

Title: “Mathematics may not be ready for such problems.”

— Erdős, on the [implicit knowability] of the Collatz Conjecture, the knowability horizon

— Dominic Reiss (dominic.reiss@gmail.com), on the epistemic knowability of the Collatz Conjecture (2025), the knowability connection

— Members of the Collatz Enlightenment Club (2025 – ????), the observers of knowability

Instructions for the Reader (you)

Do you know about the Collatz Conjecture — the one Erdős said mathematics was not ready for?

→ Yes: Go to 2.

→ No: You can probably find it on the internet or in a book or something. Learn how to calculate $\text{Collatz}(n)$ for some natural number n .

Were you able to learn how to calculate $\text{Collatz}(n)$?

→ Yes: Go to 2.

→ No: Halt. This paper tells you nothing.

2. Knowability

This paper predicts that you will agree: the Collatz Conjecture has either already been solved, or it may be undecidable in a way that mathematics still doesn’t seem ready for. But this paper is not about the Collatz Conjecture itself. It is about its *knowability* — to you, at the time of reading.

It asserts that the external semantics of the word *Collatz* is enough to spark internal minimal symbolic complexity — a kind of epistemic big bang. If you don’t already know how to compute $\text{Collatz}(n)$, you can’t know how much information it will take to import, nor whether it can be compressed into a self-contained proof.

Knowing whether we can “flatten” an external reference to Collatz into an internal representation for free requires already knowing something about such a flattening. This is the nature of branching.

The epistemic core of the Collatz Conjecture is whether this branching can be separated from some other, simpler, knowable property. If we can resolve what we mean by *Collatz* independently of its branching structure, we either solve the conjecture or prove it unknowable. But we cannot conclude this unless that resolution already exists at the time of reading.

At its core, this paper is not about the Collatz Conjecture as a mathematical object. It is about the symbol “*Collatz*” — and the symbol “*Mathematics doesn’t seem ready for X.*” These are not different in kind. Both are signs that point toward the edge of formal comprehension. One names a concrete rule. The other names a limit. But both may be understood — or not — depending on what the reader brings to the symbols.

This paper studies that equivalence.

If the phrase “*Mathematics isn’t ready*” functions just like “*Collatz*” in sparking irreducible symbolic complexity, then perhaps the name “*Collatz*” was never the point. The unknowability lives not in the rule, but in the recognition of resistance — in realizing that certain questions reflect your own internal boundary, not an external lack.

Some references in this paper to Collatz are not necessary for its logic, but they were chosen to make the object understandable to a human reader. This paper was generated by considering the minimum symbolic object needed to communicate that the knowability of the Collatz Conjecture may depend on your own internal semantics.

You might ask: If this is minimal, why all the examples? If you believe this paper, you understand that its symbolic cost is not in its length but in its purpose: to bridge internal and external representations. To talk about Collatz at all may incur an irreducible symbolic cost.

The author suggests reasoning as far as you wish or feel compelled. But this document is also offered as additional symbolic information — a signal that can mark the exit from a recursive learning process you already recognize as equivalent to a form of mathematical novelty, one that the broader community does not claim to fully understand.

You might yet solve it. But even so, another problem of this kind may exist. And before you draw the boundary yourself, you may not even know that problem exists.

If you believe you steer your own mathematical engine through free choices — capable of generating new, previously unknowable directions — then you have entangled your reasoning with itself. What if your understanding of the phrase “the reader’s internal semantics” depends on your internal semantics — the reader’s internal semantics?

And now oddly, the connection seems complete. Once you add your own internal semantics, you either add your membership to the class where Collatz is unknowably undecidable — or not. This paper is a representative of that type. And its existence measures the minimum knowable thing from the reader’s world with respect to Collatz. The Collatz Enlightenment Club exists — or it’s a crackpot theory.

If you understand that this means studying Collatz is epistemically irreducible —
Welcome to the internal semantics of the author.
Welcome to the Collatz Enlightenment Club.

This object contains itself. You, the reader, complete it — or not.

This is the minimal truth about reasoning about the Collatz Conjecture, assuming you understand you have two options:

- 1. Join the Club: You realize that, in your current life context, the pursuit of Collatz is epistemically inert.**
- 2. Stay outside the Club: You believe you know (or can know) something novel about Collatz. And when you finish exhausting that path, you will either discover a new novelty to explore — or join the Club.**

Signed: The Author. July 2025. v1.0 complete. May the next fork surprise you.