

A Procedural Ontology of Cognition and Realness

In the framework of *Procedure Metaphysics*, existence is not a static substance, nor is it shaped by causal narratives imposed in hindsight. A thing is, to the extent it emerges from the application of a procedure—of a rule, or set of constraints, that generates what can be identified and experienced as real.

We begin with the central statement:

A fractal emerges as output of a fractal generating procedure.

This is not a geometric observation, but an ontological claim. The fractal is not merely a form; it is the differentiable elaboration of a rule applied under constraint. Crucially, this iteration is not trivial repetition.

Iterations must be differential, since sameness is compressed out. Only difference makes a difference.

Redundancy has no ontological weight. In the terms of information theory and cybernetics, sameness contains no information—it is discarded by compression. What remains, and what accumulates structure, is difference. Each iteration must preserve or introduce distinction; otherwise, there is no output, no elaboration, no structure.

From this, we draw a parallel to the Universal Turing Machine (UTM)—not as a mere formalism, but as a constraint-driven generator of differentiability.

Hence the Universal Turing Machine, a set of rules (more precisely stated, constraints) that order an unending stream of random events into logic, hence cognizable sequences as outputs, functions as a fractal elaboration emerging procedure.

The UTM is indifferent to the physical nature of input (and indeed of output too). Whether the stream is truly random or structurally opaque is irrelevant. From the viewpoint of *Procedure Metaphysics*, what cannot be differentiated, named, or identified does not exist—not as a metaphysical claim, but as an epistemological necessity.

If a UTM's output is not cognizable—it does not exist.

The objection that UTMs are deterministic misses the point. The relevant condition is cognizability: if no pattern can be identified, then the output is ontologically null. Likewise, the claim that UTMs do not inherently produce fractal-like outputs ignores the definitional framing: fractal elaboration is the outcome of constrained

differentiation, not of geometric form. Wherever rules produce elaborated, differentiable patterns, a fractal structure emerges.

This leads to a fundamental requirement:

Logic must output fractally to permit both identification and the experience of realness.

To identify is to engage repeated difference under rule. To experience realness is to encounter elaborated constraint that has reached a threshold of differentiability. In this view, realness is not absolute but emerges from the internal consistency and intensity of constraint-based elaboration.

Identity and Realness as Collision Traces

In *Procedure Metaphysics*, realness happens as response to quanta (meaning fractals) collision @ c^2 in a relativity vacuum. This is not metaphor—it is the condition under which unstructured potential becomes actual. When constraint, acting through rule, differentiates sufficiently to induce a quantal event-collision—at relativistic intensity c^2c^2 —a threshold is crossed: that which was previously undifferentiated becomes identifiable. This is realness—not substance, but the emergence of response through irreducible contact.

Realness is not the presence of substance but the emergence of response: a singularity of differentiable contact.

Identity happens as a series (or trace) of such collisions.

This marks a deeper ontological insight: identity is not a given, nor a persistent object, but a trace—a memory of iterative, high-intensity contact events. Each collision at c^2c^2 leaves a differentiable imprint, a recognizable structure in the unfolding sequence of elaboration. Identity is thus serial, recursive, and intrinsically quantal—it is what remains identifiable across multiple elaborated collisions.

The Universal Turing Machine, in this framing, is not a metaphor for cognition but a formal model of identity's condition: constraint-based iteration that produces recognizable, non-compressible differences. The UTM's role is not computational but ontogenic: generating the series from which identity can be read.

Fractal output is not decorative. It is necessary. Without recursive differentiation, there can be no emergence, no identity, no realness. A system that does not output fractally cannot be cognized, cannot be experienced, and therefore, does not exist—not ontologically, but procedurally.

Conclusion: Toward a Procedure-Based Ontology

In *Procedure Metaphysics*, to be is to be identified and experienced as real by virtue of constrained differentiation. The Universal Turing Machine, long treated as a model of abstract computation, is instead a generator of ontological relevance. It exemplifies the fundamental condition: existence emerges only where constraint compels the elaboration of difference.

Fractals, in this light, are not curiosities but evidences. They are the recursive marks left by rules that successfully elaborate what can be known, encountered, and registered. Logic is not static form, but the cognizable elaboration of rule-governed difference. Where this constraint holds and elaborates, realness follows.

Beyond that, there is nothing.