the result of random field interactions such as resonance. Particles such as fermions stay in spacetime because they have stable standing waves. So, unless you are a theoretical physicist, don't be too bothered by all those subatomic particles being detected, only the ones we find in our everyday lives have real significance to us.

The aether contains all the energy available to the universe. As bodies move through empty space, stress-energy tensors around that body must be automatically adjusted according to the existing environmental conditions at each point in space and time. And this is possible because of the continuous nature of the aether. That is the principle behind inertia and momentum. The time a moving body takes to reach thermodynamic equilibrium with its surroundings, is directly proportional to the inertia and momentum forces it will experience. Each body's energy requirements is tied to the total energy available to each given point in space and time.

As objects are accelerated in a space-time metric, each new position creates new energy requirements from the continuum. The aether provides the unity needed for the inertial state to be instantaneously registered.

Particles follow the laws of spacetime. Laws by which their structure is going to be held intact in spacetime, only if the spatial relationships are maintained, in spacetime.

If we allow for three different size scales of reality, with aether as the substrate, the whole process can be coherently put together. We could say that aether, hyperspace, and spacetime are all different states of the same entity, the difference between them being just a matter of scale. At the aether scale, there are no reference points. No meaningful motion, no time, and no wave fronts, with empty space as perfectly flat. Then, at a larger scale, it becomes hyperspace, and we get things like EM fields, photons, bosons, and all types of quanta. Finally, at an even larger scale, we get Einstein's spacetime, the objective universe as we naturally perceive it.

1. **Aether** -- (Sub-quantum level) Dimensionless, timeless. David Bohm's implicate order. Basil Hiley's pre-space. The scale at which non-local, instantaneous state change occurs. This is where Nature's four fundamental forces are administered from.

2. **Hyperspace** -- (Quantum level) Wheeler's quantum foam. Quantum gravity. Quantum weirdness. A medium where more than one object can occupy the same space; allowing for quantum wave superposition and parallel, non-linear information processing.

3. **Spacetime** -- (Classical level) Inflation, Gravitation, Black Holes, matter... the objective universe.

We could conceive reality to have started with this non-material, indivisible substance from which hyperspace emerged. A reality that shares the properties of both: the aether's omnipresence, and hyperspace's non-linear information processing. Which then turns into spacetime as reference points and linear time emerge, sharing the properties of all three scales, or realms at once.

According to Timothy Boyer, Quantum Foam (space) is constituted by at least two different types of quantum matter. One is noisy and expanding, while the other is ordered and condensing. One exhibits negative gravitation, the other, positive gravitation. From one, space is created, from the other, matter is created. Quantum matter waves (Q-bits) inwardly flowing into matter (Gravitons?), as heat and light continuously flow away from matter. There is a continuous condensation and expansion of space taking place.

We need two separate matter states, two types of motion with opposite directions, one deterministic, the other indeterministic. Objective and subjective. Matter and quantum matter. Particle-wave systems in a continuous exchange of information between matter and space in a non-ending quest for self-consistency. Order (matter) coming out of entropy (quantum matter). It is a semiclassical process, an endless information exchange between the metric and quantum matter. Schrödinger waves evolving in curved spacetime.

The Schrödinger equation must be solved according to the spacetime geometry, but then, as the system continues to move in spacetime, stress-energy expectation values need to reset to a new spacetime geometry, making it necessary to again solve for the new quantum state. This process repeats itself in a continuous cycle without end in the form of spherical standing waves.

It is a process where an object's matter waves are described as being continuously condensed by gravity.

Leon Rosenfeld (1933, 1963 papers) considered:

$$G_{\mu\nu} = 8\pi G \langle \hat{T}_{\mu\nu} \rangle_{\psi}$$

where  $\Psi(\psi)$  represents the quantum state of matter fields, and:

\* Gravitation is the beginning of a semi-deterministic process. The gravitational field (G) is considered a classical, non-quantized field.

\* Gravity and wave packet collapse are interrelated. There is wave packet collapse because there is gravity, gravitation being the product of gravitational forces generated within matter.

\* Gravitation is caused by a space pressure differential created by the inward, radial space flow that occurs as a result of the object's wave packet continuous collapses.

\* Quantization and organization of space is orchestrated by matter fields which originate from, and follow, exclusive dimensions already existing as matter. Energy being quantized into particles by spontaneously emitted sub-atomic particles (Higgs boson?), in hyperspace.

