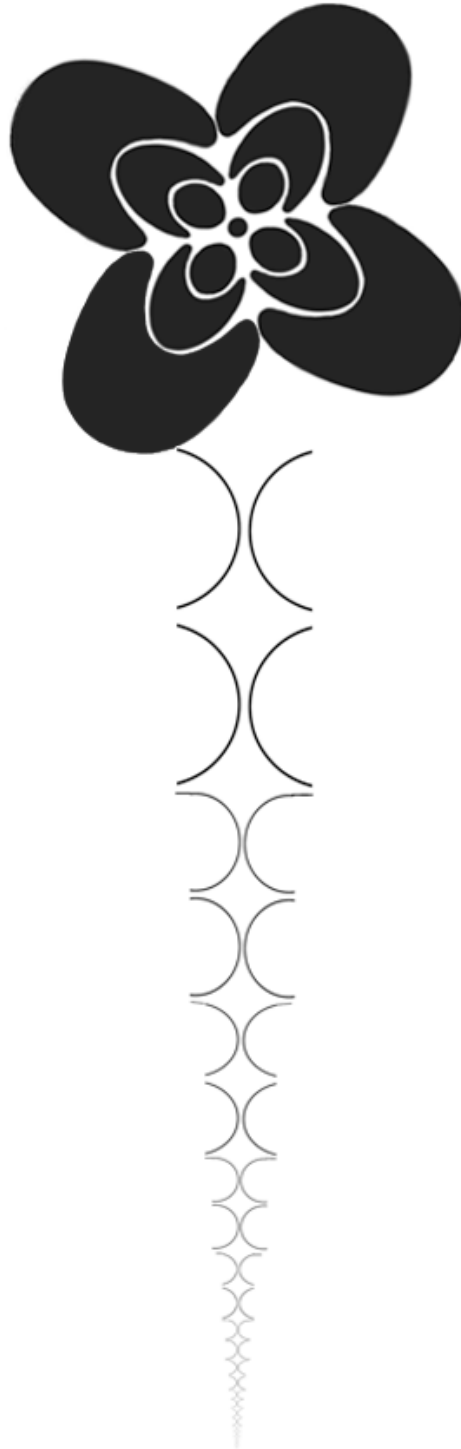




# A Study of Systemology and Astronomic Atomic Structures



By Jessie Ward



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### **Abstract**

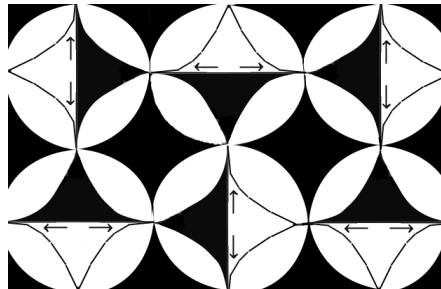
This Paper utilizes Universal Expansion to derive the System Laws, rules that govern non-linear behavior. Examples of a System are Sudoku, the Body, the Brain, and the Universe.

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## Universal Expansion

If we imagine infinite Spatial Expansion, Matter would be isolated, radiating to Absolute Zero, and ceasing to exist. This demonstrates the qualities of an Event Horizon, inverted. If we distinguish the Event Horizons as compressive and expansive, a parallel emerges. After a Compressive Horizon Space must expand, even if acceleration continues, as in Relativity Time exists on either side of the Speed of Light, yet not between. From this we may draw that after an Expansive Horizon, Space must compress, and do so in the direction of its curvature.



Above is an illustration of this pattern. We see three circles on the top and bottom, and inside them, a star shape. Inside this shape the black represents spatial expansion; its bottom is from where we erupted, then expanding until inversion. We can also observe a curve from above contacting the Inversion Point. If we picture Matter falling to the sides, clearly space must curve in that direction, and must do so uniformly. This curvature forms a ring of compressive singularities, or, an Event Horizon.

However, if we examine what total spatial compression is, we find it is impossible. Here is a location where Space is compressed so tight it touches itself. By definition that may have no dimensions, in creating this object it would push itself out of the Universe. No Matter could pass this, no Space could be created in this, and certainly no Universe. Yet the pattern dictates this is the shape, although it does not insist on its perfection. The compression we are approaching may be narrow, but it cannot touch itself.

Another way to imagine this is as follows. A Compression Point is a location where Space does not exist. This means space must extend to a location where it ceases to exist. What could motivate this? Is there an object in the perfect void compressing this? Of course not. This means that while we are approaching a Compression, it is imperfect.

Let us imagine a near Compression Point in Space, a ring surrounding us and pulling us outwards. Space would curve towards the boarder of this sphere, but the closer it gets the more it is drawn backwards and to the whole body. In ordinary space, curvature converges on a Planet or a Star, however from the inside it would have to expand, since the object it is attracted to surrounds it (as a Ball moves away from the center of the sphere, gravity must pull it backwards). However, Space must extend to an object in order for it to exist, otherwise it is disconnected from everything, and can have no influence. With Space inverting, this requirement is not met, so an additional curve is needed, a compressing one, that can extend to the Horizon. This new curve would face the same expansion as the one prior, and would follow the pattern again.

