The Theorem of Constants Co-Derivation

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Summary

The Theorem of Constants Co-Derivation **proves that math was discovered, not invented.** This theorem shows that the fundamental constants of mathematics—such as π, e, and Φ—**do not exist as independent axioms.** Instead, **they are co-defined and are mutually interdependent.** The premise is simple: if math was discovered, it must have **irreducible first principles**—baseline concepts defining the mathematical structures. These principles **must co-define one another**; otherwise, their values would be arbitrary. I identified **hundreds of exact, nontrivial, and asymmetric equations** that establish these co-derived, mutually interdependent first principles. Altering a single constant collapses the entire framework. This theorem further reveals a **new algebraic property called "isolation resistance,"** in which you cannot isolate a constant because its values **do not derive independently.** Given that the constants are measurements of existence, this theorem proves that **mathematics is the discovered operating system of existence** and reveals that a *Grand Unified Theory of Everything* **must exist.**

Architecture

Did we discover or create mathematics? We currently think we built mathematics on **axioms—a foundational statement accepted as true by necessity**, such as "a straight line is the shortest distance between two points," serving as the foundation for more complex math. Different domains, such as calculus, algebra, and geometry, **have their own axioms**, suggesting that **we invented mathematics** by creating distinct, independent fields.

However, mathematics works so well across phenomena that it suggests we discovered it. Until we find a **universal mathematical architecture**, the distinction between invented and discovered remains unclear. *The Theorem of Constants Co-Derivation* definitely ends this debate by revealing this missing unified framework, proving that mathematics is **the discovered operating system of existence**, and revealing that a *Grand Unified Theory of Everything*—a single theory that explains all phenomena—**must exist**, and luckily… **it does** 😉

Required Proof of Constants Co-Derivation

Mathematical domains have unique constants—**numbers that always stay the same** and dictate **a fundamental property of existence**. The primary examples are **pi (π)** in geometry, **exponential growth/decay (e)** in calculus, the **imaginary number (i)** in transformations, and **the golden ratio (Φ)** in algebra. These constants have completely different mathematical architectures, or so we thought. We can write some of them using **fractions like Φ**, while others **we cannot, like π and e**, so mathematicians treat these constants as incompatible because they come from **different axiomatic foundations**. We have yet to find a single equation that relates them precisely.

The only known connections between these constants are **approximations, coincidences, or trivialities.** To prove math is discovered, we need at least one equation uniting the constants with three required properties to prove a universal framework: they must be 1) **exact,** 2) **non-trivial,** and 3) **asymmetric.** Let's examine each:

◊ **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 must reveal something meaningful about the mathematical constants' relationships, not just "we added random numbers to make it balance out."

◊ **Asymmetric**: The equation has a clear direction—one side does not simply mirror the other. For example, $5 + 2 = 5 - (-2)$ is symmetric, but $14/2 = 3 + 4$ is asymmetric because each side has unique properties.

The current problem is that we do not have an equation **with multiple fundamental constants** such as π, e, and Φ **with all three properties at once**. According to the current axiomatic model, it is impossible 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), such as: $\pi + 1 = e + {\sim}1.423$, where ${\sim}1.423$ is trivial.

◊ If you keep it non-trivial (showing genuine relationships), it can't be exact (you'd need approximations).

If these constants came from a discovered, unified mathematical architecture, then **we should be able to write equations with these constants that are simultaneously exact, non-trivial, and asymmetric.** Without these equations, it remains possible that we invented mathematics, rather than discovered a universal framework. We must find *at least one* equation to resolve this debate. In *The Theorem of Constants Co-Derivation*, **I identified hundreds of such equations**, demonstrating that **we discovered mathematics rather than invented it.** These equations are astonishing and possess properties we have yet to see. Let me show you all its beauty.

Isolation Resistance

Here is the primary equation for *The Theorem of Constants Co-Derivation.* On the left side, we have the ***Natural Resonance*** and the ***Fundamental Unit***, respectively. This equation exhibits **a new mathematical property called "isolation resistance,"** which unmistakably reveals constants co-derivation. The property shows that the **impossibility of isolating the constants algebraically** because their values do not exist in isolation—they co-derive.

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

Isn't she beautiful? Look at what happens to this equation when we try to isolate the golden ratio (Φ):

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

When we attempt to isolate Φ, it collapses into tautology because **it is the mathematical bedrock**. We have reached a **foundational truth** that we cannot decompose further because it is the foundation. The constants cannot be isolated because **they do not exist in isolation**. Interestingly, not all co-derivation equations have it:

$$\left[cos\left(\frac{\pi}{5}\right) = \frac{\Phi}{2}\right] \rightarrow \left[\pi = 5 * arccos\left(\frac{\Phi}{2}\right)\right] \quad \left[sin\left(\frac{\pi}{10}\right) = \frac{1}{2\Phi}\right] \rightarrow \left[\Phi = 1/2 * sin\left(\frac{\pi}{10}\right)\right]$$

In the axiomatic model, **you cannot express constants** from one domain in terms of those from another domain. Still, in these two constants co-derivation equations, **you can isolate and express** π in terms of Φ and Φ in terms of π. This selective isolation resistance proves that constants co-derivation is **rigid enough to provide structure** but **flexible enough to allow mathematical operations**—a feature we could not have possibly invented.

