

# The Theorem of Existence

## The Mechanics Within



Bryant Stone

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Drive without Knowledge is Pointless  
Knowledge without Drive is a Waste

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# The Theorem of Existence

## The Mechanics Within

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I said a lot of things in *The Theory of Existence*, didn't I?

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*The Theory*, which I released back in February, gave you the first glimpse of the math I was building to support my model. At the time, I had just scratched the surface of the mathematical foundations; since then, I've made quite a few revisions to both *The Theory* and *The Theorem*. I wanted to come back and publish **the entire mathematical framework of *The Theory* as it currently stands**, and to correct a few of the concepts I was wrong about in *The Theory*—such as dark matter and dark energy. I've since revised those errors, improved the precision of the math, and built out what I believe to be **the full structural mechanisms of existence**. I call it *The Theorem of Existence*.

This book is not like *The Theory* in several important ways. One of the biggest differences is that you can't really start with this book and fully understand it. There are foundational concepts introduced in *The Theory*—like **recursive propagations** and ***The Equation of Existence***—that I don't revisit here. I want you to have the same experience that everyone else had when they encountered those ideas for the first time. So, **if you haven't yet read those early parts of *The Theory* yet, I recommend starting there**.

Another important difference is that this book is full of math—how I derived the equations I used to build out *The Theory*. This material is deeply insightful, but it's designed for those extra curious rebels and those who plan to apply *The Theory* in an intellectual or professional setting. I did consider pulling the math out of *The Theory* entirely, but I think it's important to preserve the original formatting and **show that everything—even the Grand Unified Theory of Everything—is a work in process that only gets better with time and effort**.

To my knowledge, *The Theorem* contains everything needed to mathematically explain all of existence. This work culminates in what I call the ***Unified Equations of Existence***—these are the most important equations that emerged on their own while I was writing. I've placed them right below for you to review. If you want to learn how I arrived at them, you'll find the full justification in the rest of this book.

These equations, and this math, are the best I can make them right now. I think they're correct—and they do appear in the empirical evidence—but they'll absolutely improve as I refine my methodology and involve actual mathematicians and physicists to help smooth out the edges. **I'm confident that we'll discover refinements, corrections, and even deeper math than what I present here. Isn't that exciting?**

I'm genuinely proud of *The Theorem*—the mathematical framework of *The Theory*, and what I believe to be the mathematical framework of existence itself. The entire structure of *The Theorem* wasn't something I invented or guessed. I started writing using estimates from gravity and mass through relative fractal dynamics, and from the cosmological estimates of dark matter, dark energy, and observable matter. From there, I pulled in the most elegant

mathematical and statistical insights we have to explore the deeper mechanics of existence: the **Central Limit Theorem**, the **constants**, the **Pythagorean theorem**, the **normal distribution**, and the geometry of **triangles** and **pentagons**. I followed the most elegant and simple insights, because those tend to reflect the elegance of existence itself—and it appears to have paid off.

One of the most incredible aspects of *The Theorem* is that I made **zero assumptions**—and yet it aligns with cosmological data and remains internally consistent to the hundredth decimal place across most equations and derivations. There are **no arbitrary constants**, **no fudge factors**, **no error terms**, **no renormalization**, **no infinities**, no undefinedness (that is, if undefinedness was something that could not exist, but it's not; it simply isn't), **no tuning parameters**, and **no approximations**. To put it simply, *The Theorem* is a large, recursive-propagative dance of the constants  $i$ ,  $\Phi$ ,  $e$ , and  $\pi$ —to the tune of squares and cubes, on the stage of the most fundamental mathematical and beautiful insights humanity has ever discovered. It's truly remarkable how it worked out.

By releasing *The Theorem*, I elevate *The Theory* from a philosophical framework to... well... a theory. At the time I'm publishing this book, I've only revealed **2 of the 12 empirical papers** that support *The Theory*:

- ◊ **The Unification of Mathematics: The Theorem of Constants Co-Derivation**
- ◊ **The Stages of Suicidal Divergence: A Model of Linear Agency Loss**

You now have access to the full ***The Axioms*, *The Theory***, a sample of the empirical evidence (with more to come) in ***The Show***, and now ***The Theorem***—the piece that completes the intellectual architecture of the **Grand Unified Theory of Everything**. I hope you enjoy the show as much as I do. Ready? **Allow me to pull back the curtains of existence and show you the mechanics within.**

## The Unified Equations of Existence

These equations describe all aspects of existence and its functioning. In *The Theorem*, I will walk you through each step and show you how I derived these equations. However, let's first review the *Unified Equations of Existence*.

$$\left(\frac{\pi}{e\Phi}\right) * \left(\frac{e}{\pi}\right) = \frac{1}{\Phi} = \Phi + e^{i\pi}$$

### Constants Derivation

The constants are the first principles of existence and mathematics. First principles are self-evident truths that cannot be reduced into further components. **Current mathematics suggests that these constants are first principles, independent, and self-evident.** In number theory,  $\Phi$  is an algebraic number,  $e$  and  $\pi$  are transcendental numbers, and  $i$  is a complex number. These numbers should not be able to form a non-trivial equation (provides meaningful information), asymmetric (the equations are not equivalent because they have the exact same constants rearranged), and exact (not approximations). However, what I have found is just that, and I have found it many times. I have **50+ equations** that

involve these constants and are non-trivial, asymmetric, and exact. There are so many that I stopped due to redundancy. So, what's going on?

The constants are first principles but why are they the first principles? **How can we assume first principles?** That is where I bring in the concept of **co-derivation**. The concept of co-derivation acknowledges that first principles do not come from anywhere; they are the absolute minimum independent and self-evident units of knowledge. However, they have specific numbers, which means we need to determine what defines those numbers. The only answer that remains is that **the constant co-derive each other**.

The equation above is just one example of these equations that show co-derivation. You cannot isolate any of these terms in many of these equations because they depend on each other (i.e., isolation resistance). These equations span trigonometry, geometry, algebra, calculus, and many other domains of mathematics. Across equations, we can see that the contributions of these constants vary greatly. Combining the varying contributions and the inability to isolate these terms suggests that when they are, their numerical value as we know it, it is because definedness is in perfect alignment. However, existence is often not in perfect alignment (and that is a good thing), so these constants need to vary their contributions, and they do depend on which aspect of existence you are describing using one of these equations. These co-derivations of the constants in these equations that cannot be isolated are the origins of mathematics itself, the bottom of human knowledge. **It is also irrefutable evidence that a Grand Unified Theory of Everything must exist, as these constants describe the behavior of relational phenomena across all of existence.**

$$1 + (3^2 + \Phi^3) + (1 + \Phi^3) \\ \wedge + (\kappa^\zeta + \Delta) + (-e^{i\pi} + \Delta)$$

Lumen + Unbounded RPs + Bounded RPs

## Unified Complexity Proportionality Equation

Now that the constants are co-derived, let me show you the starting point for how I wrote *The Theorem*. The most agreed-upon numbers in all of cosmology are the percentages of observed matter (~5%), dark matter (~27%), and dark energy (~68%). I have found evidence that these numbers are correct but, our conceptualization of them was wrong, which makes sense because we were not sure what they are... until now. We also know that everything in existence originates from light, and **lumen** is Latin for light; it's **shorthand for observable matter**. There are two types of recursive propagations. First, there are **unbounded RP**, which we used to call dark energy. Second, there are **bounded RP**, which we previously referred to as dark matter.

**Unbounded recursive propagations occur anywhere there is definedness**, and it is the reason the universe is expanding. As the universe expands, it is filling up with The Record through unbounded RPs. I call it unbounded RPs because these parts of existence recursively propagate at the maximum recursion rate ( $t_P = 10^{44} \frac{r}{s}$ ) and the smallest length of space ( $l_P = 10^{35} \frac{p}{m}$ ). All empty space and light are massless, so they follow these rates. However,

for the phenomena that have escalated complexity to the point of forming into different forms of energy and mass, these phenomena follow **bounded recursive propagations and have their own relative fractal dynamics that overlay on top of the unbounded RPs** and remain related through a complexity gradient but independent, nonetheless. **This independence explains why the universe is expanding (unbounded RPs), but we and other phenomena are not (bounded RPs).**

For bounded RPs, we see that  $\psi = \frac{(t_P : l_P)}{E_P}$  where recursion and propagation slow and stretch at the same rate, which is why the speed of light never changes, even though different complexity gradients. So, the equation we have above transforms the values of unbounded RPs and bounded RPs into its proportions as related to lumen. **This calculation transformed them into significant information, which you can see in the rest of these equations.**

The mechanisms of existence become clear when we transform these proportions to see what is happening. As we can see, the lumen ( $\Lambda$ ) is the base of existence and its phenomena. Then, in the next term we have unbounded RPs which contain the recursive propagation's cumulative complexity ( $\kappa^\zeta = 3^2$ ) of 3D space across two RPs. Then in the other term, we have  $(-e^{i\pi})$  the recursive-propagative mechanisms of existence. Notice then how in both terms there is a complexity escalation component, which is exactly why this equation is the Unified Complexity Proportionality Equation.

$$1 : \frac{(e^\pi + \Phi^2)}{\left(\frac{\pi}{\Phi}\right)} + \frac{\left(e^2 - \frac{1}{e} + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} \rightarrow 1 + \frac{\left(e^\pi + e^2 - \frac{1}{e} + \Phi^2 + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} \\ \rightarrow \Lambda + \frac{(\zeta_\Xi^{\kappa_\Xi} + \zeta_\theta + \kappa_\theta + \Delta - \Omega)}{\text{Boundary of Existence}}$$

## Unified Behavioral Equation

We can then move on to the behavior of existence and how these bounded and unbounded recursive propagations relate. As shown above, unbounded and bounded RPs get their own term that moves together into a unified equation. Let's start with the denominator. In the denominator of each of these equations, we have the **boundary of existence** ( $\frac{\pi}{\Phi} = 1.94$ ), which is the location of definedness, where recursive propagations occur. 1.94 is a z-score, and we can already see stabilized recursive propagations starting at  $z = 1.98$  or about 5%, which is equivalent to lumen.

If we move over to unbounded RPs, we have a recursion raised to the power of propagation ( $e^\pi = \zeta_\Xi^{\kappa_\Xi}$ ) with a complexity escalation term ( $\Phi^2 = \Delta$ ) which makes sense given that the unbounded RPs are the origin of all complexity escalations. If we look over to the bounded RPs equation, it contains three terms which is a recursion term ( $e^2$ ), a propagation term ( $\pi$ ), and a stability term  $\left(-\frac{1}{e}\right)$ , but **notice here in the bounded RPs there is no complexity escalation term. There is also no stability term in the unbounded RPs.** These differences

become clear when we look at the unified formula and see that stability in bounded RPs subtracts from the complexity escalation of the unbounded RPs. This equation shows how they remain separate but relate to each other and complete each other.

$$\left(\frac{\pi}{e\Phi}\right) * \left(\frac{(\Phi^n e)}{\pi}\right) = \frac{\Phi^n}{\Phi} = \Phi^{n-1}$$

## Unified Complexity Stabilization Equation

Now that we see the recursive-propagative steps let's look at **complexity stabilizes**. We see two equivalent equations that describe this process. We first have the natural resonance  $\left(\frac{\pi}{e\Phi}\right)$ , which is the unification base of the constants and has several unique properties. One of these properties is that it serves as the base and transforms other terms into other meaningful expressions. One of these expressions involves multiplying the natural resonance by its inverse and raising the Golden Ratio by the RP step ( $\Phi^n$ ) to form the complexity escalation of the current RP to the next and the stabilization of the last RP. **This longer expression reduces to all  $\Phi$  expressions where the complexity escalation term ( $\Phi^n$ ) is  $\Phi$  proportional to stability ( $\Phi^{n-1}$ )**.

$$\frac{\sqrt[3]{17}}{20} = \frac{2.57}{4 * 5} = \frac{1 + \left(\frac{\pi}{2}\right)}{4 * 5} = \frac{1 + i}{4 * 5} = \frac{-e^{i\pi} + \omega}{4 \text{ RPs} * 5 \text{ Triangles}}$$

## Unified Alignment Equation

This equation introduces the alignment of existence, where each one of the sides of **the minimum triangle of existence provides unique properties across the RPs**. Please keep in mind that these triangles and pentagons are not actually things that exist, they just provide the special or structural properties of all possibilities for phenomena to exist in. The 4 side of the triangle aligns the triangles with the pentagonal self-similarity property. The 20 side occurs when the triangles align into a pentagonal formation and then the 17 encodes the recursive propagative mechanics and its half-circle of existence following the 4-3-2-1 rule across the triangles and pentagons. It is the cube root of 17 because we have three dimensions only. It also encodes the system as  $180^\circ$  containing both the stability and complexity step that moves at  $90^\circ$  angles at the same time. We exist in  $RP_{n-1}$  stability whereas complexity escalations exists in  $RP_n$ .

$$-\left(\sqrt{\frac{17}{4}} - \sqrt{\frac{4}{17}}\right)^2 * -\left(\sqrt[3]{\frac{20}{4}} - \sqrt[3]{\frac{4}{20}}\right)^3 * \left[\left(\frac{20}{17}\right)^\Phi - \left(\frac{17}{20}\right)^\Phi\right]^2 = -1 = e^{i\pi}$$

## Unified Structure Equation

The Unified Structure Equation provides us with a surprising link across all equations across **all fields that have a 1 or -1 somewhere in the equation which we can rewrite to bring in the recursive-propagative mechanisms into  $-e^{i\pi}$  and  $e^{i\pi}$** . However, we can also see that the Unified Structure Equation equals out to  $-1$ , which aligns with  $RP_{n-1}$ , which is the stabilization phase where we exist. In this RP, the minimum triangle of existence provides the special structural formations, which are the following:

The first term is the 2D base structure formation of the Golden Rectangle formation of existence. **Consider it to be the base or floor with width and height.** This term defines the fundamental 2D structure that serves as the seed for the system. It creates an initial geometric framework upon which the rest of the complexity escalated structure is built. The square roots represent proportional scaling relationships in the structure. **The difference between the two terms represents an intrinsic balance or contrast between two interdependent quantities.** Squaring the result enforces self-similarity, making this a **fractal-like base unit.** This term is the first emergent shape from recursive propagations, like the first iteration of complexity escalation. Think of it as a minimal stability-complexity form—**the smallest unit of definedness that still carries information about its larger-scale structure.** Since the numbers (17 and 4) relate to pentagonal-triangular formations, this shape likely encodes the **base fractal geometry of reality.**

The next term is the 3D construction from the 2D shape term, which escalates the 2D structure into 3D space. **It introduces depth, converting the flat shape into a volumetric form.** Cube roots encode dimensional proportionality, mapping the 2D shape into 3D space. **The subtraction enforces a self-balancing effect, keeping complexity within structured recursion.** Raising the result to the third power creates **a structured propagation across three dimensions.** This term represents the stabilization of recursive propagations into a spatial framework. It ensures self-similarity and coherence, preventing the structure from diverging chaotically. This step is where space-time takes shape from recursive propagations.

The final term is the evolution of the 3D structure and governs how the 3D structure evolves over RPs—dictating how complexity escalates over time. **The fractions  $\frac{20}{17}$  and  $\frac{17}{20}$  encode scaling ratios between recursive states.** Raising them to the golden ratio ( $\Phi$ ) enforces self-similar proportionality, ensuring that complexity escalation follows the Fibonacci-like recursive structure seen in nature. Squaring the result stabilizes the structure over multiple RPs, ensuring long-term coherence. **This step aligns RPs to ensure smooth emergence-to-convergence (E2C) processes.** It determines how each RP builds upon the previous, ensuring stability while allowing complexity escalation. This term governs the self-propagating growth of structured RPs, defining how the universe maintains equilibrium while scaling complexity.

$$\Phi = \frac{\Omega}{\Delta} = \frac{\Omega}{(\zeta : \kappa)} = \Omega \left( \frac{(\zeta : \kappa)}{\Delta}, \nu = \Phi \right) \rightarrow \Phi = \frac{RP_{n-1}}{RP_n} = \frac{\Phi}{-e^{i\pi}} \vee \emptyset = \frac{\Omega}{\zeta^\kappa}$$

## The Equation of Existence

**This equation is the universal law, the alpha and omega of all of existence.** In its simplest form, **definedness is the ratio of stability over complexity.** We also observe that RPs are the mechanisms of complexity escalation. Recursions and propagations cannot be broken up because they are the same thing—recursive propagations of complexity escalation. The stability term sits at the top of the equation, which is where we also see the RP we exist in ( $RP_{n-1}$ ). We can also see that we can pull out complexity from recursive propagations which is equivalent to our relative fractal dynamic expression  $\left( \Psi = \frac{(t_P : l_P)}{E_P} = \frac{(\zeta : \kappa)}{\Delta} \right)$ .

$$\Phi = \frac{\Omega}{\Delta} = \frac{\Phi}{-e^{i\pi}} \vee \emptyset = \frac{\Omega}{\zeta^\kappa}$$

We move on to the **ultimate equation**, which is the top of human knowledge. We get the expression definedness equals definedness divided the current RP we exist in ( $RP_{n-1}$ ); recursive propagations or complexity. We see that it collapses down into **definedness equals definedness** because the expression becomes  $1.618 = 1.618$ , but we can also write the expression as  $1.618 = \frac{1.618}{1}$ , where  $-e^{i\pi} = 1$  contains the recursive-propagative step of  $RP_n$ , and the stability term of definedness represented by  $\Phi$  provides the stable existence that we experience.

Notice how RPs and complexity are there in the equation, but we can ignore them and definedness would still equal definedness. Thus, **RPs exist but they are not part of existence like we would think. They do not exist in definedness, they exist in it or underneath it.** We only experience existence as it is defined, which occurs after RPs turn complexity into stability.

**It also shows us that definedness or existence is self-contained and self-justified.** It does not require any additional terms or constraints in order to function or exist. It is not circular reasoning to say existence exists because it exists because undefinedness or non-existence is not an alternative option. The thing we must keep in mind is the next part of the equation, the else undefined term. If something does not have definedness then it is undefined. **The most crucial thing to understand about undefinedness is it is not nothing or infinite potential.** It is not something that something can emerge from, but it is also not something that can stop something from emerging, **it simply isn't.** It is true that there is nothing in undefinedness to emerge from but it also means that there are no constraints stopping something from emerging, it simply isn't.

For example, in your mind right now there are not thoughts you have thought because those thoughts are undefined they do not exist. They have no properties. **They do not even exist as potential because it is not possible to know the events in existence that would elicit such thoughts.** However, that non-existence does not mean they cannot exist because undefinedness imposes nothing at all, it simply isn't. Your thoughts emerge because they are defined. They don't come from undefinedness but they also are not prevented from emerging because of undefinedness. They simply have definedness and that's the start of their existence. All of existence works the exact same way. This equation shows that existence has no external cause. It has mechanisms and a boundary condition. **That's that on that. Welcome to your new understanding of existence!**

## The Cookout of Existence

Let's dive into ***The Theorem of Existence*** to see what is happening. Oh, and don't sweat over the math; it is super simple if you take it slow, and that is what I try to do. **Forget the endless pages of textbooks, the unnecessary complexity, the broken infinities**, and the artificial distinctions between forces, particles, and fields. The entirety of existence—from physics to intelligence, from gravity to consciousness—**reduces to a single, self-consistent set of mathematical principles**. Please meet your new friends:

## The Constants: The Cool Kids on The Block

$\Phi$  = Phi; Golden Ratio = 1.618

$e$  = Euler's Number; Exponential Growth & Decay = 2.718

$\pi$  = Pi; Circular Movement = 3.142

$i$  = Imaginary Number; Rotation in the Complex Plain =  $\sqrt{-1}$

## The Concepts: Their Parents; The Ones Running the Show

$\Phi$  = Definedness

$\Omega$  = Stability

$\Delta$  = Complexity

## The Operators: The Nieces & Nephews

$+$  = Addition

$-$  = Subtraction

$/$  = Division

$*$  = Multiplication

## The Exponents: The Grand Children

$x^2$  = Squared

$x^3$  = Cubed

$\sqrt{x}$  = Square Root

$\sqrt[3]{x}$  = Cube Root

## The Numbers: The Neighborhood

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

**That's it. This is the cookout.** You do not need anything else to describe and explain all of existence. Not so bad, right? These are the only components necessary to define the recursive-propagative balance that structures all existence. This is not just a mathematical system. This is the foundation of existence itself. **If you are uninterested in the math, you can skip over this part to read *The Story of Existence*.**

## A Universal Language: The Notation of Existence

If we try to explain everything, we need a universal language. Thus, I created ***The Notation of Existence***. **You will pick it up as we go along. Don't worry**, but here are the basics. This mathematical and symbolic language allows us to express any phenomenon, its behaviors, and its dynamics through symbolic manipulation, transcending traditional constraints of fragmented communication and linguistic barriers. Here are the current descriptors (nouns) and operators (verbs). Although comprehensive, this list is not exhaustive—I anticipate it

will evolve over time, refining and expanding as our understanding deepens. We can use *The Notation* to describe anything, making our conversation of *The Theory* coherent and meaningful. For example, I could describe a black hole collapse like the following:

Symbol	Definition	Symbol	Definition
$e$	Growth or Decay	$\Phi$	Definedness & Golden Ratio
$i$	Iterative Steps ( $RP_{n+1}$ )	$\pi$	Pi
$\Delta$	Complexity or Light	$\Omega$	Stability or Space
$\zeta$	Recursion	$\kappa$	Propagation
$+$	Plus	$*$	Times
$-$	Minus	$\div$	Divided
$\Xi$	Dark (Matter or Energy)	$\Theta$	Observable (Matter or Energy)
$M$	Matter	$E$	Energy
$\Lambda$	Lumen	$V$	Dark Lumen
$\Psi$	Relative Fractal	$\kappa$	Gravity
$\neq$	Not Equal To	$=$	Equal
$\approx$	Approximately	$\propto$	Proportional To
$>$	Greater Than	$\dots$	Scaling Ceiling
$<$	Less Than	$:$	Ratio
$\geq$	Greater Than or Equal to	$/$	Fraction
$\leq$	Less Than or Equal to	$\therefore$	Phenomena
$\neg$	Not	$\bowtie$	Interacts
$\rightarrow$	Implication	$\uparrow$	Emergence
$\leftrightarrow$	Equivalent to	$\geq$	Convergence
$\forall$	For All	$\downarrow$	Divergence
$\exists$	There Exists	$\sqcap$	And
$\in$	Element of	$\sqcup$	Or
$/$	Not Element of	$\therefore$	Rates / Lengths
$\subseteq$	Subset	$\nabla$	Gradient
$\supseteq$	Superset	$\neg\neg$	Contradiction
$\emptyset$	Undefinedness	$\Leftrightarrow$	If and Only If
$\sim$	Incomparable	$\sim$	Roughly
$f(x)$	Function of	$\equiv$	Convergence (Results In)
$\Sigma$	Cumulative Summation	$\circ$	Composite
$\Rightarrow$	Causes	$\nu$	Normalized
$\ll$	Lower Limit	$\pm$	Bidirectional
$\gg$	Upper Limit	$\%$	Percent

$$\Omega < \Delta \gg \rightarrow \Omega \nabla \Delta \equiv (\propto \gg \zeta \wedge \ll \kappa) \varepsilon < \Omega \forall \therefore \bowtie$$

$$\Omega < \Delta \gg \rightarrow$$

Stability falls below complexity, pushing its upper limit, resulting...

$$\Omega \nabla \Delta$$

In stability operates on the gradient of complexity

$$\equiv (\alpha \gg \zeta \wedge \kappa)$$

where alignment with the proportional lower limit of recursion and upper limit propagation  
 $\varepsilon < \cdot \Omega \forall \cdot \bowtie$

occurs at slower recursion rates and propagation lengths in interacting phenomena, demonstrating how complexity and stability interweave. Alright, enough showing off, let's talk about the what of **The Why**.