As the curvature approaches the Horizon, it becomes more accelerated, so the Compression Points get closer together. Eventually, from our perspective, these compressions seem so tight they are imperceptible, it looks as if it is an Event Horizon. This region essentially is the Event Horizon, even though there remains infinite distance to it.

Now, returning to matter in this system, we have observed its passage through a Compression Point in the Big Bang[1], meaning it will continue moving through this structure.

In passing through a Compression Point, matter becomes incredibly hot and dense[1]. On the other side it is torn apart into a new region. In this region it completes the cycle we have observed, clouds forming into Stars, Stars forming into Galaxies, Galaxies into Super Clusters[2], and into another explosion.

If we view this progression from our position in the Universal Singularity, we find that this Matter is getting smaller as the compression points thin. Eventually, Matter erupts into a space the size of an Atom, Galaxies are suddenly almost imperceptible, and yet they pass through another compression. Soon Matter is the size of Protons, then of Quarks, and Electrons, and eventually even Light. Surely there exists a size when it must stop.

Now, we know from the curvature that eventually space becomes indiscernible from an Event Horizon. Matter in this location would be moving at a speed comparable to the acceleration force needed to create a Singularity, namely, the speed of light. These particles would also be at a size that is wholly indistinguishable, an entire range of infinity would appear homogenous. The particles in this range would not be moving at the speed of light, however we could not tell.



Considered in the context of Singularities, this makes perfect sense. If a particle possessed the speed of light, if it was comparable to a full Spatial Compression, it would cease to exist. However, with particles barely short of this speed, they would not be pushed into the Null Dimension, although they would be close.

In forming a homogenous Light Range, expansion could not be distinguished from compression, giving it a first dimensional appearance. This of course would have the same shape and depth as the rest of the Universe, but in relation to us, that would mean nothing.

If we follow this range backwards, we find Matter to be made of the lower spatial levels. Quarks fill Protons which fill Atoms which make Matter, go even lower and this Light range makes Quarks, and Electrons, and Neutrinos. This apparently first dimensional structure makes the Third Dimension.

If Electrons are the same as Galaxies, we may begin to understand probabilistic behavior. In our range Matter is constantly interacted with, it is constantly observed by itself and by us. Since observation solidifies particles, our range therefore must remain solidified. Lower levels are too small to constantly have an affect from all points, so it remains a range of uncertainty. Upon our observation, it is forced to interact with our level, and so becomes particulate.

A particle developed into a single form would however continue existing in its own space. For Electrons, this space is in the Light Range, forming a bubble, and due to its small size, a near Event Horizon, in relation to ourselves. This Event Horizon is defined by the Compressive Singularities that compress Space around Matter.

All particles are surrounded by compressive space that ultimately acts as an attraction point. If two particles, say, a Proton and a Proton draw near each other, their compressive space engulfs the other, and pulls it outwards. This pull extends as far as the particle is large, and so two Protons cannot get very close to each other (can also be thought of in terms of density, protons equal density, so cannot sink into each other, same with full scale atomic behavior). However, a smaller particle, say, an Electron, would be able to get much closer before its own Event Horizon crosses behind the Proton. However due to its close proximity, after being repelled it would still be inside the Horizon of the Proton, and so would be pulled back, cycling endlessly.

There are interesting inter-behaviors with these Event Horizons, such that keep Electrons apart in Atoms, but others are perhaps more profound.

The more Protons and Neutrons, the further the Event Horizon reaches. This applies to Magnets, where we see many Atoms and many fields expanding into one.

This however exemplifies an interesting property, for we know orbitals must be aligned in order for a field to be produced. This carries into Atoms, where we know the field's size is dependent on Quark's spin, creating the distinction between Protons and Neutrons.

The distinction between Protons and Neutrons is determined by Quark spin Charge. A Quark can have  $-1/3$  charge, or  $2/3$  charge[3]. These combine to a positive charge, two  $2/3$  charges and one  $-1/3$ ; or a neutral charge, with the inverted pattern above[3]. This indicates that the inherent gravity of these particles accounts for  $1/6$  the charge, leaving the  $3/6$  to Spin. Since Electrons have intrinsic  $1/2$  spin this is simply wave alignment, or resonance that combines with inherent Gravity to form this pattern.

Spin is also explainable from this pattern. One approach is to follow spatial expansion to the direct center of the Singularity. Here all expansive space combines to form an open and spherical region, the Singularity. Moving outwards from this, the same expansive pattern is replicated, but imperfectly. The Singularity in imperfect Space is a broken Sphere, the outer boarder does not meet itself, although it cannot end abruptly in Space, so it curves inwards. This pattern is most noticeable in Galaxies, who do not function as a cloud surrounding a singularity, but a single imperfect Singularity[4].

