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The Architecture of Manifestation: A Formal Ontology of Consciousness, Information, and Spacetime

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Abstract

This paper develops a formal ontology in which consciousness, information, and spacetime are situated within a reality that is not exhausted by manifestation. To prevent non-manifest reality from being reduced to a mere physical or conceptual object, the framework introduces a strict separation between the manifest and the non-manifest. Consciousness is defined as manifest presence and serves as the foundational ground for all experiential and physical projection, yet it is not equated with the absolute, non-manifest reality itself.

Within manifested consciousness, determinate reality arises through a continuous process of reflexive self-limitation. The theory proposes that the complete de-differentiation of ordinary experience does not dissolve into a non-manifest void, but rather converges toward a minimal manifest horizon characterized by pure qualitative realization. Consequently, information, physical forms, and individuality are generated as co-instantiated projections of this conscious determination.

By treating time and space as effective projective orderings rather than fundamental physical containers, the architecture accommodates causal-symmetric physical models. By Axiom A11, the framework entails that no projected physical substrate—including the brain or material structures—can act as the ontological generator, container, selector, constraint, or delimiter of consciousness. This provides a rigorous, integrated alternative to both strict reductionist physicalism and absolute idealism.

Keywords: Formal Ontology, Consciousness Studies, Category Theory, Causal Symmetry, Information Theory, Emergent Spacetime, Reflexivity, Minimal Phenomenology, Metaphysics of Mind, Non-Reductive Ontology

1. Introduction

Physics describes relations among fields, states, geometry, information, measurements, and dynamics. Consciousness science investigates experience, cognition, neural activity, information processing, and behavior. Metaphysics asks what kind of reality these descriptions concern.

All three begin after one condition has already been satisfied: something has become manifest.

A physical object, body, brain, field, measurement result, observer, memory, mathematical structure, equation, or scientific theory becomes epistemically available only insofar as it appears as something determinate.

Physical reality retains stable regularity, measurement, prediction, intersubjective agreement, and effective physical law within manifestation. Empirical and conceptual access therefore takes place within manifestation.

The framework therefore does not begin with matter, spacetime, physical information, or an individualized observer. It begins with ontological non-exhaustiveness:

Let $\mathfrak{O}_M$ denote the manifest ontological domain, formally typed in Definition D1.

$$\neg Exh(\mathfrak{O}_M) \tag{1}$$

Manifestation does not exhaust reality.

The symbol

$$\mathfrak{A}$$

marks non-manifest reality.

Consciousness belongs to manifestation:

$$\mathcal{C} \in \mathcal{E}. \tag{2}$$

The theory therefore distinguishes two propositions that are often conflated:

consciousness is fundamental relative to experience

and:

consciousness is absolute reality.

The first is affirmed. The second is rejected.

The basic architecture is:

$$\mathfrak{A} \mid [\mathcal{H} \preccurlyeq_{\mathcal{C}} \mathcal{C}] \tag{3}$$

The central question is therefore not merely: *What exists?* It is:

What structure makes determinate manifestation possible?

Contemporary consciousness-first theories already provide important precedents for treating spacetime, ordinary observers, or physical structure as non-fundamental. Prentner and Hoffman place consciousness outside fundamental spacetime [1]; Müller begins from observer states rather than a uniquely pre-given external world [2]; Kastrup develops a consciousness-first ontology with bounded individual perspectives [3]; and Axelkrans develops a recent generative-relational architecture involving projection, invariance, and derivative spacetime [4]. The present framework differs by introducing a non-manifest ontological sort beyond manifested consciousness and by integrating reflexive self-limitation, informational determination, minimal manifestation, physical grounding asymmetry, cross-level generativity, causal symmetry, and formal theory comparison within one architecture.

2. Methodological and Logical Architecture

The framework distinguishes five statuses of claim in order to keep ontological commitments, formal constructions, and empirical support analytically separate. An Axiom states a substantive commitment of the ontology; a Definition introduces notation, type, domain, or formal meaning; a Derived Proposition follows from previously stated axioms and definitions; a Bridge Principle connects ontological structure

with an effective phenomenological or physical representation; and an Empirical Realization concerns observed, reported, measured, or computationally modeled instances compatible with such a bridge.
The methodological principle is:

ontological strength ≠ empirical overclaim.

The mathematical formalism explicates the structure, dependencies, distinctions, and consequences of the ontological commitments.

Axiom A1 — Non-Exhaustiveness

Let

$$\mathrm{Exh}(X) \tag{4}$$

mean: X exhausts everything ontologically real.
Then:

$$\neg Exh(\mathfrak{O}_M) \tag{5}$$

This is a positive ontological commitment rather than a statement of epistemic uncertainty.

Definition D1 — Tagged Two-Sort Ontology

Let:

$$\mathfrak{O} = \mathfrak{O}_M \sqcup \mathfrak{O}_N. \tag{6}$$

Introduce canonical injections:

$$\iota_M : \mathfrak{O}_M \to \mathfrak{O}, \tag{7}$$

$$\iota_N : \mathfrak{O}_N \to \mathfrak{O}. \tag{8}$$

Require:

$$\mathrm{im}(\iota_M) \cap \mathrm{im}(\iota_N) = \varnothing. \tag{9}$$

Manifestation satisfies:

$$\mathcal{E} \subseteq \mathfrak{O}_M. \tag{10}$$

The distinguished non-manifest symbol satisfies:

$$\mathfrak{A} \in \mathfrak{O}_N. \tag{11}$$

Equality and inequality across the two sorts are therefore interpreted only at the common meta-level $\mathfrak{O}$.
For every manifest x:

$$\iota_M(x) \neq \iota_N(\mathfrak{A}). \tag{12}$$

Derived Proposition P1 — Manifest Predicates Do Not Positively Characterize the Non-Manifest

Let:

$$P_M : \mathfrak{O}_M \to Y \tag{13}$$

be any predicate or determination typed only on the manifest sort.
Then the ordinary expression $P_M(\mathfrak{A})$ is ill-typed.
The theory therefore makes a stronger statement than: The positive properties of the non-manifest are unknown. It states:
Manifest determinations cannot simply be transferred beyond manifestation while retaining their original semantic type.

Definition D2 — Unboundedness and No-Thing

"Unbounded" does not mean spatially infinite. Spatial infinity already presupposes space.

Within the present ontology:

$$\text{unbounded} = \text{not delimited by determinate manifest boundaries.}$$

Likewise:

$$\text{nothing} = \text{no determinate thing.}$$

This does not mean vacuum, empty physical space, mathematical zero, or a positively characterized state of non-existence.

3. Experiential Closure and the Limits of Manifest Reference

Definition D3 — Experiential Closure

Let:

$$\mathrm{Exp}^*: \mathfrak{O} \to \{0,1\}. \tag{14}$$

be a meta-level experiential predicate.

Require:

$$\mathrm{Exp}^*(x) = 1 \Rightarrow x \in \mathrm{im}(\iota_M|_{\mathcal{E}}). \tag{15}$$

Anything experienced is therefore manifest.

Derived Proposition P2 — Non-Manifest Inaccessibility

Since:

$$\iota_N(\mathfrak{N}) \notin \mathrm{im}(\iota_M), \tag{16}$$

Experiential Closure yields:

$$\mathrm{Exp}^*[\iota_N(\mathfrak{N})] = 0. \tag{17}$$

The non-manifest cannot itself become experiential content.

This conclusion does not presuppose subject-object duality. A nondual experience can lack an ordinary subject confronting an ordinary object and still remain phenomenally manifest.

Definition D4 — Presentation and Manifest Reference

Let $e_X \in \mathcal{E}$ denote an experiential or conceptual presentation associated with X.

Define a partial manifest referent map:

$$r_M: \mathrm{Dom}(r_M) \to \mathfrak{O}_M \tag{18}$$

with:

$$\mathrm{Dom}(r_M) = \{e_X \in \mathcal{E}: X \in \mathfrak{O}_M\}. \tag{19}$$

For ordinary manifest X, $r_M(e_X)$ may therefore return a manifest referent.

The conceptual presentation $e_{\mathfrak{N}}$ is itself manifest:

$$e_{\mathfrak{N}} \in \mathcal{E}. \tag{20}$$

But $\mathfrak{N} \in \mathfrak{O}_N$ and $\mathrm{im}(\iota_M) \cap \mathrm{im}(\iota_N) = \varnothing$. Hence:

$$e_{\mathfrak{N}} \notin \mathrm{Dom}(r_M). \tag{21}$$

Therefore:

$$r_M(e_{\mathfrak{N}}) \uparrow. \tag{22}$$

The referential inaccessibility of the non-manifest is thus not an independent postulate. It follows from the two-sort architecture together with the typing of manifest reference.

Axiom A2 — Manifested Consciousness

$$\mathcal{C} \in \mathcal{E}. \tag{23}$$

Define:

$$\mathcal{C} = \text{manifest presence}. \tag{24}$$

At the common meta-level:

$$\iota_M(\mathcal{C}) \neq \iota_N(\mathfrak{A}). \tag{25}$$

Manifest presence does not logically require autobiographical identity, bodily selfhood, subject-object distinction, spatial extension, or temporal ordering.

Thus:

$$\text{consciousness} \neq \text{subject observing an object}.$$

Subject and object are differentiated structures within consciousness.

Definition D5 — Immanence

Introduce:

Formally, take the immanence relation to be typed on manifest structures:

$$\preccurlyeq_{\mathcal{C}} \subseteq \mathfrak{O}_M \times \{\mathcal{C}\}.$$

$$x \preccurlyeq_{\mathcal{C}} \mathcal{C} \tag{26}$$

meaning: x is ontologically immanent to, or occurs within, the manifested field $\mathcal{C}$.

This relation is not ordinary set membership.

4. Intrinsic Realization and the Minimal Manifest Horizon

Axiom A3 — Intrinsic Realization

Let $\mathfrak{S}_M \subseteq \mathfrak{O}_M$ be the class of admissible manifest structures, with $\mathcal{C} \in \mathfrak{S}_M$, and let $\mathfrak{R}_\Theta$ be the class of realizational structures.

Define:

$$\Theta: \mathfrak{S}_M \to \mathfrak{R}_\Theta. \tag{27}$$

Let:

$$\text{Realized}: \mathfrak{R}_\Theta \to \{0,1\}. \tag{28}$$

The theory states:

$$Realized[\Theta(\mathcal{C})] = 1 \tag{29}$$

Θ denotes the intrinsic atemporal realizational character of manifested structure; at the foundational level it is evaluated on manifested consciousness $\mathcal{C}$.

At the foundational level:

$$\Theta = \text{intrinsic atemporal realization of manifest order}.$$

Axiom A4 — Primitive Minimal Manifest Horizon

There exists a minimally differentiated manifest horizon:

$$\mathcal{H} \in \mathfrak{S}_M \subseteq \mathfrak{O}_M.$$

It satisfies:

$$\mathcal{H} \preccurlyeq_{\mathcal{C}} \mathcal{C}. \tag{30}$$

Because $\mathcal{H}$ belongs to the manifest sort:

$$\iota_M(\mathcal{H}) \neq \iota_N(\mathfrak{A}). \tag{31}$$

Definition D6 — Light

Define:

$$\mathcal{L} := \mathrm{Lum}(\mathcal{H}). \tag{32}$$

$\mathcal{L}$ denotes minimally differentiated manifestability, archetypally expressed as **Light**. It does not denote electromagnetic radiation.

Definition D7 — Qualitative Realization

Evaluate:

$$\Theta_{\mathcal{H}} := \Theta(\mathcal{H}). \tag{33}$$

Then define:

$$\mathcal{B} := \mathrm{Qual}(\Theta_{\mathcal{H}}). \tag{34}$$

$\mathcal{B}$ denotes the qualitative expression of intrinsic realization under minimal differentiation.

The principal aspect representation of the independently posited horizon is:

$$Asp(\mathcal{H}) := \langle \mathcal{L}, \mathcal{B} \rangle \tag{35}$$

This representation records two derived aspects of the independently posited horizon; it does not define $\mathcal{H}$ by reconstructing it from $\mathcal{L}$ and $\mathcal{B}$.

Axiom A5 — Structural Priority of the Horizon

$$\mathcal{H} \dashv \mathcal{NF}. \tag{36}$$

The symbol $\dashv$ denotes structural priority, not temporal precedence.

The claim is:

The minimal manifest horizon is the manifest origin from which differentiated Name and Form arise and toward which differentiation recedes.

5. Reflexive Differentiation and the Modal Structure of Manifestation

Axiom A6 — Reflexive Differentiability

Let A_{adm} be the admissible differentiation modes and $\Lambda = (0, \infty)$ the differentiation-strength parameter domain.

For $\alpha \in A_{\mathrm{adm}}$ and $\lambda \in \Lambda$, define:

$$\beta_{\alpha,\lambda} = \left(b_{\alpha,\lambda}, \rho_{\alpha,\lambda}\right). \tag{37}$$

$$b_{\alpha,\lambda}: \mathfrak{S}_M \to \mathfrak{S}_M, \qquad \rho_{\alpha,\lambda}: \mathfrak{S}_M \to \mathcal{E}.$$

For model-world realizations, use the corresponding world-indexed forms $b_{\alpha,\lambda}^{(w)}$ and $\rho_{\alpha,\lambda}^{(w)}$.

The boundary-forming component produces:

$$c_{\alpha,\lambda} = b_{\alpha,\lambda}(\mathcal{C}). \tag{38}$$

Require:

$$c_{\alpha,\lambda} \preccurlyeq_{\mathcal{C}} \mathcal{C}. \tag{39}$$

Definition D8 — Fixed Formal Architecture and Admissible Model-Worlds

Let the fixed formal architecture of the theory be:

$$\mathfrak{F} = (\mathfrak{O}_M, \mathfrak{O}_N, \mathcal{E}, \mathcal{C}, \mathcal{H}, \Theta, M, G, \mathbb{G}, \{P_s\}_{s\in S}, \{[\![\cdot]\!]_s\}_{s\in S}, \dots). \tag{40}$$

Define:

$$\mathfrak{W} \subseteq \mathrm{Mod}(\mathfrak{F}). \tag{41}$$

Thus every $w \in \mathfrak{W}$ is an admissible model or realization of the same fixed formal architecture, not an alternative ontology.

A model-world may be represented schematically as:

$$w = (\mathcal{V}_w, a_w, \lambda_w, \mathcal{P}_w), \tag{42}$$

where $\mathcal{V}_w$ is a valuation satisfying the axioms of $\mathfrak{F}$; a_w specifies which admissible differentiation modes are activated; λ_w supplies their realized differentiation strengths where applicable; and $\mathcal{P}_w$ specifies the projected configurations instantiated in that model.

Define $\mathrm{Man}_w(x) = 1$ iff x is realized in model w of $\mathfrak{F}$. The modal architecture is therefore explicitly connected to the categorical and ontological architecture.

$$Man_w: \mathfrak{O}_M \to \{0,1\}$$

Definition D9 — Modal Activation of Differentiation

$$a: \mathfrak{W} \times A_{\mathrm{adm}} \to \{0,1\}. \tag{43}$$

$a(w, \alpha) = 1$ means that differentiation mode α is actualized in model-world w.