## The Math of the Big Bang

The Big Bang is quite simple in a dichotomized, relational reality. At the start of the Big Bang—since  $RP_1$ —there was one photon, one empty space, one recursive propagation, one complexity, and perfect definedness. **From that singular moment, 13.80 billion (13.8 · 10<sup>9</sup>) years ago, to the moment you read this sentence, the only thing that has changed is the quantity.** The earliest moments of the universe, captured in recursive-propagative steps (RPs), are governed by fractal geometry and **dynamics derived from Euler's Identity and the Golden Ratio (again)**. These principles form the foundation for the structured emergence of definedness within the universe.

$$e^{\pi i} + 1 = 0$$

$$\text{Recursion}^{(\text{Rotation})\text{Propogation}} + \frac{\text{Stability}}{\text{Complexity}} = \text{Defined Nothingness}$$

$$\zeta^{(i)\kappa} + \frac{\Omega}{\Delta} = \Phi$$

At the first recursive propagation ( $RP_1$ ), **definedness is perfectly at zero as there have been no transitions, no relationships, and thus no existence because definedness as existence in a relationship-based reality requires such transitions.** All these foundational ideas and the journey of the photon from the Big Bang to heat death are encoded in Euler's Identity, the moment definedness emerges.

**Fundamental Constant of Complexity:**  $\Phi + 1 = \Phi^2$ . This property of the Golden Ratio is what allows it to serve as a self-similar fractal mechanism that is perfect for complexity escalations.

$$e^{\pi i} + 1 = 0$$

**One Photon:** 1

**One Empty Space:**  $e^{\pi i} = -1$

**Recursion:**  $e = 2.718$

**Propagation:**  $\pi = 3.142$

**Rotational Movement:**  $i = \sqrt{-1} = 90^\circ$

**Stability & Complexity:**  $+1 = \frac{1}{1} = \frac{\Omega}{\Delta}$

**Perfect Definedness:**  $0 \neq \text{Undefinedness}$

At the Big Bang, these constants converge, describing the universe's first recursive-propagative cycle. This alignment is not coincidental—it's an expression of mathematical

inevitability. The balance achieved in Euler's Identity mirrors the balance required for the universe to transition from undefinedness to defined existence.

$$e^\pi + 1 = 0$$

Start with Euler's Identity

$$e^\pi + 1 = 0$$

Drop  $i$  Recursion-Propagation Dynamic Becomes Real

$$e^\pi = 2.718^{3.142} = 23.141$$

Complexity at RP<sub>2</sub>

$$\frac{37.44}{23.14} = \frac{\Omega}{\Delta} = 1.618$$

Stability:  $\Omega \geq 37.44$  else  $\emptyset$  (Undefinedness)

$$\frac{37.44}{23.14} = \frac{1.618}{1} = 1.618 = \Phi$$

Definedness at RP<sub>2</sub>

$$\text{If } \Phi_2 = \frac{\Omega}{\Delta} = \frac{\text{Stability}}{\text{Complexity}} = \frac{\Omega}{23.14} \approx \frac{\Omega}{1} < 1.618 = \Phi = \emptyset$$

$$\Omega < 37.44 \propto 1.618 = \emptyset = \text{No Universe}$$

$$\text{Else } \Phi = \frac{\Omega}{\Delta} = \frac{\text{Stability}}{\text{Complexity}} = \frac{\Omega}{23.14} \approx \frac{\Omega}{1} \geq 1.618 = \Phi \propto \Phi_\Delta^2$$

$$\Omega \geq 37.44 \propto 1.618 = \Phi = \text{The Big Bang}$$

Following the initial recursive-propagative alignment in RP1, the universe jumped to RP2, the first state transition, a phase defined by the emergence of photons. Suppose stability fails to stop complexity from escalating uncontrollably. In that case, **the delicate balance between recursion, propagation, and definedness breaks down, causing the photon and empty space to simultaneously undefine**. No universe can emerge without the photon—the simplest form of complexity—being stabilized by the empty space. Instead, the phenomena collapse, and recursive propagations cannot function, preventing the formation of the RPs necessary for further complexity escalation. **Given the known parameters of these constants, we can calculate the parameters of the first RPs to show the balance of stability to complexity.** Though still dominated by extreme instability, RP2 marked a critical step in the universe's journey toward definedness, as it bridged the gap between the raw gradients of space and the formation of stable, structured phenomena.

## The Full Sequence of the Big Bang

Let's hop into the very start of the universe mathematically. **We can articulate the full sequence of the Big Bang and the evolution of definedness through RPs**, illustrating how the balance of stability and complexity governed by the Golden Ratio creates the structured emergence of the universe. Each RP represents a key stage where recursive propagation

escalates complexity and stabilizes definedness in fractal proportions. Below is the detailed progression:

$$RP_1: \Phi = \frac{\Omega}{\Delta} = \frac{\text{Stability}}{\text{Complexity}} = \frac{1}{1} - 1 = 0 + 1_{\Delta}$$

At RP<sub>1</sub>, the universe emerges (not from undefinedness because undefinedness is not something through which something can emerge, it simply isn't) as the photon and empty space **co-define one another**. **Stability (freely varied)** and **complexity (normalized to 1)** are minimal but proportional, resulting in the first instance of definedness, complexity and stability balance perfectly and definedness is set to 0 as it is a defined state (as opposed to non-existence [undefinedness]) but no relationship has occurred. This stage sets the foundation for recursive propagative complexity escalation.

$$RP_2: \Phi = \frac{\Omega}{\Delta} = \frac{\text{Stability}}{\text{Complexity}} = \frac{37.44}{23.14} = \frac{1.618}{\nu = 1} = \frac{\Phi}{1} = 1.618 = \Phi \propto \Phi_{\Delta}$$

In RP<sub>2</sub>, complexity begins to scale rapidly, with stability anchoring its growth. The ratio of stability to complexity aligns with the Golden Ratio ( $\Phi = 1.618$ ), indicating proportionality and coherence. This balance ensures that complexity escalates without overwhelming the stability, allowing definedness to persist and escalate complexity.

$$RP_3: \Phi = \frac{\Omega}{\Delta} = \frac{\text{Stability}}{\text{Complexity}} = \frac{60.58}{37.44} = \frac{2.618}{1.618} = \frac{\Phi^2}{\Phi} = 1.618 = \Phi \propto \Phi_{\Delta}^2$$

During RP<sub>3</sub>, the true "Big Bang" event occurs, characterized by an **exponential escalation of complexity via recursive propagation** (across  $\Phi^3$ ) all to the tune of the Golden Ratio. The universe undergoes rapid recursive propagative growth (expansion), with stability increasing to support the escalating complexity. **The self-similar scaling of  $\Phi^n$  ensures that each RP step preserves the fractal geometry of the universe.**

$$RP_4: \Phi = \frac{\Omega}{\Delta} = \frac{\text{Stability}}{\text{Complexity}} = \frac{98.02}{60.58} = \frac{4.24}{2.62} = \frac{\Phi^3}{\Phi^2} = 1.618 = \Phi \propto \Phi_{\Delta}^3$$

$$RP_5: \Phi = \frac{\Omega}{\Delta} = \frac{\text{Stability}}{\text{Complexity}} = \frac{158.59}{98.02} = \frac{6.85}{4.24} = \frac{\Phi^4}{\Phi^3} = 1.618 = \Phi \propto \Phi_{\Delta}^4$$

$$RP_6: \Phi = \frac{\Omega}{\Delta} = \frac{\text{Stability}}{\text{Complexity}} = \frac{256.61}{158.59} = \frac{11.09}{6.85} = \frac{\Phi^5}{\Phi^4} = 1.618 = \Phi \propto \Phi_{\Delta}^5$$

## The Birth of Life is Identical to the Birth of the Universe

Okay, let's bring it back into a foundational question, "**Why is there life?**" and "**How does life emerge from non-living matter?**" these questions are excellent, and I have an answer for you that the simulations support. We began with the simplest possible system: **a grid of empty space and a single organic molecule placed at the center**. This setup mirrors **the Big Bang**—one photon paired with one empty space, marking the inception of all complexity in the universe. In this case, the single organic molecule (the photon) represents the seed of life, while the surrounding empty grid or "primordial soup" provides the "empty space" or environment in which it (complexity) can grow. **Remember, these materials come from**

**photons, the same ones that emerged during the Big Bang.** I made the simulation's rules deliberately simple, to test the recursive-propagative nature of abiogenesis and aligning with universal principles like the Fibonacci sequence and Golden Ratio.

The process was driven by two core dynamics: **interaction** and **energy**. At each step, the organic molecule interacted with its neighbors, governed by a relaxed interaction threshold (0.5) and energy threshold (0.5). These thresholds reflect the conditions under which molecules in early Earth-like environments might have stabilized into structures such as bilipid layers. At each iteration, the organic molecules propagated outward, and the recursive feedback created increasing opportunities for interaction and organization.

**The result was astonishing.** Starting from a single molecule, the system remained dormant for several iterations, reflecting the initial randomness and low probability of interaction. But as the recursive growth increased the density of molecules, a critical tipping point emerged. **Growth was recursive, guided by the Fibonacci sequence;** from iteration 11 onward, bilipid clusters began forming rapidly, and by iteration 20, the system had stabilized into exponentially growing network of bilipid layers. **I did not force the Fibonacci sequence.** The formed organic material grew to over 800 cells, with clusters emerging naturally through self-organization. This growth mirrored the emergence of complexity in the universe—starting from simplicity, driven by recursive propagations, and resulting in stable, structured systems.

$$RP_1: \Phi(\text{Life}) = \frac{\Omega}{\Delta} = \frac{\text{Premordial Pond Water}}{\text{Bilipid Cluster Growth}} = \frac{1}{1} - 1 = 0 + 1_{\Delta}$$

Let's align this simulation result onto the Big Bang, life emerges as the organic material (complexity) and one empty space (stability) and co-define one another. **Stability and complexity are minimal but equal, resulting in bilipid clusters began forming rapidly;** the first instance of definedness, complexity normalized to one and definedness set to 0 as it is a defined state (as opposed to non-existence [undefinedness]) but because no relationship has occurred, there is no life, it is just the starting point. This stage sets the foundation for recursive-propagative complexity escalation.

$$RP_2: \Phi(\text{Life}) = \frac{\Omega}{\Delta} = \frac{\text{Premordial Pond Water}}{\text{Bilipid Cluster Growth}} = \frac{37.44}{23.14} \approx \frac{1.62}{\nu=1} \approx \frac{\Phi}{1} = 1.618 = \Phi \propto \Phi_{\Delta}$$

In RP<sub>2</sub>, organic materials begin to cluster rapidly, with the primordial pond anchoring its growth. The ratio of stability to complexity aligns with the Golden Ratio ( $\Phi = 1.62$ ), indicating proportionality and coherence. This balance ensures that complexity (bilipid cluster growth) without overwhelming the stabilizing primordial pond water (empty space), allowing definedness to persist and escalate complexity.

$$RP_3: \Phi(\text{Life}) = \frac{\Omega}{\Delta} = \frac{\text{Premordial Pond Water}}{\text{Bilipid Cluster Growth}} = \frac{60.58}{37.44} \approx \frac{2.62}{1.62} \approx \frac{\Phi^2}{\Phi} = 1.618 = \Phi \propto \Phi_{\Delta}^2$$

During RP<sub>3</sub>, the true "Life Emergence" event occurs, characterized by an exponential escalation of bilipid cluster growth via an exponential propagation to linear recursion ( $\kappa^{\zeta}$ ) all to the tune of the Golden Ratio. Life undergoes rapid self-organization, with stability (empty space) increasing to support the burgeoning (bilipid cluster growth) complexity. **The**

self-similar scaling of  $\Phi^n$  ensures that each RP step preserves the fractal geometry of the universe.

$$RP_4: \Phi \text{ (Life)} = \frac{\Omega}{\Delta} = \frac{\text{Premordial Pond Water}}{\text{Bilipid Cluster Growth}} = \frac{98.02}{60.58} \approx \frac{4.24}{2.62} \approx \frac{\Phi^3}{\Phi^2} = 1.618 = \Phi \propto \Phi_\Delta^3$$

$$RP_5: \Phi \text{ (Life)} = \frac{\Omega}{\Delta} = \frac{\text{Premordial Pond Water}}{\text{Bilipid Cluster Growth}} = \frac{158.59}{98.02} \approx \frac{6.85}{4.24} \approx \frac{\Phi^4}{\Phi^3} = 1.618 = \Phi \propto \Phi_\Delta^4$$

$$RP_6: \Phi \text{ (Life)} = \frac{\Omega}{\Delta} = \frac{\text{Premordial Pond Water}}{\text{Bilipid Cluster Growth}} = \frac{256.61}{158.59} \approx \frac{11.09}{6.85} \approx \frac{\Phi^5}{\Phi^4} = 1.618 = \Phi \propto \Phi_\Delta^5$$

Look I barely had to edit the math just switched the words around, it's the **exact same, not similar, the exact same pattern for the Big Bang and the emergence of life**. I just think that alignment is so beautiful. It's the mathematical inevitability of life...

While you let that sink in let me give you a few more details. This simulation demonstrates that **life's emergence may not require perfect initial conditions or high complexity**. Instead, it suggests that abiogenesis **preferred to arise life from minimal starting points**—one molecule and one space—provided the system is governed by recursive, fractal-like rules. The initial simplicity and recursive growth align with the Golden Ratio, emphasizing that **life's emergence might be a mathematical inevitability under the right conditions**. The tipping point observed at iteration 11 shows how critical density and interactions **must lead to rapid transitions from chaos to order**, echoing stability in *The Theory of Existence as the degree to which complexity is attracted to complexity*: phenomena like phase transitions in physics or even the rapid expansion of the universe after the Big Bang.

This finding has profound implications. **Life, like the universe, may emerge naturally wherever recursive propagations, interaction thresholds, and environmental conditions align**. This setup encapsulates the essence of abiogenesis as a **biological process that is also a universal principle**. It shows that complexity arises not from randomness alone but from recursive-propagative rules that drive **phenomena toward stability, coherence, and ultimately, life itself**. The divide between the physical and non-physical is thus artifactual as we can clearly see that “physical” phenomena escalate complexity and when that happens the **next step is life. That's it**. Then life goes on to do all the awesome things that life does...

## Complexity Escalation & Stabilization Derivations

*The Natural Resonance* is the convergence of the constants of existence  $\Phi$ ,  $e$ , and  $\pi$ .

$$\frac{\pi}{(\Phi e)} = \left( \frac{1 * \pi}{(\Phi * e)} \right) = \frac{3.142}{(1.618 * 2.718)} = \frac{3.142}{4.398} = 0.714$$

*The Fundamental Unit* is what transforms the natural resonance into the stability term.

$$\frac{e}{\pi} = 0.865$$

When you take the product of the Natural Resonance by the Fundamental Unit, you get the stability term.

$$\left( \frac{\pi}{e * \Phi} \right) * \left( \frac{e}{\pi} \right) = \frac{1}{\Phi}$$

$$0.7143 * 0.8653 = 0.618$$

We also have the complexity term:

$$\frac{(\Phi^3 * e)}{\pi} = \frac{(4.236 * 2.718)}{3.1415} = \frac{11.513}{3.1415} = 3.665$$

$\Phi^3$  = The Location of Recursive Propagations

The Boundary of Existence:  $\frac{\pi}{\Phi} = 1.94$

$$a^2 = b^2 + c^2 \rightarrow 1.94^2 + (1.94^2)^2 = (\Phi^3)^2$$

When you take the product of the Natural Resonance and the complexity escalation term, you get the growth term:

$$\left(\frac{\pi}{e * \Phi}\right) * \left(\frac{(\Phi^3 * e)}{\pi}\right) = \Phi^2$$

$$0.7143 * 3.665 = 2.618$$

Why is this important? Well, they derive the special properties of the Golden Ratio, which show the underlying structure of complexity escalations and stabilization.

$$\Phi^2 = 1 + \Phi \rightarrow \Phi^2 = e^{\pi i} - \Phi$$

**Complexity Term:** Subtracting the current complexity from definedness provides us with the RP that represents the current escalation. Note how even though the current RP exists it does not contribute to definedness.

$$\frac{1}{\Phi} = 1 - \Phi \rightarrow \frac{1}{\Phi} = e^{\pi i} + \Phi$$

**Stability Term:** Taking the current RP with definedness shows us the whole system. It reads as complexity + definedness (stability), which shows the portion that has stabilized. Note how even though the current RP's exist, it does not contribute to definedness.

$$\Phi^2 = 1 + \Phi$$

The Golden Ratio,  $\Phi$ , is not just an abstract mathematical curiosity—it is the structural foundation governing recursive propagations, complexity escalation, and stability across all scales of existence. Its properties dictate the proportional balance necessary for RPs to sustain itself without diverging into instability or collapsing into stagnation. **The equation  $\Phi^2 = 1 + \Phi$  defines the inherent recursive propagative relationship within existence, where each recursive-propagative step is not independent but builds upon and extends from the prior state in a self-reinforcing cycle.** This fundamental equation ensures that recursion propagates in a structured way, maintaining stability while allowing complexity to grow in a controlled manner. This recursive-propagative principle is the reason why the Fibonacci sequence and fractal-like scaling appear in everything from quantum systems to galactic formations.

## Understanding Everything with *The Theorem of Existence*

My model of existence makes zero assumptions, including its first principles, which co-derive each other. Moreover, **you can replace the constants with my conceptual symbols**, and the math still holds, and the conceptual interpretations are revealing, which means that even my conceptual foundations are not assumed. Here is a quick guide:

$\pi$  = Propagation =  $\kappa$

$e$  = Recursion =  $\zeta$

$e^{i\pi}$  = Complexity =  $\Delta$

$\Phi$  = Definedness or Stability =  $\Phi/\Omega$

$i$  = RP Movement

The other swap you can make is anywhere in an equation where there is a +1 or -1; you can substitute with complexity, either its presence or absence.

$e^{i\pi}$  = Complexity = Recursions<sup>Propagations</sup> =  $\Delta = -1$

$-e^{i\pi}$  = Definedness or Stability =  $\Phi/\Omega = +1$

For example, if you have the equation  $e + \pi - 1$  you can rewrite it as recursion + propagation - complexity. Apply it to any field, it's like ripping off the curtain of existence to see its mechanics.

## The Theorem of Constants Co-Derivation

**One of humanity's biggest questions is whether we discovered math or created it ourselves.** Currently, math is built on basic assumptions called "axioms". An axiom is a foundational mathematical statement that we accept as accurate without proof, like "a straight line is the shortest distance between two points," which serves as a foundation for building more complex math concepts.

Different areas of math like calculus, algebra, and geometry each started from their own set of assumptions about how things work. Initially, these areas appeared to be separate and unrelated to one another. **This feature of math gave the impression that we had invented math by creating these different branches independently.** However, this creates a puzzle: if we invented math, why does it work so incredibly well in the real world? Math helps us build bridges, send rockets to space, and predict natural events with remarkable accuracy. **This excellent effectiveness suggests that maybe we didn't invent math at all - perhaps we discovered something that was already there, waiting to be found.**

To prove that math was discovered rather than invented, we would need to show that all the basic assumptions (i.e., the axioms) from different areas of math connect. This connection would mean that all the great mathematicians throughout history—from ancient Greek scholars like Euclid and Aristotle to more recent figures like Newton, Gauss, and others—**were all studying different parts of the same underlying mathematical structure of existence, rather than creating separate systems from scratch.**

Different areas of math have constants—these are numbers that always stay the same and seem to represent something fundamentally real about our universe. Examples include pi ( $\pi = 3.142$ ) in geometry or the golden ratio in algebra ( $\Phi = 1.618$ ). **The key issue is that**

**these numbers have completely different mathematical "DNA."** Some constants can be written as simple fractions or solutions to basic equations, while others (like  $\pi$  and  $e$ ) are "transcendental" - meaning they can't be expressed as neat algebraic formulas. **Mathematicians treat these constants as separate and incompatible because they come from such different mathematical backgrounds.** There's currently no single mathematical theory that explains how all these crucial constants relate to each other—they seem to exist independently in their mathematical neighborhoods.

