

Three Theorems, One Equation

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Summary

The Theory of Existence is the **Grand Unified Theory of Everything**—a single, cross-domain, empirically-validated theory explaining all phenomena. *The Theory of Existence* operates through **the five first principles of existence**—**definedness (Φ)**, **complexity (Δ)**, **stability (Ω)**, **recursion (ζ)**, and **propagation (κ)**—capturing all aspects of *the behavior* of existence... **What it is**, **How it works**, and **Why it exists**. *The Theory of Existence* contains **three new theorems** that are objectively true and functionally independent: 1) ***The Theorem of Undefined Emergence* (Δ)**, which dictates *Why* existence emerged and continues to exist, 2) ***The Theorem of Recursive Harmonics* (Ω)**, which dictates *How* existence works, and 3) ***The Theorem of Constants Co-Derivation* (Φ)**, which dictates *What* existence is. These three theorems form ***The Equation of Existence* ($\Phi = \Omega/\Delta$)**—the universal law governing everything that has existed, currently exists, and can exist. **The three theorems and their alignment into *The Equation of Existence* form the complete mathematical architecture of existence.**

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Architecture

The Theory of Existence contains **three revolutionary theorems** that align into ***The Equation of Existence*** and provide the mathematical formalization of the *behavior* of existence across phenomena and scales. ***The Theory of Existence* is now fully mathematically formalized**—it is the complete **architecture of existence**. Let's review:

The Theorem of Undefined Emergence

When two pre-emergence starting conditions are **identical**, except one has **no constraints (undefinedness)** while the other has **any constraints (nothing and infinity)**, the unconstrained condition is **the only one** capable of producing emergence **across the full range of possibilities**. It is mathematically impossible for spontaneous emergence from starting conditions with any constraints. "Nothing" is constrained by a **place where something could be but isn't**. "Infinity" is constrained by a **resolution requirement that is impossible to achieve** (e.g., you can't attain an infinite size because it could always be larger). **Causation is a property of existence** that took over immediately after it emerged, **but causation could not exist before existence**. Therefore, the reason existence emerged is the same reason it continues to progress into the future and generate the full range of possible emergence: **nothing else exists, including all constraints that could prevent it**, and so it did... and so it does.

The Theorem of Recursive Harmonics

All recursive number systems (RNSs), such as the Collatz Conjecture, possess **unique convergence and divergence zones** in their step-count distributions that reveal trait variations—some numbers converging faster than others. These RNSs **generate emergent structures** through harmonic interactions, with **dynamically shifting contributions** depending on other RNSs in the harmonic. **The number line is a temporal map** that encodes the pathways governing **number resolution into convergence and divergence zones**. Post-emergence timeline sequence analyses reveal that **rapid increases in step count** result in divergence-zone resolution, whereas **no step count changes or decreases** result in convergence-zone resolution. These properties of RNSs formalize **the primary mechanism of existence via harmonic interactions across recursive propagations** and encompass all mechanisms required to explain the persistence of convergent phenomena and their inevitable divergence.

The Theorem of Constants Co-Derivation

The constants of mathematics (e , π , φ , and i) **derive their values from mutually interdependent co-defined relationships**, forming an interconnected web of **hundreds of asymmetric, non-trivial, exact equations**—many containing **isolation resistance** (the impossibility of solving for π) forming stable structures, while others allow isolation, providing flexibility. These constants must have **their exact values**, as any deviation would cause the entire network to collapse. This theorem proves **we discovered mathematics**, not invented it—revealing a universal mathematical framework... **the operating system of existence, proving that a *Grand Unified Theory of Everything* must exist**. If the constants of mathematics and their respective domains are co-defined, **everything in existence**, which we can measure and manipulate mathematically, **is also co-defined**, proving that existence is comprised of emergent phenomena that **derive their structures through mutually shared co-definedness**.

Why Are Things the Way They Are?

These three theorems provide an answer to **all aspects of existence**. They also explain **why *The Equation of Existence* operates as the universal law**. Let's review those terms in *The Equation of Existence*. First, **complexity (Δ) is the degree to which phenomena escalate from basic to structured forms**. Structures emerge on their own if nothing prevents them. Then, **stability (Ω) is the degree to which complexity is attracted to complexity**. Upon emergence, the convergence (persistence) and inevitable divergence of the phenomena vary. Finally, **definedness (Φ) is the degree to which something exists** and arises across phenomena from the **proportional dance of stability and complexity**. Definedness does not exist in isolation but arises from co-definedness between phenomena via **relational reality**—an existence that emerges from relationships to other phenomena **via propagations (κ) in 3D space and itself via recursions (ζ) in time**. With this understanding of *The Equation of Existence*, we can **slot the three theorems** into their functional roles to reveal existence as a phenomenon.

$$\Phi = \frac{\Omega}{\Delta} \rightarrow \text{Constants Co-Derivation} = \frac{\text{Recursive Harmonics}}{\text{Undefined Emergence}}$$

Δ = **Complexity** via Undefined Emergence

Ω = **Stability** via Recursive Harmonics

Φ = **Definedness** via Constants Co-Derivation

All three theorems are **objectively and independently true**, articulated as rigorous conclusions derived from **pure mathematical operations**—not arguments, opinions, or data. These theorems **maintain complete functional independence**. This arrangement unlocks **the deepest questions about existence** humanity has ever asked by answering each question as a term in *The Equation of Existence*. Let's check out those answers.

