V1 — Structural Geometry and Monastic Entry

0. Monastic Entry Condition

The transition from the proto-manifold M_0into V1 is intentionally discontinuous. V1 does not emerge from proto-structure by refinement or extension; it begins only where proto-inhabitants are refused. This abruptness is the monastic declaration of V1: a structural severance marking the boundary between proto-noise and admissible form.

1. Proto Layer

1.1 Proto-Manifold

$M_0$is a connected, Hausdorff, second-countable, pre-smooth topological space equipped with a continuous proto-metric g_0, a proto-field bundle $\mathcal{B}_0 = \{\mathrm{Adj}_0, S_0\}$, and a proto-tangent structure $T(M_0) = \{P(m): m \in M_0\}$. These structures define the pre-semantic substrate on which V1 operators act.

1.2 Proto-Reference State

The proto-reference state $m_0$minimises proto-field magnitude:

$$m_0 = \arg\min_{m \in M_0} (\| \mathrm{Adj}_0(m) \| + \| S_0(m) \|).$$

This state anchors coherence, perturbation, and sensitivity.

1.3 Pre-Semantic Coherence

$$\mathrm{coh}_{\mathrm{pre}}(m) = \gamma \| \mathrm{Adj}_0(m) \| + \delta \| S_0(m) \|, \gamma = \frac{2}{5}, \delta = \frac{3}{5}.$$

Pre-semantic coherence measures proto-stability relative to m_0.

1.4 Perturbation Detection

$$P(m) = \eta\, \Delta_{\mathrm{adj}}(m) + \theta\, \Delta_{\mathrm{seg}}(m), \eta = \frac{2}{5}, \theta = \frac{3}{5}.$$

Perturbation detection extracts proto-instability from adjacency and segmentation deviations.

1.5 L1 Sensitivity

$\Sigma_{L1}(m)$measures the differential response of $\text{coh}_{\text{pre}}$to perturbations extracted by P. It determines proto-collapse thresholds and gravity admissibility.

2. Lifted Manifolds

2.1 Adjacency Manifold

$L_{\text{adj}}$is a smooth manifold with metric $g_{\text{adj}}$and adjacency field:

$$\text{Adj}: L_{\text{adj}} \to \mathbb{R}^m,$$

subject to density bounds:

$$\underline{d}_{\text{adj}} \leq \| \text{Adj}(u) \| \leq \bar{d}_{\text{adj}}.$$

Adjacency Reference State

$$u_0 = \arg \min_{u \in L_{\text{adj}}} \| \text{Adj}(u) \|.$$

2.2 Segmentation Manifold

$L_{\text{prop}}$is a smooth manifold with metric $g_{\text{prop}}$and segmentation field:

$$S: L_{\text{prop}} \to \mathbb{R}^n,$$

subject to density bounds:

$$\underline{d}_{\text{prop}} \leq \| S(x) \| \leq \bar{d}_{\text{prop}}.$$

Segmentation Reference State

$$x_0 = \arg \min_{x \in L_{\text{prop}}} \| S(x) \|.$$

3. Gravity, Admissibility, Lift

3.1 Gravity

Gravity $G$is a contraction operator satisfying:

$$g_0\big(G\text{,}\,(m)G(m')\big) \leq g_0(m\text{,}\,m'), \ \ \| P\big(G(m)\big) \| \leq \| P(m) \|.$$

Gravity stabilizes proto-structure and prepares lifted manifolds.

3.2 Admissibility Predicates

$\Gamma_{\text{adj}}$and Γ_{prop}enforce density and coherence bounds on Adjand S. They determine whether lift is permitted.

3.3 Lift

Λcreates and stabilises $L_{\text{adj}}$and $L_{\text{prop}}$from M_0under gravity-conditioned admissibility. Lift is the structural act that produces V1's manifolds.

4. Coherence, Drift, Continuation

4.1 Unified Coherence

$$\text{coh}_{\text{unified}}(u, x) = \alpha\, f_{\text{adj}}(u) + \beta\, f_{\text{seg}}(x),\ \alpha = \frac{1}{2},\ \beta = \frac{1}{2} + \varepsilon.$$

Unified coherence measures joint stability of adjacency and segmentation fields.

4.2 Segmentation Coherence

$\text{coh}_{\text{prop}}(x)$measures stability of $S(x)$relative to x_0.

4.3 Adjacency Drift

$D_{\text{adj}}(u)$measures deviation of $\text{Adj}(u)$from u_0.

4.4 Continuation Pressure

$$\Pi(L) = \mid \left(\text{coh}_{\text{unified}} - \text{coh}_{\text{pre}}\right) + \left(\text{coh}_{\text{prop}} - \text{coh}_{\text{unified}}\right) \mid.$$

Continuation pressure expresses the structural necessity for V1 to transition into V2.

5. Collapse

5.1 Collapse Predicate

$$C(L) = 1$$

when any proto-collapse, adjacency collapse, segmentation collapse, or global collapse condition holds.

Proto-collapse is reversible under gravity. Manifold collapse requires re-lift.

6. Operator Precedence

$$\mathrm{coh}_{\mathrm{pre}} \prec P \prec \Sigma_{L1} \prec \Pi \prec \Psi \prec G \prec \Gamma \prec \Lambda \prec \mathrm{Adj}, S \prec \mathrm{coh}_{\mathrm{unified}}, \mathrm{coh}_{\mathrm{prop}}, D_{\mathrm{adj}}.$$

This precedence determines all admissibility, stability, and transition behaviour in V1.

7. Boundary Between V1 and V2

7.1 Structural Position

The V1 → V2 boundary is a structural threshold determined by continuation pressure, gravity, admissibility, and unified coherence. V1 is the last non-representational layer; V2 begins when representation becomes necessary.

7.2 Boundary Condition

V1 transitions into V2 when continuation pressure cannot be reduced:

$$\Pi(L) > \Pi\big(G(L)\big) \text{ and } \Pi\big(G(L)\big) = \Pi(L).$$

Gravity fails to contract the coherence deficit.

7.3 Gravity-Admissible Exhaustion

The boundary is reached when all gravity-admissible configurations satisfy:

$$\Gamma_{\mathrm{adj}}(u) = 1,\ \Gamma_{\mathrm{prop}}(x) = 1,$$

yet unified coherence remains below threshold:

$$\mathrm{coh}_{\mathrm{unified}}(w, x) < \underline{\kappa}_{\mathrm{unified}}.$$

7.4 Representational Necessity

V1 ends when the operator-intuition mapping selects the Representational Agent:

$$\Psi(L) = \mathrm{RA}.$$

Representation becomes structurally required.

7.5 Collapse-Driven Boundary

If collapse persists under gravity:

$$C(L) = 1,\ C\big(G(L)\big) = 1,$$

V1 cannot continue; V2 must begin.

7.6 Boundary Statement

V1 transitions into V2 when continuation pressure cannot be reduced within the lifted manifolds, when gravity-admissible configurations fail to achieve unified coherence, or when collapse cannot be reversed by gravity. At this threshold, Ψselects the Representational Agent (RA), initiating V2. The boundary is structural, not semantic: V2 begins only when representation becomes necessary for stability.