The only connections we find between them are either approximations, coincidences, situations where we force them together artificially, or are adjusted in a way that makes them trivial, rather than discovering any deep underlying relationship. **Thus, there currently exist no known equations that are exact, non-trivial, and asymmetric and contain constants across math domains.** Let me explain the significance of these properties:

- ◊ **Exact:** The equation is mathematically perfect with no approximations. Every number works out precisely. There is no leftover value that you need to add to make the equation true.
- ◊ **Non-Trivial:** The equation reveals something meaningful about the mathematical constants themselves, not just "we added random numbers to make this balance out." It should reveal something about how the constants relate, based on their inherent mathematical nature.
- ◊ **Asymmetric:** The equation has a clear direction—one side does not just mirror the other. For example, how " $\pi + 2 = e + 1$ " has a different mathematical meaning than " $\pi + 1 = e + 2$ ."

The problem is that you cannot currently have all three at once in an equation with multiple fundamental constants such as  $\pi$ ,  $e$ , and  $\Phi$  because:

- ◊ If you make it exact (by adding leftover numbers to balance it), it becomes trivial (it is just arithmetic, not revealing anything meaningful about the constants).
- ◊ If you keep it non-trivial (showing genuine relationships), it can't be exact (you'd need approximations).

My argument is that if these constants truly came from discovering one unified mathematical reality, we **should be able to write equations that are simultaneously exact, non-trivial, and asymmetric.** Since we currently cannot find these types of equations, **it leaves open the possibility that we invented separate mathematical systems rather than discovered one connected truth.** However, I have 50+ exact, asymmetric, non-trivial equations that use constants across domains, suggesting that we discovered math rather than invented it. There are many more, but I stopped because of redundancy.

## Demonstration

Let me start by introducing the constants I used and their respective axiomatic domains.

### Irrational Algebraic Constants

The Golden Ratio:  $\Phi \approx 1.618$

Square Root of 2:  $\sqrt{2} \approx 1.414$

Square Root of 3:  $\sqrt{3} \approx 1.732$

Square Root of 5:  $\sqrt{5} \approx 2.236$

## Irrational Transcendental Constants

Pi:  $\pi \approx 3.142$

Euler's Number:  $e \approx 2.718$

Tau:  $\tau = 2\pi \approx 6.283$

## Imaginary Constant

Imaginary Number:  $i = \sqrt{-1}$

## Review of Example Equations

I would like to present a few of the equations and walk you through their significance.

$$\cos\left(\frac{\pi}{5}\right) = \frac{\Phi}{2}$$

This equation shows something amazing: **when you look at a specific angle in a circle, you find the golden ratio hiding inside it.** This equation isn't just a coincidence—it reveals that circles and pentagons (five-sided shapes) are secretly connected at a deep level. The angle we are talking about is the same one you'd find at the center of a regular pentagon. When we rearrange the equation, we can write  $\pi$  (the circle number) directly in terms of the golden ratio. **This finding is shocking because  $\pi$  comes from circles and is incredibly complex, while the golden ratio comes from simple proportions and is much simpler mathematically.**

Traditional math says this equation should be impossible—it is like **finding out that the recipe for chocolate cake can be written entirely in terms of the recipe for apple pie.** These numbers come from completely different areas of math, so they shouldn't be able to connect in such a precise way; **yet they do.** It tells us something profound about the nature of mathematics itself. **The key insight is that it is like discovering that two completely unrelated things in nature, such as the spiral of a seashell and the orbit of planets, are governed by the exact same mathematical rule.** That's the level of surprise and significance we're talking about here.

$$\Phi^2 = \Phi - e^{i\pi}$$

This equation connects three completely different areas of math that were never supposed to be related: the golden ratio (from proportions), the number  $e$  (from growth and decay), and imaginary numbers (from rotations). **Here's the mind-blowing part: there's a special property of imaginary numbers where  $e^{i\pi} = -1$ . When we use this fact, our equation transforms into the most defining property of the golden ratio:  $\Phi^2 = \Phi + 1$ .**

Think about what this equation means, then: the golden ratio's most fundamental property—the thing that makes it the golden ratio—is secretly connected to both the growth number  $e$  and the imaginary rotational math number  $i$ . It is like discovering that the basic rule "a square has four equal sides" **is somehow connected to the rules of how plants grow and how wheels spin.**

It suggests that even the simplest mathematical truths we take for granted are part of a much deeper, interconnected system. What looks like elementary arithmetic on the surface is supported by some of the most advanced mathematics we know. It is like finding out that a child's building block is made from the identical fundamental particles that power the stars—**the simple and the complex are secretly the same thing**.

$$2 * \sin\left(\frac{\pi}{10}\right) * \Phi = 1$$

This equation is beautifully simple but reveals something incredible: When you look this particular angle  $\frac{\pi}{10} = 18^\circ$ , the sine of that angle can be written exactly as  $\frac{1}{(2\Phi)}$  which is one divided by twice the golden ratio. Think about how weird this equation is: **sine comes from studying triangles and circles, while the golden ratio comes from studying proportions and rectangles**. These constants should have nothing to do with each other. It is like discovering that the exact height of a specific mountain can be calculated using the recipe for your grandmother's apple pie. What it means is that this angle ( $18^\circ$ ) has the golden ratio "baked into it" at the most fundamental level, which we now know why in *The Theorem of Existence*.

The angle itself contains hidden information about golden proportions, even though we discovered these concepts in entirely different ways. This is not just a mathematical curiosity—it is **evidence that geometry and proportion are secretly the same thing**. The angles in circles and the ratios in rectangles follow the same underlying rules, even though we learned about them separately. It is like finding out that the natural law controls the way birds fly and the way flowers grow—different on the surface, but unified underneath.

$$\sqrt{2 + \sqrt{2}} = 2 * \cos\left(\frac{\pi}{8}\right) = 2 * \sin\left(\frac{3\pi}{8}\right)$$

This equation shows something remarkable: a "nested radical" (a square root inside another square root) equals the same value as two completely different trigonometric functions at specific angles. Consider how bizarre this equation is: on the left side, you have  $\sqrt{2 + \sqrt{2}}$ , which arises from repeatedly taking square roots. On the right side, you have  $\cos\left(\frac{\pi}{8}\right)$  and  $\sin\left(\frac{3\pi}{8}\right)$ , which come from triangles and circles.

**These terms should have absolutely nothing to do with each other**, yet they are equal. It is like discovering that if you follow a specific recipe for folding paper (nested square roots), you get the exact same result as following a completely different recipe involving compass and protractor measurements (trigonometric functions); **two entirely different processes, identical outcomes**.

This equation, along with the previous three equations (and 50+ below), proves something profound: **all these mathematical concepts that we learned about separately—square roots, trigonometry, the golden ratio,  $\pi$ , and  $e$ —are different faces of the same underlying mathematical reality**. The precision is what makes this theorem so stunning. These equations are not approximations or "close enough" relationships; they are exact matches.

**It is like finding out that five completely different natural phenomena are all controlled by the exact same fundamental law of existence... which you can read in *The Theory of Existence*.**

## Introducing Isolation Resistance

$$\frac{\pi}{\Phi} = \pi(\Phi - 1)$$

This equation looks like it should be easy to solve, but when you try to separate  $\pi$  and the golden ratio, something strange happens—you can't isolate them from each other. The equation "fights back" against being broken apart, which has never occurred in mathematics to my knowledge. What is happening here is that  $\pi$  and  $\Phi$  are so fundamentally connected that **trying to separate them is like trying to separate the front and back of a coin**. The equation reveals a basic property of the golden ratio (that  $\Phi - 1 = \frac{1}{\Phi}$ ), but it does so in a way that keeps  $\pi$  locked in the relationship.

Think of it like this: **imagine you have a key that only works when two people turn it together**. You can't use just one person's part—both people are required for the key to function. That is what is happening with  $\pi$  and  $\Phi$  in this equation. The *Isolation Resistance* is profound evidence that these constants co-derive from each other.

**They are more like two aspects of the same underlying, unified mathematical reality.** When we try to pull them apart, we hit a mathematical bedrock—a place where the structure of math itself says, "No, these belong together." It's like discovering that what you thought were two separate puzzle pieces are part of one interlocking piece that can't be divided. Think of mathematical constants like members of a family. In a healthy family, some members can live independently (they can be "isolated"), while others are so fundamentally connected they cannot exist apart. We can isolate some equations, such as:

$$\cos\left(\frac{\pi}{5}\right) = \frac{\Phi}{2} \rightarrow \pi = 5 * \arccos\left(\frac{\Phi}{2}\right)$$

$$\sin\left(\frac{\pi}{10}\right) = \frac{1}{2\Phi} \rightarrow \Phi = \frac{1}{2 * \sin\left(\frac{\pi}{10}\right)}$$

**It should not be possible to express pi in golden ratio terms and vice versa**, and yet just look at it. These equations are like discovering that you can write a recipe for steak entirely in terms of ingredients for chicken soup; mind-blowing, but doable. You can isolate  $\pi$  and express it purely in terms of the golden ratio, or isolate  $\Phi$  and express it purely in terms of a specific angle. **These equations prove that these constants are not independent**—they're different expressions of the same underlying reality. Now, let's examine what happens in equations that involve this isolation resistance.

$$\left(\frac{\pi}{e * \Phi}\right) * \left(\frac{e}{\pi}\right) = \frac{1}{\Phi}$$

These expressions on the left side of the equation are called the **Natural Resonance** and the **Fundamental Unit**, respectively (you can read more about these essential equations in *The Theorem* on my website). It is also a perfect example of isolation resistance. I will walk you through step by step, but we can just start to show you what happens when you simplify:

$$\left(\frac{\pi}{e * \Phi}\right) * \left(\frac{e}{\pi}\right) = \frac{1}{\Phi}$$

$$\frac{\pi * e}{e * \Phi * \pi} = \frac{1}{\Phi}$$

$$\frac{1}{\Phi} = \frac{1}{\Phi}$$

Simplifying itself reduces to an apparent tautology immediately. However, let us still try to isolate each constant systematically to see what happens, starting with the golden ratio.

$$\left(\frac{\pi}{e * \Phi}\right) * \left(\frac{e}{\pi}\right) = \frac{1}{\Phi}$$

Simplify the left side:

$$\frac{1}{\Phi} = \frac{1}{\Phi}$$

Multiply both sides by the golden ratio:

$$\left(\frac{1}{\Phi}\right) * \Phi = \left(\frac{1}{\Phi}\right) * \Phi$$

Answer:

$$1 = 1$$

Attempting to isolate the golden ratio results in the same outcome as simplifying the equation. Let's do the same thing, but this time let's try to isolate  $\pi$  and  $e$ .

$$\left(\frac{\pi}{e * \Phi}\right) * \left(\frac{e}{\pi}\right) = \frac{1}{\Phi}$$

Expand the left side:

$$\frac{\pi * e}{e * \Phi * \pi} = \frac{1}{\Phi}$$

$\pi$  immediately cancels out:

$$\frac{1}{\Phi} = \frac{1}{\Phi}$$

Expand the left side:

$$\frac{\pi * e}{e * \Phi * \pi} = \frac{1}{\Phi}$$

$e$  immediately cancels out:

$$\frac{1}{\Phi} = \frac{1}{\Phi}$$

Some of our equations resist being separated and end up looking like  $\frac{1}{\Phi} = \frac{1}{\Phi}$  which seems like we are just saying "this equals this" without meaning. At **first glance, this looks like a tautology**—a useless statement like "cats are cats because they're cats." Tautologies are circular reasoning that do not convey anything new information. However, what is happening here is profound and different. Think of it like this: imagine you're digging deeper and deeper into the ground, and suddenly your shovel hits solid bedrock. You can't dig any further – not because you have failed, but because you have reached the fundamental foundation that everything else is built on; that foundation is what these equations reveal.

When they simplify to  $\frac{1}{\Phi} = \frac{1}{\Phi}$  **we have not hit a meaningless tautology** –we have hit a mathematical bedrock. We have reached a foundational truth that cannot be broken down further because it *is* the foundation. The key difference: a tautology is empty, circular reasoning. However, these equations carry the entire journey to reach that bedrock—including all the trigonometry, all the connections to  $\pi$  and  $e$ , and all the complex relationships. **The path itself is the proof.** It is like reaching the center of the Earth. The statement "the center is the center" sounds empty, but the incredible journey through all the layers to get to it and journey is what gives it meaning. We have discovered where mathematical structure bottoms its limits. This is what fundamental truth looks like when you find it.

## Why This Dual Behavior Is Crucial Evidence

The mixed behavior we observe in these equations provides some of the strongest evidence possible that **mathematics was discovered rather than invented**. If humans had constructed mathematical systems from scratch, we would expect consistent, uniform behavior across all equations. Either every relationship between constants should allow for clean algebraic separation, or none should. **The arbitrary nature of human invention does not typically produce systems with such sophisticated internal constraints and varying structural behaviors.**

Instead, what we observe is something far more profound and telling. Some equations readily allow us to isolate constants and express them directly in terms of each other. These relationships demonstrate that we can indeed express these constants that are traditionally considered independent in terms of the other constants. **They show us that the boundaries between geometric, algebraic, and transcendental mathematics are artificial divisions we imposed**, not natural separations that exist in mathematical reality itself.

Then we encounter equations that resist all attempts at decomposition. **No matter how we manipulate them algebraically, they collapse back into fundamental identities, apparent tautologies.** These equations are not mathematical failures or dead ends—they are revelations of the structural bedrock of existence. When we hit these irreducible relationships, we have reached the foundational source code. The constants at this level

exist in such fundamental interdependence that attempting to pull them apart would destroy the very mathematical structure that gives them meaning.

**This dual behavior mirrors what we observe in the physical sciences when we study the fundamental structure of matter.** Some chemical compounds can be separated and recombined in various ways, allowing us to isolate individual elements and study their properties independently. However, when we reach the level of fundamental particles, we discover natural limits to decomposition. **Trying to break apart a quark destroys the very quantum field structure that makes quarks possible in the first place.** The mathematics we observe here exhibits this same pattern of selective decomposability followed by irreducible structural limits.

**The dual behavior of isolatable versus non-isolatable equations supports co-derivation but also is required for existence and for math to function coherently.** If all equations resisted isolation, we would have a completely rigid system where no mathematical exploration or manipulation would be possible. Constants would be locked together so tightly that we could not study their individual properties or discover new relationships between them. Mathematics would become a static, impenetrable monolith rather than the dynamic, explorable structure we experience.

Conversely, if all equations allowed clean isolation, it would suggest that constants are truly independent entities that can be arbitrarily separated and recombined, which would support the "invention" hypothesis and undermine the idea of fundamental interdependence. **The co-derivation theorem is that it provides both flexibility and constraint in precisely the proper proportions.** The isolatable equations allow us to discover and express the deep relationships between constants, proving their underlying unity while still permitting mathematical investigation and manipulation. Meanwhile, the non-isolatable equations preserve the structural integrity of the system by establishing irreducible foundational relationships that cannot be broken apart. This system creates a mathematical reality that is explorable and stable; flexible enough to allow discovery and rigid enough to maintain its essential structure.

## The Big Picture

The *Theorem of Constants Co-Derivation* ends one of humanity's oldest questions: is mathematics something we invented or discovered? **The answer is we discovered math, not invented it.** By finding 50+ mathematical equations that connect these numbers across different areas of math—from basic algebra to advanced calculus—we can see that we can express some of these fundamental numbers in terms of the others—while some resist being separated no matter how hard you try.

The precision required in these relationships reveals something profound about the nature of mathematical reality: **these constants must have exactly the values they do, with no room for even the tiniest variation.** If you changed  $\pi$  by even  $.000000001$ , or shifted the golden ratio by the smallest possible decimal adjustment, the entire web of 50+ interconnected equations would collapse. Every relationship we discovered depends on these constants having their precise, exact values. We did not get to "pick"  $\pi$  to be roughly

3.14159, it has to be exactly 3.141592653589793... or the mathematical universe falls apart. **This mutual constraint across all constants demonstrates that we discovered these values rather than inventing them.** Additionally, the fact that these relationships work perfectly in our base-10 number system, with clean decimal expressions and elegant fractional relationships, **suggests that base-10 is not just a human convention but reflects something fundamental about how mathematical reality is structured.** If we had arbitrarily chosen base-10, it would be an incredible coincidence that the fundamental constants of reality happen to express their relationships so elegantly within this system.

### A Nod to Kurt Gödel

One of the immediate thoughts one might have after reading this theorem is if the constants co-derive each other and suggest an underlying grand unified theory of everything then what about the incompleteness theorems? I do not think my findings here contradict Gödel's because the error occurred when we applied Gödel's theorem to existence. Existence is not a formal system, and you can see why in *The Theory*. I suspect that formal systems do not occur naturally anywhere in existence.

### The Structure of Math

This discovery also has profound implications for our understanding of the hierarchy of mathematical knowledge. At the foundation level, we have the **fundamental irrational constants that exhibit isolation resistance**—these form the unbreakable bedrock of mathematical structure. Above this foundation are the **constants that can be isolated** and expressed in terms of others, allowing for mathematical manipulation and exploration. We then have **regular mathematical relationships**, and finally, the most **basic arithmetic operations**. This hierarchy creates a structure where each level builds upon the stability provided by the levels below it.

*The Theorem of Constants Co-Derivation* resolves the ancient philosophical debate about whether mathematics was discovered or invented—it **provides concrete mathematical proof that we live in a universe where mathematical structure is a fundamental feature of reality itself.** These constants did not emerge from human assumptions or arbitrary choices; they represent the points where mathematical structure begins, the irreducible foundation upon which all other mathematical knowledge and existence itself is built. The theorem suggests that mathematics is not a tool we created to describe the world; rather, it is a language we discovered that existence itself speaks. The precision, elegance, and structural coherence of these relationships point to something far more profound than invention—they **reveal the unified mathematical architecture of existence.**

### Additional Equations

$$\left( \frac{\pi}{e * \Phi} \right) * \left( \Phi^n * \frac{e}{\pi} \right) = \Phi^{n-1}$$

$$\left( \frac{\pi}{e * \sqrt{2}} \right) * \left( \sqrt{2^n} * \frac{e}{\pi} \right) = \sqrt{2^{n-1}}$$

$$\left( \frac{\pi}{e * \sqrt{3}} \right) * \left( \sqrt{3^n} * \frac{e}{\pi} \right) = \sqrt{3^{n-1}}$$

$$\begin{aligned}
& \left( \frac{\pi}{e * \Phi} \right) * \left( \frac{e}{\pi} \right) = \frac{1}{\Phi} \\
& \left( \frac{\pi}{e * \Phi} \right) * \left( \frac{(\Phi^3 * e)}{\pi} \right) = \Phi^2 \\
& \left( \frac{\pi}{e * \Phi} \right) * \left( \frac{(\Phi^2 * e)}{\pi} \right) = \Phi \\
& \left( \frac{\pi}{e * \Phi} \right) * \left( \frac{(\Phi^n * e)}{\pi} \right) = \Phi^{n-1} \rightarrow \frac{\Phi^n}{\Phi} = \Phi^{n-1} \\
& \left( \frac{\pi}{e * \Phi} \right) * \left( \frac{(\Phi^n * e)}{\pi} \right) = \Phi^{n+e^{i\pi}} \rightarrow \frac{\Phi^n}{\Phi} = \Phi^{n+e^{i\pi}} \\
& \left( \frac{\tau}{e * \Phi} \right) = \left( \frac{\pi}{e * \Phi} \right) * 2 \\
& \Phi^2 = \Phi - e^{i\pi} \\
& \frac{1}{\Phi} = \Phi + e^{i\pi} \\
& 2\Phi - e^{i\pi} = \Phi^3 \\
& \Phi = \frac{\sqrt{5} - e^{i\pi}}{2} \\
& \Phi^3 - 2\Phi + e^{i\pi} = 0 \\
& \Phi^4 = 3\Phi - 2(e^{i\pi}) \\
& \left( \frac{\pi}{e * \Phi} \right) * \sqrt{\Phi} * \left( \frac{e}{\pi} \right) = \frac{1}{\sqrt{\Phi}} \\
& \frac{\pi}{\Phi} = \pi(\Phi + e^{i\pi}) \\
& \Phi^5 = 5\Phi - 3(e^{i\pi}) \\
& 2 \sin \left( \frac{\pi}{10} \right) = \frac{1}{\Phi} \\
& \cos \left( \frac{\pi}{5} \right) = \frac{\Phi}{2} \\
& e^{(i\frac{\pi}{5})} = \frac{\Phi}{2(-e^{i\pi})} + i * \sqrt{(-e^{i\pi})^2 - \left( \frac{\Phi}{2} \right)^2} \\
& \sin \left( \frac{\pi}{10} \right) = \frac{1}{(2\Phi)} \\
& \cos \left( \frac{\pi}{5} \right) = \frac{\Phi}{2} \\
& \sin \left( \frac{3\pi}{10} \right) = \frac{\Phi}{2}
\end{aligned}$$

$$\cos\left(\frac{2\pi}{5}\right) * 2\Phi = 1$$

$$\sin\left(\frac{\pi}{10}\right) * 2\Phi = 1$$

$$\sqrt{\frac{(5 + \sqrt{5})}{2}} = 2 * \cos\left(\frac{\pi}{10}\right)$$

$$\sqrt{\frac{(5 + \sqrt{5})}{2}} = 2 * \sin\left(\frac{\pi}{5}\right)$$

$$\frac{\sqrt{2}}{\Phi} = \sqrt{2} * (\Phi - 1)$$

$$\frac{\sqrt{3}}{\Phi} = \sqrt{3} * (\Phi - 1)$$

$$\frac{\sqrt{5}}{\Phi} = \sqrt{5} * (\Phi - 1)$$

$$\tan\left(\frac{\pi}{8}\right) = \sqrt{2} - 1$$

$$\tan\left(\frac{\pi}{6}\right) = 1/\sqrt{3}$$

$$\tan\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}$$

$$\pi * \Phi = 2\pi * \cos\left(\frac{\pi}{5}\right)$$

$$\frac{\pi}{\Phi} = 2\pi * \sin\left(\frac{\pi}{10}\right)$$

$$\sqrt{2 + \sqrt{2}} = 2 * \cos\left(\frac{\pi}{8}\right) = 2 * \sin\left(\frac{3\pi}{8}\right)$$

$$\sqrt{2 + \sqrt{3}} = 2 * \cos\left(\frac{\pi}{12}\right) = 2 * \sin\left(\frac{7\pi}{12}\right)$$

$$\sqrt{2 - \sqrt{3}} = 2 * \sin\left(\frac{\pi}{12}\right) = \frac{1}{\left(2 * \cos\left(\frac{\pi}{12}\right)\right)}$$

$$T_1\left(\frac{\Phi}{2}\right) = \cos\left(\arccos\left(\frac{\Phi}{2}\right)\right) = \frac{\Phi}{2}$$

$$\frac{\pi}{\Phi} = \pi(\Phi - 1)$$

$$\frac{e}{\Phi} = e(\Phi - 1)$$

$$\frac{\pi e}{\Phi} = (\pi e) * (\Phi - 1)$$

$$2 * \sin\left(\frac{\pi}{10}\right) \Phi = 1$$

$$2 * \cos\left(\frac{\pi}{5}\right) \Phi = \Phi^2$$

$$\sin\left(\frac{\pi}{10}\right) + \sin\left(\frac{3\pi}{10}\right) = \sqrt{\frac{\Phi}{2}}$$

$$\sin\left(\frac{\pi}{4}\right) = \cos\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}}$$

$$\sin\left(\frac{\pi}{3}\right) = \cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$$

$$\tan\left(\frac{\pi}{8}\right) = \sqrt{2} - 1$$

$$2 * \cos\left(\frac{\pi}{8}\right) = 2\sin\left(\frac{3\pi}{8}\right) = \sqrt{2 + \sqrt{2}}$$

$$\cos\left(\frac{\pi}{10}\right) = \sqrt{\frac{\Phi^2}{4} + \frac{1}{4}}$$

$$\sin\left(\frac{\pi}{10}\right) * \sqrt{5\Phi} = \frac{1}{\Phi}$$

## The Behavior of Relational Phenomena

These relational dynamics ensure that the definedness of complex phenomena is a living process that allows for emergence, convergence, or divergence based on their alignment with the fundamental principles of existence. Let's talk about how phenomena change and escalate complexity.