The Precision is Key

The precision required for this equation to be true reveals that **these constants must have their exact values.** If we take another look at the primary constants co-derivation equation, there is a profound, **hidden truth in those parentheses.** Let me show it to you with rounded values for demonstrative purposes, without simplifying:

$$\left[\left(\frac{\pi}{e * \Phi}\right) * \left(\frac{e}{\pi}\right)\right] \rightarrow \left[\left(\frac{3.142}{2.718 * 1.618}\right) * \left(\frac{2.718}{3.142}\right)\right] \rightarrow [0.715 * 0.865] = 0.618 = \frac{1}{\Phi}$$

The Theorem of Existence ◊ Leaflet 7

The final parentheses **prevent the constants from canceling out** before they are resolved. The intermediate values of 0.715 and 0.865 are **not constants** but derived values from them. For the equation to be true, **any deviation in the constants' value would cause the final multiplication** to produce an approximation, not $1/\Phi$. Therefore, the constants must have their exact values, **proving *The Theorem of Constants Co-Derivation*.**

Co-Derivation is a Property of Mathematical Operations

The Theorem of Constants Co-Derivation contains one astonishing identity that reveals that co-derivation is not merely a pattern among constants but **a consequence of mathematics**, baked into its **fundamental operations.**

$$\left(\frac{A}{B*C}\right) * \left(\frac{B}{A}\right) = \left(\frac{A}{B}\right) * \left(\frac{B}{A*C}\right) = \frac{1}{C}$$

This identity is valid for **all values A, B, and C**, whether irrational, transcendental, imaginary, or symbolic, and works for edge-of-boundary values (very large or small) **across all of mathematics** (except for A or B $= 0$, which has significance we'll discuss later). Remember, **this identity has isolation resistance**, so **there is no cancellation trick**. The identity is true even when $A = B$ but $\neq C$, or $A = C$ but $\neq B$, or rotating through any valid triple of numbers. This identity proves that co-derivation occurs not just in constants, but **in mathematical operations.** The final identity depends not just on the exact values of the constants, **but on all values.** Yes, dear reader, let it land: this identity **proves that all values in math must have their exact values.** Look at some other examples:

$$\left[2*sin\left(\frac{\pi}{10}\right)*\Phi = 1\right] \quad \left[\sqrt{2+\sqrt{2}} = 2*cos\left(\frac{\pi}{8}\right) = 2*sin\left(\frac{3\pi}{8}\right)\right] \quad \left[\left(\frac{\pi}{e*\sqrt{2}}\right)*\left(\sqrt{2^n}*\frac{e}{\pi}\right) = \sqrt{2^{n-1}}\right]$$

$$\left[\left(\frac{\pi}{e*\Phi}\right)*\left(\frac{(\Phi^n*e)}{\pi}\right) = \Phi^{n+e^{i\pi}} \rightarrow \frac{\Phi^n}{\Phi} = \Phi^{n+e^{i\pi}}\right] \quad \left[e^{\left(i\frac{\pi}{5}\right)} = \frac{\Phi}{2(-e^{i\pi})} + i*\sqrt{(-e^{i\pi})^2 - \left(\frac{\Phi}{2}\right)^2}\right]$$

A Unified Mathematical Framework

The most striking implication of *The Theorem of Constants Co-Derivation* is that **it reveals a universal mathematical framework… the operating system of existence**. If these constants and their domains are co-defined, it means that **anything in existence we can measure and manipulate using math also has co-definedness**… and we can measure and mathematically manipulate anything in existence, which means that the co-derivation of constants is really capturing **the co-definedness of all phenomena in existence**. We did not invent mathematics.

Still, some might be wondering how *The Theorem of Constants Co-Derivation* exists when **we already proved Gödel's Incompleteness Theorems.** He showed that **any consistent formal system** capable of basic arithmetic will always contain true statements it cannot prove—and cannot prove its own consistency. These theorems have **shattered the dreams** of a complete, contradiction-free foundation for mathematics for almost a century, because they suggest that **no closed framework can fully capture existence**. The problem is that **existence is not a formal system**—it doesn't rely on static axioms but on **co-defined, interdependent first principles**. Thus, *The Theorem of Constants Co-Derivation* does not contradict Gödel; it steps around him… and into the universe.

The Big Picture

The Theorem of Constants Co-Derivation is **a profound new mathematical** framework with far-reaching implications. The most significant one is **that we did not invent mathematics; we discovered it.** All those brilliant mathematicians across history—from ancient Greek scholars like **Euclid** and **Aristotle** to more recent figures like **Newton**, **Gauss**, and others—were all peering into different parts of the same **underlying mathematical structure of existence.** With this theorem, we have **finally found it in full.** I suspect there is so much more happening in this theorem than what I have presented, so time and help from **mathematicians around the world** will truly reveal its depths. We have built up axiomatic fields of mathematics, but now *The Theorem of Constants Co-Derivation* is **the final piece** that finally provides the unified mathematical architecture, and isn't it… beautiful?