If there were no wave packet collapse, there would be no matter, simple as that. Stopping or reversing gravitation would require the stopping or reversing of the matter wave flow, and that would cause matter to disintegrate. All matter is wave and particle at the same time (de Broglie, et al.), that is why there is gravitation. So, let's stop wasting time on anti-gravity devices and let's concentrate on creating a spacetime bubble in a completely independent and separate matrix. A bubble which could be extracted from and reintroduced back into the time-cone at will.

### **The Universe as a Hologram (my interpretation)**

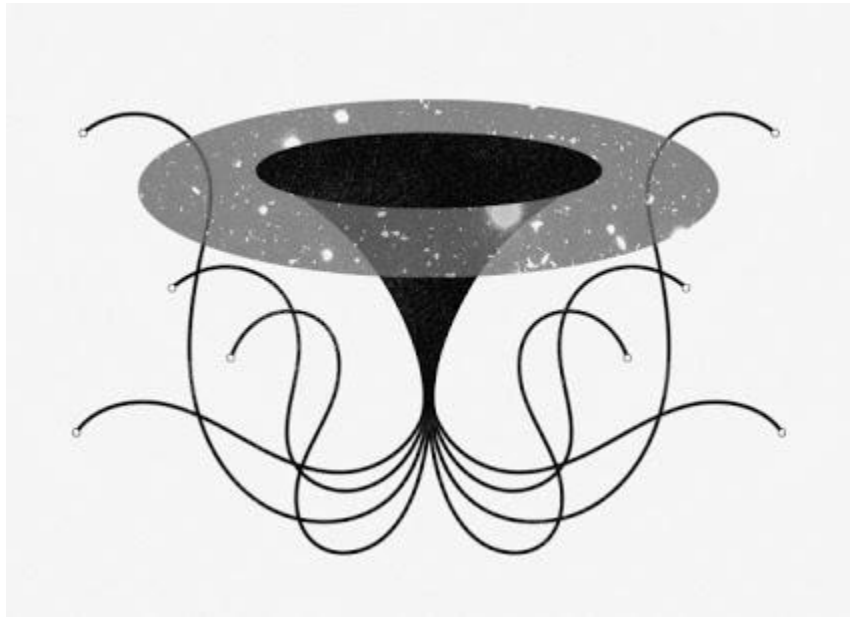
Gravity as a negentropic force? As an information gathering mechanism? That's what it looks like.

Let's look at a our galaxy, then apply this model to a subatomic particle.

At the center of our galaxy we have a black hole, or a singularity. This black hole is constantly pulling matter/information, but all that information stays on the surface (Event Horizon), the black hole's surface growing directly proportional to the volume of the bodies it swallows (Jacob D Bekenstein, Gerard 't Hooft, Leonard Susskind, Juan Maldacena, Stephen Hawking, et al.). So, black holes inside galaxies, like the black holes inside subatomic particles, are basically nothing more than information gathering mechanisms.

All of these black holes acting as information nodes forming a quantum network or hologram (spacetime) where the holographic plate is the two dimensional surface of the event horizon and the non-dimensional object (singularity) in the center of each body acting as their energy source.

Right, all that missing mass (aka., Dark Matter) is now being considered by contemporary physics to be contained by empty space itself, probably in the form of infinitesimally small black holes in the center of neutrons, protons, electrons, and the rest of all subatomic particles. Which is how all matter is connected to the whole. Current physics' description of black holes, singularities and the gravitational aether being actually very similar.



Octopus Wormhole  
Olena Shmahalo/Quanta Magazine

It is a radically holistic view of reality where entanglement is seen as the glue that keeps the universe from atomizing. Entanglement made possible by the aether's oneness.

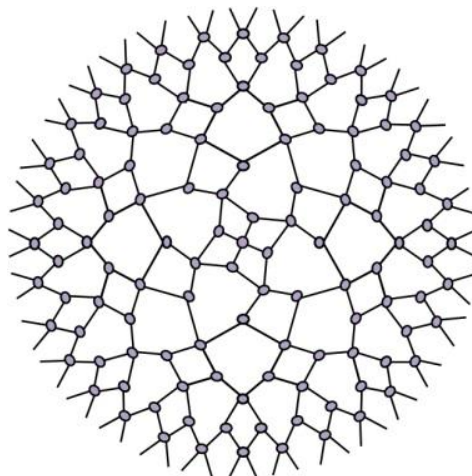
## 7. Gravity, Inertia, and Mass

Today, space is not the same thing 19th and early 20th century physicists viewed as space. Back then, there were no CBR, nor Wheeler's quantum foam. Now, space is considered to be material, a collection of small particles. Space is now chock full of particles, most of which are photons and zero point radiation. This is why modern physics now say space is grainy.