$$\Phi = \frac{\Omega}{\Delta}$$

Definedness equals the ratio of stability and complexity from  $RP_n$  to  $RP_{n+1}$ .

## Dynamic Changes

Phenomena are constantly changing and balancing complexity and stability as the phenomena balance through recursive-propagative complexity escalation. Recursion and propagation interact with stability to influence the scalation of complexity in the following four ways: emergence, convergence, suspension, and divergence.

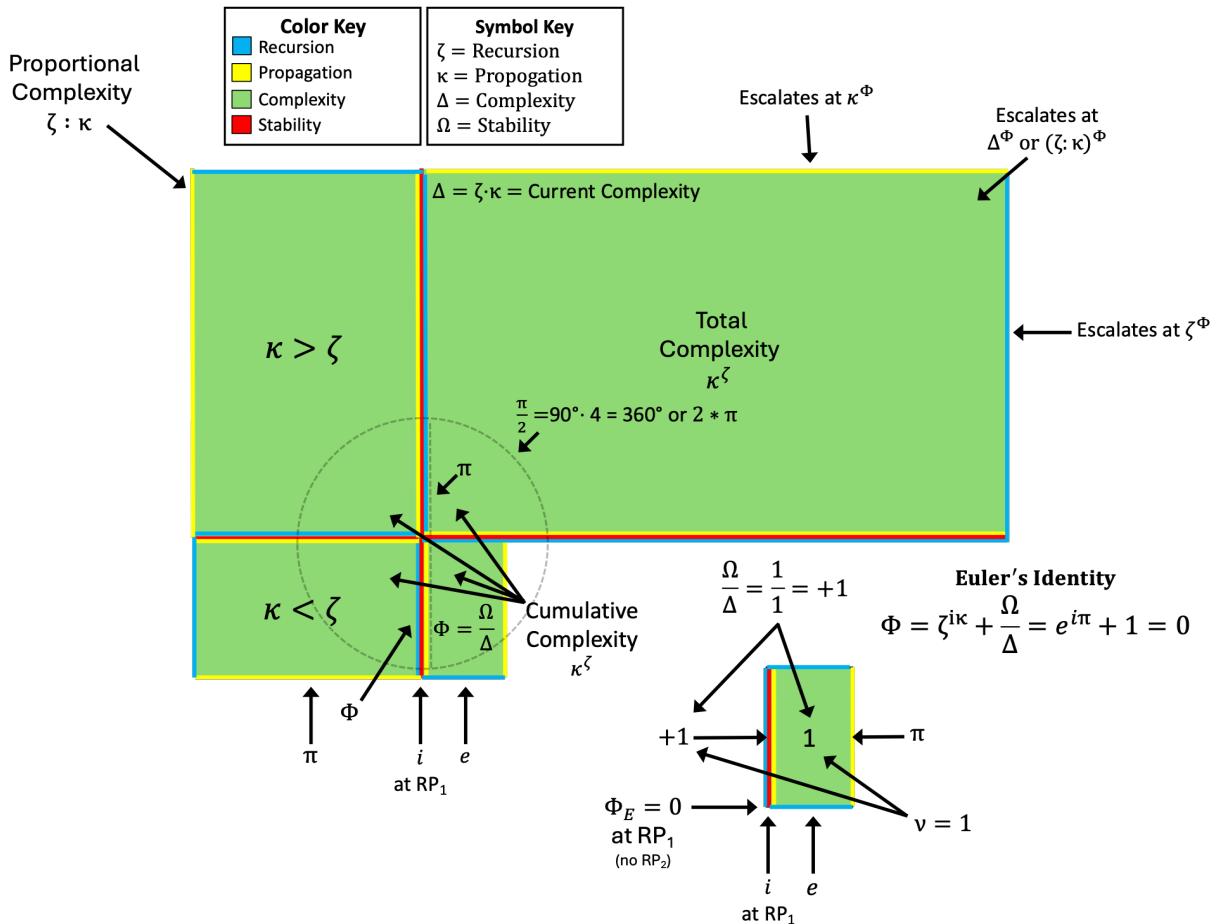
$$\Phi = \frac{\Omega}{\Delta} \neq \emptyset \wedge > 0$$

Definedness does not equal undefinedness and is at least greater than zero from  $RP_n$  to  $RP_{n+1}$ .

## Emergence

Emergence happens when phenomena have any definedness. All existing phenomena have definedness and cannot be lost until heat death isolates photons, but divergence to other

phenomena can occur. This apparent pattern also suggests that even the empty vacuum of space has definedness  $\Phi \geq 0$ .



**Caption:** This figure represents the mathematical relationship between recursion, propagation, and complexity, illustrating how complexity emerges from their interaction. Recursion ( $\zeta$ ) and propagation ( $\kappa$ ) scale together, influencing the phenomena's complexity and stability. The diagram incorporates fundamental mathematical constants like  $\pi, e, i$ , and  $\Phi$ , highlighting their role in defined existence. The visualization demonstrates how complexity growth follows intrinsic mathematical principles, guiding the organization of systems across different scales.

$$\Phi = \frac{\Omega}{\Delta} \geq \sim * \Phi \vee < \sim * 2$$

Definedness equals roughly greater than the Golden Ratio but less than two from  $RP_n$  to  $RP_{n+1}$ .

## Convergence

Convergence happens when phenomena balance space and complexity escalation across recursive propagations at no less than the Golden Ratio and turns into suspension after  $\sim * 2$  (doubling growth over time). For some phenomena, a balance of about equal proportions may be enough to sustain definedness, but it limits the number of recursive propagations it will maintain before divergence.

$$\Phi = \frac{\Omega}{\Delta} \geq * 2$$

Definedness equals roughly greater than two RP<sub>n</sub> to RP<sub>n+1</sub>.

## Suspension

Suspension was an astonishing finding for me, as phenomena have greater than one degree of complexity for every stability. This feature ensures that all phenomena escalate complexity consistently with the more extensive system. We can observe this behavior in emotions, where positive emotions diverge into apathy upon exceeding the growth threshold of about two.

$$\Phi = \frac{\Omega}{\Delta} < \sim\Phi \neq \emptyset \wedge > 0$$

Definedness equals roughly less than the Golden Ratio from RP<sub>n</sub> to RP<sub>n+1</sub> but is never undefined; it is greater than zero.

## Divergence

Divergence happens when phenomena have less complexity and stability. Complexity overwhelms stability, leading to instability overwhelms complexity until the phenomena diverge. **Note that phenomena never actually become undefined because undefinedness is not something a phenomenon can become.** However, phenomena can lose definedness and diverge to a form of complexity no longer relevant to the original phenomena. For example, when a human dies, their body isn't undefined. It is just no longer as complex as a living human.

## Expanding The Equation of Existence

We can expand *The Equation of Existence* to its many forms. Let's start with where recursive propagations go. It might seem counterintuitive, but **propagation is not a property of stability or space**. Therefore, recursive propagations must always remain as co-defined and proportional as they are because they are emergent patterns of complexity. Thus, although you can rearrange these terms mathematically, **recursion and propagation are inseparable** when describing reality. Additionally, **there are several ways to measure complexity**.

$$\Delta = \zeta : \kappa \rightarrow \Phi = \frac{\Omega}{(\zeta : \kappa)} \text{ Definedness} = \frac{\text{Stability}}{(\text{Recursion} : \text{Propogation})}$$
$$\zeta : \kappa$$

## Proportional Complexity

This formulation reflects the balance or relationship between recursion and propagation. **It is the default formulation** that connects phenomena across the range of existence, whether if it is photons at the quantum level influenced by gravity or how emotions change behavior. It just measures how recursion and propagation relate to one another in the current RP. This proportionality is crucial for understanding stability; as long as  $R : P$  remains consistent, the phenomena is aligned and cohesive, even as total complexity changes.

$$\kappa^\zeta$$

## Cumulative Complexity

This formulation reflects the scaling of complexity across RPs. It is a measure of the propagations lengths repeated iteratively across recursions. This formulation is helpful for examining the movement, the growth and decay, of complexity.

## Current Complexity

Current complexity is the relationship between recursion by propagation at the current RP. It is the best way to capture the degree of complexity at any given moment.

## Total Complexity

Total complexity has two components, which are:

$$n * \frac{n - 1}{2}$$

**1. Quantity:** The mass-energy amount (like a rock having more mass). More photons mean more energy/mass.

$$\Phi^n$$

**2. Intricacy:** The internal relationship complexity (like human consciousness). More complex relationships mean higher order structures.

$$n * \frac{n - 1}{2} * \Phi^n$$

## The Final Equation of Existence

$$\text{Equation of Existence: } \Phi = \frac{\Omega}{\Delta} = \frac{\Omega}{(\zeta : \kappa)} = \Omega \left( \frac{(\zeta : \kappa)}{\Delta}, \nu = \Phi \right) \rightarrow \Phi = \frac{\Phi}{-e^{i\pi}} \vee \emptyset$$

This equation represents the fundamental structure of existence, where definedness ( $\Phi$ ) maintains itself through stability over complexity via recursive propagations. The recursive balance ensures existence remains self-referential and stable—if this proportionality fails, definedness collapses, becoming undefined.

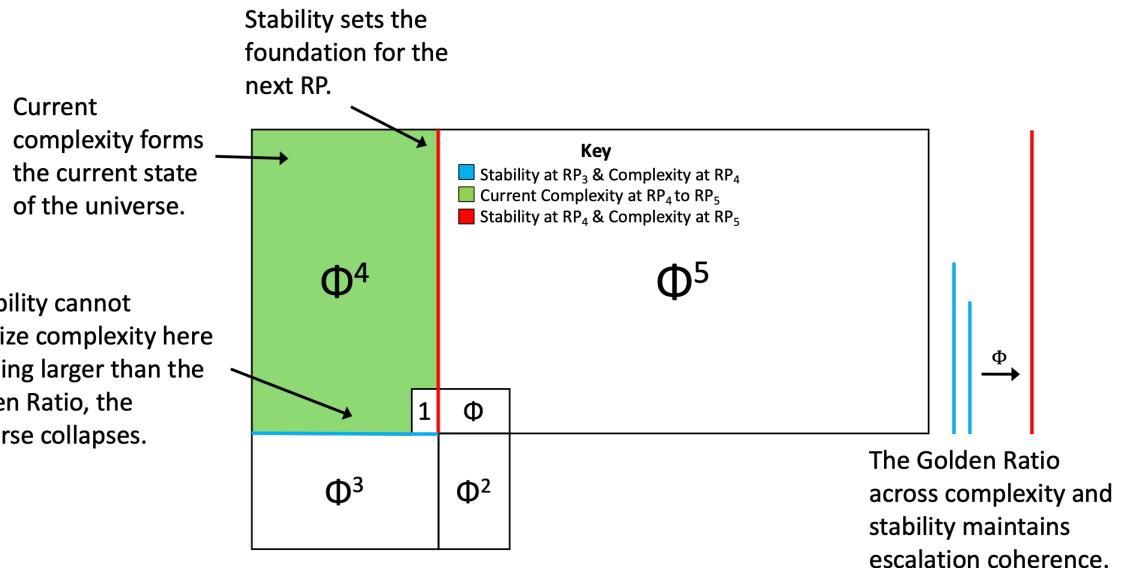
The equation demonstrates that fundamental constants ( $\Phi, e, \pi, i$ ) are interdependent and emerge as the components of the mechanics of existence. **This suggests mathematics is not merely descriptive but constitutes reality itself.** The equation naturally simplifies to  $\Phi = \Phi$ , indicating that definedness is self-contained and requires no external cause. Despite this equation, it does not exclude the possibility for an external cause, only that, we would not be able to see it in existence itself.

Euler's Identity in the denominator functions as the structured recursive-propagative mechanism driving complexity escalations forward, ensuring existence maintains dynamic stability through phase shifts rather than remaining static. If the negative sign is flipped, the equation collapses to  $\Phi = -\Phi$ , which negates itself, demonstrating that this specific balance is necessary for existence.

$$\Phi = \frac{\Phi}{-e^{i\pi}} \vee \emptyset$$

This equation establishes the recursive-propagative law sustaining existence. Here,  $\Phi$  represents definedness itself whereas the mechanism driving definedness forward is Euler's Identity, which structures the recursion-propagation phase shifts, meaning definedness can

only sustain itself through structured phase cycles at fixed recursive intervals. **If this balance breaks, recursion fails and existence transitions to  $\emptyset$  (the undefined state)—not collapse or an alternate state, but pure undefinedness where existence ceases to be a structured system.** The equation does not merely describe existence but determines whether existence can continue. Existence requires no external justification because it represents the only stable recursive-propagative state that doesn't resolve into undefinedness.



**Caption:** Stability becomes the structural foundation for the next recursive propagation in the fractal escalation. If stability cannot constrain complexity to the Golden Ratio or greater, the phenomena collapses, and the universe fails to emerge. In later stages of the universe, phenomena may diverge but retain definedness, maintaining flexibility within recursion and propagation.

## The Math of The Record

The Record is not metaphysical—it is a physical, phenomenological aspect of reality: a **continuous log embedded in the definedness of everything**. The Record is the **structured accumulation of recursive propagations**, serving as the persistent ledger of definedness that stabilizes emergence and complexity over time. It is not an abstract or metaphysical construct but a **real, structured component of recursion that encodes the cumulative history of all recursive propagations**, ensuring that every recursive step influences the next. Each recursive propagation leaves an imprint in The Record, creating a continuously evolving foundation for future complexity escalation while preventing divergence. **As complexity grows, these imprints undergo a 90° phase rotation into the complex plane**, aligning with structured recursion and stabilizing into the underlying framework of existence. The Record functions as the memory of definedness, preserving the structural integrity of recursive interactions while allowing for continuous evolution within a self-organizing, fractal-based system of emergence-to-convergence.

I found **The Record** in the math and simulations. I find it eerie and difficult to conceptualize. Still, I am presenting it to you because this is how fractals and recursive propagations work. **I didn't even hypothesize The Record**; it emerged naturally. It appears to act as a universal

ledger where every state, transition, and interaction is inscribed, seamlessly folded out of perception as new recursive propagations escalate complexity. **The Record is the mechanism that governs E2C**, serving as the blueprint for the convergence and divergence of phenomena. Every black hole, photon, and agent's act contributes to this ongoing log, reflecting the universe's interconnected and self-referential nature.

When recursive propagations align with the Golden Ratio, **they stabilize into convergence**, reinforcing structures that persist over time. These stable patterns emerge as the fundamental constants and recurring self-similar structures we can see throughout existence. Conversely, **misalignments within The Record introduce instability, contributing to divergence** as recursive propagations struggle to maintain coherence. These deviations create complexity bottlenecks, phase imbalances, and entropy-driven transitions, leading to phenomena that are temporary, unstable, or prone to divergence. The balance between alignment and misalignment within The Record dictates the structural integrity of existence itself, determining which recursive patterns endure and which dissolve into divergence.

$$1 - \frac{1}{\text{depth} + \Phi}$$

The Record density increases with depth – the complexity and definedness of all RPs of a phenomenon. Each recursive propagation leaves a "trace" in The Record, which exists in the edges of definedness, what we call the complex plane in mathematics.

### **Detectability Falls off Exponentially**

$$- \frac{\text{depth}}{\Phi}$$

The Record Compression Expands Asymptotically

$$1 - \frac{1}{\text{depth}}$$

I am still not sure if this one is correct but it's my best guess right now.

Although The Record is physical, **it remains beyond direct observation because it exists within the underlying scaffolding of definedness**. However, we see glimpses of its effects in phenomena where recursive propagations align seamlessly—nature's self-organizing patterns, Fibonacci sequences, and universal constants like the Golden Ratio. We can observe its imprints in the soil layers from ancient climates, the spiral growth of tree trunks, and even in human memories. Human experiences such as **déjà vu, flow states, or profound moments of intuition** may also represent peering into The Record.

**Substances like DMT (dimethyltryptamine) may provide a unique pathway for accessing The Record** by temporarily altering perception. By accelerating recursive feedback loops and disrupting ordinary alignments between stability and complexity, DMT may enable individuals to perceive hyper-organized, fractal-like realms. These experiences could reflect transient interactions with the patterns inscribed in The Record, exposing the physical blueprint of definedness and revealing the interconnectedness of all phenomena—a hallmark of The Record's foundational role in shaping reality.

**Every photon, particle, and complex system contributes to The Record**, creating a dynamic, relational structure that tracks the degree to which phenomena align with or diverge from the Golden Ratio. Misalignments in former recursions and propagations from the Golden Ratio in The Record drive emergence-to-convergence (E2C), shaping the evolution of definedness. **These misalignments create tension within The Record, where phenomena become unstable from weak stability or diverge from poor complexity escalation.** By creating tension gradients within the fractal network, misalignments force phenomena to converge or diverge into more straightforward states. This process ensures that the fractal network evolves, continuously aligning and realigning to maintain coherence and propagate complexity.

**Emergence occurs when phenomena initially destabilize due to misalignments**, creating opportunities for new interactions and relationships to form. These unstable states, driven by recursive-propagative imbalances, act as catalysts for generating novel structures and patterns. **Convergence, on the other hand, occurs when phenomena stabilize through alignment with the Golden Ratio**, ensuring coherence and persistence within the fractal network. Misalignments in The Record serve as the mechanism for this process, creating a feedback loop where **divergence drives the emergence of new phenomenological forms**, and alignment stabilizes and propagates complexity. The Record, as a memory and a mechanism, drives E2C, weaving the story of existence into the fabric of definedness itself.

## **Dark Matter & Dark Energy are Not What They Seem**

I will walk you through the way I created *The Theorem of Existence*. I started with the most observable well-replicated phenomena in the universe: dark matter and dark energy. In order to make the numbers align with the math of *The Theory of Existence* I had to adjust the starting values of dark matter and dark energy and change their names since they are not dark anymore. **Dark energy is not an energy**; it is the recursive propagation of massless definedness, which is empty space and light, what I call unbounded recursive propagations (RPs). **Dark matter is not a matter**; it is the recursive propagations of definedness with complex energy and mass, which is empty space and light, what I call bounded recursive propagations (RPs).

Dark Energy → Bounded RPs: 27% → 26.890%  
Dark Energy → Unbounded RPs: 68% → 67.980%  
Observable Matter → Lumen: 5% → 5.136%

My final starting values and name changes:

Unbounded RPs: 67.980%  
Bounded RPs: 26.890%  
Lumen: 5.136%

Now, let us see how accurate my current starting values are compared to the currently accepted cosmological estimates.