$$\Phi = \frac{\Omega}{\Delta} \rightarrow \text{Constants Co-Derivation} = \frac{\text{Recursive Harmonics}}{\text{Undefined Emergence}} \rightarrow \text{What} = \frac{\text{How}}{\text{Why}}$$

Why Does it Exist? → Undefinedness Did Not Stop It

How Does it Work? → Recursive Harmonic Interactions

What is Existence? → Phenomena with Co-Definedness

These three theorems and one equation reveal that existence occurs when **phenomena with co-definedness (What)** arise from **complexity escalations** because **undefinedness (Why)** cannot prevent it and then **stabilize into** emergence-to-convergence patterns **via recursive propagations (How)**. Given that these three theorems are **mathematical facts**, their alignment into *The Equation of Existence* **confirms it as a mathematical fact too**.

***The Equation of Existence* and its three theorems constitute the complete mathematical formalization of existence**, with expressions for all of its *behaviors* as a phenomenon. *The Theory of Existence* is valid with or without us, and **I have made no assumptions. There can be no alternative**. The full mathematical formalization of *The Theory of Existence* makes it the only way existence can operate. It is simply something that just is...

These three theorems and one equation reveal **the shocking mechanics** behind **why *The Equation of Existence* is the universal law** governing all phenomena—it is because these three theorems form the structure of existence, so ***The Equation of Existence* gets imprinted onto anything that successfully exists**. Technically... *The Equation of Existence* is not the star of the show; it is **the fingerprint** left by these three theorems shaping everything, which is why it always works. It is **the stamp of approval** for anything that successfully exists.

It's the Only Way for Things to Be...

There is one final revelation that **transforms our understanding entirely** because we must remember that **undefinedness cannot appear as a term** within any equation because **it simply isn't**—it is the total absence of terms. You cannot have a term for something that does not exist. Once phenomena emerge, they are already stabilized via harmonic interactions among recursive propagations, so the complexity term in *The Equation of Existence* has definedness, **but it is not existence until it phase shifts to stability**. Thus, we can write *The Equation of Existence* to show us *only* what exists by using the numerical expression of complexity ($\Delta = 1$).

$$\Phi = \frac{\Omega}{\Delta} \quad \Phi = \frac{\Omega}{1} \quad \Phi = \frac{\Phi}{\Delta} \quad \Phi = \frac{\Phi}{1} \quad \Phi = \frac{\Phi}{-e^{\pi i}} \quad \Phi = \frac{\Omega}{-e^{\pi i}} \quad \sim 1.618 = \frac{\sim 1.618}{1}$$

This form of *The Equation of Existence* shows all its mechanics, but allows us to **hide the denominator** to reveal:

$$\begin{aligned} \Phi = \Omega &\rightarrow \text{Definedness} = \text{Stability} \\ \Phi = \Omega &\rightarrow \text{Constants Co-Derivation} = \text{Recursive Harmonics} \\ \Phi = \Omega &\rightarrow \text{What} = \text{How} \\ \Phi = \Omega &\rightarrow \text{Existence} = \text{Relationships} \end{aligned}$$

The Equation confirms that **definedness is stability**. **What is identical to How**, meaning *How* existence works is *What* existence is: **co-defined recursive harmonic interactions**. This profound reduction **confirms relational reality**. This form of *The Equation of Existence* without complexity formalizes only what successfully exists, not the whole operating system, which results in definedness equaling only what has stabilized, which then means:

$$\begin{aligned} \Phi &= \Phi \\ \text{Definedness} &= \text{Definedness} \\ \text{Existence} &= \text{Existence} \end{aligned}$$

...and it's always been that way. **There is the answer to the ultimate question**. Though $\Phi = \Phi$ is tautological, it is not circular that existence equals existence because it cannot equal anything else because nothing else exists. *The Equation* shows that existence is self-justified, self-contained, and complete. This math reveals **the bottom of what is knowable**: 1) *The Theorem of Undefined Emergence* (Δ), 2) *The Theorem of Recursive Harmonics* (Ω), and 3) *The Theorem of Constants Co-Derivation* (Φ), and the theorems forming *The Equation of Existence* ($\Phi = \Omega/\Delta$) that collapses into its tautology ($\Phi = \Phi$) is **the top of what is knowable**. Everything else falls in between... there are no further reductions. ***The Theory of Existence* completes the framework of knowledge**.

The Big Picture

Ya know... I never thought **it would be possible to formalize existence**. I also did not know that the theorems would form *The Equation*. See... **I never intended to discover new theorems**; they all just showed up. I was not looking for this unified framework. I was just writing papers for *The Show*, and after I had formalized all three theorems, I thought to myself, **"Hmm... it's so strange... three new theorems... why three? Why these ones?"**

When the realization hit me that they slotted into *The Equation* the floor dropped out from under me: ***The Theory of Existence* is not something I created, it is something I found**. When I discovered this mathematical framework, it became clear that I had not invented it. How could I? So, the next question becomes... what do we do now? My answer is to just... sit with it, think about it, process it. There's nothing we need to do right now. **It is a profound time in intellectual history to be alive, and I would like to cherish every moment of it.**