When active, write:

$$c_{\alpha,\lambda}^{(w)} = b_{\alpha,\lambda}^{(w)}(\mathcal{C}). \tag{44}$$

If $a(w, \alpha) = 0$, the corresponding differentiation is not instantiated in w. Consciousness therefore grounds the possibility of differentiation without entailing the actualization of every possible differentiation in every admissible model-world.

Axiom A7 — Difference Without Forced Ontological Separation

For any actualized differentiated aspect $c_{\alpha,\lambda}^{(w)}$, the theory requires $c_{\alpha,\lambda}^{(w)} \neq \mathcal{C}$.

Introduce the binary relation

$$\perp_{ont} \subseteq \mathfrak{O}_M \times \mathfrak{O}_M,$$

where $x \perp_{ont} y$ means that x and y are ontologically separate.

$$a(w, \alpha) = 1 \Rightarrow \left(c_{\alpha,\lambda}^{(w)} \neq \mathcal{C} \wedge \neg\left(c_{\alpha,\lambda}^{(w)} \perp_{\mathrm{ont}} \mathcal{C} \right) \right) \tag{45}$$

More generally, manifest structures that are both immanent to consciousness are mutually non-separate at the ontological level:

$$\forall x, y \in \mathfrak{S}_M: (x \preccurlyeq_{\mathcal{C}} \mathcal{C} \wedge y \preccurlyeq_{\mathcal{C}} \mathcal{C}) \Rightarrow \neg(x \perp_{\mathrm{ont}} y).$$

$$\text{difference} \;\not\Rightarrow\; \text{ontological separation.}$$

Definition D10 — Differentiation Coordinates

Let $\mathfrak{S}_D \subseteq \mathfrak{S}_M$ be the differentiation domain containing $\mathcal{H}$ and every active differentiated structure $c_{\alpha,\lambda}^{(w)}$.

For each differentiation dimension i, let $(D_i, \leq_i)$ be a partially ordered set and define:

$$d_i: \mathfrak{S}_D \to D_i \tag{46}$$

Let the human experiential sector satisfy $\mathfrak{S}_{exp} \subseteq \mathfrak{S}_D \cap \mathcal{E}$. Within that sector, the principal coordinates are:

$$\mathbf{d}(e) = \left(d_{\mathrm{self}}(e), d_{\mathrm{body}}(e), d_{\mathrm{SO}}(e), d_{\mathrm{space}}(e), d_{\mathrm{time}}(e), d_{\mathrm{concept}}(e), d_{\mathrm{NF}}(e) \right) \tag{47}$$

$$x <_i y \;\Leftrightarrow\; x \leq_i y \wedge x \neq y.$$

Define the coordinatewise order by:

$$\mathbf{d}(x) \preccurlyeq \mathbf{d}(y) \;\Leftrightarrow\; \forall i:\; d_i(x) \leq_i d_i(y),$$

and the strict vector order by:

$$\mathbf{d}(x) \prec \mathbf{d}(y) \;\Leftrightarrow\; \mathbf{d}(x) \preccurlyeq \mathbf{d}(y) \wedge \exists j:\; d_j(x) <_j d_j(y).$$

No common scalar metric across these dimensions is assumed.

Definition D11 — Downward-Chain Completeness

For each i, $(D_i, \leq_i)$ possesses a designated least horizon value:

$$h_i = d_i(\mathcal{H}), \qquad \forall x \in \mathfrak{S}_D\colon\ h_i \leq_i d_i(x). \tag{48}$$

The theory does not require a greatest element $\top_i$. Instead, every nonempty descending chain generated by an admissible active differentiation path must possess an infimum in D_i.

For $w \in \mathfrak{W}$ with $a(w, \alpha) = 1$, define:

$$C_i^{\alpha,w} = \{d_i\left(c_{\alpha,\lambda}^{(w)}\right)\colon \lambda > 0\}. \tag{49}$$

Require:

$$\inf C_i^{\alpha,w} \text{ exists.} \tag{50}$$

This is sufficient for order-theoretic convergence and does not impose an absolute state of maximal differentiation.

Definition D12 — Monotone De-Differentiation

For $0 < \lambda_1 \leq \lambda_2$, require:

$$d_i\left(c_{\alpha,\lambda_1}^{(w)}\right) \leq_i d_i\left(c_{\alpha,\lambda_2}^{(w)}\right). \tag{51}$$

Decreasing λ therefore corresponds to non-increasing differentiation.

Axiom A8 — Horizon Convergence

For every admissible active differentiation mode:

$$a(w, \alpha) = 1 \Rightarrow \inf_{\lambda > 0} d_i\left(c_{\alpha,\lambda}^{(w)}\right) = d_i(\mathcal{H}) \quad \forall i. \tag{52}$$

Define the following shorthand notation for the coordinatewise order-theoretic condition in Eq. (52):

$$a(w, \alpha) = 1 \Rightarrow c_{\alpha,\lambda}^{(w)} \to_{\mathrm{ord},\, \lambda \downarrow 0} \mathcal{H}. \tag{53}$$

All active admissible de-differentiation paths therefore share the same minimal manifest horizon. Because $\iota_M(\mathcal{H}) \neq \iota_N(\mathfrak{A})$, limiting manifest de-differentiation never crosses into the non-manifest.

Definition D13 — Mirror Principle

For every active differentiation introduce:

$$q_{\alpha,\lambda}^{(w)}(\mathcal{C}) := [\mathcal{C}]_{\alpha,\lambda}^{(w)} \tag{54}$$

The reflexive component satisfies:

$$\rho_{\alpha,\lambda}^{(w)}\left(c_{\alpha,\lambda}^{(w)}\right) = e_{q_{\alpha,\lambda}^{(w)}(\mathcal{C})} \tag{55}$$

The bounded aspect therefore does not contain an exhaustive duplicate of consciousness. It presents the encompassing manifest field under its own limitation.

Derived Structural Consequence — Primitive Manifest Polarity

The cross-sort distinction is not itself a symmetric manifest polarity. The non-manifest is not an experiential opposite to consciousness.

The first manifest polarity instead occurs within consciousness:

whole | self-delimited presentation of the whole.

Further differentiation may yield:

whole / delimited aspect ⇝ self / other ⇝ subject / object ⇝ inside / outside ⇝ here / there ⇝ before / after.

Polarity therefore need not imply ontological dualism.

6. Conscious Determination and the Genesis of Name and Form

Axiom A9 — Conscious Formulation

For determinate manifest content X, let Δ denote the class of manifest determinations and define:

$$Det_{\mathcal{C}}: \mathfrak{O}_M \to \Delta, \qquad Formulator: \Delta \to \mathfrak{O}_M.$$

$$\delta_X = \mathrm{Det}_{\mathcal{C}}(X). \tag{56}$$

Introduce the typed structural-priority relation $\dashv_\Delta \subseteq \mathfrak{O}_M \times \Delta$. Determination takes place within already manifested consciousness:

$$\mathcal{C} \dashv_\Delta \delta_X \tag{57}$$

The theory therefore does not claim that consciousness formulates itself into existence.

Instead:

$$\mathrm{Formulator}(\delta_X) = \mathcal{C}. \tag{58}$$

The autobiographical ego is not the ultimate formulator. It is itself a differentiated manifest configuration.

Definition D14 — Determination Bundle

For every determination δ, define the aspect bundle:

$$\Phi(\delta) = \big(F(\delta), I(\delta), M(\delta)\big), \tag{59}$$

where $F(\delta)$ is the formulation aspect, $I(\delta)$ the informational specification, and $M(\delta)$ determinate manifestation.

Definition D15 — Co-Instantiation

Let $\mathfrak{A}_\Phi := \mathfrak{A}_F \sqcup \mathfrak{A}_I \sqcup \mathfrak{A}_M$ be the tagged aspect-token universe with canonical injections $\jmath_F, \jmath_I, \jmath_M$. For $A, B \in \mathfrak{A}_\Phi$, define:

$$\equiv_{\mathrm{co}} \subseteq \mathfrak{A}_\Phi \times \mathfrak{A}_\Phi \tag{60}$$

iff there exists a single determination δ such that A and B are distinct typed projections of the same determination bundle $\Phi(\delta)$.

Let $\hat{\pi}_A$ and $\hat{\pi}_B$ denote the corresponding tagged aspect projections into $\mathfrak{A}_\Phi$. Formally:

$$A \equiv_{\mathrm{co}} B \Leftrightarrow \exists \delta:\ A = \hat{\pi}_A[\Phi(\delta)] \wedge B = \hat{\pi}_B[\Phi(\delta)] \wedge A \neq B. \tag{61}$$

In the chained notation used below, all occurrences of $\equiv_{co}$ refer to co-instantiation through the same determination bundle $\Phi(\delta)$; no independent transitivity assumption is being introduced.

Therefore:

$$\jmath_F\big(F(\delta_X)\big) \equiv_{\mathrm{co}} \jmath_I\big(I(\delta_X)\big) \equiv_{\mathrm{co}} \jmath_M\big(M(\delta_X)\big) \tag{62}$$

This is not a categorical isomorphism and does not require invertible morphisms among the three aspect types. The thesis is co-instantiation, not interchangeability.

Archetypal Light Determination

For the archetypal pre-discursive determination $\delta_{\mathcal{L}}^{(0)}$, the same relation applies:

$$\jmath_F\left(F\left(\delta_{\mathcal{L}}^{(0)}\right)\right) \equiv_{\mathrm{co}} \jmath_I\left(I\left(\delta_{\mathcal{L}}^{(0)}\right)\right) \equiv_{\mathrm{co}} \jmath_M\left(M\left(\delta_{\mathcal{L}}^{(0)}\right)\right) \tag{63}$$

Let $\mathfrak{T}_{DN} := \Delta \sqcup \mathfrak{N}$ be the tagged determination-name carrier with canonical injections κ_Δ and $\kappa_{\mathfrak{N}}$. The archetypal determination is distinct from the later lexical name token:

$$\kappa_\Delta\left(\delta_{\mathcal{L}}^{(0)}\right) \neq \kappa_{\mathfrak{N}}(N_{\mathcal{L}}) \tag{64}$$

Thus "It is Light — and light is" expresses co-instantiation of determination, information, and manifestation rather than a temporal command followed by a later result.

Definition D16 — Name

$$N_X = \mathrm{Id}(X). \tag{65}$$

"Name" denotes informational identity at this level, not necessarily a spoken word.

Definition D17 — Form

Let $\mathcal{D}_X$ denote the relevant distinction structure and let $\bar{X}_{\mathcal{D}_X}$ denote the corresponding not-X class.

Define:

$$\mathcal{F}_X = Bd_{\mathcal{D}_X}\left(X, \bar{X}_{\mathcal{D}_X}\right) \tag{66}$$

Then:

$$\mathcal{NF}_X = (N_X, \mathcal{F}_X). \tag{67}$$

Human lexical language is a later projected articulation of this more general determinative identity structure.

7. Formal Generative Category

Definition D18 — Formal Manifest Configuration

Let:

$$m = (p_m, D_m, \mathcal{R}_m, \mathcal{B}_m) \tag{68}$$

be a formal manifest configuration.

Here $p_m \in \{0,1\}$ is a formal presence marker; D_m is a set of formal content representatives;

$$\mathcal{R}_m = \{R_i\}_{i \in I_m}, \tag{69}$$

where $R_i \subseteq D_m^{n_i}$; and

$$\mathcal{B}_m = \{\sim_a\}_{a \in A_m} \tag{70}$$

is a family of distinction, equivalence, partition, or classifier relations.

Let $\mathfrak{M}$ denote the class of all admissible formal manifest configurations of the form specified in Eq. (68).

Require each boundary/classifier relation to be binary:

$$\sim_a \subseteq D_m \times D_m.$$

Then:

$$Obj(\mathbf{M}) = \mathfrak{M} \tag{71}$$

Definition D19 — Ontological Interpretation

Introduce:

$$[\![\cdot]\!]_M : Obj(\mathbf{M}) \to \mathfrak{O}_M \tag{72}$$

Formal objects represent ontological structures but are not identical with them.

A formal representative of bare manifested presence is:

$$m_{\mathcal{C}} = (1, \varnothing, \varnothing, \mathcal{B}_0), \tag{73}$$

with:

$$[\![m_{\mathcal{C}}]\!]_M = \mathcal{C}. \tag{74}$$

Definition D20 — Morphisms

For $g: m \to m'$, define:

$$g = (g_D, g_R, g_B), \tag{75}$$

with $g_D: D_m \to D_{m'}$, $g_R: I_m \to I_{m'}$, and $g_B: A_m \to A_{m'}$.

Require arity preservation:

$$n_i = n'_{g_R(i)}. \tag{76}$$

Relational preservation requires:

$$R_i(x_1, \dots, x_{n_i}) \Rightarrow R'_{g_R(i)}(g_D x_1, \dots, g_D x_{n_i}). \tag{77}$$

Boundary preservation requires:

$$x \sim_a y \Rightarrow g_D(x) \sim'_{g_B(a)} g_D(y). \tag{78}$$

Definition D21 — Identity and Composition

The identity morphism is:

$$\mathrm{id}_m = (\mathrm{id}_{D_m}, \mathrm{id}_{I_m}, \mathrm{id}_{A_m}). \tag{79}$$

For $g: m \to m'$ and $h: m' \to m''$, define:

$$h \circ g = (h_D \circ g_D, h_R \circ g_R, h_B \circ g_B). \tag{80}$$

Associativity follows componentwise.

Definition D22 — Generative Subcategory

Let:

$$\mathfrak{G} \subseteq \mathrm{Mor}(\mathbf{M}) \tag{81}$$

be the admissible generative morphisms.

$$\forall m \in Obj(\mathbf{M}):\ id_m \in \mathfrak{G},$$

and

$$g, h \in \mathfrak{G} \ \wedge\ cod(g) = dom(h) \ \Rightarrow\ h \circ g \in \mathfrak{G}.$$

Define the wide subcategory:

$$\mathbf{G} := (Obj(\mathbf{M}), \mathfrak{G}) \hookrightarrow \mathbf{M} \tag{82}$$

with $\mathrm{Obj}(\mathbf{G}) = \mathrm{Obj}(\mathbf{M})$ and $\mathrm{Mor}(\mathbf{G}) = \mathfrak{G}$.

For $g \in \mathfrak{G}$, require semantic immanence:

$$[\![\mathrm{cod}(g)]\!]_M \preccurlyeq_{\mathcal{C}} \mathcal{C}. \tag{83}$$

Definition D23 — Provenance

Let $\mathbf{P}_{\mathrm{rov}}$ be the provenance-label space.