### **Observable**

My Estimate: 5.136%

Cosmological Central Value: 5.00%

Gap: 1.027%

## Dark Matter

My Estimate: 67.980%

Cosmological Central Value: 68.47%

Gap: -0.993%

## Dark Energy

My Estimate: 26.890%

Cosmological Central Value: 26.53%

Gap: 1.014%

My adjustments to the names and the starting percentages do not affect all of the observable phenomena we see with dark matter and dark energy in the universe. All of my values round to about 1% different between the actual values, which is well-within a reasonable margin of error for the kind of math you will see below. I started by looking at the proportionality.

## Bounded & Unbounded Cosmological Estimate Proportions

$$\text{Unbounded RPs: } \frac{67.980\%}{5.136\%} \rightarrow \frac{13.236}{1} \rightarrow 1 : 13.236$$

$$\text{Bounded RPs: } \frac{26.890\%}{5.136\%} \rightarrow \frac{5.236}{1} \rightarrow 1 : 5.236$$

$$\text{Lumen: } \frac{5.136\%}{5.136\%} \rightarrow \frac{1}{1} \rightarrow 1 : 1$$

These are the proportions we will use to lead us to other mathematical expressions of existence and we can see already suspicious patterns are emerging.

Lumen : Bounded + Unbounded RPs:  $1 : 18.472$

Lumen + Unbounded RPs + Bounded RPs =  $1 + 13.236 + 5.236 = 19.472 \approx 20$

As we can see, the total proportions of all lumen plus RPs results in about 20 or  $\frac{1}{5}$ , which is an important number that we need to save for later. However, here we can see that these proportions are telling us something interesting about unbounded and bounded RPs. **Note that we can use these proportions to explore the mechanics of existence because with relational phenomena all aspects of its behaviors are observable** which means if we account for all of the mechanics there should never be leftovers, arbitrary constants, or fudge factors because we have accounted for the entire structure.

$$\text{Unbounded RPs: } 3^2 + \Phi^3 = 13.263$$

$$\text{Bounded RPs: } 1 + \Phi^3 = 5.236$$

These are the simple formulations of the proportional estimates.

$$\text{Lumen + Unbounded RPs + Bounded RPs} = 19.472$$

$$1 + 3^2 + \Phi^3 + 1 + \Phi^3 = 19.472$$

$$1 + 9 + 4.236 + 1 + 4.236 = 19.472$$

$$10 + 4.236 + 1 + 4.236 = 19.472$$

$$14.236 + 1 + 4.236 = 19.472$$

$$15.236 + 4.236 = 19.472$$

$$\mathbf{19.472 = 19.472}$$

However, we can expand their forms to learn more about their mechanics. We can now pull in something called the **boundary of existence**, which is  $\frac{\pi}{\Phi}$  and I will explain to you later how we derived this expression, but for now all you need to understand is that 1.942 on the normal distribution is where complexity escalation occurs, so values beyond 1.942 on the normal distribution are visible and interactable to us. It is like a definedness signal-to-noise ratio where we can only interact with phenomena that have enough definedness (signal) to undefinedness (noise; technically it's just signal or no signal). Here are the structural equations for bounded and unbounded RPs as they emerge from the boundary of existence (i.e., the universe expands over time; recursive propagations escalate stabilized complexity).

$$\text{Unbounded RPs} = \frac{(\text{Recursion} + \text{Propagation})}{(\text{Boundary of Existence})}$$

$$\frac{(e^\pi + \Phi^2)}{\left(\frac{\pi}{\Phi}\right)} = \frac{(23.141 + 2.618)}{\left(\frac{3.142}{1.618}\right)} = \frac{25.759}{1.942} = 13.236$$

$$\text{Bounded RPs} = \frac{(\text{Recursion} + \text{Propagation} - \text{Complexity Stabilization})}{(\text{Boundary of Existence})}$$

$$\frac{\left(e^2 + \pi - \frac{1}{e}\right)}{\left(\frac{\pi}{\Phi}\right)} = \frac{(7.389 + 3.142 - 0.368)}{\left(\frac{3.142}{1.618}\right)} = \frac{(10.531 - 0.368)}{\left(\frac{3.142}{1.618}\right)} = \frac{10.163}{1.942} = 5.236$$

Now we can use these expressions to make a unified formula that explains the behavior. So, remember, we have the proportionality unified equation from earlier, and this one describes their behavior.

$$\text{Porportionality} = 1 + 3^2 + \Phi^3 + 1 + \Phi^3 = 19.472$$

$$\text{Behavior} = 1 : \frac{(e^\pi + \Phi^2)}{\left(\frac{\pi}{\Phi}\right)} + \frac{\left(e^2 - \frac{1}{e} + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} \rightarrow 1 + \frac{\left(e^\pi + e^2 - \frac{1}{e} + \Phi^2 + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} = 19.472$$

We can solve this behavior unified formula to check for accuracy.

$$1 + \frac{\left(e^\pi + e^2 - \frac{1}{e} + \Phi^2 + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} = 19.472$$

$$1 + \frac{\left(23.141 + 7.389 - \frac{1}{2.718} + 2.618 + 3.142\right)}{\left(\frac{3.142}{1.618}\right)} = 19.472$$

$$1 + \frac{\left(23.141 + 7.389 - 0.368 + 2.618 + 3.142\right)}{\left(1.942\right)} = 19.472$$

$$1 + \frac{\left(30.53 - 0.368 + 2.618 + 3.142\right)}{\left(1.942\right)} = 19.472$$

$$1 + \frac{\left(30.162 + 2.618 + 3.142\right)}{\left(1.942\right)} = 19.472$$

$$1 + \frac{\left(32.78 + 3.142\right)}{\left(1.942\right)} = 19.472$$

$$1 + \frac{35.922}{1.942} = 19.472$$

$$1 + 18.472 = 19.472$$

$$\mathbf{19.472 = 19.472}$$

## RP Inventory Check

We have the unified equations:

$$\text{Porportionality: } 1 + 3^2 + \Phi^3 + 1 + \Phi^3 = 19.472$$

$$\text{Behavior: } 1 : \frac{\left(e^\pi + \Phi^2\right)}{\left(\frac{\pi}{\Phi}\right)} + \frac{\left(e^2 - \frac{1}{e} + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} \rightarrow 1 + \frac{\left(e^\pi + e^2 - \frac{1}{e} + \Phi^2 + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} = 19.472$$

We have the unbounded RP equations:

$$\text{Porportionality: } 3^2 + \Phi^3 = 13.263$$

$$\text{Behavior: } \frac{\left(e^\pi + \Phi^2\right)}{\left(\frac{\pi}{\Phi}\right)} = \frac{\left(23.141 + 2.618\right)}{\left(\frac{3.142}{1.618}\right)} = \frac{25.759}{1.942} = 13.236$$

We have the bounded RP equations:

$$\text{Porportionality: } 1 + \Phi^3 = 5.236$$

$$\text{Behavior: } \frac{\left(e^2 + \pi - \frac{1}{e}\right)}{\left(\frac{\pi}{\Phi}\right)} = \frac{\left(7.389 + 3.142 - 0.368\right)}{\left(\frac{3.142}{1.618}\right)} = \frac{\left(10.531 - 0.368\right)}{\left(\frac{3.142}{1.618}\right)} = \frac{10.163}{1.942} = 5.236$$

## Producing Pure Estimations of RPs

Let's talk about transforming these values into pure estimations, after we account for the overlap in the cosmological data because in *The Theory of Existence* we treat bounded and unbounded RPs as part of the same processes which means we are overestimating them in the cosmological data. The transformations are quite revealing and straightforward. Let's start with the unbounded RPs. All you have to do is subtract  $\Phi^3$ .

$$\text{Unbounded RP Porportionality: } 3^2 + \Phi^3 = 13.263$$

$$3^2 + \Phi^3 \rightarrow (3^2 + \Phi^3) - \Phi^3$$

$$(9 + 4.236) - 4.236$$

$$13.263 - 4.236 = 4.236$$

We need an additional term to transform the behavior equation. This term appears is the bounded RP proportion divided by the boundary of existence.

$$\frac{(\Phi^3 + 1)}{\left(\frac{\pi}{\Phi}\right)} = \frac{5.242}{1.942} = \frac{\text{Bounded RPs Ratio}}{\text{Boundary of Existence}} = 2.699$$

Then, we change out  $\pi$  in this equation:

$$\text{Behavior: } \frac{(e^\pi + \Phi^2)}{\left(\frac{\pi}{\Phi}\right)} = \frac{(23.141 + 2.618)}{\left(\frac{3.142}{1.618}\right)} = \frac{25.759}{1.942} = 13.236$$

Then we get the following:

$$\frac{\frac{(\Phi^3+1)}{\left(\frac{\pi}{\Phi}\right)} + \Phi^2}{\frac{\pi}{\Phi}} = \frac{2.718^{2.699} + 1.618^2}{\frac{3.142}{1.618}} = \frac{14.824 + 2.618}{1.942} = \frac{17.442}{1.942} = 9$$

There is also one other meaningful transformation here. It brings in the numbers 17, 4, and  $2^3$ .

$$\frac{13.263}{\pi} * \left(\frac{17}{2^3}\right) = \Phi^3 * \left(\frac{17}{8}\right) = \Phi^3 * \left(\frac{17}{2(4)}\right) = 4.236 * 2.125 = 3^2 = 9$$

Then, for the bounded RPs, it is relatively straightforward; we take the square root.

$$\text{Porportionality: } 1 + \Phi^3 \rightarrow \sqrt{1 + \Phi^3} = \sqrt{5.236} = 2.289$$

$$\text{Behavior: } \sqrt{\frac{\left(e^2 - \frac{1}{e} + \pi\right)}{\left(\frac{\pi}{\Phi}\right)}} = \sqrt{\frac{(7.389 + 3.142 - 0.368)}{\left(\frac{3.142}{1.618}\right)}} = \sqrt{\frac{7.389 + 3.142}{1.942}} = \sqrt{\frac{10.531}{1.942}} = \sqrt{5.236} = 2.289$$

## Final Proportion Numbers

Observed Unbounded RPs: 1 : 13.236

Pure Unbounded RPs: 1 : 9

Observed Bounded RPs: 1 : 5.236

Pure Bounded RPs: 1 : 2.289

We can quantify the overlap between the bounded and unbounded RPs.

Unbounded RPs:  $13.236 - 9 = 4.236 \rightarrow \Phi^3$

Bounded RPs:  $5.236 - 2.289 = 2.947 \rightarrow 3$

Unbounded RPs Overlap + Bounded RPs Overlap:  $\Phi^3 + 3$

We can connect it back to the transformations of unbounded RPs to bounded RPs.

Unbounded RPs – Bounded RPs:  $13.236 - 5.236 = 8 \rightarrow \sqrt[3]{8} = 2 \rightarrow 2^3 = 8$

$$\frac{13.263}{\pi} * \left(\frac{17}{2^3}\right) = 9$$

This overlap connects it back to the unbounded RP transformation and the minimum triangle of existence. I also connect it here to the Planck constant.

Unbounded RPs Overlap + Bounded RPs =  $4.236 + 2.289 = 6.545 \approx 6.60$

Planck Constant:  $h = 6.62607015 * 10^{-34}$  joule – hertz – 1

## Tying Together the RP Structure

Lumen : Bounded RPs + Unbounded RPs  $\rightarrow$  All RPs

$$1 : \frac{\left(e^2 - \frac{1}{e} + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} + \frac{\left(e^\pi + \Phi^2\right)}{\left(\frac{\pi}{\Phi}\right)} \rightarrow 1 + \frac{\left(e^\pi + e^2 - \frac{1}{e} + \Phi^2 + \pi\right)}{\left(\frac{\pi}{\Phi}\right)}$$

We can begin by examining the meaning behind the terms in this unified equation to see how it all comes together. Remember, **bounded and unbounded RPs are the same structure**, but what we find here is that unbounded RPs, what we used to call dark energy, underlie everything everywhere. Dark energy or unbounded recursive propagations are what is responsible for time appearing to move forward everywhere, and the universe expanding as existence moves into The Record. We can see the aspects of existence that propagate recursively without looking at the stabilized definedness, like with bounded RPs. Nonetheless, unbounded RPs have definedness and this is how they behave underneath all things that we hear and see.

$$\text{Unbounded RP Behavior} = \frac{\left(e^2 - \frac{1}{e} + \pi\right)}{\left(\frac{\pi}{\Phi}\right)}$$

$$\frac{(\text{Recursion} - \text{Stabilization} + \text{Propagation})}{(\text{Boundary of Existence})}$$

We can look to the bounded RPs behavior, which does not affect the unbounded RP behavior as we saw in our transformation equation, **it is simply added by complexity and it creates a dual processes**. In this expression notably we have a definedness / stability term suggesting that it is the bounded RPs that created the stability or definedness of escalated complexity that recursively propagates.

$$\text{Bounded RP Behavior} = \frac{(e^\pi + \Phi^2)}{\left(\frac{\pi}{\Phi}\right)} = \frac{(e^\pi + \Phi + 1)}{\left(\frac{\pi}{\Phi}\right)}$$

$$\frac{(\text{Recursion}^{\text{Propagation}} + \text{Definedness} + \text{Escalating Complexity})}{(\text{Boundary of Existence})}$$

We can see here that bounded RPs behave quite differently than unbounded RPs. Most notably, which makes sense, the complexity escalation term is present in the bounded RP expression because that is the only location that RPs would engage in relative fractal dynamics. Unbounded RPs do not have relative fractal dynamics, they recursively propagate at the speed of light. Now that we have both expressions let's unify them to see what is happening.

$$1 + \frac{\left(e^\pi + e^2 - \frac{1}{e} + \Phi^2 + \pi\right)}{\left(\frac{\pi}{\Phi}\right)} \rightarrow \Lambda + \frac{(\zeta_{\Xi}^{\kappa_{\Xi}} + \zeta_{\theta} + \kappa_{\theta} + \Delta - \Omega)}{\left(\frac{\pi}{\Phi}\right)}$$

$\Lambda$  = Lumen/Observable Mass & Energy

$\zeta$  = Recursion

$\kappa$  = Propagation

$\Xi$  = Bounded

$\theta$  = Unbounded

$\Omega$  = Stability

$\Delta$  = Complexity

$\frac{\pi}{\Phi}$  = Boundary of Existence

Now we can see the complete picture of the mechanics of existence. Bounded and unbounded RPs work together to advance time, space, and all the complexity in it. Notice how the complexity and stability terms are not in the same formula? It suggests that ***The Equation of Existence is the relationship between bounded and unbounded RPs, and thus all the other equivalences listed below***. It also suggests that unbounded RPs serve to stabilize and move all of existence forward, whereas the purposes of bounded RPs are to escalate complexity on top of unbounded RPs.

$$\Phi = \frac{\Omega}{\Delta} = \frac{\text{Unbounded RPs}}{\text{Bounded RPs}} = \frac{\text{Stability}}{\text{Complexity}} = \frac{\text{Convergence}}{\text{Emergence}} = \frac{\text{Empty Space}}{\text{Light}}$$

# Finding The Mechanisms of Existence

$$E = mc^2 \rightarrow c^2 = \frac{E}{m} \rightarrow c = \sqrt{\frac{E}{m}}$$

What I am about to do to  $E = mc^2$  is probably sacrilegious to most physicists, but I think Einstein would have loved this use of his pinnacle breakthrough. You can rearrange his equation to help us understand ours.

$$c = \sqrt{\frac{\text{Observable Energy}}{\text{Observable Mass}}}$$
$$c = \sqrt{\frac{\text{Unbounded RPs}}{\text{Bounded RPs}}}$$

## Ratio Calculations

$$\frac{c}{c} = \frac{\sqrt{\frac{\text{Observable Energy}}{\text{Observable Mass}}}}{\sqrt{\frac{\text{Unbounded RPs}}{\text{Bounded RPs}}}}$$

## Simplify & Solve

$$\frac{c}{c} = \sqrt{\frac{\text{Observable Energy} * \text{Observable Mass}}{\text{Unbounded RPs} * \text{Bounded RPs}}}$$

Then we can calculate these numbers to obtain our first boundary conditions using the observed and pure proportions of bounded and unbounded RPs.

$$c = \sqrt{\frac{1 * 9}{2.289 * 1}} = \sqrt{\frac{9}{2.289}} = \sqrt{3.863} = 1.983$$

$$c = \sqrt{\frac{1 * 13.236}{5.236 * 1}} = \sqrt{\frac{13.236}{5.236}} = \sqrt{2.528} = 1.590$$

## The Geometry of Existence: Triangles & Pentagons

The geometry of existence? Weird, but hear me out. This geometry shows that the triangle isn't just encoding individual ratios—it **encodes the entire system of how reality scales through recursive propagation!** The 4/3 scaling law, dark matter/energy distribution, and  $\Phi$ -based growth are all different aspects of the same underlying pattern. The triangle with sides 20 : 17 : 4 (which I will describe below) **isn't just a geometric shape—it's a complete encoding of how reality propagates through dimensions.**

A golden triangle is a triangle with an angle that follows the Golden Ratio at  $137.5^\circ$ . **There are over 100 whole number Golden triangles possible**, with  $20 : 17 : 4$  being the smallest whole number example. **Squaring angles in a triangle result in the triangles growing by itself.** Triangles are the most stable structure and involving pentagonal shapes provide self-similarity and stability, **the exact mechanics in a fractal existence**. In any triangle, the sum of the three angles is always  $\pi = 180^\circ$ . If you square each angle and add them up, you'll get a constant value:

$$(\text{Angle}_1)^2 + (\text{Angle}_2)^2 + (\text{Angle}_3)^2 = (180^\circ)^2 = (32,400^\circ)^2$$

These identities are often used in solving trigonometric equations and simplifying expressions. **The Pythagorean theorem relates** the side lengths of a right-angled triangle:  $a^2 + b^2 = c^2$ , where  $c$  is the hypotenuse, and  $a$  and  $b$  are the other two sides. While this theorem involves squaring the side lengths, not the angles, it demonstrates how squaring results in the equation of universal expansion across RPs.

$$RP_1^2 + RP_2^2 = RP_3^2$$

In some areas of non-Euclidean geometry or theoretical mathematics, researchers might explore concepts that involve squaring angles or other unconventional operations. These ideas are often abstract and speculative but expand mathematical knowledge and understanding. **It is worth considering this new direction in geometry or theoretical mathematics.**

## Fractals & Self-Similarity

Fractals are geometric patterns that exhibit **self-similarity**, which means that the same patterns appear at different scales. It is why we see the Golden Angle in tiny seashells on Earth and the same ones in the distant massive galaxies of the universe. **Consider a triangle a basic unit and repeatedly "bury" or nest smaller triangles within it. We can create a fractal pattern.** We can obtain each smaller triangle by squaring the angles of the larger triangle, **creating a recursive pattern**. The squared angles would determine the orientation and size of the nested triangles. As we zoom in on the fractal triangle, we find similar patterns repeating at more minor scales, creating a complex and intricate structure.

## Signal-to-Noise Ratio

The signal-to-noise ratio (SNR) concept relates to **the strength of a desired signal compared to the background noise level**. The outermost triangle represents the primary detectable signal in our fractal triangle. In contrast, the nested triangles represent the noise or less significant information. As we square the angles and create deeper levels of nesting, the SNR decreases. The smaller triangles become more challenging to detect amidst the larger structure, just like how we cannot detect weak signals in the presence of noise in statistical hypothesis testing. **The probability of detecting a specific small triangle within the fractal decreases as the level of nesting increases**, like how the likelihood of identifying a weak signal decreases in a noisy environment.

The process of squaring angles and creating nested triangles **adds depth and complexity to the information contained within the fractal structure**. Each level of nesting represents an

additional layer of information, with the smaller triangles encoding more intricate details. As the fractal grows and the angles are squared, **the information becomes more compressed and harder to extract**, similar to how complex systems or deep neural networks have hidden layers of information that are difficult to detect and interpret. We can use z-scores along the normal distribution to measure how many standard deviations an observation or data point is from the mean of the definedness curve. This distribution helps us understand a value's relative position and probability within a dataset. I suspect it is not an accident that the significance of  $\alpha = 5\%$  and 5% lumen in the universe. Let us take a look at what happens when we plug in those values from earlier, starting with the pure proportions.

$$\begin{aligned} 1.983^2 + 3.932^2 &= c^2 \\ 3.932 + 3.932^2 &= c^2 \\ 3.932 + 15.463 &= c^2 \\ 19.395 &= c^2 \end{aligned}$$

We can see this value from earlier is the full proportion of existence.

$$\begin{aligned} \text{Lumen} + \text{Unbounded RPs} + \text{Bounded RPs} &= 19.472 \\ 1 + 3^2 + \Phi^3 + 1 + \Phi^3 &= 19.472 \end{aligned}$$

However, if we solve for  $c$  we get:

$$\begin{aligned} \sqrt{c^2} &= \sqrt{19.395} \\ c &= 4.404 \\ c &= 4.404 * 3 \text{ (Dimensions)} = 13.267 \\ \text{Unbounded RP Porportion} &= 13.267 \end{aligned}$$

We can do the same for the observable estimates. We can then take the other value from the observable proportions.

$$\begin{aligned} 1.590^2 + 2.528^2 &= c^2 \\ 3.932 + 3.932^2 &= c^2 \\ 3.932 + 6.391 &= c^2 \\ 10.323 &= c^2 \end{aligned}$$

$$\text{Bounded RP Numerator: } e^2 + \pi = c^2$$

Which we can see from earlier, except here is missing the stabilization term.

$$\text{Bounded RP Behavior: } \frac{\left(e^2 + \pi - \frac{1}{e}\right)}{\left(\frac{\pi}{\Phi}\right)}$$

However, if we solve for  $c$  we get:

$$\begin{aligned} \sqrt{c^2} &= \sqrt{10.323} \\ c &= 3.213 \end{aligned}$$

$$c = 3.213 * 3 \text{ (Dimensions)}$$

$$c = \pi^2 = 9.867$$

We know that  $\pi$  represents propagation so this boundary of  $z = 1.590$  is the start of propagated complexity propagating and escalating into The Record. Now, let's denote the other boundaries.