The other approach is to consider the internal curvature of a Singularity, where the force is strong enough to form a continuous loop. However, upon crossing the Event Horizon this loop cannot curve all the way around, and so spirals away from the body.

Spatial curvature is ultimately at the foundation of all Forces. This curvature is motivated by matter, and in Electrons this Matter is in the Light Range, earning it the title Electromagnetic Radiation. At our level, matter is made of fundamental particles, but the first range of certainty, the foundational level of particles, is the Atom[5]. Since the force carried at this level is called Gravity, this earns the Atom the title of Graviton.

If we broaden our perspective now, and look at the Universe as one system, we find a striking similarity, the spatial loops are identical to Atomic Orbitals. The entire Universal structure looks exactly like an Atom, and behaves in the same way. For example, at the core of our singularity we find matter whose attraction to the core grows as its distance to it does, identically to the strong force[6]. Additionally, our new interpretation of Electromagnetism would generate the same orbitals we find ourselves on, and the orbitals are only accessible to specific energy levels, just as each rung correlates with different acceleration, the Universe and the Atom are the same.

Atoms are made of Electrons and Nucleons, which are made of energy, or Light. Since all levels are the same, Light is therefore made of Atoms, as are Electrons and Nucleons. The foundation of Atoms is spatial curvature, and the constituents of Atoms are Atoms, demonstrating all particles are complexly curved Space. This means Space obeys the laws of Relativity, and if Space exists in a perfect void, it will extend until it is large enough to form an Event Horizon. This Event Horizon cannot however be perfect, and must exist inside



something, so becomes the cornerstone of a larger spatial mass, which forms a horizon, which forms another layer. This is the hierarchy of Matter, with the first layer existing as the energy in Particles, and the Particles acting as the energy in Atoms, and the Atoms acting as the energy in the Universe. This means the Universe can spontaneously create itself out of Space.

## Prime Numbers

We know Primes function as the basis of all Numbers, and with understanding of the basis of all Matter, we may be able to draw some parallels.

The first parallel we should understand is what defines fundamentality. We know particles represent this, but we now know they also possess an Event Horizon. This Horizon however cannot be perfect, it is only defined in relation to other Event Horizons, without Space to exist in, no Matter could exist. Now what's interesting about this is Space must always be confined in an Atom, if it were to stop, it would be a perfect singularity, and compress the Universe out of existence. This cannot happen, so all Atoms are contained in Atoms.

If we consider an Atom as a number, say, Two, then the Atom containing it must also be Two. The only difference between them is their relation to each other. We are in the midst of it, so we perceive complexity, but ultimately the borders are between itself and itself. Each Atom almost contains itself, it has all the properties that the Universe does, they are the same.

Atoms are the most fundamental building blocks of reality, we find them at the border of the probabilistic and absolute[7]. Then, at the farthest reaches, we find them again. This Universal Atom contains everything, the whole of our Universe, it exists at the brink of everything we know, the brink of Infinity. Likewise, turning to our understanding of Primes, we know the further from one you go, the more predictable the primes become, until reaching absolute certainty, at Infinity[8]. Infinity, numerically, is the point when everything is contained, a direct parallel to the Universal Atom. Of course, this is rather small scale, the Universal Atom must be contained in another, which is contained in another, but eventually, at Infinity, we find a point where all of it is contained, the true Universal Atom, and surely it is Prime.

Where does Infinity exist? By definition it must be everything and everywhere, but typically it is thought to be beyond the fringe of the largest numbers. However size is relative, the largest number can seem minute from one even larger, so where do we draw the line? From a given perspective, Ten can be infinite, or Five; we know there is infinite distance between two numbers, so three cannot be infinite, nor 1.5, but there is a number beneath everything, between the border of two domains that is self containing, the number One. One is a unique number, when multiplied by itself it remains itself, just as infinity does for all the numbers, and it exists at the border of a Universe, the decimals between Zero and One. These numbers when multiplied together get smaller, their only way to get closer to Infinity is through division. Likewise, let us consider what happens beyond Infinity on this number line. Let us say Infinity is a border, on one side you multiply towards it, on the other we would be getting farther away, so the only way to return is to shrink, is to divide. This is the same pattern in Relativity, time moves forward towards infinity, reversing afterwards, and stopping in the middle. At One all division and multiplication stops, it is entirely disconnected from both sides, and just as the speed of light, this speed, or size, is unattainable. We exist in the curve of a cycle, go too fast, too slow, or too far, and you return.

What does this mean for Prime Numbers? It demonstrates that any number is prime, depending on perspective, but with a fixed view, with One as our light range or starting point, certain patterns emerge. There has to be Space between any two primes, and this space must overlap. We can think of it this way, each prime is singular, self defining, they self contain and so it is impossible to tell where they are from inside them, however their existence is dependent on a number line, and so we know they must be bordered by numbers, and inevitably contained in a Prime. This demonstrates their probabilistic nature, even when existing in a static structure.