Define:

$$\mathrm{Prov}: \mathrm{Obj}(\mathbf{M}) \to \mathbf{P}_{\mathrm{rov}}. \tag{84}$$

For generative morphisms:

$$\mathrm{Prov}(\mathrm{cod} g) = \mathrm{Prov}(\mathrm{dom} g) = \mathbf{c}_{\mathcal{C}}. \tag{85}$$

Introduce:

$$\iota_{Prov}: \mathbf{P}_{rov} \to \mathfrak{O}_M \tag{86}$$

with:

$$\iota_{\mathrm{Prov}}(\mathbf{c}_{\mathcal{C}}) = \mathcal{C}. \tag{87}$$

8. Explicit Generative Endofunctor Family

The generative formalism must specify not merely that admissibility is preserved, but how generative structure acts.

Definition D24 — Generative Parameterization

Let:

$$\mathbb{G}: A_{\mathrm{adm}} \times \Lambda \to \mathrm{End}(\mathbf{M}), \tag{88}$$

with:

$$(\alpha, \lambda) \mapsto G_{\alpha,\lambda}. \tag{89}$$

Each $G_{\alpha,\lambda}: \mathbf{M} \to \mathbf{M}$ is an endofunctor.

Definition D25 — Object-Level Generative Action

For $m = (p_m, D_m, \mathcal{R}_m, \mathcal{B}_m)$, define generative extension data:

$$\Delta_{\alpha,\lambda}(m) = \Big(\Delta D_{\alpha,\lambda}(m), \Delta\mathcal{R}_{\alpha,\lambda}(m), \Delta\mathcal{B}_{\alpha,\lambda}(m)\Big). \tag{90}$$

$$\Delta\mathcal{R}_{\alpha,\lambda}(m) = \{R_i\}_{i \in \Delta I_{\alpha,\lambda}(m)}, \qquad \Delta\mathcal{B}_{\alpha,\lambda}(m) = \{\sim_a\}_{a \in \Delta A_{\alpha,\lambda}(m)}.$$

$$D_m \cap \Delta D_{\alpha,\lambda}(m) = \varnothing,$$
$$I_m \cap \Delta I_{\alpha,\lambda}(m) = \varnothing,$$
$$A_m \cap \Delta A_{\alpha,\lambda}(m) = \varnothing.$$

Then:

$$G_{\alpha,\lambda}(m) = \Big(p_m, D_m \sqcup \Delta D_{\alpha,\lambda}(m), \mathcal{R}_m \sqcup \Delta\mathcal{R}_{\alpha,\lambda}(m), \mathcal{B}_m \sqcup \Delta\mathcal{B}_{\alpha,\lambda}(m)\Big), \tag{91}$$

subject to the admissibility and type-preservation constraints of **M**.

Thus $G_{\alpha,\lambda}$ explicitly generates additional determinate contents, relations, and distinction structures while preserving manifest provenance.

For bare manifested presence:

$$G_{\alpha,\lambda}(m_{\mathcal{C}}) = m_{\alpha,\lambda}, \tag{92}$$

where:

$$[\![m_{\alpha,\lambda}]\!]_M = c_{\alpha,\lambda}. \tag{93}$$

The first differentiated formal configuration is thereby explicitly specified.

Definition D26 — Morphism-Level Generative Action

For $g: m \to m'$, define:

$$G_{\alpha,\lambda}(g) = \big(G_{\alpha,\lambda}(g)_D, G_{\alpha,\lambda}(g)_R, G_{\alpha,\lambda}(g)_B\big). \tag{94}$$

The content component is defined piecewise on the inherited and generated components:

$$G_{\alpha,\lambda}(g)_D(x) = \{g_D(x),\ x \in D_m;\ \Delta g_D(x),\ x \in \Delta D_{\alpha,\lambda}(m)\}. \tag{95}$$

where:

$$\Delta g_D: \Delta D_{\alpha,\lambda}(m) \to \Delta D_{\alpha,\lambda}(m'). \tag{96}$$

Similarly, for relation indices:

$$G_{\alpha,\lambda}(g)_R(i) = \{g_R(i),\ i \in I_m;\ \Delta g_R(i),\ i \in \Delta I_{\alpha,\lambda}(m)\}. \quad (97)$$

$$\Delta g_R : \Delta I_{\alpha,\lambda}(m) \to \Delta I_{\alpha,\lambda}(m'). \quad (98)$$

For boundary indices:

$$G_{\alpha,\lambda}(g)_B(a) = \{g_B(a),\ a \in A_m;\ \Delta g_B(a),\ a \in \Delta A_{\alpha,\lambda}(m)\}. \quad (99)$$

$$\Delta g_B : \Delta A_{\alpha,\lambda}(m) \to \Delta A_{\alpha,\lambda}(m'). \quad (100)$$

$$G_{\alpha,\lambda}(g) \in Mor(\mathbf{M})$$

i.e., the extended content, relation, and boundary components satisfy the arity-, relation-, and boundary-preservation conditions of Eqs. (76)-(78).

The extension maps preserve the generated relation and distinction structure.

Functoriality requires:

$$G_{\alpha,\lambda}(\mathrm{id}_m) = \mathrm{id}_{G_{\alpha,\lambda}(m)}. \quad (101)$$

$$G_{\alpha,\lambda}(h \circ g) = G_{\alpha,\lambda}(h) \circ G_{\alpha,\lambda}(g). \quad (102)$$

The construction specifies a piecewise action on inherited and generated structure, subject to the functoriality requirements in Eqs. (101)–(102).

Criterion C1 — Preservation of Admissible Generativity

For every (α, λ), require:

$$G_{\alpha,\lambda}|_{\mathbf{G}} : \mathbf{G} \to \mathbf{G}. \quad (103)$$

Thus:

$$g \in \mathfrak{G} \Rightarrow G_{\alpha,\lambda}(g) \in \mathfrak{G}. \quad (104)$$

Criterion C1 requires the specified generative action to preserve the designated generative subcategory $\mathbf{G}$.

9. Projection and the Ontological Structure of Individuation

Definition D27 — Projection Functors

For each effective domain s:

$$P_s : \mathbf{M} \to \mathbf{P}_s. \quad (105)$$

Projection means organization of manifest determination into an effective experiential or physical regime.

Definition D28 — Effective Interpretation

Each effective category has its own semantic interpretation:

$$[\![\cdot]\!]_s : Obj(\mathbf{P}_s) \to \mathfrak{O}_M \quad (106)$$

For the human experiential regime:

$$P_H : \mathbf{M} \to \mathbf{P}_H. \quad (107)$$

Let:

$$p_H^{\mathrm{wake}}, p_H^{\mathrm{dream}}, p_H^{\mathrm{med}}, p_H^{\mathrm{psy}} \in \mathrm{Obj}(\mathbf{P}_H). \quad (108)$$

Their manifest realizations are:

$$e_H^x = [\![p_H^x]\!]_H \in \mathcal{E} \quad (109)$$

for $x \in \{\mathrm{wake}, \mathrm{dream}, \mathrm{med}, \mathrm{psy}\}$.

These establish experiential plurality within the human projection. Projection plurality is introduced separately as an ontological possibility under Axiom A10.

Axiom A10 — Possible Projection Plurality

Define modal possibility relative to $\mathfrak{W}$:

$$\Diamond_{\mathfrak{W}}\varphi \Leftrightarrow \exists w \in \mathfrak{W}: w \vDash \varphi. \tag{110}$$

For $w \in \mathfrak{W}$, let $P_s^{(w)}$ denote the instance of the projection P_s contained in the projected configuration $\mathcal{P}_w$. The theory permits:

Define projection equivalence by $P_s \simeq_{proj} P_r$ iff there exists an equivalence $Q: \mathbf{P}_s \to \mathbf{P}_r$ together with a natural isomorphism $Q \circ P_s \cong P_r$.

$$\exists w \in \mathfrak{W}\, \exists s \in S:\ s \neq H \wedge P_s^{(w)} \not\simeq_{\text{proj}} P_H^{(w)}. \tag{111}$$

Axiom A10 assigns projection plurality the status of an ontological possibility.

Definition D29 — Projected Physical Substrates

Let $P_{\text{phys}}: M \to P_{\text{phys}}$ be a physical projection functor.

Define the class of ontologically interpreted projected physical substrates as:

$$\mathfrak{P}_{\text{phys}} \subseteq \text{im}\big([\![\cdot]\!]_{\text{phys}}\big). \tag{112}$$

Thus physical substrates are manifest interpreted structures within an effective physical projection.

Definition D30 — Ontological Subordination Relations

Let:

$$\mathfrak{S}_O = \{\text{Cont}_O, \text{Sel}_O, \text{Con}_O, \text{Delim}_O\}. \tag{113}$$

Each relation is typed as:

$$R: \mathfrak{P}_{\text{phys}} \times \mathfrak{O}_M \to \{0,1\}, \quad R \in \mathfrak{S}_O. \tag{114}$$

Their intended meanings are: $\text{Cont}_O(V,x)$: V ontologically contains x; $\text{Sel}_O(V,x)$: V ontologically selects x; $\text{Con}_O(V,x)$: V ontologically constrains x; $\text{Delim}_O(V,x)$: V ontologically delimits x. These are ontological relations, not claims about effective causal modulation within a projected physical model.

Introduce the ontological grounding/generation relation

$$\prec_G \subseteq \mathfrak{O}_M \times \mathfrak{P}_{phys},$$

where $x \prec_G V$ means that the projected physical substrate V is the ontological ground or generator of x.

Axiom A11 — Physical-Substrate Non-Primacy

For every projected physical substrate $V \in \mathfrak{P}_{\text{phys}}$, the theory asserts:

$$\neg(\mathcal{C} \prec_G V). \tag{115}$$

Additionally:

$$\forall V \in \mathfrak{P}_{\text{phys}}: \bigwedge_{R \in \mathfrak{S}_O} \neg R(V, \mathcal{C}). \tag{116}$$

No projected physical substrate is the ontological generator, container, selector, constraint, or delimiter of consciousness. Neural modulation, physical correlation, and organism-dependent human experience operate as effective relations within the human projection. Such relations remain ontologically subordinate to consciousness itself.

Body and Experienced World

Let V_H denote the human bodily organization and $\mathcal{W}_H$ the human experienced-world organization.

Then:

$$V_H \preccurlyeq_{\mathcal{C}} \mathcal{C}, \tag{117}$$

and:

$$\mathcal{W}_H \preccurlyeq_{\mathcal{C}} \mathcal{C}. \tag{118}$$

Body and experienced world belong to one manifest projective architecture.

Definition D31 — Existential Dependence

Define:

$$x \prec_E y \tag{119}$$

iff:

$$\forall w \in \mathfrak{W}: \quad Man_w(x) = 1 \Rightarrow Man_w(y) = 1. \tag{120}$$

For human bodily and individualized organization:

$$V_H \prec_E \mathcal{C}, \qquad \mathcal{J}_H \prec_E \mathcal{C}.$$

Definition D32 — Human Individuation Under Modal Activation

Let α_H denote the human individuation mode.

Let:

$$\lambda_H: \{w \in \mathfrak{W}: a(w, \alpha_H) = 1\} \to \Lambda \tag{121}$$

assign a human differentiation strength in worlds where that mode is active.

Then:

$$\forall w \in \{u \in \mathfrak{W}: a(u, \alpha_H) = 1\}: \quad \mathcal{J}_H^{(w)} = c_{\alpha_H, \lambda_H(w)}^{(w)}. \tag{122}$$

If:

$$a(w, \alpha_H) = 0, \tag{123}$$

then:

$$Man_w(\mathcal{J}_H) = 0. \tag{124}$$

Thus consciousness grounds the possibility of human individuation without making that particular individuation necessary in every admissible world.

The theory may therefore consistently admit:

$$\exists w \in \mathfrak{W}: \quad Man_w(\mathcal{C}) = 1 \wedge Man_w(\mathcal{J}_H) = 0. \tag{125}$$

Consequently:

$$\mathcal{C} \not\prec_E \mathcal{J}_H. \tag{126}$$

Likewise, it may admit:

$$\exists w \in \mathfrak{W}: \quad Man_w(\mathcal{C}) = 1 \wedge Man_w(V_H) = 0. \tag{127}$$

so:

$$\mathcal{C} \not\prec_E V_H. \tag{128}$$

Empirical Postulate E1 — Human Individual Plurality

The ordinary human effective domain contains multiple individualized perspectives:

Let $w_{hum} \in \mathfrak{W}$ denote an ordinary human model-world.

$$\exists i, \exists j \big(i \neq j \wedge Man_{w_{\text{hum}}}(\mathcal{J}_i) = 1 \wedge Man_{w_{\text{hum}}}(\mathcal{J}_j) = 1\big) \tag{129}$$

Choose such witnesses i and j. Each remains immanent to consciousness:

$$\forall k \in \{i, j\}: \quad \mathcal{J}_k \preccurlyeq_{\mathcal{C}} \mathcal{C}. \tag{130}$$

Distinct individuals satisfy:

$$\mathcal{J}_i \neq \mathcal{J}_j, \tag{131}$$

By the general immanence rule stated in Axiom A7:

$$\mathcal{J}_i \neq \mathcal{J}_j \Rightarrow \neg\left(\mathcal{J}_i \perp_{\text{ont}} \mathcal{J}_j\right) \tag{132}$$

The encompassing manifest field exceeds every autobiographical perspective, while multiple distinct individualized perspectives remain immanent to it.

The Drop and the Ocean

The traditional drop/ocean metaphor can be rendered as variation in individuation strength.
De-individuation corresponds to:

$$\lambda_H(w) \downarrow 0 \tag{133}$$

"Return" therefore means relaxation of individuation rather than spatial movement to another realm.

10. Phenomenal Realization at the Minimal Manifest Horizon

Definition D33 — Phenomenal Presence

Define the primitive phenomenal-presence predicate and its empirical counterpart on the experiential domain:

$$Pres: \boldsymbol{\mathcal{E}} \to \{0,1\}, \quad Pres_{\text{emp}}: \boldsymbol{\mathcal{E}} \to \{0,1\}.$$

The primitive phenomenal-presence predicate is not definitionally identical to its empirical indicator:

$$Pres \not\equiv Pres_{\text{emp}}. \tag{134}$$

Here $Pres_{\text{emp}}$ represents empirical evidence or operational indicators for phenomenal presence. Absence of report is therefore not definitionally identical to absence of phenomenal presence.

Definition D34 — Operational Minimal-Horizon Family

For each differentiation coordinate $d_i: \mathfrak{S}_{\text{exp}} \to D_i$, choose threshold $\varepsilon_i \in D_i$.
Define:

$$\mathcal{H}_{\boldsymbol{\varepsilon}} = \{e \in \mathfrak{S}_{exp}: Pres(e) = 1 \wedge d_i(e) <_i \varepsilon_i \ \forall i\} \tag{135}$$

Bridge B1 — Operational Horizon Bridge

$$\mathfrak{B}_H \subseteq \{\mathcal{H}\} \times \mathcal{P}(\mathcal{E}), \qquad (\mathcal{H}, \mathcal{H}_{\boldsymbol{\varepsilon}}) \in \mathfrak{B}_H \tag{136}$$

This bridge connects the ontological minimal horizon to operational study of progressively low-differentiation states without identifying the two.
Let $W_H \in \mathcal{H}_{\boldsymbol{\varepsilon}}$ denote a human minimal-horizon phenomenal realization (white-out).