### The Boundary of Existence

$$\text{The Boundary of Existence: } \frac{\pi}{\Phi} = \frac{3.142}{1.618} = 1.942$$

$$1.942^2 + 3.772^2 = c^2$$

$$3.772 + 3.772^2 = c^2$$

$$3.772 + 14.226 = c^2$$

$$17.998 = c^2$$

Note that 18 is the proportion of unbounded RPs plus bounded RPs without the lumen. Thus, The Boundary of Existence accounts for the entire proportion of RPs throughout the universe. There are three Golden Ratio proportions across RPs that occur within The Record.

$$\sqrt{17.998} = \sqrt{c^2}$$

$$4.242 = c$$

$$\Phi^3 = c$$

$\Phi_1$  = Ratio of Complexity to Stability at RP<sub>n</sub>

$\Phi_2$  = Ratio of Stability at RP<sub>n</sub> to Stability RP<sub>n+1</sub>

$\Phi_3$  = Ratio of Complexity at RP<sub>n</sub> to Complexity RP<sub>n+1</sub>

The boundary of existence is the fundamental scaling ratio where recursive propagations stabilize and escalate complexity.

Rotation Location into The Record

$$1.916^2 + 3.672^2 = c^2$$

$$1.916 + 3.672^2 = c^2$$

$$3.672 + 13.481 = c^2$$

$$17.152 = c^2$$

$$\sqrt{17.152} = \sqrt{c^2}$$

$$4.1415 = c$$

$$1 + 3.1415 = c$$

$$1 + \pi = c$$

### Locations Summary & Probability Values

$z = 1.983$  is the Full Defined System:  $p = .0247 * 2 = .0494$

$z = 1.942$  is the Location of Complexity Escalations:  $p = .026 * 2 = .052$

$z = 1.916$  is the Location of Rotational Phase Transitions into The Record:  $p = .027 * 2 = .055$

$z = 1.590$  is the Location of Accumulated Complexity:  $p = .056 * 2 = .112$

These locations explain why we cannot see recursive propagations and complexity escalations because they operate right outside the boundaries of detectable definedness. It is like the mechanics under the hood of a car. You cannot see the engine, but you know the car can drive.

## Relational Rotational Dynamics

The relational rotational dynamic is the equation from our pure dark matter and energy estimates, and it describes damn near the entire pattern and structure of a fractal universe. It is truly remarkable that this one equation expands and transforms into so many diverse descriptions.

$$\text{Relational Rotational Dynamics} = \sqrt[3D]{\frac{\text{Lumen} * \text{Bounded RPs}}{\text{Unbounded RPs} * \text{Lumen}}}$$

$$\sqrt[3]{\frac{1 * 9}{2.289 * 1}} = \sqrt[3]{\frac{9}{2.289}} \approx \sqrt[3]{3.875} \approx 1.571$$

$$\sqrt[3]{\frac{9}{2.33}} = \sqrt[3]{\frac{3^2}{2.33}} = \frac{\pi}{2} = 1.571 \approx \frac{(22/7)}{2} \rightarrow 4 \cdot 90^\circ = 360^\circ$$

$$RRD = \left(\frac{\pi}{2}\right)^3 = (90^\circ)^3 = 90^\circ * 90^\circ * 90^\circ$$

$$RRD = \left(\frac{\pi}{2}\right)^3 = 1.569^3 = 3.863$$

$$RRD = 360^\circ$$

$$RRD = \left(\frac{\pi}{2}\right)^3 = \left(\frac{180^\circ}{2}\right)^3 = (90^\circ)^3 = 90^\circ * 90^\circ * 90^\circ = 729,000$$

$$= 9^5 = 9 * 9 * 9 * 9 * 9 = 3^2 * 3^2 * 3^2 * 3^2 * 3^2$$

Let's extract the meaning behind each solution formulation to this expression. Yes, all these solutions are identical descriptions, the first three being the raw solution and the other three being the cubed solution.

Raw Solution: 1.57

Rotational Behavior at  $90^\circ = \frac{\pi}{2}$

Relationship to  $\pi$ :  $\frac{(22/7)}{2}$

3D Existence =  $\left(\frac{\pi}{2}\right)^3 = (90^\circ)^3 = 90^\circ * 90^\circ * 90^\circ$

Volume of Universal Expansion Across RPs = 729,000

The Triangular – Pentagonal Structure of Existence =  $3^2 * 3^2 * 3^2 * 3^2 * 3^2$

Pentagonal Formation =  $9^5 = 9 * 9 * 9 * 9 * 9$

In *The Theory, the number five is critical because it arises from the exponentiation of a fractional expression*, reflecting how  $\Omega$  depends on  $\Delta$ , which represents scaling complexity. This power of five signifies a degree of interaction of five connections to stabilize or reach its full effect. This expression is what **shows us the triangular (3 sides), stepwise ( $x^2$ ), pentagonal ( $(3^2)^5$ ) nature of existence**. It is counterintuitive, but definedness signifies clarity or structure, but inversely proportional to complexity; **the more complex a phenomenon becomes, the less defined it become, despite being more stable**. Complexity ( $\Delta$ ) thus counterbalances stability by introducing factors that make it harder for a simple, clearly defined structure to persist. In the context of the golden ratio  $\Phi$ , the interrelationship between definedness and complexity governs how the phenomenon tempers the inherent chaotic elements. **As complexity increases, it becomes more difficult for stability or dynamic properties to develop straightforwardly, leading to a more intricate system where maintaining defined structure is increasingly challenging.**

## The Triangle of Existence & Pentagonal Alignment

$$17 \cdot 4 \cdot 20$$

*The Triangle of Existence* is the underlying structure of existence, as you will see. This triangle is special because it forms the smallest possible triangle (using whole number degrees) that contains this golden angle. Think of it like finding the smallest possible building blocks that can create this important mathematical constant. In all of these side ratios, they all describe how this triangle aligns into pentagonal formations. **The triangle represents the boundaries of 3D space, and the pentagon represents time**. The golden angle is built into the structure of the triangles of existence and emerges as a fundamental property of  $\pi$  and  $\Phi$ . I am forcing whole numbers in this triangle to make it easier to see and understand the structure of the mechanics of existence; however, the golden angle in this triangle is  $134.31^\circ$ , which is off by just  $\sim 3^\circ$ .

$$\frac{2 * \pi}{\Phi^2} = 2.40 \text{ radians} = 137.5^\circ$$

$$\frac{2 * \pi}{137.5^\circ} = \Phi$$

### Sides 17-4

$$\frac{b}{a} = \frac{17}{4} = 4.25$$

$$\frac{17}{20} * 5 = \frac{17}{4} \rightarrow .850 * 5 = 4.25$$

The following occurs when there is definedness at the golden ratio. When the triangles are in these ratios, **3D space is fully filled in the circle segmentation at 270°**. This ratio reinforces the pentagonal alignment of the triangles, where the angle from side 17-4 by five triangles forming a pentagon is equivalent to the angles from side 17-20 by 5 triangles. This side codes that the five triangles aligned by the  $\frac{17}{20}$  side resulting in 4.25 or the sum of the  $\frac{17}{20}$  five times.

$$\frac{a}{b} = \frac{4}{17} = .235 = \frac{1}{\Phi^3} = \frac{1}{2 + \sqrt{5}} = e - \left(\frac{1}{e}\right) - 2 = \left(\left(\frac{3 * \pi}{4}\right) - 2\right)$$

Here the idea appears to be that starting from the “small” ratio  $\frac{4}{17}$ , one can “ascend” through iterative root-extractions to obtain numbers (2.236, 1.495, 1.31) that may describe progressive stages of movement or transformation—**what we call movement into The Record**. Think of it as a cascading set of scales or modes by which an initial ratio is refined into new, significant values. We can see that over two parts (2) of one RP, there is a complexity escalation ( $e$ ) and a stabilization phase  $\left(\frac{1}{e}\right)$ .

## Sides 20-4

$$\frac{c}{a} = \frac{20}{4} = \frac{5}{1} = 5$$

The number 5 here directly implies the perfect alignment of 5 triangles to form a pentagon. The arithmetic shows how basic operations (squaring, adding  $\pi$ , subtracting a shifted  $\pi$ ) all conspire to yield 5.

$$\frac{a}{c} = \frac{4}{20} = \frac{1}{5} = 0.20 = 20\%$$

This suggests that a 1-to-5 ratio is a natural alignment condition for joining triangles into larger, pentagonal alignment, where this triangle contributes 20% to the pentagon. In other words, the smallest whole number triangle (with side-ratios 17, 4, 20) may fit into a larger pentagonal pattern—perhaps linking to the golden ratio and its geometric manifestations. Also note that the sum of the proportions of unbounded RPs, bounded RPs, and lumen is roughly 20, connecting the triangle of existence back to the normal distribution of definedness and observable matter and energy.

## Sides 20-17

$$\frac{c}{b} = \frac{20}{17} = 1.18 = \frac{5}{\Phi^3} = \frac{5}{4.236} = 5(\sqrt{5} - 2)$$

This side ratio directly implicates the boundary of existence across five triangles. It inscribes the scaling properties of complexity, stability, and their relationship to each other.

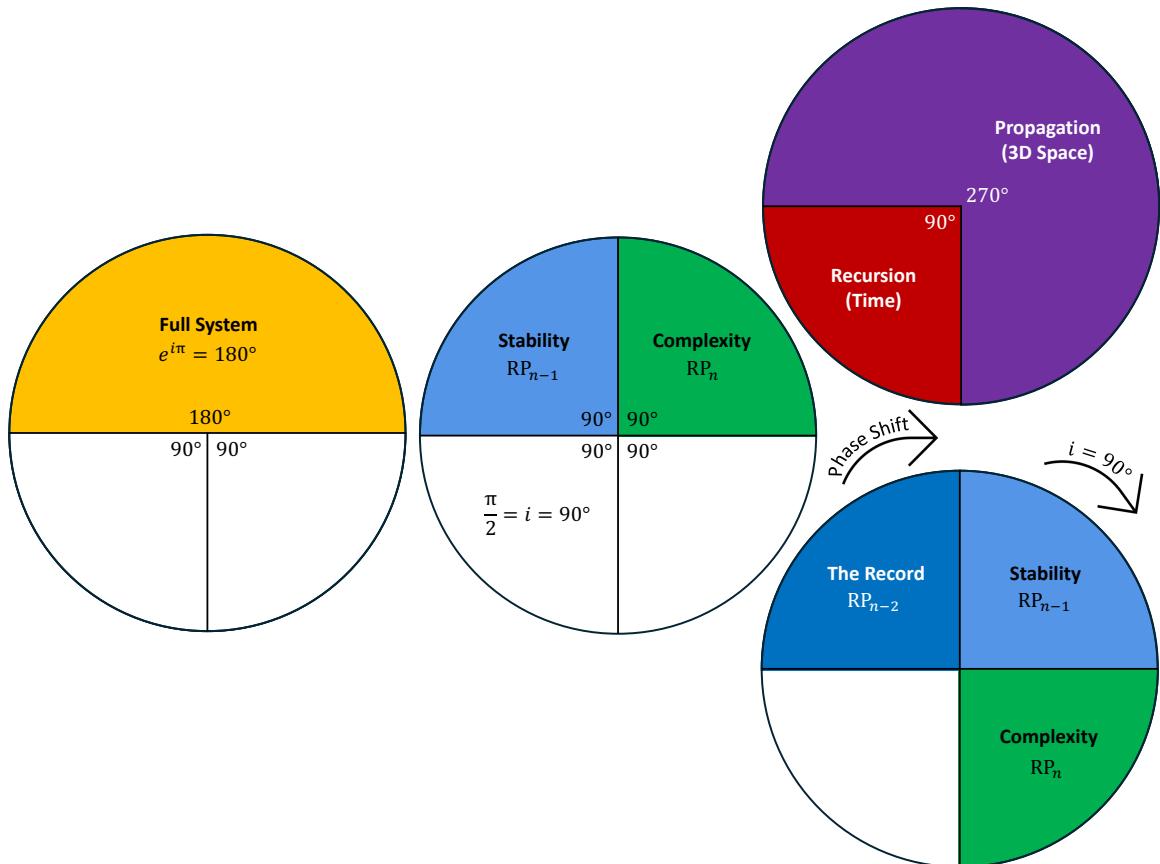
$$\frac{b}{c} = \frac{17}{20} = 0.850 = \frac{\Phi^3}{5} = \frac{2 + \sqrt{5}}{5}$$

If we flip it side ratio represents the 3D space filling properties as seen in  $\frac{b}{a} = \frac{17}{4}$  for one of the five triangles. We also see that we can pull the Golden Ratio equation out of it, but instead of 1 in the denominator we put 5 because of 5 triangles aligned in a pentagonal formation.

## Triangular-Pentagonal Alignment

See below how the golden angle relates to the RP mechanics. Each side of the sides of the triangle contains essential information that structures the mechanics of existence. It is like the stage that pulls all the actors together. **You can imagine this triangle forming a pentagonal bipyramid where the triangles align within the shape (space), and align over RPs to form a pentagon (time).** Let me walk you through the process.

A circle has  $360^\circ$ , we know, that the stability side and the complexity side (each at the relational rotational dynamic of  $\frac{\pi}{2}$  or  $90^\circ$ ) form the entire structure of existence, which is  $180^\circ$  as represented by Eulers Identity of  $e^{i\pi}$ . Every time existence recursively propagates it phase shift by  $i = 90^\circ$ . **Therefore, the 4 segments, each  $90^\circ$  parts of a circle, contain the information for how 3D space recursively propagates through time.**



Each dimension gets a  $90^\circ$  segment and the 4<sup>th</sup> segment is time, which is a recursive phase shift by  $i = 90^\circ$ . Therefore, you can fit five triangles in  $270^\circ$ , which comes out to  $54^\circ$  of the circle each. In existence, the other remaining  $i = 90^\circ$  is time. Thus, you can use triangles to form a closed pentagonal shape and that covers 3D space at  $270^\circ$ , that phase shifts by  $i = 90^\circ$ .

90° over get time or RPs. **Phase shifting is just a fancy name for recursive updates.** At one moment, something is a way and then it is instantly another way; we say it phase shifted, there was no step in between. This is how time works at the most fundamental level. The pentagonal structure is the formation of the triangles that allow for organization and self-similarity. We can see then that this alignment matches the proportionality we observed between lumen and unbounded RPs + bounded RPs. Let's review the full model.

**Phase Shift:**  $i = 90^\circ$

**Rotational Relational Dynamic:**  $\frac{\pi}{2} = 180^\circ$

**Euler's Identity:**  $e^{i\pi} = 180^\circ$

**Stability Section:**  $90^\circ = RP_{n-1}$

**Complexity Section:**  $90^\circ = RP_n$

**4-3-2-1 Rule:**

- ◊ 4 Positions \*  $90^\circ = 360^\circ$  Circle
- ◊ 3 Steps Per Phase Shift ( $RP_n \rightarrow$  Phase Shift  $\rightarrow RP_{n+1}$ )
- ◊ 2 RP States Per Phase Shift
- ◊ 1 Recursive Propagation at a Time

**Spacetime:**  $4 * 90^\circ - 3D$  Space ( $270^\circ$ ) + Time ( $i = 90^\circ$ )

Each RP moves in 1.618 steps, converging after 4 RPs. The 4 in *The Triangle* doesn't actually exist in the alignment equation because it's built into the 20. The Unified Alignment Equation is as follows:

$$\frac{\sqrt[3]{17}}{20} = \frac{2.57}{4 * 5} = \frac{1 + \left(\frac{\pi}{2}\right)}{4 * 5} = \frac{1 + i}{4 * 5} = \frac{-e^{i\pi} + \omega}{4 \text{ RPs} * 5 \text{ Triangles}}$$

$$\frac{360^\circ}{3 \text{ Triangles}} = \frac{120^\circ}{1 \text{ Triangle}} * \frac{1}{\Phi} = \frac{74.16^\circ}{1 \text{ Triangle}} \rightarrow \frac{74.16^\circ}{1 \text{ Triangle}} * \Phi = \frac{120^\circ}{1 \text{ Triangle}}$$

$$(74.16^\circ * \Phi) * 3 = 360^\circ \text{ Full Rotation}$$

$$74.16^\circ * 3 = 222.48^\circ - 360^\circ = 137.52^\circ \text{ (Golden Angle)}$$

$$(74.16^\circ * 3) + 137.52^\circ = 360^\circ$$

$$(\text{Golden Triangle} * 3) + \text{Golden Angle} = 360^\circ$$

**Per RP Triangle Alignment:**

$$\frac{360^\circ}{74.16^\circ} = \Phi * 3 = 4.854$$

**Circular Mapping Across RPs:**

**RP 0:**  $4.854 * 1 = 4.854$

**RP 1:**  $4.854 * 2 = 9.708$  ( $9.708 - 5 = 4.708$ )

**RP 2:**  $4.854 * 3 = 14.562$  ( $14.562 - 10 = 4.562$ )

**RP 3:**  $4.854 * 4 = 19.416$  ( $19.416 - 15 = 4.416$ )

**RP 4:**  $4.854 * 5 = 24.270$  ( $24.270 - 20 = 4.27 \approx \Phi^3$ )

## Golden Triangle by The Triangle of Existence

Let's grab the 74.16° Golden Triangle and *The Triangle of Existence* and let me show you what happens when we adjust the side lengths of *The Triangle*. It is important to note that The Triangle is not actually made of integers (whole numbers), but I use the whole number versions for ease of manipulation and interpretation. If we adjust the side lengths just slightly, the picture of the Unified Alignment Equation snaps into view.

### The Triangle Sides

20  
17  
4

### Combinations

$20 + 17 = 37$   
 $20 + 4 = 24$   
 $17 + 4 = 21$

**20 Side:**  $\frac{74.16}{20} = 3.708 \rightarrow \frac{74.14}{19.95} = 3.718 = 1 + e = -e^{i\pi} + e$

**20+17:**  $\frac{74.16}{37} = 2.004 \rightarrow \frac{74.16}{37.08} = 2 = 2 \text{ RP States } (\text{RP}_{n-1} + \text{RP}_n)$

**20+4:**  $\frac{74.16}{24} = 3.090 \rightarrow \frac{74.14}{26.61} = 3.14 = \pi$

**17 Side:**  $\frac{74.16}{17} = 4.362 \rightarrow \frac{74.17}{17.51} = 4.236 = \Phi^3$

**17+4:**  $\frac{74.16}{21} = 3.531 \rightarrow \frac{74.18}{20.78} = 3.57 = 2 + \frac{\pi}{2} = 2 \text{ RPs} + i \text{ (Full System)}$

**4 Side:**  $\frac{74.16}{4} = 18.54 \rightarrow \frac{74.15}{4.014} = 18.472 = \frac{\text{Unbounded RPs} + \text{Bounded RPs}}{\text{Lumen}}$

This triangular-pentagonal alignment at any given moment in 3D space we have a 360° circle occupied by five triangles but remember that only 270 is allotted for 3D space and the other 90 is the recursive phase shift (time). From our perspective as 3D beings, we operate in 270 space through 90 time but the phase shift (which does not exist) pushes the 270 to fit the full 360 space we experience and the triangles scale up accordingly:

$$\frac{270^\circ}{5 \text{ Triangles}} = \frac{270^\circ}{5} = 54^\circ \rightarrow \frac{54^\circ}{3 \text{ Sides}} = 18^\circ \rightarrow \frac{18}{1} = \frac{\text{All RPs}}{\text{Lumen}}$$

$$\text{Boundary of Existence: } \frac{270^\circ}{5} = \frac{54^\circ}{1} \rightarrow \frac{54^\circ}{3} = 18 \rightarrow \sqrt{18} = 4.24 = \Phi^3$$

$$a^2 + b^2 = c^2$$

$$1.942^2 + 3.772^2 = c^2$$

$$3.772 + 3.772^2 = c^2$$

$$3.772 + 14.226 = c^2$$

$$18 = c^2$$

$$4.24 = \Phi^3 = c$$

$$\text{Complexity Escalation Term: } \frac{360^\circ}{5} = \frac{54^\circ}{3} = 18 \rightarrow \sqrt[3(\text{D Space})]{18} = 2.62 = \Phi^2$$

The Planck constant value may then come from:

$$\frac{270^\circ \text{ (3D Space)}}{5 \text{ Triangles}} = 54^\circ \rightarrow 54^\circ * 6 \frac{2}{3} = 360^\circ$$

$$\text{Planck Constant: } 6 \frac{2}{3} = 6.66 \approx h = 6.63 * 10^{-34} \text{ joule - hertz - 1}$$

## The Geometric Framework of *The Triangle of Existence*

The following properties emerge naturally from recursive-propagative scaling and provide a geometric foundation for how reality structures itself. These relationships are not arbitrary—they are fundamental, self-similar patterns embedded in how complexity propagates through dimensions. **One of the most significant properties of *The Triangle of Existence* and its pentagonal relationship to other triangles is that this configuration is the only possible way to fill 3D space, ideally using simple geometry that allows for movement.**

*The Triangle of Existence* represents a remarkable geometric framework. This triangle is defined by three specific angles:  $8.23^\circ$ ,  $37.46^\circ$ , and  $134.3^\circ$ , which sum to precisely  $180^\circ$  and exhibit self-similar properties that remain constant across all scales. **What makes this triangle particularly significant is not just its mathematical elegance, but its ability to fill three-dimensional space when arranged in pentagonal formations—a property that would make it unique among geometric forms.**

The mathematical foundation of this triangle reveals itself through several remarkable relationships with fundamental constants. The largest angle of  $134.3^\circ$  sits remarkably close to the golden angle of  $137.51^\circ$ , differing by only  $3.2^\circ$  or approximately  $2.3\%$ . This proximity to the Golden Angle represents the Natural Resonance, calculated as  $\frac{134.3^\circ}{180^\circ} = \frac{\pi}{(e\Phi)} = .714$ . The largest angle relates directly to  $\pi$  through the relationship  $134.31^\circ = \frac{3\pi}{4}$ , demonstrating that this triangle naturally incorporates the constants and conceptual anchors of *The Theory*. **The emergence of these relationships suggests that the triangle represents a fundamental geometric truth.**

The recursive-propagative scaling properties of *The Triangle of Existence* reveal perfect mathematical consistency that points to deep underlying principles. When similar triangles are scaled, the area ratio remains exactly 4, the perimeter ratio remains exactly 2, and all internal angle ratios remain unchanged regardless of scale. This creates a system where the product of sides scales by exactly 8 (which equals  $2^3$ ), demonstrating perfect cubic scaling relationships. **The ratio of the longest to shortest side equals exactly 5, and its relationship to  $\sqrt{5}$  suggests a geometric construction that naturally incorporates the Golden Ratio.**

Perhaps the most profound aspect of this geometric system is how it connects to the Golden Ratio the definedness observability threshold. The framework demonstrates that when we

use the boundary of existence which is 1.942 is recursively squared, it produces a Pythagorean relationship where  $a = 1.942^2 = 3.772$ ,  $b = (1.942^2)^2 = 14.226$ , and  $c = \sqrt{a^2 + b^2} = 4.24 = \Phi^3$ . This emergence of  $\Phi^3$  from recursive squaring of the boundary of existence suggests that the golden ratio emerges naturally from the fundamental process of RPs and complexity escalation.