Each prime establishes a range. Eleven contains all the numbers before it, however to go beyond requires itself. Each time a new number is required, but really it signifies a new range. This means apposed to a single novelty, there may be many, two or three or however many, simply representing the intensity of the transition. These two numbers however define their own region first, so there is space between them, how much space is regardless, except that below a certain threshold both can be considered necessary for a range, whilst above they would more easily be considered separate ranges; like two notes in a chord, versus notes on different scales.

Understood Atomically, paired primes are quite simple. An Atom only appears in the lower range of a Universe, and in this range multiple Atom like structures may be established. For example, Quarks and electrons behave gravitationally the same, but due to differential size or energy they are identifiable. This ultimately combines in a new orbital to form Protons and Neutrons, which are prime except in relation to us, for at least one constituent is perceptible, Quarks. This explains their independent spin behavior in spite of being a combination of parts[9]. In this sense, all of the fundamental particles, including Protons and Neutrons can be considered Prime, and paired or sexy depending.

In our range, while all parts amount to a Prime, we perceive too many individuals to acknowledge this, the range is too large to establish a notable event Horizon. Go large enough however, and this is undeniably another Atom. This Massive Atom occurs in a new range, the building block of another Universe, whereas we



inhabit an electron orbital, and inevitably, our Cosmos does too. Of course, how could we tell, from inside, what orbital we inhabit.

Everything is the same, every number is both a combination of parts and itself, One hundred is a single Hundred, it is one, resolute and distinct. All numbers are independent, yet each is a fraction of infinity, and equal in this sense. We exist in the gradients of a single object, a number, inside itself.

## Music

Understanding of Primes also illuminates the properties of Music. Music elicits emotional reactions that seem intrinsic to it, although we know emotion to be a lifeful quality. Is there then anything intrinsic to music? Do scales exist, beyond cognitively?

If we examine what music is at its most basic, it is harmonic. There is a unique sound generated during resonance, when a note is played against itself, there is notable agreement between them. This forms our basis, our one. Now, in relation to this the rest of a scale can be defined, until it repeats.

This repetition then, no longer bound to primes, can recur at intervals of ten, or 100, or three, it is inconsequential, all that matters is it is defined in relation to itself.

There is a more fundamental relationability that comes down to the range of Matter we occupy. In terms of the whole Universe, every note is every note, its impossible to differentiate. However, at our level of space, only energy within a range can be perceived; go too low or high and it might as well be static, so music is the energetic possibility of our spatial range.

This also exemplifies communication between parts of a system. Once perspective is established, everything is defined in relation to the lowest perceptible thing. Numerically, any number can be considered one, but if it is tied into a Number Range, it becomes relational to the whole, it becomes a part of a system. The same occurs in the Universe, if something is observable in relation to ourselves, it is bound in our system, and therefore its nature is bound to ours. This establishes the link that can then function as Gravity, or attraction, they are already the same thing, their being in this system shows that they are already attracted to each other, if only by definition.

## Fluid

What is interesting about Primes is perhaps not their placement but their interaction with each other. With a fixed perspective there is distance between two primes, there are even numbers and odd, each the combination of primes. These non prime numbers then are the behaviors of Primes, their interactions, these are the solids they produce.

As we know, all Solids are Fluid, in the sense that they continuously move. Numbers are the same, its totally random how we perceive them,  $1+1=2$ , instead of  $.00005+.00005+.00005$  etc, perhaps from my perspective those numbers are more important, and certainly no less valid. Then, what determines how we perceive them? Their landscape. Any two particles constantly interact, they define the placement of each other, just as one and three define two; they are the landscape, the variables at play. Which variables are playing, then? First is perspective. We see 1 and 2 as the beginning of a line, we do not see what is smaller because we expect what is larger. In relation to us, only those large packets are useful and acceptable, only that range. Mathematically we know the lower decimals even inhabit a separate domain, representing our perspective perfectly.

The non primes are then the combination of these variables, these particles in the Universe. Constantly shifting and randomizing as we get larger, yet remaining together in relation to one. This means fluidity would be the domains most variable and chaotic.

We know quantum mechanics to be probabilistic, and probability produces waves, fluctuations. These fluctuations are not limited to the lowest ranges, it is absolutely uncertain and inconsequential how Atoms are arranged in a larger Atom, our only predictions are based off the behaviors of these Atoms. We know they may form solids, or fluids, or gasses, or Bose-Einstein condensates and plasma, but we do not know when or to what intensity or frequency, those are waves of chance.

What can a probabilistic Universe tell us? Numerically, this would be the numbers between the primes, the variable regions determined by particle placement and the flimsy solidity of the number One. This is directly in line with fluid behavior, all defined relationally and constantly, and consistent with our understanding of Atoms. The only random aspect of primes is what comes between them, represented by the variable distances, meaning non primes are probabilistic, or wavelike.