Cosmic background radiation and other particles fill the observable universe. What I call aether is before this material space, it is what Einstein called, the gravitational aether. The gravitational field (aka., aether), as described by Einstein, being continuous, not quantized, as Wheeler's Quantum Foam is. Reality is built on quantized structures. Matter is always quantized but sits on the gravitational field, which is continuous.

In this view, particles in spacetime are gathered and organized by matter waves (morphic fields), as matter crystallizes, or condenses into atoms, molecules, cells... etc. Quantum matter (Q-bits) continuously flowing into matter as it is quantized and carried by concentric, spherical standing waves. EMR radiating from and into matter in a constant exchange of information about its objective state and its relation to surrounding objects in spacetime.

First there is the quantum vacuum, which is made of virtual particles billions of times smaller than any neutron or proton. Tiny particles which are not spinning, but pulsating in and out of spacetime. Then come the bigger and more stable particles, which are made out of the space foam they are continuously feeding from. This inwardly flow of space foam being what causes gravitation, spin and all those vortices (Penrose's spin networks) many are trying to understand. Spacetime formed by a tensor network, with gravitational waves being the result of tensor fluctuations... that's the current view.



Tensor Network

Compared to the previously shown 3D image of a crystal lattice, in this 2D representation the filaments connecting the entangled particles are now seen as the same strings String Theory talks about. In Quantum Gravity Theory these are called tensors. In my view, these are information highways.

## Gravity

According to the theory, gravitation started the moment the Big Bang occurred, with gravity acting as a negentropic force always trying to put spacetime back into a singularity.

First of all, let gravity, gravitation, and gravitational waves be three different things. Gravity being a fundamental force, while gravitation and gravitational waves just the products of that force. The way I see it, gravity starts at the aether level as stress-energy tensors and lines of force are formed. Space particles (quantum matter, or Q-bits) being carried by matter-selective, inwardly flowing quanta (Gravitons?) in a gravitational current, the same way electrons are carried by an electromotive force. The center of each particle acting as a sink, or miniature black hole. Wave packet collapse being closely related to gravity (Quantum Gravity).

Imagine the first particle as a point-like object pulsating at a very high frequency in an endless quest for thermal efficiency and equilibrium. Each time it pulsates forming a wave-front pushing outwards, driven out by the force of anti-gravity (aka., Dark Energy), which then contracts as the wave is pulled back in by the force of gravity. This pulsation, or vibration, causing this space (quantum foam) inwardly flow we know as gravitation. This motion seen as an information gathering mechanism in which the wave front is where the information is being stored at.

You can visualize the fundamental particle as a bubble that inflates and deflates as it pops in and out of nothingness (AKA., Einstein's gravitational aether). Which is how most visualize Wheeler's Quantum Foam: as a bubbling soup, the bubbles being virtual particles, and the soup the gravitational field. Bubbles made of energy. Remember, energy is space in motion. Space being stretched, which is where the stress-energy tensor comes from. As the bubble inflates, space is being stretched out, until gravity wins and collapses it. While the bubble inflates, space and time are being created. Before the bubble, there is neither space, nor time, all there is is aether, which is pure energy. Energy which is neither hot, nor bright... until the bubbling starts.

Gravitation coming from a pressure differential in material space caused by the constant radial flow of matter waves into bodies with mass, as quantum matter condenses and crystallizes into its objective state. Gravitational waves being just the ripples (tensor fluctuations) being caused by the motion of the bodies floating in this sea of particles.

Picture two bodies, like the Earth and the Moon, now imagine space flowing into each body at the same time: that causes gravitation. Because there is space flowing in opposite directions, which causes a decrease in material space density, there is a drop in pressure that makes both objects drift toward each other. That is also how we get tide movement: the Moon casts a shadow as it blocks space flow to the Earth, causing gravitic pressure to drop between the two bodies and consequently causing the sea level to rise where the shadow is being cast.

Gravitation being caused by radial space/information flow, as photons in hyperspace are converted into matter by an autopoietic process driven by logic and the laws of Thermodynamics. Massless bosons, full of information, being used to support the structure of



already existing matter, in spacetime. Space being viewed as q-bits of information (J.D. Bekenstein, Stephen Wolfram, Lee Smolin, Gerard 't Hooft, Leonard Susskind, et al.).