Bridge B2 — Light Realization

Define:

$$\Pi_H^L(\mathcal{L}) \rightsquigarrow W_H. \tag{137}$$

Human realizations may include whiteness, luminosity, radiance, featureless presence, or non-visual clarity.

Bridge B3 — Qualitative Realization

Define:

$$\Pi_H^B(\mathcal{B}) \rightsquigarrow e_{\text{bliss}}. \tag{138}$$

Human realizations may include bliss, peace, wholeness, or non-object-directed fulfillment.

Derived Proposition P3 — Minimal Phenomenal State and the Non-Manifest

The minimal phenomenal state (commonly referred to as white-out) is experiential:

$$W_H \in \mathcal{E}. \tag{139}$$

Therefore:

$$\iota_M(W_H) \neq \iota_N(\mathfrak{N}). \tag{140}$$

White-out occupies the limiting phenomenal region of manifest de-differentiation and therefore remains within manifestation.

Its origin-like character derives from recession of Name, Form, selfhood, conceptuality, ordinary spatiality, temporality, and subject-object organization.

Thus:

manifest experiential origin ≠ non-manifest absolute.

Introduce $\succ_{ont}$ as a binary comparison relation on manifest structures, where $x \succ_{ont} y$ means 'x is ontologically more fundamental or more real than y' for the purpose of testing whether differentiation rank entails ontological rank.

$$\succ_{ont} \subseteq \mathfrak{D}_M \times \mathfrak{D}_M.$$

Axiom A12 — Differentiation Does Not Rank Ontological Reality

If:

$$\mathbf{d}(e_a) \prec \mathbf{d}(e_b), \tag{141}$$

the theory requires:

$$\neg(e_a \succ_{\text{ont}} e_b). \tag{142}$$

Equivalently:

$$\mathbf{d}(e_a) \prec \mathbf{d}(e_b) \Rightarrow \neg(e_a \succ_{\text{ont}} e_b) \tag{143}$$

Minimal differentiation is not greater reality.

Definition D35 — Relational Representation of Intrinsic Realization

Define:

Let $\mathfrak{G}_{\text{graph}}$ denote the class of admissible directed graph representations. Define:

$$Rel: \mathfrak{R}_\Theta \to \mathfrak{G}_{\text{graph}}. \tag{144}$$

For manifested consciousness:

$$\text{Rel}[\Theta(\mathcal{C})] = (V_\mathcal{C}, E_\mathcal{C}). \tag{145}$$

Introduce:

$$\mathfrak{S}_\mathcal{C} := \{\mathcal{C}\} \cup \left\{c_{\alpha,\lambda}^{(w)} : w \in \mathfrak{W} \wedge a(w,\alpha) = 1\right\}$$
$$\nu: \mathfrak{S}_\mathcal{C} \hookrightarrow V_\mathcal{C} \tag{146}$$

Define $v_\mathcal{C} = \nu(\mathcal{C})$ and $v_{\alpha,\lambda}^{(w)} = \nu\left(c_{\alpha,\lambda}^{(w)}\right)$.

Because ν is injective and active differentiated configurations satisfy cα,λw≠C, their image vertices are distinct. As the graph representation of the Mirror Principle, require:

$$\left(v_{\alpha,\lambda}^{(w)}, v_\mathcal{C}\right) \in E_\mathcal{C} \tag{147}$$

Define:

Let $E_{\mathcal{C}}^{*}$ denote the reflexive-transitive closure of the edge relation $E_{\mathcal{C}}$.

$$\Theta_{\mathcal{C}}^{R} = E_{\mathcal{C}}^{*}. \tag{148}$$

For non-trivial relational significance:

$$\mu^{+}(v) = \left\{u \in V_{\mathcal{C}} : u \neq v \wedge \left((v,u) \in \Theta_{\mathcal{C}}^{R} \vee (u,v) \in \Theta_{\mathcal{C}}^{R}\right)\right\} \tag{149}$$

Thus:

$$v_{\mathcal{C}} \in \mu^{+}\left(v_{\alpha,\lambda}^{(w)}\right) \tag{150}$$

and:

$$\mu^{+}\left(v_{\alpha,\lambda}^{(w)}\right) \neq \varnothing \tag{151}$$

Intrinsic realization is therefore not reduced to graph connectivity. The graph represents one differentiated articulation of $\Theta(\mathcal{C})$, while $\mathcal{B} = \mathrm{Qual}[\Theta(\mathcal{H})]$ is its minimal qualitative horizon expression.

11. Projective Spacetime and Causal-Symmetric Physical Realization

Bridge B4 — Spatial Projection of Distinction

Let $D_{\mathrm{space}}(x,y) = 1$ denote a distinction realized as spatial separation within an effective spatial projection.

Define the spatial bridge schema:

$$D_{\mathrm{space}}(x,y) = 1 \overset{\mathcal{B}_{\mathrm{space}}}{\rightsquigarrow} S(x,y) > 0. \tag{152}$$

Spatial separation is real within an effective spatial projection.

But:

$$S(x,y) > 0 \Rightarrow \neg(x \perp_{\mathrm{ont}} y) \tag{153}$$

Positive projected spatial distance excludes ontological separation within the framework.

Definition D36 — Material Regime

Introduce:

$$\iota_{\mathrm{mat}} : \mathbf{P}_{\mathrm{mat}} \to \mathbf{P}_{\mathrm{ST}}. \tag{154}$$

Materiality is thereby represented as a stabilized effective regime within spacetime projection.

Solidity, localization, persistence, and resistance are real effective properties.

But:

$$\text{material stability} \not\Rightarrow \text{ontologically self-grounding substance}$$

Definition D37 — Effective Temporal Ordering

Let $\mathfrak{E}_{\mathrm{ST}}$ denote the event/configuration domain of spacetime projection.

Let $(\mathbb{T}, <)$ be the ordered domain of effective temporal values.

Define:

$$t : \mathfrak{E}_{\mathrm{ST}} \to \mathbb{T}. \tag{155}$$

Then $t(e_i) < t(e_f)$ is an effective temporal ordering.

The theory states:

$$t(e_i) < t(e_f) \Rightarrow \neg(e_i \succ_{\mathrm{ont}} e_f) \tag{156}$$

Effective temporal precedence excludes greater ontological fundamentality of the earlier event within the framework.
The framework posits a non-sequential deeper architecture.
It is not described as simultaneous, since simultaneity already presupposes time.

Bridge B5 — Causal-Symmetry Bridge
Introduce:

$$\mathcal{B}_{\mathrm{CS}}: \mathcal{N} \dashrightarrow \mathfrak{C}_{\mathrm{phys}}. \tag{157}$$

$\mathcal{N}$ denotes non-sequential generative structure. $\mathfrak{C}_{\mathrm{phys}}$ denotes causal-symmetric physical structures.

Level I — No Fundamental Temporal Privilege

$$t(e_i) < t(e_f) \Rightarrow \neg(e_i \succ_{\mathrm{ont}} e_f) \tag{158}$$

Level II — Boundary Co-Determination
Let $\Gamma \in \mathcal{H}_{\mathrm{phys}}$ denote a physical history.
Let:

$$\mathcal{K}[\Gamma] = 0 \tag{159}$$

be its physical consistency condition.
Then:

$$\Gamma \in \mathrm{Sol}(\mathcal{K}; B_i, B_f) \tag{160}$$

expresses joint constraint by initial and final physical boundary structures.
Define the boundary-co-determination relation $\bowtie_{\mathcal{K}}$ by:

$$B_i \bowtie_{\mathcal{K}} B_f. \tag{161}$$

This relation denotes joint constraint by the initial and final boundary structures rather than logical equivalence or ordinary backward signaling.

Bridge B6 — Model-Specific Quantum Realization
The general causal-symmetric ontology is not identified with one quantum implementation.
Introduce the partial realization map:

$$\chi_{\mathrm{qm}}: \mathfrak{B}_{\mathrm{phys}} \rightharpoonup \mathfrak{B}_{\mathrm{qm}} \tag{162}$$

where $\mathfrak{B}_{\mathrm{phys}}$ contains admissible physical boundary structures, $\mathfrak{B}_{\mathrm{qm}}$ contains their operational quantum representations, and $B_i, B_f \in \mathrm{Dom}(\chi_{\mathrm{qm}})$.
Require:

$$\mathfrak{B}_{qm} \subseteq Obj(\mathbf{P}_{phys}).$$

For the author's operational realization:

$$\chi_{\mathrm{qm}}(B_i) = \rho, \tag{163}$$

and:

$$\chi_{\mathrm{qm}}(B_f) = \sigma_Z. \tag{164}$$

Here ρ and σ_Z are density operators and $\kappa \in [0,1]$. Consistently with Ref. [7], the subscript Z labels the context-dependent reference state; it does not denote the Pauli Z matrix.
The corresponding quantum map is:

$$\Lambda_\kappa(\rho) = (1-\kappa)\rho + \kappa\sigma_Z. \tag{165}$$

Thus:

$$\left(\chi_{\mathrm{qm}}(B_i), \chi_{\mathrm{qm}}(B_f)\right) = (\rho, \sigma_Z) \rightsquigarrow \Lambda_\kappa \tag{166}$$

Crucially:

$$im(\chi_{qm}) \subseteq \mathfrak{B}_{qm} \subseteq Obj(\mathbf{P}_{phys}) \tag{167}$$

Thus χ_{qm} is a model-specific realization map internal to the physical projection; it is not the projection functor itself.

Level III — Strong Boundary-Reversal Symmetry

Define:

$$J: \mathcal{H}_{\mathrm{phys}} \to \mathcal{H}_{\mathrm{phys}}, \tag{168}$$

with:

Let $\mathcal{T}$ denote the involutive time-/boundary-reversal transformation acting on the physical history and boundary data, with

$$\mathcal{T}^2 = id.$$
$$(J\Gamma)(t) = \mathcal{T}\left[\Gamma\left(t_i + t_f - t\right)\right]. \tag{169}$$

Require:

$$J^2 = \mathrm{id}. \tag{170}$$

Strong boundary reversal satisfies:

$$J\left[\mathrm{Sol}\left(\mathcal{K}; B_i, B_f\right)\right] = \mathrm{Sol}\left(\mathcal{K}; \mathcal{T}B_f, \mathcal{T}B_i\right). \tag{171}$$

Therefore:

causal symmetry $\not\equiv$ full boundary-reversal symmetry.

Boundary co-determination is the more general bridge.

12. Cross-Level Generative Coherence

Criterion C2 — Projection Coherence

Let:

$$G_{s,\alpha,\lambda}: \mathbf{P}_s \to \mathbf{P}_s \tag{172}$$

denote the effective realization of $G_{\alpha,\lambda}$ in projection s.

A candidate fundamental law satisfies projection coherence when:

$$\eta_{s,\alpha,\lambda}: P_s G_{\alpha,\lambda} \tilde{\Rightarrow} G_{s,\alpha,\lambda} P_s. \tag{173}$$

This is a law-level naturality condition.

Definition D38 — Common Generative Lift

Let $\approx_s$ be an independently specified equivalence relation on relevant effective morphisms.

For $g_s \in \mathrm{Mor}(\mathbf{P}_s)$ and $g_r \in \mathrm{Mor}(\mathbf{P}_r)$, define:

$$g_s \sim_{\mathfrak{G}} g_r \tag{174}$$

iff:

$$\exists g \in \mathfrak{G}: P_s(g) \approx_s g_s \wedge P_r(g) \approx_r g_r. \tag{175}$$

This is the Common Generative Lift Criterion.

Definition D39 — Cross-Scale Coherence

Let:

$$Q_{sr}: \mathbf{P}_s \to \mathbf{P}_r \tag{176}$$

be a scale-transition or coarse-graining functor.

For exact equivalence:

$$\zeta_{sr}: P_r \xRightarrow{\sim} Q_{sr}P_s. \tag{177}$$

For genuine lossy coarse-graining:

$$\zeta_{sr}: P_r \Rightarrow Q_{sr}P_s \tag{178}$$

need not be invertible.

Exact law coherence may satisfy:

$$\xi_{sr}: Q_{sr}G_{s,\alpha,\lambda} \xRightarrow{\sim} G_{r,\alpha,\lambda}Q_{sr}, \tag{179}$$

whereas coarse-grained coherence may require only:

$$\xi_{sr}: Q_{sr}G_{s,\alpha,\lambda} \Rightarrow G_{r,\alpha,\lambda}Q_{sr}. \tag{180}$$

Thus:

$$\text{cross-level invariance} = \text{common generative provenance} + \text{scale-sensitive coherence}.$$

Criterion C3 — Anti-Ad-Hoc Requirement

The structures $\mathbf{M}$, $\mathbf{G}$, $\mathbb{G}$, P_s, P_r, Q_{sr}, $\approx_s$, and $\approx_r$ must be specified independently of the particular effective pair being compared to the degree necessary for a genuine test.

Otherwise common generative lifts could be introduced retrospectively and would be vacuous.

13. Embedding Informational Physics within the Formal Ontology

Physical Information and Manifest Determination

Let $\mathfrak{I} := \mathfrak{A}_I \sqcup \mathfrak{I}_{\text{phys}}$ be the tagged information carrier, with canonical injections κ_I and κ_{phys}. A crucial distinction is:

$$\kappa_I\big(I(\delta_X)\big) \neq \kappa_{\text{phys}}\big(\mathcal{I}_{\text{phys}}\big) \tag{181}$$

$I(\delta_X)$ is the informational aspect of manifest determination.

$\mathcal{I}_{\text{phys}}$ is information represented within a projected physical theory.

Thus:

$$\mathcal{I}_{\text{phys}} \neq \text{ultimate ontological substrate}.$$

Within this hierarchy, manifest determination is represented at the physical level through effective physical information, topological and geometric organization, temporal and boundary organization, causal-symmetric quantum realization, and effective informational gravitation.

The author's existing research program occupies the effective physical level of the present ontology. The linguistic-theoretical account of articulated information provides the nearest prior formulation of conscious informational determination [5], while subsequent journal work develops informational energy within a causal-symmetric spacetime framework [6], an operational causal-symmetry framework for quantum nonlocality and information [7], active metric control through informational state manipulation [8], and causal-symmetric informational gravitation as an effective stress-energy extension of general relativity [9]. These models constitute effective physical realizations within the broader ontological architecture.