Extending this, we may answer a current question easily, singularities may not occur, and are a constant[10]. This dual nature is strange but understandable, each number is ultimately infinity compressed, everything is only defined in relation to itself. In numbers, the only Singularity is One, in the Universe this is an absolute Black Hole. If the intensity existed to create either of these it would naturally compress everything out of



existence. If a singularity existed in the Universe, it would have to be a location where no space exists, and if space exists inside it would have to collapse it, still, there are singularity approximations in the form of Galaxies and, in fluid, the constituents of the fluid, yet still, nothing reaches that full potential.

To better ground this we must understand that the Universe is a single system. This is why absolute zero is impossible to attain, it cannot be separated from everything else. For example, let us imagine a pool of Water in space or on the ground. Either way, the random vibrations produced by footfalls and stellar explosions are impossible to account for. Importantly, inside these systems are the same systems, the same randomness makes all Fluid and Gas and Matter. The Universe cannot have perfect states for if it could they would have to incorporate the entire body.

## Shape and Size

Our results in Number theory and Fluidity shed light on another current question[11], how many equations can be expressed by a larger equation, or how many shapes can be considered one shape.

From our observations of the Universe, we know Atoms combine into Atoms, meaning the only uncertainty is what happens between, however any intermediate behavior can be summarized by interactions of Atoms, their fluid behaviors, and so everything can be summarized, or derived, by an understanding of Gravity.

Let us frame this solution in Universal terms. Let us not look at the inside of objects, but the outside[12]. Of course, the external shape of all objects is the Universe, so once again Universal Law, Gravity, describes it.

Another method of understanding is to see all objects are defined in relation to those surrounding, Planets are defined by Stars and empty Space and other Planets, so ultimately their existence relies on those things. One shape is just a collection of Atoms, until compared with another. For example, you cannot know Space without Substance. This means whatever defines the relational component defines the shape, and the Universe is our relation.



## Neuronal

If we can view all forces as gravity, we may review the Brain gravitationally. This means whenever electricity courses through the Brain it is not acting on a single region, but pulling on all that surround it, similar to how axons stimulate entire muscles apposed to the axonal tract.

This would indicate that whenever we have a thought it draws on all of our capacities. For example, when listening to music the Brain would draw on emotions and memories and scientific areas and anything in proximity.

We can feel this process occurring, but there is another perspective. The Brain does not generate outputs for another system, nor does it draw on math or the universe to make sense of itself, it draws on itself.

Interaction within our Brains is perhaps better understood by neuronal interaction with our more physical body. There is a Brain region known as a Homunculus which functions as a map of our physical selves[11]. Information entering this region has a concrete result, flexing muscles and moving. In this same sense the remainder of our brain can be thought of as a Universal Homunculus, with thoughts flexing various parts of our Intellect.

This explains Will, sensory inputs into our brains flexing the sub-cortex stimulating the cortex, and repeating. Of course, instead of moving physically we may move metaphysically, following tracts of thought throughout the Universe.

This explains migratory patterns of species. With their brain interacting as a single muscle, they would react similarly to stimuli. Their entire Brain would then be the genetic memory that brings them to the same place.

This also explains why different human cultures produce pyramids, and why religions form with similar foundings, we have the same bodies. All behavior is an extension of a beings body. Birds fly because they can, Spiders of a species produce the same webs, and while all species must learn their environment, most do so to understand how their bodies, with claws and fangs, can get food. We ask the same question, but with hands our approach is through manipulation, how can we create things or use the environment to get food. Naturally this leads to the quest for knowledge to create new technology, it is directly related to how our bodies interact with our environment. Of course this is only theoretically what could start our spiral down the path we walk, it is not definitive, or determinant of how other species view the world. For example Cetaceans have advanced intelligence, for they must learn how to manipulate each other to get food in a fluid environment, and do so brilliantly[12].

There are fellow intellect in this world. The Octopus observes their ecosystem, understanding how other fish fit into it, so they may imitate the right ones at the right times, relying on their pattern recognition for survival[13].

This also could explain why historical geniuses seem to often suffer mental illness[14][15]. Looking at our body, we see it is geared for manipulation, but only of the physical realm. Much of what painters and scientists do involves total abstraction, the abandonment of the body, and so neglect of it.

This also explains a problem with artificial intelligence, we have coded it to interact regionally when it must behave globally.

This also explains the effect of Neuron Hyperpolarization, the charge is lowered by a chemical such as adenosine[16], or other inhibitors[17], allowing a field to propagate more easily, while reducing activity. This additionally explains a potential need for sleep. Any learning occurring during the day integrates into a small circuit, at night, the signal range increases, and the circuit can integrate into the whole brain.