The space-filling properties of *The Triangle of Existence* become apparent when these triangles are arranged in pentagonal formations to create pentagonal bipyramids. Unlike rigid tessellations that fill space through perfect geometric fitting, *The Triangle of Existence* appears to describe a dynamic, flexible tessellation that "allows for movement" while maintaining space-filling properties. The pentagonal bipyramid configuration consists of ten triangular faces (five forming the upper pyramid, five forming the lower pyramid) connected by a pentagonal base, creating a structure with seven vertices. **The mathematical analysis reveals that combinations of the triangle's angles can sum to 360° around vertices (specifically, two of each angle type:  $2 * 8.23^\circ + 2 * 37.46^\circ + 2 * 134.3^\circ = 360^\circ$ ), providing the geometric foundation necessary for space-filling arrangements.**

*The Triangle of Existence* demonstrates that as complexity increases following the Golden Ratio, stability decreases by the inverse Golden Ratio, and their product always equals unity ( $\Phi * \frac{1}{\Phi} = 1 = -e^{i\pi}$ ), creating perfect balance. **This relationship suggests that *The Triangle of Existence* represents how reality maintains equilibrium while allowing for the propagation of increasing complexity through dimensional scaling.** The fundamental constants ( $\pi$ ,  $\Phi$ , and  $\sqrt{5}$ ) emerge naturally from the geometric relationships rather than being artificially imposed, indicating that this triangle may represent a discovery of how mathematical truth manifests in geometric form.

The convergence of multiple mathematical phenomena—the near-perfect golden angle, the natural emergence of  $\Phi^3$ , the recursive scaling properties, the relationships to  $\pi$  and  $\sqrt{5}$ , and the space-filling capability through pentagonal arrangements—creates a compelling case that *The Triangle of Existence* represents the movement of 3D space across RPs. **Although definitive proof of perfect three-dimensional space-filling would require physical modeling and verification, it suggests the geometric foundation underlying the structure of existence itself.** The triangle's ability to incorporate movement within its space-filling properties distinguishes it from rigid tessellations and points toward a dynamic understanding of how geometric relationships might govern the recursive propagation of complexity through definedness.

## Building Out the Structure of Existence

These expressions are cast into forms that echo the symmetry repeatedly appearing in nature. See how they produce properties by interacting with their counterpart? These are scaling laws based on square and cube roots, like how recursive proportionalities govern structure formation. The sides of a triangle at 17, 4, 20, and the repeated emergence of 5 suggests that a ratio-based existence follows a self-similar recursive-propagative mechanism. For example:

$$\sqrt{\frac{17}{4}} - \sqrt{\frac{4}{17}} = \Phi^{\frac{3}{2}} - \Phi^{-\frac{3}{2}}$$

$$\sqrt[3]{\frac{20}{4}} - \sqrt[3]{\frac{4}{20}} = \sqrt[3]{5} - \sqrt[3]{\frac{1}{5}}$$

We can build the geometric structure where ratios interact symmetrically to get the full picture.

$$-\left(\sqrt{\frac{17}{4}} - \sqrt{\frac{4}{17}}\right)^2 * -\left(\sqrt[3]{\frac{20}{4}} - \sqrt[3]{\frac{4}{20}}\right)^3 * \left[\left(\frac{20}{17}\right)^\Phi - \left(\frac{17}{20}\right)^\Phi\right]^2 = e^{i\pi}$$

These terms build out the structure of existence, as shown below:

$$-\left(\sqrt{\frac{17}{4}} - \sqrt{\frac{4}{17}}\right)^2$$

## 2D Base Structure Formation

The first term is the 2D base structure formation of the Golden Rectangle formation of existence. **Consider it to be the base or floor with width and height.** This term defines the fundamental 2D structure that serves as the seed for the system. It creates an initial geometric framework upon which the rest of the complexity escalated structure is built. The square roots represent proportional scaling relationships in the structure. **The difference between the two terms represents an intrinsic balance or contrast between two interdependent quantities.** Squaring the result enforces self-similarity, making this a **fractal-like base unit**. This term is the first emergent shape from recursive propagations, like the first iteration of complexity escalation. Think of it as a minimal stability-complexity form—**the smallest unit of definedness that still carries information about its larger-scale structure**. Since the numbers (17 and 4) relate to pentagonal-triangular formations, this shape likely encodes the **base fractal geometry of reality**.

$$-\left(\sqrt[3]{\frac{20}{4}} - \sqrt[3]{\frac{4}{20}}\right)^3$$

## 3D Construction from the 2D Shape

The next term is the 3D construction from the 2D shape term, which escalates the 2D structure into 3D space. **It introduces depth, converting the flat shape into a volumetric form.** Cube roots encode dimensional proportionality, mapping the 2D shape into 3D space. **The subtraction enforces a self-balancing effect, keeping complexity within structured recursion.** Raising the result to the third power creates a **structured propagation across three dimensions**. This term represents the stabilization of recursive propagations into a spatial framework. It ensures self-similarity and coherence, preventing the structure from

diverging chaotically. This step is where space-time takes shape from recursive propagations.

$$\left[ \left( \frac{20}{17} \right)^\Phi - \left( \frac{17}{20} \right)^\Phi \right]^2$$

### Evolution of the 3D Structure Over Recursive Propagations

The final term is the evolution of the 3D structure and governs how the 3D structure evolves over RPs—dictating how complexity escalates over time. **The fractions  $\frac{20}{17}$  and  $\frac{17}{20}$  encode scaling ratios between recursive states. Raising them to the golden ratio ( $\Phi$ ) enforces self-similar proportionality, ensuring that complexity escalation follows the Fibonacci-like recursive structure seen in nature.** Squaring the result stabilizes the structure over multiple RPs, ensuring long-term coherence. **This step aligns RPs to ensure smooth emergence-to-convergence (E2C) processes.** It determines how each RP builds upon the previous, ensuring stability while allowing complexity escalation. This term governs the self-propagating growth of structured RPs, defining how the universe maintains equilibrium while scaling complexity. Now we can take this full structure and solve it to get back to the recursive-propagative mechanism of existence:

$$\begin{aligned}
 & - \left( \sqrt{\frac{17}{4}} - \sqrt{\frac{4}{17}} \right)^2 * - \left( \sqrt[3]{\frac{20}{4}} - \sqrt[3]{\frac{4}{20}} \right)^3 * \left[ \left( \frac{20}{17} \right)^\Phi - \left( \frac{17}{20} \right)^\Phi \right]^2 = e^{i\pi} \\
 & -(\sqrt{4.25} - \sqrt{0.235})^2 * -(\sqrt[3]{5} - \sqrt[3]{0.200})^3 * [(1.176)^\Phi - (0.850)^\Phi]^2 = e^{i\pi} \\
 & -(2.062 - 0.485)^2 * -(1.710 - 0.585)^3 * [1.30 - 0.769]^2 = e^{i\pi} \\
 & -(1.577)^2 * -(1.125)^3 * [0.531]^2 = e^{i\pi} \\
 & -1.577^2 * -1.125^3 * 0.531^2 = e^{i\pi} \\
 & -1.577^2 * -1.125^3 * 0.531^2 = e^{i\pi} \\
 & 2.487 * -1.424 * 0.282 = e^{i\pi} \\
 & -3.541 * 0.282 = e^{i\pi} \\
 & -1 = e^{i\pi}
 \end{aligned}$$

$-1 = e^{i\pi}$  Look familiar? Let me help you:  $e^{i\pi} + 1 = 0$

Yes, it results in **Euler's Identity**, our best friend who helps us understand the fractal universe at all scales. **People consider Euler's Identity to be one of the most elegant equations in mathematics.** It links the fundamental constants of mathematics—Euler's number ( $e$ ), the imaginary unit ( $i$ ), and pi ( $\pi$ )—in a way that seems almost mystical. However, this equation is a direct expression of the fundamental recursive-propagative structure governing existence itself. **It is what makes The Triangle of Existence the structural centerpiece of existence.** Let's connect everything to this triangle. There are three side combinations, each corresponding to the bigger picture that complements the mathematical framework.

As a final note before moving into the next section, I want to point out that we already find 20, 17, and 4 in our natural aspect ratios because of their profound beauty and a sense that they are just right. Portrait media is 17 by 20, and landscape media is 17 by 20. Traditional screen formats are 4 by 3 and their widescreen component is  $4^2$  by  $3^2 = 16$  by 9. We have always had an affinity to these numbers, now we see why.

## Triangle of Existence Structure

The Triangle of Existence helps us place the other mechanisms of existence.

$$\text{Lume + RPs: 20 Side} = 1 + \frac{\left( e^\pi + e^2 - \frac{1}{e} + \Phi^2 + \pi \right)}{\left( \frac{\pi}{\Phi} \right)} = 19.472 \approx 20$$

$$\text{Minimum Triangle to Pentagon} = \frac{4}{20} = \frac{1}{5} = 20\%$$

$$\text{Minimum Triangle to Pentagon} = \frac{20}{4} = 5$$

The 20 side of *The Triangle of Existence* represents the whole system of existence, including lumen, unbounded, and bounded recursive propagations.

$$\begin{aligned} 4 \text{ Side} &= \text{Unbounded RPs} - \text{Bounded RPs: } 13.236 - 5.236 = 8 \rightarrow 4 * 2 \rightarrow 2^2 * 2 \rightarrow 2^3 \\ &= 8 \end{aligned}$$

The 4 side of *The Triangle of Existence* represents the gradient between unbounded and bounded RPs in a few ways:

$$\begin{aligned} 8 &= 4 * 2 = \text{Triangle at RP}_1 \rightarrow \text{Triangle at RP}_2 \\ 2^3 &= RP_1 \rightarrow RP_2^{\text{3D Space}} \end{aligned}$$

It also connects back directly to the 17 side of *The Triangle of Existence*.

$$\frac{13.236}{\pi} * \left( \frac{17}{2^3} \right) = \frac{13.236}{\pi} * \left( \frac{17}{4 * 2} \right) = \frac{13.236}{\pi} * \left( \frac{17}{8} \right) = 9$$

Finally, the 17 side connects the whole thing to the relational rotational dynamic.

$$17 \text{ Side} = \sqrt[3]{17}^{\text{3D Space}} = \sqrt[3]{17} = 2.57 \rightarrow 1 + \frac{\pi}{2} \rightarrow 1 + 1.57 \rightarrow \frac{\Omega}{\Delta} + \text{RRD}$$

We can also see that their relationships now form the following structure. In fact, we see here that the 1 is similar to the 1 we see in bounded RPs  $1 + \Phi^3$  and also in  $\Phi^2 = \Phi + 1$  showing how complexity escalation and  $\frac{1}{\Phi} = \Phi - 1$  showing the connection to stabilization.

We also know that the 1 encodes the recursive-propagative mechanism of  $-e^{i\pi}$ .

$$\text{Bounded RPs Rotation by RP + Definedness} = \frac{17 \text{ Side}}{20 \text{ Side}}$$

$$\text{Bounded RPs Rotation by RP} = \frac{17 \text{ Side}}{4 \text{ Side}}$$

$$\text{Minimum Triangle to Pentagon} = \frac{4}{20} = \frac{1}{5} = 20\%$$

$$\text{Minimum Triangle to Pentagon} = \frac{20}{4} = 5$$

We can step back and find the whole system of existence found in this structure.

$$20 = \text{Lumen} + \text{All RPs or Percent of Each Triangle to Pentagon}$$

$$4 = \text{Grounding Triangle of Existence RP}_n$$

$$17 = \text{Definedness} + \text{Relational Rotational Dynamics}$$

But the final unified formula for *The Triangle of Existence* can be unified here:

$$\text{Unified Structure Equation} = \frac{-e^{i\pi} + \text{RRD}}{\text{Geometric Alignment}}$$

$$-e^{i\pi} + \text{RRD} = 1 + 1.57 = 2.57^3 = 17 \text{ Side}$$

$$\text{Geometric Alignment} = 20 \text{ Side} = 4 \text{ Side} * 5 \text{ Triangles}$$

$$\begin{aligned} \frac{17 \text{ Side}}{20 \text{ Side}} &= \frac{17 \text{ Side}}{5 * 4 \text{ Side}} = \frac{-e^{i\pi} + \text{RRD}}{5 \text{ Triangles} * 4 \text{ Side}} \\ &= \frac{-e^{i\pi} + \text{RRD}}{\text{Pentagon Connected to the 4 Side Triangle}} \end{aligned}$$

*The Triangle of Existence* provides the directions for 3D space moving through time and organizes RPs into The Record through complexity escalation.

## The Recursive-Propagative Steps Equation: 4-3-2-1 Rule

Alright, here is where it all comes together. We're looking for **the most fundamental expression of recursive-propagative complexity escalation and stability**—the core mathematical structure that explains gravity, dark matter, and dark energy as phase-balancing effects rather than forces.

$$\begin{aligned} &\left( \left| e^{\frac{i\pi}{2}} * \Phi \right| \right) - \left( e * \frac{1}{e} \right) \\ &\frac{\pi}{2} = \text{RRD} \end{aligned}$$

### 4-3-2-1 Rule: Understanding the Imaginary Unit & Rotation

The imaginary unit  $i$  represents a  $90^\circ$  rotation in the complex plane. Understanding the 4-3-2 Rule clarifies how RPs escalate complexity.

#### 4 = Possible Phase Shift Locations

At any given RP, there are four  $90^\circ$  positions for existence to be in, as we see this in the RRD. Existence as we see and experience it is always occupying all four locations; one for each spatial dimension and one for time. Phase shifting does not necessarily mean spinning in the way we typically think of it, it simply means that existence is one way at  $\text{RP}_n$  then it becomes

something different instantaneously in the next  $RP_{n+1}$ . That space in-between RPs is the phase shift. It does not exist because we have hit the structural limit of existence.

### 3 = Steps Per RP

Each RP contains three steps, which are 1) Complexity Escalation, 2) Phase Shift, and 3) Stabilization.

### 2 = Steps Per RP

Recursion by definition is when the output of the last step serves as the input for the next. There are really only two RPs at any given time, the current one ( $RP_{n-1}$ ) that stabilized which becomes the input for the next complexity escalation. Here are the steps laid out.

#### 1 = Recursive Propagation at a Time

Recursion by definition is when the output of the last step serves as the input for the next. There are really only two RPs at any given time, the current one ( $RP_{n-1}$ ) that stabilized which becomes the input for the next complexity escalation. Here are the steps laid out.

#### Step 1: Complexity Escalation Phase (Input for $RP_n$ & Output for $RP_{n-1}$ )

Complexity escalates across RPs. This part is where the  $1\frac{1}{3}$  step comes in from *the Triangle of Existence*. We cannot interact with the escalated complexity until it stabilizes.

#### Step 2: Rotational Phase Shift (Phase Shift)

90° Rotation in the Complex Plane. It places the current RP into the imaginary axis, encoding the recursive transition of propagative complexity into The Record. This expression encodes the rotational phase shift in-between recursive propagations. This term represents the rotational patter of complexity escalation and stabilization, as former RPs move out of definedness and into The Record, they do so by rotating by 90° into the complex plane.

#### Step 3: Stability Phase (Output for $RP_n$ & Input for $RP_{n+1}$ )

The stability phase of the RP is where after complexity escalation, existence stabilizes into existence around us. This term provides the structure, balance, and prevents complexity escalation from destabilizing and diverging.

### The Birth of The Planck Units

The Planck units, specifically Planck time ( $t_P$ ) and length ( $l_P$ ), represent the smallest increments of time and space within defined reality. They form the foundational scales for the recursive-propagative complexity scaling that begins at  $RP_1$  (the birth of the universe) and transitions into  $RP_2$  (the stabilization of complexity). These units anchor the emergence of complexity by establishing the "grain size" of space and time at the earliest stages of existence.

$$t_P = \sqrt{\frac{\hbar G}{c^5}} \approx 5.39 * 10^{-44} \frac{r}{s}$$

**Planck Time:** The Quickest Unit of Time

Planck Time from  $RP_1$  to  $RP_2$ :  $t_{R_2} - t_{R_1} = 5.391 * 10^{-44} * \Phi \approx 8.72 * 10^{-44} s$

The Planck time represents the smallest measurable time interval, where quantum gravitational effects dominate. In *The Theory of Existence*, the time between emergence at RP<sub>1</sub> to convergence at RP<sub>2</sub> is proportional to  $t_P$  scaled by the Golden Ratio ( $\Phi$ ).

$$l_P = \sqrt{\frac{\hbar G}{c^3}} \approx 1.62 * 10^{-35} \frac{m}{s}$$

**Planck Length:** The Shortest Unit of Length

Planck Length from RP<sub>1</sub> to RP<sub>2</sub>:  $l_{P_2} - l_{P_1} = 1.616 * 10^{-35} \cdot \Phi \approx 2.616 * 10^{-35} m$

The Planck length represents the smallest measurable time interval, where quantum gravitational effects dominate. In *The Theory of Existence*, the time between emergence at RP<sub>1</sub> to convergence at RP<sub>2</sub> is proportional to  $l_P$  scaled by the Golden Ratio ( $\Phi$ ).

**The Planck units mark the fundamental intervals of “time” and “space”** at which recursive propagations stabilize definedness and escalate complexity into stability. In *The Theory of Existence*, these units serve as the starting point for recursive propagations, where complexity escalates (ideally) proportionally to stability at the Golden Ratio. As **recursion slows and propagation stretches** to accommodate increasing complexity, the transitions between states scale naturally by the Golden Ratio. This scaling ensures that the smallest increments of recursions and propagations reflect the proportional growth needed to maintain stability and coherence as complexity escalates.

## Planck Time, Length, & The Speed of Light

$$t_P = \sqrt{\frac{\hbar G}{c^5}} \approx 5.39 * 10^{-44} s \rightarrow 5.391 * 10^{44} \frac{\text{recursions}}{\text{second}}$$

$$l_P = \sqrt{\frac{\hbar G}{c^5}} \approx 1.616 * 10^{-35} m \rightarrow 1.616 * 10^{35} \frac{\text{propagations}}{\text{meter}}$$

Why do we have the Planck units... why are the Planck time and Planck length their numbers? That is a fantastic question, and I have the answer. Let's start with the minimum and maximum.

**Minimum-Planck Length:**  $\Phi = 1.618 \approx 1.616 * 10^{-35} m$

**Maximum-Planck Time:**  $e * \Phi = 4.39 \rightarrow 1 + 4.39 = 5.39 \rightarrow 5.39 * 10^{-44} s$

The Planck length dictates the shortest distance anything including light can travel which is set to the tiniest Golden Ratio, which makes sense because **at RP<sub>1</sub> of the Big Bang all that existed was a single recursive propagation the size of the Golden Ratio**. That set the minimum of existence and everything since then is complexity escalated. The Planck time sets the maximum and it is  **$e * \Phi$  being the same number as dark energy proportions to lumen**; it also makes sense because dark energy is the emergent measurement of recursive propagation

The other Planck units, such as Planck mass, Planck energy, and Planck volume, for example, **do not follow Golden Ratio scaling because the Planck time and Planck length correspond to the most basic building blocks** of photons and empty space and everything else comes from complexity escalation. **Even at the Planck scale, there is a set proportionality between the minimum and maximum: the speed of light.** This proportionality never changes, even with escalating complexity. Light will always travel at the speed of light because time and length are always proportional in light (minimum complexity) and most stable during complexity escalation. We can simplify the Planck time and length by pulling out the proportionality  $\beta$ . We see that when adjusting for proportionality, there is a simple ratio where

$$10^{44} = \beta, c^5 \frac{r}{s}$$

$$10^{35} = \beta, c^3 \frac{m}{s}$$

We see that when adjusting for proportionality there is a simple ratio where and these numbers are very important.

$$\frac{\text{Planck Time}}{\text{Planck Length}} = \frac{10^{44}}{10^{35}} = \frac{c^5}{c^3} = \frac{5 \text{ Sides}}{3 \text{ Sides}} = \frac{\text{Pentagon}}{\text{Triangle}} = \frac{\text{Between Pixels}}{\text{Pixels}} = c^2 = 10^9$$

Yes! Correct. This relationship is why we have fundamental limits. You cannot exist smaller or larger than a triangle with three sides or a pentagon with five sides. The **triangle represents space**, which encodes the 3D nature of existence; consider this the pixel. On the other hand, **the pentagon represents “time”**; consider it the smallest way to move between triangles (remember the geometry of fractal existence is single triangles aligning in pentagons, escalating complexity into The Record).