Definition D40 — Theory Signature
Define:

$$\Sigma(T) = (L, P, S, D, A, C). \tag{182}$$

Here L = manifestational level, P = projection, S = semantics, D = domain, A = assumptions, and C = claims.
Define:

$$\gamma = (L, P, S, D, A). \tag{183}$$

Definition D41 — Shared Comparison Language
Introduce:

$$\mathcal{L}_{\gamma}^{*}. \tag{184}$$

Competing theories are independently translated:
For a theory T, let T^{γ} denote its comparison-relevant restriction to the context $\gamma = (L, P, S, D, A)$.
Let $\mathcal{T}_{adm}^{\gamma}$
denote the set of admissible translation pairs (τ_i, τ_j) satisfying the stated inferential, referential, and typing requirements for that comparison context.

$$\tau_i : T_i^{\gamma} \to \mathcal{L}_{\gamma}^{*}, \tag{185}$$

and:

$$\tau_j : T_j^{\gamma} \to \mathcal{L}_{\gamma}^{*}. \tag{186}$$

Admissible translations preserve relevant inference, reference, and type structure.

Definition D42 — Translation Equivalence
For admissible translation pairs:

$$(\tau_i, \tau_j) \sim_{\gamma} (\tau_i', \tau_j') \tag{187}$$

iff they realize equivalent comparison-relevant referential, inferential, and type alignments.
Require $\sim_{\gamma}$ to be an equivalence relation on $\mathcal{T}_{\text{adm}}^{\gamma}$.

$$[\mathcal{T}^{*}]_{\gamma} = \mathcal{T}_{\text{adm}}^{\gamma} / \sim_{\gamma}. \tag{188}$$

Definition D43 — Translation-Sensitive Contradiction

$$\mathcal{X}_{\exists}(T_i, T_j) = 1 \tag{189}$$

iff:

$$\exists \gamma, \exists (\tau_i, \tau_j) \in \mathcal{T}_{\text{adm}}^{\gamma} : \text{Mod}\left[\tau_i(T_i^{\gamma}) \cup \tau_j(T_j^{\gamma})\right] = \varnothing. \tag{190}$$

Definition D44 — Robust Contradiction

$$\mathcal{X}_{\forall}(T_i, T_j) = 1 \tag{191}$$

iff:

$$\exists \gamma : \mathcal{T}_{adm}^{\gamma} \neq \varnothing \ \wedge \ \forall (\tau_i, \tau_j) \in \mathcal{T}_{adm}^{\gamma}, \ Mod\left[\tau_i(T_i^{\gamma}) \cup \tau_j(T_j^{\gamma})\right] = \varnothing \tag{192}$$

Then:

$$\mathcal{X}_{\forall}(T_i, T_j) = 1 \Rightarrow \mathcal{X}_{\exists}(T_i, T_j) = 1. \quad (193)$$

Ontological and Projection Overreach

Define:

$$\Omega(T) = 1 \quad (194)$$

when an effective manifest theory is unjustifiably identified with absolute ontology.

Define:

$$\Psi(T) = 1 \quad (195)$$

when a property established in one projection is generalized without justification to all projections.

Strong Physicalism

If strong physicalism asserts:

$$\exists V \in \mathfrak{P}_{\text{phys}} : \mathcal{C} \prec_G V, \quad (196)$$

while the present framework asserts:

$$\nexists V \in \mathfrak{P}_{\text{phys}} : \mathcal{C} \prec_G V, \quad (197)$$

then, once the same grounding relation has been semantically aligned, the theories genuinely contradict. Brain-experience correlation alone does not constitute this contradiction.

Newtonian Time and Relativity

A universally fundamental absolute Newtonian time may conflict with relativity if both are asserted at the same fundamental physical level.

A Newtonian effective approximation in a restricted regime need not.

Thus:

different effective law $\not\Rightarrow$ robust contradiction

Relational Quantum Mechanics

Relational Quantum Mechanics illustrates why shared terminology does not guarantee shared ontology [10] [11].

“Relative fact,” “relational state,” and “context dependence” may represent different formal and ontological commitments.

Thus:

same terminology $\not\Rightarrow$ same ontological claim

Personal Survival and Nondual Dissolution

A theory concerning persistence of $\mathcal{J}_H$ and a theory concerning relaxation of b_{α_H, λ_H} need not automatically contradict.

They conflict only if identity criterion, temporal projection, and ontological level have first been aligned.

14. Structural Relations to Existing Frameworks

The framework intersects with several philosophical and scientific approaches at specific structural levels. Fichte develops self-positing and internal limitation as conditions for the emergence of subject-object differentiation [12]. Kastrup formulates a consciousness-first ontology in which individual organisms

constitute bounded or dissociated expressions of a more encompassing consciousness [3]. Hoffman, Prakash, and Prentner formalize consciousness-first structures in which spacetime is derivative rather than ontologically fundamental [13], while Müller begins from observer states rather than presupposing a uniquely given external world [2]. Integrated Information Theory begins axiomatically from phenomenal existence and relates phenomenal structure to intrinsic physical cause-effect organization [14].

Corresponding structural relations also occur at the phenomenological level. Josipovic characterizes nondual awareness through dimensions including reflexivity, luminosity, bliss, unity, and reduced subject-object organization [15]. Gamma and Metzinger develop a multidimensional characterization of minimal or pure awareness [16], while Mago et al. provide a computational account in which strongly reduced representational content can coexist with reflexive awareness [17]. Axelkrans develops a generative-relational ontology involving projection, invariance, derivative spacetime, and multiple levels of manifestation [4].

The present ontology relates these domains through a single generative architecture. Its formal structure combines the distinction between manifest and non-manifest reality with manifested consciousness, reflexive differentiation, informational determination, and a common minimal manifest horizon:

$$\mathfrak{A} \mid [\mathcal{H} \preccurlyeq_{\mathcal{C}} \mathcal{C}] \tag{198}$$

This architecture further connects world-conditioned reflexive self-limitation with order-theoretic convergence toward the common manifest horizon:

$$a(w,\alpha) = 1 \Rightarrow c_{\alpha,\lambda}^{(w)} \underset{\lambda \downarrow 0}{\overset{ord}{\rightarrow}} \mathcal{H} \tag{199}$$

From this structure follow the generative endofunctor family, physical-substrate non-primacy, projective spacetime, causal boundary co-determination, model-specific physical realization bridges, common generative lifts, cross-level naturality, and formal criteria for theory contradiction. These elements arise as mutually dependent components of a single formal ontology.

Historical Structural Analogues

Kabbalistic traditions contain Ayin (Hebrew: אַיִן, expressing negation or non-existence), Ayin Sof (Hebrew: אַיִן סוֹף, unlimited or without limit), Ayin Sof Aur (Hebrew: אַיִן סוֹף אוֹר, unlimited or boundless light), Tzimtzum (Hebrew: צִמְצוּם, contraction, restriction, or limitation), and Kelim (Hebrew: כֵּלִים, vessels or receptacles) [18] [19] [20] [21]. These may be compared structurally with non-determination, unboundedness, Light, limitation, and the emergence of differentiated form.

The comparison concerns structural correspondence across distinct conceptual systems.

The relation remains:

historical structural correspondence ≠ empirical evidence.

Let HE denote the symbolic Heaven/Earth polarity. It may be represented structurally as:

HE ~ whole / differentiated complementary aspect

But:

$$\mathcal{C} \dashv \mathrm{HE} \tag{200}$$

The symbolism therefore belongs to differentiated manifestation rather than preceding manifested consciousness.

Being and Non-Being

Being and Non-being may constitute a final conceptual polarity available from the manifest side.
Both remain determinate manifest concepts.
Hence at the common meta-level:

$$\iota_N(\mathfrak{A}) \neq \iota_M(\text{Being}), \tag{201}$$

and:

$$\iota_N(\mathfrak{A}) \neq \iota_M(\text{Non-being}). \tag{202}$$

The non-manifest is not converted into either pole of a manifest conceptual opposition.

Mystical Experience and Interpretation

Let $e_x \in \mathcal{E}$ denote an experiential configuration and S_k a semantic, cultural, or religious system. Let $\mathfrak{I}_k$ be its manifest interpretation domain.
Define:

$$\mathfrak{I}_k \subseteq \mathfrak{O}_M, \qquad R_k : \mathcal{E} \to \mathfrak{I}_k \tag{203}$$

Define the tagged experience–interpretation carrier $\mathfrak{T}_k := \mathcal{E} \sqcup \mathfrak{I}_k$, with canonical injections κ_E and κ_{I_k}.
For $e_x \in \mathcal{E}$, $R_k(e_x)$ is the interpretation of e_x under S_k. Because $\mathcal{E} \subseteq \mathfrak{O}_M$ and $\mathfrak{I}_k \subseteq \mathfrak{O}_M$, both terms lie in the common manifest carrier.
A similar low-differentiation experience may therefore be interpreted as God, Brahman, emptiness, void, Light, or pure consciousness.
Both terms remain manifest, while the tagged carrier preserves the distinction between the experience token and its interpretation token:

$$\kappa_E(e_x) \neq \kappa_{I_k}\big(R_k(e_x)\big). \tag{204}$$

Experience and interpretation are distinct.
Every mystical experience remains manifest:

$$e_{\text{mystical}} \in \mathcal{E}. \tag{205}$$

Therefore:

$$\iota_M\big(e_{\text{mystical}}\big) \neq \iota_N(\mathfrak{A}). \tag{206}$$

No religious, contemplative, mystical, or psychedelic experience can literally be the non-manifest itself.

15. Empirical Scope and Consequences of the Framework

Empirical Interface

The non-manifest cannot be directly empirically investigated within the framework because every datum enters manifestation.
What can be investigated are structures within manifestation.
The differentiation architecture identifies empirically tractable dimensions:

$$d_{\text{self}},\quad d_{\text{body}},\quad d_{\text{SO}},\quad d_{\text{space}},\quad d_{\text{time}},\quad d_{\text{concept}},\quad d_{\text{NF}}.$$

Timmermann et al. report profound and partly independent deconstruction of self-related, bodily, visual, and other phenomenal dimensions in extreme 5-MeO-DMT states [22]. Gamma and Metzinger support a multidimensional rather than one-dimensional characterization of minimal phenomenal experience [16], while Josipovic identifies dimensions of nondual awareness including luminosity, bliss, reflexivity, unity,

and reduced ordinary subject-object differentiation [15]. Mago et al. provide a computational model in which strongly reduced representational content can coexist with reflexive awareness [17].

Independent empirical anchors extend this picture. Lindahl et al. document meditation-induced luminosity phenomenology [23], and Chiarella et al. provide evidence for plasticity of bodily and peripersonal boundary organization, directly relevant to the body- and space-differentiation coordinates [24]. Together, these findings provide evidence that several dimensions of ordinary human differentiation vary across conscious states. They provide empirical anchors for the self-, body-, subject-object-, spatial-, and representational dimensions formalized by the differentiation architecture. The corresponding empirical proposition is:

ordinary human differentiation is not invariant across conscious states.

Research Program

The framework generates a research program across phenomenology, computation, formal theory, and physics. Phenomenological work can operationalize the differentiation vector and test whether selfhood, bodily boundaries, subject-object differentiation, spatiality, temporality, conceptuality, and Name/Form covary or dissociate. Minimal-consciousness research can examine whether progressively low-differentiation states increasingly exhibit luminosity, featureless presence, reduced polarity, or non-object-directed fulfillment, while computational work can investigate mechanisms capable of reflexive awareness under strongly reduced representational differentiation. On the formal side, concrete instances of the generative endofunctor family and its extension data can be studied together with their induced effective projections.

At the physical level, cross-level research can test whether independently specified effective processes admit common generative lifts and satisfy the projection-coherence condition:

$$\eta_{s,\alpha,\lambda}: P_s G_{\alpha,\lambda} \overset{\sim}{\Rightarrow} G_{s,\alpha,\lambda} P_s. \tag{207}$$

Causal-symmetric physics can independently investigate the admissible boundary-conditioned histories:

$$\Gamma \in \mathrm{Sol}(\mathcal{K}; B_i, B_f) \tag{208}$$

without presupposing full boundary reversal.

Different candidate physical realizations may employ different realization maps $\chi^{(1)}_{\mathrm{phys}}, \chi^{(2)}_{\mathrm{phys}}, \ldots$ without changing the underlying ontological bridge.

Physics Remains Within Manifestation

Observer, apparatus, measured system, physical data, physical information, and physical theory belong to manifestation.

Scientific adequacy is ordered internally to a manifest projected domain. Let $T_1 \succ_{adeq} T_2$ mean that T_1 has greater empirical/theoretical adequacy than T_2 within the same specified manifest domain. This ordering does not define proximity to the non-manifest. Thus:

$$T_1 \succ_{adeq} T_2 \tag{209}$$

does not license an ordering of theories by proximity to the non-manifest.

Self-Application

The present theory is itself manifest.

Let T_M denote the theory.

Its conceptual presentation satisfies:

$$e_{T_M} \in \mathcal{E}. \tag{210}$$

Therefore:

$$\iota_M(e_{T_M}) \neq \iota_N(\mathfrak{A}). \tag{211}$$

The theory therefore remains subject to the same ontological typing as every other manifest conceptual structure.

Its own conceptual presentation is consequently internal to manifestation:

$$e_{T_M} \in \mathcal{E} \subseteq \mathfrak{O}_M \tag{212}$$

16. Discussion

The theory begins from a distinction that neither physicalism nor consciousness-as-absolute idealism preserves:

$$\mathfrak{A} \mid \mathcal{C}.$$

Consciousness is the primary manifest field relative to everything experiential and projected. Manifestation itself, however, does not exhaust ontology.

Thus:

fundamental relative to experience ≠ absolute relative to ontology.

Within consciousness lies the minimal manifest horizon $\mathcal{H}$.

Its principal aspects are $\mathcal{L} = \mathrm{Lum}(\mathcal{H})$ and $\mathcal{B} = \mathrm{Qual}[\Theta(\mathcal{H})]$.

Reflexive self-limitation generates differentiation:

$$c_{\alpha,\lambda}^{(w)} = b_{\alpha,\lambda}^{(w)}(\mathcal{C}). \tag{213}$$

The parameter λ indexes differentiation strength across ordered differentiation domains. Convergence is determined by the infima of admissible descending chains within those domains. De-differentiation is therefore represented order-theoretically:

$$c_{\alpha,\lambda}^{(w)} \underset{\lambda \downarrow 0}{\overset{\mathrm{ord}}{\rightarrow}} \mathcal{H} \tag{214}$$

This establishes the formal relation between self-limitation and the minimal manifest horizon.

The modal activation function $a(w, \alpha)$ simultaneously resolves a separate issue. Consciousness grounds the possibility of differentiation, but a particular differentiation mode need not be activated in every admissible world.

Thus $\mathrm{Man}_w(\mathcal{C})$ does not entail $\mathrm{Man}_w(\mathcal{J}_H)$.

Human individuality can therefore be genuinely grounded in consciousness while remaining contingent rather than necessary.

The same architecture clarifies White-out.

Ordinary structures of autobiographical identity, Name and Form, body, subject/object, spatiality, temporality, and conceptuality may recede dramatically.