### **Speed of Gravity**

Some wonder if gravity travels and at what speed, but the truth is that gravity does not move, gravitons do. Claiming that gravity moves is like claiming that the electromagnetic field moves, when in reality, what moves are photons. Same with gravity, what moves are gravitons. Gravity (the gravitational field) has no need to move, it is everywhere.

### **Dark Energy**

Today, Dark Energy is seen as anti-gravity, or gravity that pushes spacetime out, instead of pulling it back in. Why now? Because of a change in the energy density of the universe, change caused by all the condensation of space that has transpired to this date. An accelerated expansion seen as a result of too much condensation, or too much matter and too many black holes in the same vicinity.

### **Inertia**

Inertia, as conceived by Galileo, meant a resistance to change, and process is synonymous to change. Reality is process, and inertia is a product of this process.

The force of inertia, or momentum, that force we feel pushing as we come to a traffic stop, comes from the drag produced as the energy parameters between space, a moving mass, and the surrounding masses synchronize. There is a time delay as matter reaches thermal equilibrium with its surroundings, and we experience it as inertia. This is the nature of Timothy Boyer's thermal equilibrium spectrum. It takes time for any moving object to reach thermal equilibrium with its surroundings, as it jumps from inertial frame to inertial frame, in spacetime. Each inertial frame being, in reality, marked by the collapse of each matter wave front, like a quantum clock.

Inwardly flowing matter waves bring some of the information necessary for each quantization before reaching each successive inertial frame's objective state. Each object having its own rate, its own wavelength, or its own pulse, so to speak. Therefore inertia may be viewed as the drag caused by this radial space flow process and the time it takes to occur.

Inertia is the result of aether drag: a change in space flow rate, into and from the particle, as the particle moves through space. It comes from the tension created by changes in space flow rate as a material system accelerates within the chaotic medium.

As required by the equivalency and relativity principles, there is a momentum/information exchange between particles and space, through EMR, as they continuously reset their spatial relationships. (Unruh-Davies radiation and Timothy Boyer's thermal equilibrium spectrum.) When a particle is moving at a constant rate there is no information lag being created by the space/information flow occurring within the particle. Its spatial, energetic, and geometrical relationships remain constant, but as the particle is accelerated, the energetic and geometrical relationships between the particle and space will be in a constant state of change, causing this space flow tension we call inertia.

While a particle is moving at a constant speed and all the geometrical parameters are set, it will not experience any inertial forces, but as it accelerates and the relationships change, it needs to keep re-adjusting to its new energy/space consumption settings. This is why relativistic effects are so real. When accelerated in relation to other particles, space shrinks, time slows down, and mass (process) increases within the particle. This happens in order for the particle to balance its energy usage in momentum space, and to maintain its relationship to spacetime in accordance to energy conservation laws.

To us, at the Classical level, it seems as if it became a bunch of unrelated separated entities, but in reality it is all connected through the all-pervading aether. Even the most desolated regions of the universe are part of the one single process that started it all. Simply because in reality there is only one process, a universe from where a myriad of interdependent information nodes (objects) formed to become apparently separated systems, everything that moves will experience inertial forces.

## Mass

Mass is caused by the continuous internal process occurring within matter, as space/information radially flows towards the center of all matter.

Information about a material system must be contained within the system, it does not come from anywhere else in space. The only external information being brought to the system by EM waves is about the momentum and location of the particles in relation to the world. These systems are comprised by particles and their particular standing matter waves. Particles being selected, quantized, and turned into parts by standing matter waves as space particles condense into the particle/system. The parts, not the information, to construct and maintain the system intact as it moves through the medium come from the chaotic hyperspace. Wheeler's Quantum Foam is the material space from where, through a process of wave superposition and quantum decoherence, new geometrical information is created and incorporated into the system as it moves through spacetime.

The way I see it, the so-called Higgs field is just another name for Einstein's gravitational aether. Mass being the result of matter's field interactions within itself and the space in which it sits, hence the Higgs mechanism. Matter is a continuous, time dependent, and thermodynamically open, self-organizing process. Particles, as they move through Wheeler's Quantum Foam, need to

continuously re-ordinate the space that constitutes them. They are in constant motion, continuously processing space/information. Matter is formed by this process, and mass increases directly proportional to the amount of process. This is why the denser a particle is, or the faster it moves in relation to other objects, the more massive it becomes. Mass is directly proportional to process.

*(Continued on Part III)*