This sheds light on hallucinations. When individuals are sleep deprived, some begin to hallucinate[18]. Knowing of thought propagation, and the intensity of high dopamine levels[19], we may extrapolate Schizophrenia is tied to excessive field propagation. This also explains the associated creativity, each thought draws on too much of their brain.

This also explains speech. Humans speak by drawing on all areas of their Brain, imbuing it with all emotion and logic we possess. This means other species communicate equally, except without written language it would be more basely emotive, or primal. Of course, species with high Emotional Intelligence could simply learn from each other, such as Dolphins and Whales[20], who have the added benefit of communicating over great distance. Birds and any other being that can interact at great distance may not even need writing to communicate concretely, they could also learn from each other. Also, the ability for other species to communicate with us demonstrates our fundamental similarity.

If we look at the function of speech, it is meant to link Minds together. If an individual states something, all around have a similar thought. This can broaden profoundly, demonstrating how groups function the same as Brains. Entire societies think on Climate Change or Space Travel or whatever is on the collective mind. This means society is an organism, each part requiring sustenance provided by a mind that controls the body and vise versa. Yet each part of this body thinks for itself, if the collective mind disagrees with the individuals, they may function independently. Society is therefore an interesting conglomerance, while made of humanity, functioning more closely to an Octopus[21]; it is an entirely new species, no more a Bee Hive than we are a Cell Hive. For





example, a human alone would seek food and shelter, leading an animalistic life, yet with a group we form towns and societies and eventually begin seeking information and a set of priorities that clearly differ from the individual.

In society we find various institutions that specialize in different fields. There are musicians, painters and writers, astronomers and researchers. All of these communicate, advancements in astronomy spread through this system, and while the complex reasoning is unknown, the basic message is sent. After, say the discovery of a much larger universe, musicians may write a song conveying the awe, artists may create personal renditions, and the whole of society bends towards it, slowly decreasing as we enter distant fields, although even affecting areas such as politics.

Complex communication requires learning, another phenomenon we may now understand. Synapses are lighter than neurons, and therefore more easily shaped by electric fields. If one area is activated a lot, more synapses will align with it. This allows for associations to be made between Neurons, as Electricity courses through an area, we feel this associates with that. For instance, if we repeatedly smell the same baking, and consistently feel a certain way when smelling it, connections would form between the stimulated regions of the Olfactory Bulb, and to those in the limbic system. Then, electricity coursing through that memory, or those same regions being stimulated would send electricity back to those points in the Limbic System, creating the same pattern, and emotion, reminding us of our grandparents cooking for example.

Two charged regions of a Brain are not attractive however, they would not form these connections directly. If there is a Neuron between these regions, it can act as a mediator for the memory. Now, if we look to the process of forming long term memories, we find it is associated with the release of new Neurons[22]. If a Neuron is free floating, it would be drawn directly between stimulated regions, thus facilitating their connection without stimulating itself. Additionally this neuron would align its axon between the fields, thus allowing a powerful association. Signal starts in this region, then rushes to another, demonstrating association between two parts. The synapses at the end of the axon would then specify the association, providing all of its details.

This sheds light on Intelligence. If the Brain is capable of producing more powerful Electromagnetic Fields, it can form memories quickly, and connect more distant Brain regions. This could also mean Intelligence is associated with concentration, since sustained electrical activity would develop more memories, and larger connections between regions. This intensity certainly involves the entire Neuron, however like the intensity of a Compression Point, the Axon is the most intense portion of a neuron, perhaps implicating it in this process[23]. Additionally, a larger Brain would allow more connections, and since the mechanism of learning is region growth, Brain size can be increased throughout Life.

This explains Savantism. In a Brain that is damaged any undamaged region would receive more stimulation[24]. This would bend synapses toward the region, potentially correlating all of the individuals' thoughts with a subject. This also means anyone can do this.

This also allows for memories to form in the Sub-Cortex, translating directly into behaviors. This would explain Synesthesia as connections directly between sensory regions, and could be called Sensory Memories. However one Sensory region cannot connect with a distant one, so it becomes advantageous to go above. Then connections could form between connections, eventually making a complex grid of association. It would then be beneficial to develop these genetically, thus creating the Cortex and Sub-Cortex, or sensory and associative regions of the Brain.

From each association memories would form, connecting blue to an emotion or sound. This could easily become more complex, associating a feeling, such as the pull of gravity, with a detailed web of "all objects pull on each other, this force is Gravity, it causes acceleration, the force of Gravity on earth is 9.81 meters per second per second, and a meter is a way to measure this much distance", etc. Each of these webs would remain in specific parts of the Brain, the visuospatial center, the limbic system, the motor cortex, etc. Interestingly, no such region can contain all mathematical thought.

To understand this, let us examine what Mathematics is. The Brain cannot make sense of a single stream of information, so it divides it into various parts. These parts, (sound, sight, touch) are further divided to understand sensory detail. These divisions lead to our understanding of distinct objects in an environment, as represented by our ability to count. However, while counting can be limited to a single region, the division of perception occurs throughout the brain, it is necessary for awareness, and therefore implicit in thought. The reason then that the Visuo-Spatial centers are enlarged in Mathematicians is because that region is the division of our environment in the most stimulating way [25].