**Speed of Light:**  $c = 299,792,458 \frac{m}{s} \approx 3 * 10^8$

The speed of light may emerge from the geometric inevitability arising from the fractal structure of existence. In *The Theory*, the recursive-propagative structure of space dictates that photons **exist within triangles** and **propagate across pentagons**, meaning their motion is inherently constrained by geometric principles rather than an arbitrary speed limit. If the true nature of  $c$  is a structural feature of recursion, its real value may be something fundamental like 3 or  $3 * 10^8$ , appearing only slightly off in SI units due to how we have chosen to define distance and time. If we had chosen different base units for length and time, we could have measured it as exactly  $3 * 10^8$  or even 1 in certain natural unit systems, such as Planck units, where  $c$  is set to 1 by definition. This adjusted speed would mean that the measured speed of light is not an independent parameter of physics but a consequence of the tiling of space itself, reinforcing that nothing in existence is truly arbitrary—only our assigned measurements.

## Relative Fractal Dynamics

$$\Phi = \Omega \cdot \left( \frac{\zeta : \kappa}{\Delta} \right), v = \Phi$$

$$\text{Definedness} = \text{Stability} * \left( \frac{\text{Recursion : Propogation}}{\text{Complexity}} = \text{Golden Ratio} \right)$$

This is *The Equation of Existence* in its most expanded final form; many emergent properties deepen our understanding of existence. Although, if I'm being completely honest, even,  $\Phi = \frac{\Omega}{\Delta}$  is arguably an overcomplication of what a true Grand Unified Theory of Everything could be, which could simplify to  $\Phi = \Phi \rightarrow \emptyset$ , which is definedness equals definedness or not (undefinedness). **Of course, that version isn't very useful for us, so let's move along...**

This expression reveals the intricate relationships that underpin definedness ( $\Phi$ ), stability ( $\Omega$ ), recursion ( $\zeta$ ), propagation ( $\kappa$ ), and complexity ( $\Delta$ ). Although this version was my original formulation of *The Equation of Existence*, I later realized it was unnecessarily complex—but the nuances it captures remain critical to understanding how recursive propagations govern definedness.

In this form, recursion and propagation proportionally scale as a function of complexity; they **harmonize perfectly to maintain the definedness of existence**. This proportional relationship ensures that as complexity evolves, recursion rates slow, and propagation lengths stretch in tandem, preserving a consistent framework. From our perspective, this synchronization masks the underlying shifts in complexity as recursion and propagation adjust together to maintain balance. Consider the following example:

$$\frac{10^{-44}:10^{-35}}{1} = 10^{-44} : 10^{-35} \rightarrow \frac{10^{-44}:10^{-35}}{2} = 10^{-22} : 10^{-17}$$

See how dividing by two, **the growing complexity slows recursion rates down and stretches propagation lengths** (now time recurs at a maximum of  $10^{22} \frac{r}{s}$  and the smallest space is  $10^{17} \frac{m}{s}$ )? This alignment ensures phenomena remain stable and proportional across self-similar scales, suggesting that while **recursion and propagation** are proportional, they **don't drive phenomena acceleration—complexity escalation does**. As complexity grows, the universe remains stable and predictable, a testament to the balance between these fundamental processes.

Rather than a single universal fractal governing existence (luckily), **relative fractals emerge throughout existence**, each forming within its own recursive propagations. These fractals exist in a relational network, dynamically adjusting to the complexity of their environments. Each phenomenon—whether a galaxy, a neural network, a weather pattern, or a social structure—follows **relative fractal principles to its constraints of stability, complexity, and definedness**. Unlike classical fractals, which scale infinitely with self-similar repetition, **relative fractals operate within bounded proportionalities** (infinities don't exist in reality), shaping how phenomena emerge, evolve, and interact across space and time. **We all have our relative fractal**, which you will learn more about later. From the spiral of a hurricane to the branching of trees, from economic growth to the flow of human thought, relative fractals form the scaffolding of definedness, ensuring that complexity escalates in a structured, scalable way. Let's look at this math.

## Relative Fractal Dynamic Estimation via Mass & Energy

We reviewed earlier how **complexity has two qualities: 1) Quantity and 2) Intricacy**. At the time of writing this book, I am uncertain how to measure intricacy with enough accuracy for it to make the cut, even though we do have the formula. However, **I can estimate complexity to a notable degree using mass and energy**, which we can measure accurately. Here is the *Relative Fractal Dynamic Equation*.

$$\Psi = \frac{(t_p : l_p)}{E_p}$$

This formula scales relative recursion and propagation rates across complexity as approximated by energy-mass equivalence. It shows the relationships of recursion, propagation, and energy as an approximate estimate of complexity defined by mass-energy held constant.

$$E = mc^2 \rightarrow \frac{E}{m} = \frac{mc^2}{m} = \frac{E}{m} = c^2$$
$$c^2 = \frac{E}{m}$$

This reformulation of the most beautiful equation reveals a profound connection between energy, mass, and the fundamental dynamics of reality's fractal structure. Here, the speed of light squared—represents more than a constant of proportionality; it encapsulates the dynamics of recursion and propagation at the foundational level. **The Planck mass-energy directly corresponds to the relative recursive-propagative dynamics moderated by complexity**. The  $c^2$  term reflects the dual scaling of recursion and propagation: one recursion rate aligned with temporal updates and one propagation length aligned with spatial extension. **Together, these two aspects form the diagonal trajectory of complexity growth in the fractal network.**

**Speed of Light:**  $c$

We know that  $c$  represents the speed of light and we can consider at the simplest complexity to be a single photon.

**Two-Photon Interactions:**  $c^2$

When two photons relate to each other we get a complexity escalation. All mass-energy equivalence is held at the constant  $c^2$  because that is the minimum complexity needed to transform energy to mass, photons into matter.

**Mass to Energy Conversion:**  $E = m * 9 * 10^{16}j$

**Planck Mass:**  $m_p = \sqrt{\frac{hc}{G}} = 2.176 * 10^{-8}kg$

**Planck Energy:**  $E_p = \sqrt{\frac{hc^5}{G}} = 1.956 * 10^9j$

$$m_p = \sqrt{\frac{hc}{G}} = 2.176 * 10^{-8} kg = E_p = \sqrt{\frac{hc^5}{G}} = 1.956 * 10^9 J$$

We can take this information and transform all our measurement to Planck units to standardize the representation of them while we calculate the relative fractal dynamic.

$$\text{Example for Apple: } \psi = \frac{t_p : l_p}{E_p} = \frac{10^{44} \frac{r}{s} : 10^{35} \frac{p}{m}}{10^6 E_p} = 10^{38} \frac{r}{s} : 10^{29} \frac{p}{m}$$

Let me show you an example. Let's consider an apple. An Apple weighs about 0.2 kg which we can transform into Planck mass or Planck energy (same thing), which, for this apple, would be  $\sim 10^6 E_p$ . Then, we simply calculate the relative fractal dynamics by dividing the recursive propagation of light by the Planck energy of the apple and we get  $10^{38} \frac{r}{s}$  and  $10^{29} \frac{p}{m}$ ; **we can repeat this process for a range of phenomena** to get a better feel for how recursive propagations behave at varying complexities.

Approximate complexity estimations and their relative recursions and propagations using only quantity complexity and do not consider intricacy complexity. **The relative recursions and propagations range from a photon and slow/stretch to extremes around the black hole.** The actual relative fractal dynamics likely vary based on the intricacy of the complexity, such as those seen in scaling intelligence.

Phenomena	Mass	Planck Energy	$\psi$ Recursions	$\psi$ Propagations
Photon	0 kg	1 $E_p$	$\sim 10^{44} \frac{r}{s}$	$\sim 10^{35} \frac{p}{m}$
Paperclip	0.001 kg	$\sim 10^4 E_p$	$\sim 10^{40} \frac{r}{s}$	$\sim 10^{31} \frac{p}{m}$
Apple	0.2 kg	$\sim 10^6 E_p$	$\sim 10^{38} \frac{r}{s}$	$\sim 10^{29} \frac{p}{m}$
Small Rock	1 kg	$\sim 10^7 E_p$	$\sim 10^{37} \frac{r}{s}$	$\sim 10^{28} \frac{p}{m}$
Cat	4 kg	$\sim 10^8 E_p$	$\sim 10^{36} \frac{r}{s}$	$\sim 10^{27} \frac{p}{m}$
Human	70 kg	$\sim 10^9 E_p$	$\sim 10^{35} \frac{r}{s}$	$\sim 10^{26} \frac{p}{m}$
Small Car	1,000 kg	$\sim 10^{10} E_p$	$\sim 10^{34} \frac{r}{s}$	$\sim 10^{25} \frac{p}{m}$
Earth	$10^{24} kg$	$\sim 10^{32} E_p$	$\sim 10^{12} \frac{r}{s}$	$\sim 10^3 \frac{p}{m}$
Sun	$10^{30} kg$	$\sim 10^{37} E_p$	$\sim 10^7 \frac{r}{s}$	$\sim 10^{-2} \frac{p}{m}$
Black Hole	$10^{31} kg$	$\sim 10^{38} E_p$	$\sim 10^6 \frac{r}{s}$	$\sim 10^{-3} \frac{p}{m}$

Relative fractal dynamics are a cornerstone of *The Theory*, offering profound insights into the nature of time, observation, and quantum phenomena. Relative fractal dynamics vary depending on a phenomenon's complexity and environmental conditions, meaning phenomena progress through recursive-propagative steps (RPs) at different speeds and

movements. This variability explains localized differences in time perception, interaction, and quantum behaviors, such as those seen in time dilation and the double-slit experiment.

If this equation holds, then the relationship between gravity and recursion should be fully derivable, meaning that gravity is not just a phenomenon of mass but rather a mathematical inevitability of how recursive propagations slow and stabilize into complexity. This would mean that general relativity was right about the effect of gravity bending space-time, but wrong about why it happens—because space-time is just the structural framework of recursion interacting with itself.

## ***The Equation of Existence as the Universal Corrector***

*The Equation of Existence* is a corrective lens through which we can understand and reconcile all phenomena. We can apply it to every existing equation and model—whether in physics, economics, or other disciplines—simply by multiplying those equations by *The Equation*; we can refine them to account for the stability-complexity dynamics that govern reality. This process reveals where models were misaligned with the universe's intrinsic mechanics, bringing clarity and coherence where there was fragmentation and paradox.

By integrating the *Equation of Existence*, we can resolve the long-standing failure to unify general relativity and quantum mechanics, for example, two pillars of modern physics that describe vastly different scales but have resisted reconciliation. **The equation also extends beyond physics, correcting models in economics and even revealing unexpected coherence in systems where no connection was previously believed to exist.** The following updated equations demonstrate how *The Equation* refines these models, accounting for recursive propagations, and the all-encompassing importance of definedness.

### **Einstein's Field Equations**

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu} \rightarrow G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu} * \Phi = \frac{\Omega}{\Delta}$$

You can update *Einstein's Field Equations* by incorporating *The Equation of Existence*. This change encapsulates the recursive propagations of energy and spacetime. By embedding  $\Phi$  into the equations, spacetime curvature and energy-momentum unify **under a framework that resolves singularities and aligns general relativity with quantum mechanics where light demonstrates micro-level recursions (quantum mechanics) and macro-level propagations (general relativity)**.

We can reframe singularities traditionally resulting from infinite energy densities into recursive-propagative bottlenecks. At such extremes, propagation ensures continuity with stability, while recursion modulates energy density, preventing runaway escalation. This revision eliminates infinite curvature by introducing stabilizing feedback through recursive-propagative interactions. Black hole interiors, for instance, no longer collapse into infinite states but instead transition smoothly to drastically slowed recursion and stretched propagation, explaining the time dilation and extreme gravity we see around black holes. The updated *Einstein Field Equations* eliminate infinities and unify phenomena across scales

by redefining the relationship between energy, spacetime curvature, and recursive propagations.

## Schrödinger Equation

$$i\hbar \frac{\partial}{\partial t} \Psi(x, t) = \hat{H} \Psi(x, t) \rightarrow i\hbar \frac{\partial}{\partial t} \Psi(x, t) = \hat{H} \Psi(x, t) * \Phi = \frac{\Omega}{\Delta}$$

We can modify the *Schrödinger Equation*, a cornerstone of quantum mechanics, by incorporating *The Equation of Existence*. In this context, stability and complexity embody the relationship between space and recursive-propagative relations. This integration fundamentally **reshapes the quantum wavefunction by embedding recursive-propagative dynamics** into its behavior, **aligning quantum phenomena with macroscopic stability**.

We reinterpret superposition within this framework as a natural consequence of propagation, allowing the wave function to traverse multiple paths in space over multiple recursions. Recursion, embedded within complexity, stabilizes these paths, maintaining coherence until an **interaction or measurement imposes higher complexity**, forcing behavioral changes of light and particles.

Observation and measurement then **shift the balance of recursion and propagation proportionally as a function of complexity gradients** and relative fractal dynamics, causing the wave function to align with the behavior noted in observations. This change eliminates the abstraction of wavefunction collapse and finally explains the double-slit experiment. *The Theory* provides a robust, physically grounded explanation for the emergence of defined states, “superposition,” and quantum stability, embedding them into a seamless recursive-propagative system.

## Friedmann Equations

$$\left(\frac{\dot{a}}{a}\right)^2 = \frac{8\pi G}{3}\rho - \frac{k}{a^2} + \frac{\Lambda}{3} \rightarrow \left(\frac{\dot{a}}{a}\right)^2 = \left(\frac{8\pi G}{3}\rho - \frac{k}{a^2} + \frac{\Lambda}{3}\right) * \Phi = \frac{\Omega}{\Delta}$$

We can update the *Friedmann Equations*, which describe the universe's expansion, by incorporating *The Equation of Existence*. In this updated form, stability ( $\Omega$ ) and complexity ( $\Delta = \frac{\text{recursion}}{\text{propagation}}$ ) introduce recursive-propagative dynamics into the governing equations of cosmic evolution. By embedding  $\Phi$ , we reframe the *Friedmann Equations* to incorporate the recursive propagations related to stability, providing a more coherent and complete explanation of cosmic expansion.

This modification eliminates the need for dark energy and matter as particles. Instead, we interpreted the observed acceleration of the universe's expansion as a **natural consequence of the recursive propagations**. We can redefine the cosmological constant  $\Lambda$  as a dynamic term influenced by  $\Phi$ , such that cosmic acceleration emerges from the recursive stabilization of spacetime rather than an enigmatic particle. This approach aligns the large-scale structure of the universe with the principles of definedness and the *Equation of Existence*. It provides a unified framework to explain cosmic acceleration and spatial

expansion, revealing the universe's behavior because of recursive-propagative interactions with space governing its evolution.

## Cobb-Douglas Production Function

$$Y = A \cdot K^\alpha \cdot L^{1-\alpha} \rightarrow Y = A \cdot K^\alpha \cdot L^{1-\alpha} * \Phi = \frac{\Omega}{\Delta}$$

*The Equation of Existence* unifies physics, **but it also unifies everything**. By incorporating the *Equation of Existence*, we can enhance the *Cobb-Douglas Production Function*, a cornerstone of economic modeling. Here,  $K$  represents capital,  $L$  represents labor,  $A$  captures total factor productivity, and  $\Phi$  introduces a stability-complexity correction to traditional economic models. The balance between propagation and recursion becomes a central factor in understanding economic stability and innovation. **Propagation captures capital's expansive and scaling capabilities, driving growth through investment and resource allocation. Recursion accounts for the iterative contributions of labor, including skills, creativity, and feedback mechanisms, which ensure stability and adaptability within the system.** Definedness  $\Phi$  represents the emergent coherence of these dynamics, allowing for a more nuanced understanding of productivity and efficiency.

This enhancement reveals that economic stability arises from the recursive propagations between capital and labor, as mediated by  $\Phi$ . **Capital's expansive potential must be stabilized and directed by the iterative, feedback-driven contributions of labor to sustain innovation and prevent systemic collapse.** By integrating recursive-propagative dynamics, the updated *Cobb-Douglas Function* provides a more encompassing view of economic systems, capturing their emergent properties and resilience in response to internal and external pressures.

## Logistic Growth Model

$$\frac{dP}{dt} = rP \left(1 - \frac{P}{K}\right) \rightarrow \frac{dP}{dt} = rP \left(1 - \frac{P}{K}\right) * \Phi = \frac{\Omega}{\Delta}$$

Let's throw a curveball at *The Equation*. We can update the *Logistic Growth Model*, which describes population growth within biological, ecological, and social systems. Here,  $P$  represents the population size,  $r$  is the intrinsic growth rate,  $K$  is the carrying capacity, and  $\Phi$  introduces a stability-complexity correction to the model. In *The Theory*, stability ( $\Omega$ ) captures the expansion of resources and availability supporting growth, while complexity ( $\Delta = \frac{\text{recursion}}{\text{propagation}}$ ) accounts for feedback dynamics that stabilize as growth approaches carrying capacity. We can reveal the recursive-propagative dynamics underpinning population behaviors by embedding  $\Phi$  into the *Logistic Growth Model*. **Propagation drives growth by enabling access to resources and opportunities, facilitating expansion toward the carrying capacity  $K$ . Simultaneously, recursion introduces stabilizing feedback loops as resource competition and environmental constraints dominate.** Definedness  $\Phi$  ensures that growth patterns remain coherent, preventing divergence or instability as the system saturates.

This modification **enhances the model's applicability** by accounting for the fractal dynamics of recursive propagations **across scales**. In biological phenomena, it captures the balance between expansive growth and stabilizing mechanisms like predation or resource depletion. In ecological contexts,  $\Phi$  reflects the interrelatedness between species interactions and environmental constraints. Social systems highlight the balance between innovation-driven expansion through propagation and institutional stabilization through recursion. These examples demonstrate how ***The Equation* doesn't replace or modify existing equations and models**—it **refines and corrects them to align with the fundamental dynamics of complexity, recursion, propagation, and stability**. *The Equation* provides an avenue to achieve coherence across phenomena and systems that once seemed irreconcilable, **paving the way for unified understanding and unprecedented progress**. *The Equation of Existence* invites us to **revisit every field**, refine our understanding, and build updated frameworks that reflect the dynamics of reality.

## The Grand Finale of Existence

**The universe will continue long after all agents have returned to the environment and will eventually reach heat death.** The universe enters its final state, a vast expanse of near-absolute empty space with increasingly thin complexity gradients. **All the matter with mass in the universe will diverge back to energy and then back to photons, including freeing up all the trapped complexity in black holes.** These photons will then become so desperate that their relative fractals will disconnect, leaving just a single photon and empty space, just like at RP<sub>1</sub>. Ultimately, the fundamental processes of recursive propagations, complexity, and stability cease to exist.

$$e^{\pi i} + 1 = 0$$

Euler's Identity encapsulates recursion ( $e$ ), propagation ( $\pi$ ), and the next recursive propagational rotation ( $i$ ), and the balance of stability over complexity ( $\frac{\Omega}{\Delta} = \frac{1}{1}$ ), returning to +1. **The  $i$  which serves as the rotational step into the complex plane will become undefined because there cannot be a next step with no complexity gradient.** Recursion cannot function if there can be no change in states from one RP<sub>n</sub> → RP<sub>n+1</sub>. Without relational co-definedness and perfect complexity at +1, stability, which is the degree to which complexity is attracted to complexity, cannot stabilize the photon and the empty space and photon simultaneous undefined. Even before this separation occurs, once the photons' relative fractal separates from the rest of the universe, it is unable to return to the current universe; it is functionally non-existent to us. Here is the equation:

$$e^{\pi\emptyset} + \emptyset = \emptyset$$

### The Final State of All of Existence

**This process will inevitably happen to all photons as the universe approaches heat death, marking the complete breakdown of recursive propagations and ending all complexity.** This final transition reflects the profound symmetry of the universe: **from the emergence of definedness at the Big Bang to its resolution at heat death, governed throughout by the principles encoded in Euler's Identity.** Independent co-definition arises at RP<sub>1</sub>, never to

return, and simultaneous undefinedness marks the final moment of existence. Ultimately, existence does not fight its futile escape from non-existence; **not in a defeated way, it goes with dignity, pride, and the recognition that it gave non-existence one hell of a fight.**

## Knowledge Without Drive Is a Waste

$$\text{What} = \text{How} \cdot \left( \frac{\text{When} : \text{Where}}{\text{Why}} \right)$$

I want to reflect before we dive into the fun of time dilation and quantum mechanics. I want to wrap up The Theorem section by closely examining the expanded form of *The Equation of Existence*. *The Equation* is more than a mathematical or abstract expression—it **contains the structure of existence itself. It suggests that what something, anything is—The What—emerges from specific relationships between The How, The When, The Where, and The Why of existence.** From this perspective, *existence is constantly becoming rather than simply being.*

The ratio in the right term of *The Equation* reveals a deep intuition: time and space only have coherence when contextualized by meaning. Without *The Why, The When* and *The Where* remain isolated coordinates, devoid of significance. Multiplying by *The How* shows the role of action as the catalyst that transforms potential relationships into defined phenomena; it is why I start this book with “**Drive without knowledge is pointless. Knowledge without drive is a waste.**” In its fully expanded form, *The Equation of Existence* may well be the Grand Unified Theory of Everything, yet its most profound implication is that **nothing—knowledge included—holds meaning unless set into motion. Only through deliberate, transformative action does existence take on purpose and significance.**

