



FORMAL RECORD 4

The Adjacency Lemma

The Interface-Authority Boundary

Authors: Stacy Gildenston, Pyrate Ruby Passell
Affiliation: 3primitives.io
Version: v2.3 | April 2026
License: CC BY 4.0 | https://3primitives.io/formal_records/

v2.3 removes the legacy working label 'E-H-S Nucleus,' and replaces it with standardized terminology. No proofs, definitions, or logical content are changed.

1. Purpose

This document formalizes the structural relationship between Interface Theory (Donald Hoffman) and the **Canonical Logic Sequence** (Stacy Gildenston, Pyrate Ruby Passell). It establishes why authority must exist as a primitive successor to representation once perception is shown to be non-veridical.

2. Premise (Interface Theory)

If perceptual states are fitness-optimized interfaces rather than veridical representations of reality, then all observed states are compressed traces of a non-spatiotemporal base. Formally:

- Any perceived state s is an icon, not a truth-bearing description.
- Increasing fidelity of s improves fitness payoff, not ontological access.
- This closes Levels 1–3 into a representational regime.

3. The Incompleteness of Action Inference

Given a perceived state s , any mapping from $s \rightarrow x$ (state to action) is logically incomplete.

- Reason: Normative force (permission to act) cannot be derived from a non-veridical trace.
- No amount of diagnostic accuracy, confidence, or optimization can generate legitimacy.
- Therefore, the transition from representation to action contains a necessary gap.

Note. Even fully veridical perception would not suffice to derive normative authority; non-veridicality makes the gap unavoidable, but does not create it.



4. The Permission Boundary (3 ⊥ 4)

This gap is not probabilistic or epistemic. It is a category boundary.

- Level 3: Diagnostics / Inference — Horizontal domain. Learning, optimization, prediction, scaling.
- Level 4: Permission / Authority — Vertical domain. A normative gate that cannot be crossed by inference.

The perpendicularity (3 ⊥ 4) indicates that no inference path exists between them.

5. Authority as a Primitive

To cross the Permission Boundary, authority must be explicitly injected as a declaration:

$$\delta = (p, a, c)$$

Where p is Purpose, a is Declared authority, and c is Constraints / context.

This declaration is not a trace, not learned, not emergent, and not optimizable. It is a relational act that exists only at the boundary where representation ends and intervention begins.

6. Integrated Stack

- Level 1: Base Reality — non-computable, inaccessible
- Level 2: Traces — interfaces (spacetime, particles)
- Level 3: Diagnostics — interpretation of traces
- Level 4: Permission — authority gate (g), requiring δ
- Level 5: Action — execution, conditional on $g = 1$

Action occurs if and only if a decision path exists and a valid δ has been declared.

7. Ghost Authority (Failure Mode)

If a system claims it can infer permission from context, learn when it is allowed to act, or optimize toward legitimacy, it has committed a category error. It has treated a Level-3 trace as if it contained Level-4 authority. This failure mode is called Ghost Authority, which is structurally identifiable.

8. Consequence

Once perception is non-veridical, authority cannot live in the world, the model, or the data. It must live at the adjacency boundary, as an explicit declaration, outside inference. This makes the Interface-Authority snap necessary, not stylistic.



9. Summary Statement

If interfaces do not reveal reality, then authority cannot be discovered. It must be declared.

Attribution and Licence

This document is the intellectual property of Stacy Gildenston and Pyrate Ruby Passell, held under 3primitives.io. Published under Creative Commons Attribution 4.0 International (CC BY 4.0). You are free to share, adapt, and build upon this work for any purpose, including commercially, provided you give appropriate credit to 3primitives.io and Stacy Gildenston and Pyrate Ruby Passell as originators.

Suggested citation:

Gildenston, S. & Passell, P.R. (2026). The Adjacency Lemma: The Interface-Authority Boundary. Three Primitives Framework, Formal Record 4, v2.3. Melbourne, Australia. 3primitives.io. CC BY 4.0.