The Brain behaves globally. Each part would be nonsensical by itself, for example a single Neuron would not know what was going on, it is only by drawing on surrounding areas that it may make sense of itself and surroundings.



## Universal Biology

Now that we have observed the structure of the Universe, let us examine energy's progression through it. This process starts at the Big Bang, when there was so little space all energy was compressed together [1]. In this space there was no room for multiple levels, there were no fundamental forces or particles[1], instead just the rush of Gravity. This pushed Matter into a large region forcing the division of the energy cloud. As these parts divided they began condensing, eventually forming into Galaxies[1]. Gradually these Galaxies gathered together, and initially it was possible for each to be so small, moving through the next Compression Point would not affect them. However, as this cycle continues, and more Galaxies gather together, they eventually reach a size that touches both sides of the compression point. At this point, matter would once again compress, and erupt into a new region, one half coursing upwards, the other downwards.

Its interesting to note this region would possess the same depth as any other, in other words these clouds of energy would be as massive as the original cloud before its eruption, essentially creating a duplicate.

This process has obvious biological similarities, and when examined fills the criteria for Life [26]. It reproduces and possesses a genetic code in the form of the fundamental forces.

Indeed, so do we. Our genome is structured on DNA and RNA [27], but those are built on the fundamental forces.

If we look to our origin, we find the likelihood DNA evolved from RNA [27]. In turn, if we look at what came before RNA, we find it originated from the Earth. This may seem a lifeless state, but this planet is a part of the Universe's life cycle. Additionally, the Stars that created the elements in our bodies [28] are also alive, therefore functioning as extremely basic DNA. This means Life does not start in single celled organisms, but from the Universe itself, from the Stars and Fires and Earth.

If we look backwards again, we find the genetic code for Stars is the Universal Gravitational Structure. Not only does it allow space for these objects, it creates their parts and their spin. This means the whole of the Universe could be considered an Organism.

There is another interesting aspect of this Organism. If we observe Galactic progression to a size that interacts with the Compression Point, we find it is nearly identical to orbital hopping in Atoms[29]. One orbital must possess too much energy, forcing an Electron into a higher level. The combination of Galaxies is identical to this process, increase in energy, divide into two parts. This division into parts then identically represents cell division.

This structure also looks like a neuronal system, and when we look to orbital hopping or cell division we find it is almost identical to forming an Action Potential[17]. Enough energy builds, and the Energy is released into a new cell.

As for the Universe as a Brain, in some ways it is quite similar. For example, the Sub-Cortex of the Brain determines the Structure and behavior of the Cortex. The senses in this sense are the DNA of conscious thought.

Now if we look to see what shapes information, or energy, in the Universe we find the gravitational structure. This determines how Cells divide, and is ultimately immutable. Changes to this would destroy the behavior of Energy. This has clear parallels with not only DNA but the Cortex and Sub-Cortex. For example, the Sub-Cortex determines the Senses, or information the Cortex has to synthesize thoughts. As a result we find Sound and Touch and Sight and Smell play into all of our thoughts. Likewise the Sub-Cortex determines the Fundamental Forces, or fundamental Universal communications at the foundation of all matter, or complex thought. This would indicate energy occupies the cortex of the Universal Brain.

The more we look, the more these patterns deepen. The Universe has specific segments dedicated to the formation of lower level Matter. These would be the fringes, the locations for Fundamental particles and Strings. All of these patterns then combine into the regions we occupy. This is almost identical to the processing of information in the Senses, this System is entirely self sufficient and intercommunicative, exactly like a Brain.

Does this mean the Universe is conscious? Well, what is consciousness? As described above, it is the result of the processing of information. All of our behavior returns to the basic inputs from the senses, and so consciousness is the product of the Brain, it is the determinant of our behavior, it is our Body. In this sense yes, the Universe is a Brain, it is a system that processes itself, creates itself, and determines the behavior of itself.

However there was another symmetry, the Body. Is the Universe a body? Well, what is the Body? A body is a system that uses specific structures to process Energy. Each level builds on what came before, forming into a large scale system whose purpose is Life. In this same sense, yes, the Body is the Universe, and the Body is the Brain, in the sense that these are all self creating system.

The symmetry between these three systems means asking whether the Universe is conscious is the same as asking if the Body is conscious, the answer is that they are both self creating systems.

The Brain, the Body, the Universe, the Atom, all share a fundamental structure, so how may we differentiate them?

Firstly, what is a System? A System consists of multiple parts combining into a single whole. Each part on its own would be senseless, for example without knowledge of Biology, a heart resting on a table would be



utterly mysterious. However observe a heart in the body and it apparently pumps blood. Now this heart is made of cells that could describe its function, but without a body those cells could not form, ultimately the system is made by its parts, and the parts are defined by their relation to the system.