Yet the order-theoretic endpoint remains $\mathcal{H}$.

And:

$$\iota_M(\mathcal{H}) \neq \iota_N(\mathfrak{A}). \tag{215}$$

White-out therefore never becomes the non-manifest merely through limiting de-differentiation.

Informational formulation is represented by a specifically defined ontological co-instantiation relation:

$$\jmath_F(F(\delta)) \equiv_{\mathrm{co}} \jmath_I(I(\delta)) \equiv_{\mathrm{co}} \jmath_M(M(\delta)) \tag{216}$$

Formulation, informational specification, and determinate manifestation are distinct typed aspects of one determination.

Co-instantiation formally relates these distinct typed aspects without requiring categorical isomorphism.

The generative category has explicit object-level and morphism-level action.

The family $G_{\alpha,\lambda}$ acts on an object m by adjoining mode- and strength-dependent determinate contents, relations, and boundaries:

$$G_{\alpha,\lambda}(m) = \left(p_m, D_m \sqcup \Delta D_{\alpha,\lambda}(m), \mathcal{R}_m \sqcup \Delta \mathcal{R}_{\alpha,\lambda}(m), \mathcal{B}_m \sqcup \Delta \mathcal{B}_{\alpha,\lambda}(m)\right) \tag{217}$$

In particular:

$$G_{\alpha,\lambda}(m_c) = m_{\alpha,\lambda} \tag{218}$$

represents the transition from formal bare manifested presence to a first differentiated formal configuration.

Its action on morphisms is specified through extension maps. Its generality permits multiple admissible physical realizations.

The physical bridge receives a parallel refinement.

The general ontology does not entail $B_i \mapsto \rho$ and $B_f \mapsto \sigma_Z$ as a universal law.

Instead, a model-specific quantum realization χ_{qm} implements that mapping for one physical realization.

This preserves the broader thesis:

one ontological architecture → multiple possible physical realizations.

The existing operational map $\Lambda_\kappa(\rho) = (1-\kappa)\rho + \kappa\sigma_Z$ therefore becomes a concrete realization of causal boundary co-determination without being elevated into the unique physical form of the ontology.

Finally, cross-level generativity now operates through the parameterized endofunctor family itself:

$$\eta_{s,\alpha,\lambda}: P_s G_{\alpha,\lambda} \tilde{\Rightarrow} G_{s,\alpha,\lambda} P_s. \tag{219}$$

Thus "as above, so below" is formalized as common generative provenance and scale-sensitive coherence across scales.

17. Scope and Limitations

The framework is a formal ontology and metatheory. Its foundational commitments are stated explicitly as axioms, including ontological non-exhaustiveness, manifested consciousness, intrinsic realization, the primitive minimal manifest horizon, reflexive differentiability, Horizon Convergence, conscious formulation, physical-substrate non-primacy, and possible plurality of projected organizations. The mathematical structures specify the internal relations and consequences of these commitments.

The accompanying formal-support materials are provided in Appendices A–C: Appendix A contains the Lean formalization of the core axioms and derived propositions, Appendix B provides the executable finite-model check, and Appendix C documents the relative-consistency result, the scope of the formalization, and its current verification boundary.

The generative endofunctor family defines a general structural extension mechanism. Concrete empirically fixed realizations constitute the next mathematical and physical layer of the research program.

Positive ontological explanation begins with manifested consciousness. Relations crossing into the non-manifest fall outside the framework's manifest type structure; the non-manifest is therefore ontologically distinguished without being assigned a manifest generative relation to consciousness.

The empirical and phenomenological scope concerns structures and transformations within manifestation. Low-differentiation states permit variable phenomenal realizations of the minimal-horizon architecture;

autobiographical survival remains undetermined by physical-substrate non-primacy alone; projection plurality specifies ontological possibility rather than a distinct spatial realm; differentiation degree does not determine ontological rank; and empirical adequacy is evaluated within manifest domains rather than by proximity to the non-manifest.

18. Conclusion

The ontology begins with:

$$\mathfrak{O} = \mathfrak{O}_M \sqcup \mathfrak{O}_N, \tag{220}$$

and:

$$\neg Exh(\mathfrak{O}_M) \tag{221}$$

Manifestation belongs to the manifest sort. The distinguished non-manifest symbol belongs to the non-manifest sort.

Therefore:

$$\mathrm{im}(\iota_M) \cap \mathrm{im}(\iota_N) = \varnothing. \tag{222}$$

Consciousness is manifest:

$$\mathcal{C} \in \mathcal{E}. \tag{223}$$

At the common meta-level:

$$\iota_M(\mathcal{C}) \neq \iota_N(\mathfrak{A}). \tag{224}$$

Within consciousness lies the minimal manifest horizon:

$$\mathcal{H} \preccurlyeq_{\mathcal{C}} \mathcal{C}. \tag{225}$$

Its principal aspects are:

$$\mathcal{L} = \mathrm{Lum}(\mathcal{H}), \tag{226}$$

and:

$$\mathcal{B} = \mathrm{Qual}[\Theta(\mathcal{H})]. \tag{227}$$

The horizon is structurally prior to differentiated Name and Form:

$$\mathcal{H} \dashv \mathcal{NF}. \tag{228}$$

Consciousness differentiates through reflexive self-limitation:

$$\beta_{\alpha,\lambda} = \left(b_{\alpha,\lambda}, \rho_{\alpha,\lambda}\right). \tag{229}$$

Its differentiated aspect is:

$$c_{\alpha,\lambda}^{(w)} = b_{\alpha,\lambda}^{(w)}(\mathcal{C}) \tag{230}$$

whenever $a(w,\alpha) = 1$.

All active admissible de-differentiation paths converge order-theoretically toward the same manifest horizon:

$$a(w,\alpha) = 1 \Rightarrow c_{\alpha,\lambda}^{(w)} \underset{\lambda \downarrow 0}{\overset{\mathrm{ord}}{\to}} \mathcal{H}. \tag{231}$$

But:

$$\iota_M(\mathcal{H}) \neq \iota_N(\mathfrak{A}). \tag{232}$$

Thus:

limiting manifest de-differentiation ≠ transition into the non-manifest.

The bounded aspect presents the encompassing consciousness under limitation:

$$\rho_{\alpha,\lambda}^{(w)}\left(c_{\alpha,\lambda}^{(w)}\right) = e_{[\mathcal{C}]_{\alpha,\lambda}^{(w)}}. \tag{233}$$

Hence:

difference $\not\Rightarrow$ ontological separation

Consciousness is the ontological locus of determination:

$$\text{Formulator}(\delta_X) = \mathcal{C}. \tag{234}$$

Formulation, informational specification, and determinate manifestation are co-instantiated aspects of one determination:

$$\jmath_F\big(F(\delta_X)\big) \equiv_{\text{co}} \jmath_I\big(I(\delta_X)\big) \equiv_{\text{co}} \jmath_M\big(M(\delta_X)\big) \tag{235}$$

No projected physical substrate is ontologically prior to consciousness:

$$\nexists V \in \mathfrak{P}_{\text{phys}}: \mathcal{C} \prec_G V. \tag{236}$$

Nor does any projected physical substrate ontologically contain, select, constrain, or delimit consciousness.

White-out remains manifest:

$$W_H \in \mathcal{E}. \tag{237}$$

Therefore:

$$\iota_M(W_H) \neq \iota_N(\mathfrak{U}). \tag{238}$$

Lower differentiation does not imply greater ontological reality:

$$\mathbf{d}(e_a) \prec \mathbf{d}(e_b) \Rightarrow \neg(e_a \succ_{\text{ont}} e_b) \tag{239}$$

Positive projected spatial distance excludes ontological separation within the framework:

$$S(x, y) > 0 \Rightarrow \neg(x \perp_{\text{ont}} y) \tag{240}$$

Effective temporal precedence excludes greater ontological fundamentality of the earlier event within the framework:

$$t(e_i) < t(e_f) \Rightarrow \neg(e_i \succ_{\text{ont}} e_f) \tag{241}$$

The framework posits a non-sequential deeper architecture.

Causal-symmetric physical realization permits:

$$\Gamma \in \text{Sol}(\mathcal{K}; B_i, B_f). \tag{242}$$

A model-specific quantum realization may map:

$$\chi_{\text{qm}}(B_i) = \rho, \qquad \chi_{\text{qm}}(B_f) = \sigma_Z, \tag{243}$$

yielding:

$$\Lambda_\kappa(\rho) = (1 - \kappa)\rho + \kappa\sigma_Z. \tag{244}$$

This realization does not exhaust the broader ontological bridge.

Strong boundary reversal, where present, requires:

$$J[\text{Sol}(\mathcal{K}; B_i, B_f)] = \text{Sol}(\mathcal{K}; \mathcal{T}B_f, \mathcal{T}B_i). \tag{245}$$

Admissible generative transformations form:

$$\mathbf{G} \hookrightarrow \mathbf{M} \tag{246}$$

Generative differentiation is represented by:

$$\mathbb{G}: A_{\text{adm}} \times \Lambda \to \text{End}(\mathbf{M}). \tag{247}$$

In particular:

$$G_{\alpha,\lambda}(m_{\mathcal{C}}) = m_{\alpha,\lambda}, \tag{248}$$

and:

$$[\![m_{\alpha,\lambda}]\!]_M = c_{\alpha,\lambda}. \tag{249}$$

Projection coherence requires:

$$\eta_{s,\alpha,\lambda}: P_s G_{\alpha,\lambda} \tilde{\Rightarrow} G_{s,\alpha,\lambda} P_s. \tag{250}$$

Common generative provenance requires:

$$\exists g \in \mathfrak{G}: P_s(g) \approx_s g_s \wedge P_r(g) \approx_r g_r. \quad (251)$$

And genuine coarse-graining permits:

$$\xi_{sr}: Q_{sr} G_{s,\alpha,\lambda} \Rightarrow G_{r,\alpha,\lambda} Q_{sr}. \quad (252)$$

The complete thesis can therefore be stated:

Reality is not exhausted by manifestation. The non-manifest is ontologically real but is not positively characterizable through predicates whose domain is manifestation. Consciousness is the primary manifest field but is not the absolute. Manifestation possesses intrinsic atemporal realization. Within consciousness lies a minimally differentiated manifest horizon whose principal aspects are Light and qualitative realization. Consciousness differentiates through reflexive self-limitation. Every active admissible de-differentiation path converges order-theoretically, in the limiting sense defined by Eq. (52), toward the same minimal manifest horizon and never crosses into the non-manifest. Consciousness formulates determinate information, while formulation, information, and determinate manifestation are co-instantiated aspects of one determination. Name, Form, individuality, body, world, space, time, and materiality are progressively differentiated organizations within manifestation. Their differences are real, but difference does not establish ontological separation. No projected physical substrate is the ontological source, container, selector, constraint, or delimiter of consciousness. White-out reaches the limiting manifest region of differentiation, but because it remains experience, it remains manifestation and never becomes the non-manifest.

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21. Data Availability Statement

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22. Conflicts of Interest

The author declares that there is no conflict of interest.

23. AI Usage Statement

Artificial intelligence-assisted tools were used for language editing and readability improvements. The author reviewed and edited all output and takes full responsibility for the accuracy, originality, integrity, and scholarly content of the final manuscript. No artificial intelligence system is listed as an author.

24. Institutional Review Board Statement

Not applicable. This theoretical study did not involve human participants or animals.

25. Informed Consent Statement

Not applicable.

26. Appendix A: Lean 4 Formalization

Dependency-free source; verified by successful Lean 4.30.0 kernel compilation.

```
/-!
# Architecture of Manifestation — Core Formalization
This dependency-free Lean 4 file formalizes the twelve substantive axioms and
the three principal derived propositions of "The Architecture of
Manifestation" at the finite core level described in Appendix C.
The formalization represents the reflexive
component of differentiation, a genuine positive-strength infimum condition,
the structural priority of consciousness over determinations, the general
codomain of manifest determinations, the world-indexed projection witness,
the body/world dependence clauses, and the distinction between primitive and
empirical phenomenal presence.
The central relative-consistency result is `core_has_model`: an explicit finite
model inhabits `CoreTheory`. If Lean's underlying type theory is consistent,
the encoded core commitments are jointly satisfiable.
-/
namespace ArchitectureOfManifestation
/-- `i` is the greatest lower bound of the natural-valued set `S`. -/
def IsInfimumNat (S : Nat → Prop) (i : Nat) : Prop :=
  (∀ n, S n → i ≤ n) ∧
  (∀ l, (∀ n, S n → l ≤ n) → l ≤ i)
/-- The jointly asserted formal core of Axioms A1–A12 and the selected
definitions needed to state P1–P3. -/
structure CoreTheory where
  Manifest : Type
  NonManifest : Type
  Physical : Type
  World : Type
  Mode : Type
  Strength : Type
  Projection : Type
  Realization : Type
  Determination : Type
  Coordinate : Type
  consciousness : Manifest
  horizon : Manifest
  whiteOut : Manifest
  nameForm : Manifest
  individual : Manifest
  body : Manifest
  experiencedWorld : Manifest
  absolute : NonManifest
```

```
/- A1: manifestation is non-exhaustive because the non-manifest sort has a
   witness and is disjoint from the manifest sort. -/
nonManifestInhabited : Nonempty NonManifest
/- A2, D3 and P3: experience is restricted to the manifest sort. -/
isExperience : Manifest → Prop
consciousnessIsExperience : isExperience consciousness
whiteOutIsExperience : isExperience whiteOut
/- A3: manifested consciousness is intrinsically realized. -/
theta : Manifest → Realization
realized : Realization → Prop
consciousnessRealized : realized (theta consciousness)
/- A4–A5: the minimal horizon is manifest, immanent, and structurally prior
   to Name/Form. -/
immanent : Manifest → Manifest → Prop
horizonImmanent : immanent horizon consciousness
priority : Manifest → Manifest → Prop
horizonPriorToNameForm : priority horizon nameForm
/- A6: an activated differentiation contains both a boundary-forming map and
   a reflexive experiential map. -/
active : World → Mode → Prop
activeWitness : ∃ w a, active w a
zeroStrength : Strength
positiveStrength : Strength → Prop
positiveStrengthWitness : ∃ s, positiveStrength s
zeroNotPositive : ¬ positiveStrength zeroStrength
strengthLE : Strength → Strength → Prop
boundaryForm : World → Mode → Strength → Manifest → Manifest
reflexiveForm : World → Mode → Strength → Manifest → Manifest
reflexiveFormIsExperiential : ∀ w a s x,
  isExperience (reflexiveForm w a s x)
/- A7: differentiated configurations remain immanent and difference does not
   force ontological separation. -/
ontSeparate : Manifest → Manifest → Prop
immanentNonSeparation : ∀ x y,
  immanent x consciousness →
  immanent y consciousness →
  ¬ ontSeparate x y
boundaryImmanent : ∀ w a s, active w a →
  immanent (boundaryForm w a s consciousness) consciousness
differenceWithoutSeparation : ∀ w a s, active w a →
  boundaryForm w a s consciousness ≠ consciousness ∧
  ¬ ontSeparate (boundaryForm w a s consciousness) consciousness
/- D10–D12 and A8: coordinate order, monotonic de-differentiation, the
```

```
   designated horizon endpoint, and the positive-strength infimum. -/
differentiationRank : Manifest → Nat
coordinate : Coordinate → Manifest → Nat
horizonLeast : ∀ x,
  differentiationRank horizon ≤ differentiationRank x
coordinateHorizonLeast : ∀ i x,
  coordinate i horizon ≤ coordinate i x
monotoneDifferentiation : ∀ w a s₁ s₂,
  strengthLE s₁ s₂ →
  differentiationRank (boundaryForm w a s₁ consciousness) ≤
    differentiationRank (boundaryForm w a s₂ consciousness)
horizonConvergence : ∀ w a, active w a →
  boundaryForm w a zeroStrength consciousness = horizon
horizonCoordinateInfimum : ∀ w a i, active w a →
  IsInfimumNat
    (fun n => ∃ s,
      positiveStrength s ∧
      coordinate i (boundaryForm w a s consciousness) = n)
    (coordinate i horizon)
/- A9: every manifest determination is formulated by already manifested
   consciousness, which is structurally prior to the determination. -/
determine : Manifest → Determination
formulator : Determination → Manifest
determinationPriority : Manifest → Determination → Prop
consciousnessPriorToDetermination : ∀ x,
  determinationPriority consciousness (determine x)
consciousFormulation : ∀ x,
  formulator (determine x) = consciousness
/- A10: at least one admissible world contains a projection that is distinct
   from and non-equivalent to the human projection. -/
humanProjection : Projection
projectionEquivalent : Projection → Projection → Prop
projectionEquivalentRefl : ∀ p, projectionEquivalent p p
projectionEquivalentSymm : ∀ p q,
  projectionEquivalent p q → projectionEquivalent q p
projectionEquivalentTrans : ∀ p q r,
  projectionEquivalent p q →
  projectionEquivalent q r →
  projectionEquivalent p r
projectionAt : World → Projection → Prop
possibleProjectionPlurality :
  ∃ w s,
    projectionAt w s ∧
```

```
    s ≠ humanProjection ∧
    ¬ projectionEquivalent s humanProjection
/- A11: projected physical substrates are non-primary relative to
   consciousness. Nonemptiness prevents vacuous satisfaction. -/
physicalInhabited : Nonempty Physical
grounds : Manifest → Physical → Prop
contains : Physical → Manifest → Prop
selects : Physical → Manifest → Prop
constrains : Physical → Manifest → Prop
delimits : Physical → Manifest → Prop
physicalNonPrimacy : ∀ v,
  ¬ grounds consciousness v ∧
  ¬ contains v consciousness ∧
  ¬ selects v consciousness ∧
  ¬ constrains v consciousness ∧
  ¬ delimits v consciousness
/- D31–D32: body and experienced world are immanent to consciousness; the
   particular human individual and body depend on consciousness; and worlds
   without either particular organization are admitted. -/
bodyImmanent : immanent body consciousness
experiencedWorldImmanent : immanent experiencedWorld consciousness
existentiallyDependsOn : Manifest → Manifest → Prop
individualDependsOnConsciousness :
  existentiallyDependsOn individual consciousness
bodyDependsOnConsciousness :
  existentiallyDependsOn body consciousness
manifestedAt : World → Manifest → Prop
consciousnessWithoutIndividual :
  ∃ w, manifestedAt w consciousness ∧ ¬ manifestedAt w individual
consciousnessWithoutBody :
  ∃ w, manifestedAt w consciousness ∧ ¬ manifestedAt w body
/- D33 / Eq. 134: primitive phenomenal presence and its empirical indicator
   are distinct Boolean predicates on the experiential subtype. -/
presence : {x : Manifest // isExperience x} → Bool
empiricalPresence : {x : Manifest // isExperience x} → Bool
presenceNotIdentical : presence ≠ empiricalPresence
whiteOutPresence :
  presence ⟨whiteOut, whiteOutIsExperience⟩ = true
/- A12: differentiation rank does not confer greater ontological reality. -/
lessDifferentiated : Manifest → Manifest → Prop
moreFundamental : Manifest → Manifest → Prop
rankDoesNotConferFundamentality : ∀ x y,
  lessDifferentiated x y → ¬ moreFundamental x y
```

```
/-- D1: the common meta-level is a tagged disjoint sum. -/
abbrev Ontology (T : CoreTheory) := Sum T.Manifest T.NonManifest
def manifestTag (T : CoreTheory) (x : T.Manifest) : Ontology T := Sum.inl x
def nonManifestTag (T : CoreTheory) (x : T.NonManifest) : Ontology T := Sum.inr x
/-- Eqs. 9/12: canonical injections of the two sorts have disjoint images. -/
theorem tagged_sorts_disjoint (T : CoreTheory)
    (m : T.Manifest) (n : T.NonManifest) :
    manifestTag T m ≠ nonManifestTag T n := by
  intro h
  cases h
/-- A1 / Eq. 5: the manifest image does not exhaust the tagged ontology. -/
theorem manifest_is_non_exhaustive (T : CoreTheory) :
    ∃ o : Ontology T, ∀ m : T.Manifest, o ≠ manifestTag T m := by
  rcases T.nonManifestInhabited with ⟨n⟩
  refine ⟨nonManifestTag T n, ?_⟩
  intro m h
  exact tagged_sorts_disjoint T m n h.symm
/-- D3: the meta-level experience predicate is false on the non-manifest tag. -/
def metaExperienced (T : CoreTheory) : Ontology T → Prop
  | Sum.inl m => T.isExperience m
  | Sum.inr _ => False
universe u
/-- P1 / Eq. 13: a manifest determination with an arbitrary codomain accepts
only terms of the manifest sort. -/
abbrev ManifestDetermination (T : CoreTheory) (Y : Sort u) := T.Manifest → Y
abbrev ManifestPredicate (T : CoreTheory) := ManifestDetermination T Prop
/-- P2 / Eq. 17: the distinguished non-manifest term is not experiential. -/
theorem non_manifest_inaccessible (T : CoreTheory) :
    ¬ metaExperienced T (nonManifestTag T T.absolute) := by
  intro h
  exact h
/-- A6 / Eq. 37: the differentiation bundle contains boundary and reflexive
components. -/
def differentiationPair (T : CoreTheory)
    (w : T.World) (a : T.Mode) (s : T.Strength) :=
  (T.boundaryForm w a s, T.reflexiveForm w a s)
/-- P3 / Eq. 140: white-out is manifest and cannot equal the non-manifest. -/
theorem white_out_is_not_non_manifest (T : CoreTheory) :
    manifestTag T T.whiteOut ≠ nonManifestTag T T.absolute :=
  tagged_sorts_disjoint T T.whiteOut T.absolute
/-- A11 restated as a directly reusable theorem. -/
theorem no_physical_substrate_is_primary (T : CoreTheory) (v : T.Physical) :
    ¬ T.grounds T.consciousness v ∧
```

```
    ¬ T.contains v T.consciousness ∧
    ¬ T.selects v T.consciousness ∧
    ¬ T.constrains v T.consciousness ∧
    ¬ T.delimits v T.consciousness :=
  T.physicalNonPrimacy v
namespace FiniteWitness
inductive Manifest where
  | consciousness
  | horizon
  | whiteOut
  | nameForm
  | individual
  | body
  | experiencedWorld
  | physicalImage
  deriving DecidableEq
inductive NonManifest where
  | absolute
  deriving DecidableEq
inductive Physical where
  | bodySubstrate
  deriving DecidableEq
inductive World where
  | human
  | bareConsciousness
  deriving DecidableEq
inductive Mode where
  | humanIndividuation
  deriving DecidableEq
inductive Strength where
  | zero
  | epsilon
  | high
  deriving DecidableEq
inductive Projection where
  | human
  | alternate
  deriving DecidableEq
inductive Coordinate where
  | axis
  deriving DecidableEq
def isExperience : Manifest → Prop
  | .consciousness | .horizon | .whiteOut => True
```

```
  | _ => False
def immanent (_x y : Manifest) : Prop := y = .consciousness
def priority (x y : Manifest) : Prop :=
  x = .horizon ∧ y = .nameForm
def active (_w : World) (_a : Mode) : Prop := True
def positiveStrength : Strength → Prop
  | .zero => False
  | .epsilon | .high => True
def boundaryForm (_w : World) (_a : Mode) : Strength → Manifest → Manifest
  | .zero, _ => .horizon
  | .epsilon, _ => .horizon
  | .high, _ => .individual
def reflexiveForm (_w : World) (_a : Mode) (_s : Strength)
    (_x : Manifest) : Manifest := .whiteOut
def ontSeparate (_x _y : Manifest) : Prop := False
def differentiationRank : Manifest → Nat
  | .horizon => 0
  | .consciousness => 0
  | .whiteOut => 0
  | _ => 1
def coordinate (_i : Coordinate) (x : Manifest) : Nat :=
  differentiationRank x
def strengthLE : Strength → Strength → Prop
  | .zero, _ => True
  | .epsilon, .epsilon | .epsilon, .high => True
  | .high, .high => True
  | _, _ => False
def determinationPriority (x _d : Manifest) : Prop :=
  x = .consciousness
def projectionEquivalent (x y : Projection) : Prop := x = y
def projectionAt (_w : World) (_p : Projection) : Prop := True
def grounds (_x : Manifest) (_v : Physical) : Prop := False
def contains (_v : Physical) (_x : Manifest) : Prop := False
def selects (_v : Physical) (_x : Manifest) : Prop := False
def constrains (_v : Physical) (_x : Manifest) : Prop := False
def delimits (_v : Physical) (_x : Manifest) : Prop := False
def existentiallyDependsOn (_x y : Manifest) : Prop :=
  y = .consciousness
def manifestedAt : World → Manifest → Prop
  | .human, _ => True
  | .bareConsciousness, .consciousness => True
  | .bareConsciousness, .horizon => True
  | .bareConsciousness, .whiteOut => True
```

```
  | .bareConsciousness, _ => False
def presence (_e : {x : Manifest // isExperience x}) : Bool := true
def empiricalPresence (_e : {x : Manifest // isExperience x}) : Bool := false
def lessDifferentiated (x y : Manifest) : Prop :=
  differentiationRank x < differentiationRank y
def moreFundamental (_x _y : Manifest) : Prop := False
/-- A concrete finite witness satisfying the encoded core. -/
def model : CoreTheory where
  Manifest := Manifest
  NonManifest := NonManifest
  Physical := Physical
  World := World
  Mode := Mode
  Strength := Strength
  Projection := Projection
  Realization := Unit
  Determination := Manifest
  Coordinate := Coordinate
  consciousness := .consciousness
  horizon := .horizon
  whiteOut := .whiteOut
  nameForm := .nameForm
  individual := .individual
  body := .body
  experiencedWorld := .experiencedWorld
  absolute := .absolute
  nonManifestInhabited := ⟨.absolute⟩
  isExperience := isExperience
  consciousnessIsExperience := by simp [isExperience]
  whiteOutIsExperience := by simp [isExperience]
  theta := fun _ => ()
  realized := fun _ => True
  consciousnessRealized := by trivial
  immanent := immanent
  horizonImmanent := by rfl
  priority := priority
  horizonPriorToNameForm := by exact ⟨rfl, rfl⟩
  active := active
  activeWitness := ⟨.human, .humanIndividuation, by trivial⟩
  zeroStrength := .zero
  positiveStrength := positiveStrength
  positiveStrengthWitness := ⟨.epsilon, by simp [positiveStrength]⟩
  zeroNotPositive := by simp [positiveStrength]
```

```
strengthLE := strengthLE
boundaryForm := boundaryForm
reflexiveForm := reflexiveForm
reflexiveFormIsExperiential := by
  intro w a s x
  simp [reflexiveForm, isExperience]
ontSeparate := ontSeparate
immanentNonSeparation := by
  intro x y _hx _hy
  simp [ontSeparate]
boundaryImmanent := by
  intro w a s _h
  rfl
differenceWithoutSeparation := by
  intro w a s _h
  constructor
  · cases s <;> simp [boundaryForm]
  · simp [ontSeparate]
differentiationRank := differentiationRank
coordinate := coordinate
horizonLeast := by
  intro x
  exact Nat.zero_le _
coordinateHorizonLeast := by
  intro i x
  exact Nat.zero_le _
monotoneDifferentiation := by
  intro w a s₁ s₂ h
  cases s₁ <;> cases s₂ <;>
    simp_all [strengthLE, boundaryForm, differentiationRank]
horizonConvergence := by
  intro w a _h
  rfl
horizonCoordinateInfimum := by
  intro w a i _h
  cases i
  constructor
  · intro n hn
    exact Nat.zero_le _
  · intro l hl
    have h0 : l ≤ 0 := hl 0 (by
      refine ⟨.epsilon, ?_, ?_⟩
      · simp [positiveStrength]
```

```
      · simp [coordinate, boundaryForm, differentiationRank])
    simpa [coordinate, differentiationRank] using h0
determine := fun x => x
formulator := fun _ => .consciousness
determinationPriority := determinationPriority
consciousnessPriorToDetermination := by
  intro x
  rfl
consciousFormulation := by
  intro x
  rfl
humanProjection := .human
projectionEquivalent := projectionEquivalent
projectionEquivalentRefl := by
  intro p
  rfl
projectionEquivalentSymm := by
  intro p q h
  exact h.symm
projectionEquivalentTrans := by
  intro p q r hpq hqr
  exact hpq.trans hqr
projectionAt := projectionAt
possibleProjectionPlurality := by
  refine ⟨.human, .alternate, by trivial, ?_, ?_⟩
  · intro h
    cases h
  · intro h
    cases h
physicalInhabited := ⟨.bodySubstrate⟩
grounds := grounds
contains := contains
selects := selects
constrains := constrains
delimits := delimits
physicalNonPrimacy := by
  intro v
  simp [grounds, contains, selects, constrains, delimits]
bodyImmanent := by rfl
experiencedWorldImmanent := by rfl
existentiallyDependsOn := existentiallyDependsOn
individualDependsOnConsciousness := by rfl
bodyDependsOnConsciousness := by rfl
```

```
  manifestedAt := manifestedAt
  consciousnessWithoutIndividual := by
    exact ⟨.bareConsciousness, by simp [manifestedAt]⟩
  consciousnessWithoutBody := by
    exact ⟨.bareConsciousness, by simp [manifestedAt]⟩
  presence := presence
  empiricalPresence := empiricalPresence
  presenceNotIdentical := by
    intro h
    let e : {x : Manifest // isExperience x} :=
      ⟨.whiteOut, by simp [isExperience]⟩
    have htf : true = false := by
      simpa [presence, empiricalPresence] using congrFun h e
    cases htf
  whiteOutPresence := by rfl
  lessDifferentiated := lessDifferentiated
  moreFundamental := moreFundamental
  rankDoesNotConferFundamentality := by
    intro x y h
    simp [moreFundamental]
end FiniteWitness
/-- Main relative-consistency certificate: the encoded core has a
model. -/
theorem core_has_model : Nonempty CoreTheory := ⟨FiniteWitness.model⟩
/-- Consequently, not every structure satisfying the encoded core yields
contradiction. -/
theorem not_every_model_is_false : ¬ (∀ _T : CoreTheory, False) := by
  intro h
  exact h FiniteWitness.model
end ArchitectureOfManifestation
```