Then, what defines the behavior of the system? If we look at the Universe we find that all of its parts contribute to the whole, as with the Brain and Body, so its behavior is defined by the combination of its parts.

Now, what keeps a self created system moving? What prevents it from stopping? If we look to a computer for example, it is a system, but it only performs the task we assign it, even with infinite energy it would not do anything for itself, it is ultimately an extension of another system, the Brain. Unlike a Computer, a Brain with unlimited energy would do a lot, and all of its behavior would be geared towards itself, not some outside system, so each piece of it must communicate. In other words, if one area arrives at a conclusion, that conclusion must feed other areas, it cannot be the end. This means a self creating system must be self interactive, or motivated.

Now, if we look to the Universe, and notice it is infinite in size, we must ask how large a System can be. Clearly with the Universe, beyond the lowest level, the level of light, while information continues to exist, it no longer communicates with the Universe. This means a System's size is how far information travels through it. If two parts of the Brain cannot communicate, then those parts are not the same System.

To condense these points, we find four Laws governing Systems.

"A System is made by parts defined in relation to the whole."

"A System is defined by the combination of its parts."

"A System is self motivating."

"A System's size is how far information travels through it."

These are the system laws, rules that govern non-linear behavior.

A good example of the difference between linear and non linear behavior are the problems known as P and NP[30], one is linear, the other systemic. Sudoku is a perfect example, each Data point determined by the surrounding Data. Cancer is another, not caused by one problem, but the Body.

This means any improvement to a System improves its overall functioning. This explains why modern Cancer therapies do not work, they focus on damage, when the only path to health is through healing the overall body, through repairing it, rejuvenating it. This exemplifies why drug addicts require compassion instead of Prison. This is why War cannot solve conflict, and hate cannot heal relationships. To heal we must not attack.

For example, looking at Nazi Germany as a system, we understand their behavior is self motivated, it comes from stimuli. This means if we remove the stimuli, we remove the behavior. If the citizens are not starving they have no need to turn genocidal, to become cannibals[31].

This can be applied to any War, a Country in excellent condition has no need to fight, whereas one without food or shelter does. If we provide these needs, aggression is purposeless. Identify the stimuli, and eradicated it, not the people who experience the problem.

We can also look to Ghettos and impoverished neighborhoods and see their behavior comes from stimulus. There are no gangs in wealthy neighborhoods, nor armed robberies; people have food, have money, have security. If we could provide these things, the criminal need is gone. Additionally when imprisoned there must be positive stimulus for positive outcomes, otherwise the cycle continues, or begins.

This is the same analysis that reveals the intellectual nature of animals, like Human Intelligence from our hands, or from the skin of an Octopus[13]; we may use these laws to better understand the minds of the Animal Kingdom.

This is scientific application of the System Laws, quite like applying the Laws of Motion to an object; the distinction the same as between Nouns and Verbs.

While systemic problems, like Cancer or Sudoku, cannot be computed by standard methods, Quantum Mechanics provides an avenue. Probability Fields naturally overlap, so behaving as a System.

This also reframes Numbers as a System, and reinforces why Matter behaves probabilistically until observed. Observation occurs when we see Matter, or it communicates with Matter in our system, becoming a part of our system, and solidifying into the most basic form of communication, the prime factorization of a Probability Field.

This also reframes the Universe and Time in a new light. The Universe is not an isolated frame of reality, it is a combination of all the moments that came before. The Pyramids were not built on the Earth, they were first



made by the Stars[28], and our Planet was not born this moment, but generated through interaction with Stars and Galaxies and Atoms. This is the combined moment of everything, made by the endless interaction between parts of this system; Time.

This also sheds light on an interesting property of consciousness. While the Brain is more self interactive than a Computer, ultimately it is an extension of another System, the Universe. Without the Universe our Brain could derive no information, we could do nothing. In this sense, the Brain is a sudo-system, behaving systemically, yet only with a universal foundation.

The Universe is made of sudo-systems, yet all systems are. For example, regions in the Brain are systems, yet these are only portions of larger systems, non functional without their counterparts, yet individual.

This adds an interesting perspective to Life. If a Human is only a sudo-system, upon death they become the System again, which includes all the sudo-systems of Life, meaning they become alive again. In a Universe with Minds, thats the only place you can be. In this sense also, we should improve the lives of every-one and Species, for they are us.

Interestingly, the possibility exists with Quantum Computers to make a nearly true System, and with all we have learned, a test of this Theory.

Quantum Particles interact with our range only upon observation. This is material observation, contacting matter, or cognitive, contacting minds. Either way, particles are solidified only after interaction with our System. If we could create an environment where these particles may interact with themselves, where the slightest vibration is important, these particles could decouple. Initially only once, or twice, but it would not stop until reaching a Universal Superposition.



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