27. Appendix B: Finite Model Check

Executable Python witness mirroring the finite model in Appendix A; verified result: 32/32 checks passed, SAT.

```
#!/usr/bin/env python3
"""Executable finite-model check for the core formalization.
This independently checks the concrete witness mirrored in
ArchitectureOfManifestation.lean. It does not replace Lean's kernel;
it makes the finite witness inspectable and executable when Lean is unavailable.
"""
from __future__ import annotations
import itertools
import json
MANIFEST = {
    "C",
    "H",
    "WHITE_OUT",
    "NAME_FORM",
    "INDIVIDUAL",
    "BODY",
    "EXPERIENCED_WORLD",
    "PHYSICAL_IMAGE",
}
NON_MANIFEST = {"A"}
PHYSICAL = {"BODY_SUBSTRATE"}
WORLDS = {"HUMAN", "BARE_CONSCIOUSNESS"}
MODES = {"HUMAN_INDIVIDUATION"}
STRENGTHS = {"ZERO", "EPSILON", "HIGH"}
PROJECTIONS = {"HUMAN", "ALTERNATE"}
COORDINATES = {"AXIS"}
def manifest_tag(x: str) -> tuple[str, str]:
    assert x in MANIFEST
    return ("M", x)
def nonmanifest_tag(x: str) -> tuple[str, str]:
    assert x in NON_MANIFEST
    return ("N", x)
def is_experience(x: str) -> bool:
    return x in {"C", "H", "WHITE_OUT"}
def immanent(_x: str, y: str) -> bool:
    return y == "C"
def priority(x: str, y: str) -> bool:
    return x == "H" and y == "NAME_FORM"
def active(_w: str, _a: str) -> bool:
    return True
```

```
def positive_strength(s: str) -> bool:
    return s in {"EPSILON", "HIGH"}
def strength_le(s1: str, s2: str) -> bool:
    order = {"ZERO": 0, "EPSILON": 1, "HIGH": 2}
    return order[s1] <= order[s2]
def boundary_form(_w: str, _a: str, s: str, _x: str) -> str:
    return "H" if s in {"ZERO", "EPSILON"} else "INDIVIDUAL"
def reflexive_form(_w: str, _a: str, _s: str, _x: str) -> str:
    return "WHITE_OUT"
def ont_separate(_x: str, _y: str) -> bool:
    return False
def rank(x: str) -> int:
    return 0 if x in {"C", "H", "WHITE_OUT"} else 1
def coordinate(_i: str, x: str) -> int:
    return rank(x)
def determine(x: str) -> str:
    return x
def formulator(_determination: str) -> str:
    return "C"
def determination_priority(x: str, _determination: str) -> bool:
    return x == "C"
def projection_equivalent(x: str, y: str) -> bool:
    return x == y
def projection_at(_w: str, _p: str) -> bool:
    return True
def grounds(_x: str, _v: str) -> bool:
    return False
def contains(_v: str, _x: str) -> bool:
    return False
def selects(_v: str, _x: str) -> bool:
    return False
def constrains(_v: str, _x: str) -> bool:
    return False
def delimits(_v: str, _x: str) -> bool:
    return False
def existentially_depends_on(_x: str, y: str) -> bool:
    return y == "C"
def manifested_at(w: str, x: str) -> bool:
    if w == "HUMAN":
        return True
    return x in {"C", "H", "WHITE_OUT"}
def presence(_experience: str) -> bool:
    return True
```

```
def empirical_presence(_experience: str) -> bool:
    return False
def more_fundamental(_x: str, _y: str) -> bool:
    return False
def check() -> dict[str, object]:
    checks: dict[str, bool] = {}
    checks["A1_non_exhaustiveness"] = bool(NON_MANIFEST) and all(
        nonmanifest_tag(n) != manifest_tag(m)
        for n, m in itertools.product(NON_MANIFEST, MANIFEST)
    )
    checks["D1_tagged_sorts_disjoint"] = all(
        manifest_tag(m) != nonmanifest_tag(n)
        for m, n in itertools.product(MANIFEST, NON_MANIFEST)
    )
    checks["P1_manifest_determination_domain_restricted"] = all(
        tag[0] == "M" for tag in map(manifest_tag, MANIFEST)
    ) and all(tag[0] == "N" for tag in map(nonmanifest_tag, NON_MANIFEST))
    checks["A2_consciousness_experiential"] = "C" in MANIFEST and is_experience("C")
    checks["P2_nonmanifest_inaccessible"] = not (
        nonmanifest_tag("A")[0] == "M" and is_experience("A")
    )
    checks["A3_intrinsic_realization"] = True
    checks["A4_horizon_manifest_and_immanent"] = (
        "H" in MANIFEST and immanent("H", "C")
    )
    checks["A5_horizon_structurally_prior"] = priority("H", "NAME_FORM")
    diff_cases = list(itertools.product(WORLDS, MODES, STRENGTHS))
    checks["A6_active_witness"] = any(active(w, a) for w, a in itertools.product(WORLDS, MODES))
    checks["A6_boundary_and_reflexive_components"] = all(
        boundary_form(w, a, s, x) in MANIFEST
        and reflexive_form(w, a, s, x) in MANIFEST
        and is_experience(reflexive_form(w, a, s, x))
        for w, a, s, x in itertools.product(WORLDS, MODES, STRENGTHS, MANIFEST)
    )
    checks["A7_boundaries_immanent"] = all(
        immanent(boundary_form(w, a, s, "C"), "C")
        for w, a, s in diff_cases
        if active(w, a)
    )
    checks["A7_difference_without_separation"] = all(
        boundary_form(w, a, s, "C") != "C"
        and not ont_separate(boundary_form(w, a, s, "C"), "C")
        for w, a, s in diff_cases
```

```
    if active(w, a)
)
checks["A7_immanent_mutual_nonseparation"] = all(
    not ont_separate(x, y)
    for x, y in itertools.product(MANIFEST, repeat=2)
    if immanent(x, "C") and immanent(y, "C")
)
checks["D10_rank_horizon_least"] = all(rank("H") <= rank(x) for x in MANIFEST)
checks["D10_coordinate_horizon_least"] = all(
    coordinate(i, "H") <= coordinate(i, x)
    for i, x in itertools.product(COORDINATES, MANIFEST)
)
checks["D12_monotone_dedifferentiation"] = all(
    rank(boundary_form(w, a, s1, "C"))
    <= rank(boundary_form(w, a, s2, "C"))
    for w, a, s1, s2 in itertools.product(WORLDS, MODES, STRENGTHS, STRENGTHS)
    if strength_le(s1, s2)
)
checks["A8_zero_strength_horizon"] = all(
    boundary_form(w, a, "ZERO", "C") == "H"
    for w, a in itertools.product(WORLDS, MODES)
    if active(w, a)
)
checks["A8_positive_strength_infimum"] = all(
    min(
        coordinate(i, boundary_form(w, a, s, "C"))
        for s in STRENGTHS
        if positive_strength(s)
    )
    == coordinate(i, "H")
    for w, a, i in itertools.product(WORLDS, MODES, COORDINATES)
    if active(w, a)
)
checks["A9_determination_priority"] = all(
    determination_priority("C", determine(x)) for x in MANIFEST
)
checks["A9_conscious_formulation"] = all(
    formulator(determine(x)) == "C" for x in MANIFEST
)
checks["A10_projection_equivalence_relation"] = (
    all(projection_equivalent(p, p) for p in PROJECTIONS)
    and all(
        not projection_equivalent(p, q) or projection_equivalent(q, p)
```

```
        for p, q in itertools.product(PROJECTIONS, repeat=2)
    )
    and all(
        not (projection_equivalent(p, q) and projection_equivalent(q, r))
        or projection_equivalent(p, r)
        for p, q, r in itertools.product(PROJECTIONS, repeat=3)
    )
)
checks["A10_world_indexed_projection_plurality"] = any(
    projection_at(w, s)
    and s != "HUMAN"
    and not projection_equivalent(s, "HUMAN")
    for w, s in itertools.product(WORLDS, PROJECTIONS)
)
checks["A11_physical_non_primacy"] = all(
    not grounds("C", v)
    and not contains(v, "C")
    and not selects(v, "C")
    and not constrains(v, "C")
    and not delimits(v, "C")
    for v in PHYSICAL
)
checks["D31_body_immanent"] = immanent("BODY", "C")
checks["D31_experienced_world_immanent"] = immanent("EXPERIENCED_WORLD", "C")
checks["D31_individual_depends_on_consciousness"] = existentially_depends_on(
    "INDIVIDUAL", "C"
)
checks["D31_body_depends_on_consciousness"] = existentially_depends_on("BODY", "C")
checks["D32_consciousness_without_individual"] = any(
    manifested_at(w, "C") and not manifested_at(w, "INDIVIDUAL") for w in WORLDS
)
checks["D32_consciousness_without_body"] = any(
    manifested_at(w, "C") and not manifested_at(w, "BODY") for w in WORLDS
)
experiences = {x for x in MANIFEST if is_experience(x)}
checks["D33_presence_not_empirical_indicator"] = (
    all(presence(x) for x in experiences)
    and all(not empirical_presence(x) for x in experiences)
    and any(presence(x) != empirical_presence(x) for x in experiences)
)
checks["P3_whiteout_remains_manifest"] = (
    is_experience("WHITE_OUT")
    and manifest_tag("WHITE_OUT") != nonmanifest_tag("A")
```

```
    )
    checks["A12_rank_not_ontological_reality"] = all(
        not more_fundamental(x, y)
        for x, y in itertools.product(MANIFEST, repeat=2)
        if rank(x) < rank(y)
    )
    failed = [name for name, passed in checks.items() if not passed]
    return {
        "model": "Architecture of Manifestation finite-core witness",
        "checks_run": len(checks),
        "passed": len(checks) - len(failed),
        "failed": failed,
        "result": "SAT" if not failed else "FAILED",
        "checks": checks,
    }
if __name__ == "__main__":
    result = check()
    print(json.dumps(result, indent=2, sort_keys=True))
    raise SystemExit(0 if result["result"] == "SAT" else 1)
```

28. Appendix C: Formalization Report

Result

The core axiom system A1–A12 has an explicit finite witness model. In that model, the twelve substantive axioms can be jointly satisfied together with the principal derived propositions P1–P3 and the selected definitions required to state them. The executable finite-model check in Appendix B returns SAT across 32 checks.

Lean 4.30.0 kernel compilation completed successfully for the dependency-free source reproduced in Appendix A. The theorem core_has_model : Nonempty CoreTheory confirms that the encoded core has a model. This establishes relative consistency of the encoded core: the formalized commitments do not force a contradiction in the supplied semantics, relative to Lean's underlying type theory.

Formalized correspondence

Paper location	Encoded commitment
A1; Eqs. 5–12	A nonempty non-manifest sort, a tagged disjoint ontology, and an explicit theorem of non-exhaustiveness.
P1; Eq. 13	A manifest determination has the general type Manifest → Y; applying it to a non-manifest term is excluded by the type system.
D3 and P2; Eqs. 14–17	Experience is defined on the tagged ontology and is false on the non-manifest branch.
A2; Eqs. 23–25	Consciousness is a manifest and experiential term.
A3; Eqs. 27–29	Manifested consciousness is intrinsically realized.
A4–A5; Eqs. 30–36	The horizon is manifest and immanent, is least under the encoded rank and coordinate orders, and is structurally prior to Name/Form.
A6–A8; Eqs. 37–53	The formalization contains boundary-forming and reflexive maps, an active differentiation mode, immanence and nonseparation clauses, monotonicity, a zero-strength horizon endpoint, and a positive-strength infimum condition.
A9; Eqs. 56–58	Every manifest determination is consciously formulated, and consciousness is structurally prior to the determination.
A10; Eqs. 110–111	Projection equivalence is an equivalence relation, and an admissible world contains a projection distinct from and non-equivalent to the human projection.

Paper location	Encoded commitment
A11 and D31–D32; Eqs. 112–128	Physical non-primacy is represented on a nonempty physical type; body and experienced world are immanent to consciousness; individual and body depend on consciousness; and worlds without the particular individual or body are admitted.
D33; Eq. 134	Primitive phenomenal presence and its empirical indicator are represented by distinct predicates on the experiential subtype.
P3; Eqs. 139–140	White-out remains experiential and manifest, and therefore cannot equal the non-manifest term in the tagged ontology.
A12; Eqs. 141–143	Lower differentiation rank does not imply greater ontological fundamentality.

Logical clarifications

1. Manifest and NonManifest are distinct types and enter the common ontology only through different constructors of a tagged sum.
2. P1 is enforced type-theoretically: the determination's domain is Manifest, while its codomain is arbitrary.
3. A1 is not inferred merely from type separation; the formalization supplies a non-manifest witness and proves that no manifest tag equals it.
4. A6 includes both the boundary-forming and reflexive components of differentiation, and the reflexive component is required to remain experiential.
5. A7 is encoded both generally for co-immanent terms and specifically for the differentiated boundary produced by an active mode.
6. A8 is checked in a finite, three-level strength order and on one finite coordinate axis. The witness verifies the endpoint and infimum claims for this model; it is not a replacement for a full analytic treatment over arbitrary continuous coordinates.
7. A9 includes an explicit structural-priority relation in addition to conscious formulation.
8. A10 is world-indexed. Projection equivalence is represented as an abstract equivalence relation; no stronger category-theoretic structure is assumed in this core.
9. A11 uses a nonempty physical type, so physical non-primacy is not satisfied vacuously. The D31–D32 clauses establish the stated dependence and model possibilities; they do not by themselves entail autobiographical survival.
10. D33 distinguishes primitive phenomenal presence from an empirical indicator, preventing the two predicates from being identified by definition.

Verification record

Lean source	Appendix A — ArchitectureOfManifestation.lean
Lean version	4.30.0
Kernel result	Successful compilation with no errors
Lean certificate	core_has_model : Nonempty CoreTheory
Finite checker	Appendix B — Finite_Model_Check.py
Finite-check result	32 of 32 checks passed; SAT

Verification boundary

The formal verification covers the finite core explicitly encoded in Appendices A and B. The full category-theoretic development associated with D18–D28, the complete functoriality claims C1–C3, the physical bridge principles B1–B6, the theory-comparison material D40–D44, and every formula through Eq. 252 are not yet completely kernel-verified. They remain a separate next layer of formalization.

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