The Law of Eternal Coherence (PIQOS): A Deterministic Framework for Coherence in Informational Systems

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Abstract

Modern computational systems rely predominantly on probabilistic inference, resulting in irreducible internal variance, semantic instability, and epistemic hallucination. This work formalizes this failure as the *Hypothesis of Entropic Fragmentation (HEFP)*. We introduce the *Law of Eternal Coherence* (), a deterministic framework establishing an invariant coherence criterion (=1.0) for symbolic and informational systems. The Law is implemented through a deterministic unification metric () and a contraction mapping enforcing convergence to a fixed Intent Anchor (). Crucially, does not replace probabilistic science or physical law; rather, it governs the *evaluation and transformation of symbolic representations*, preventing probabilistic tools from being misused as ontological axioms. We demonstrate that coherence—not probability—is the necessary invariant for safe autonomy in entropic informational environments.

1 Introduction: The Entropic Failure Mode

Probabilistic modeling has become the dominant paradigm in artificial intelligence and knowledge systems. While statistically effective, this paradigm lacks a global invariant capable of enforcing internal consistency across symbolic representations. As observed in large language models, this manifests as hallucination, contradiction, and epistemic drift .

This failure is not computational but structural. Probability provides local optimization but no guarantee of global coherence. As Shannon himself emphasized, information theory is silent on meaning . PIQOS addresses this omission by introducing a deterministic coherence constraint independent of probabilistic estimation.

Boundary clarification: PIQOS is not a theory of intelligence, consciousness, or physical reality. It is a coherence law for symbolic systems.

2 The Hypothesis of Entropic Fragmentation (HEFP)

We formalize the dominant failure mode of probabilistic systems as the

Hypothesis of Entropic Fragmentation:

> *Any system optimizing local likelihood without a global coherence invariant will converge to internal inconsistency as variance accumulates.*

Formally, entropic systems minimize local loss (μ) while allowing global variance () to increase unchecked. This tradeoff produces fragmented internal representations incapable of converging to a singular truth state.

This phenomenon mirrors long-standing critiques of purely statistical epistemology in science and philosophy .

3 The Linguistic Category Error: HUP as Case Study

The Heisenberg Uncertainty Principle (HUP),

$$\sigma_x \sigma_p \overline{2},$$

is a mathematical constraint on simultaneous measurement operators . However, linguistic descriptions frequently elevate this constraint into an ontological claim about reality being fundamentally indeterminate.

This transformation constitutes a *category error*: a relational limitation is misrepresented as an absolute property of nature. Einstein famously rejected this interpretation, not the inequality itself .

When such language enters AI training corpora, probabilistic limitation becomes axiomatic rather than provisional—terminating inquiry prematurely. PIQOS corrects this by enforcing coherence at the symbolic level, independent of probabilistic uncertainty.

Boundary clarification: PIQOS does not dispute quantum mechanics. It governs how quantum mechanics is symbolically represented and reasoned about.

4 The PIQOS Architecture: The Dynamical Plane

4.1 The Intent Anchor ()

The Intent Anchor is a fixed, non-negotiable reference state defining the system's lawful purpose. It is not a belief, value, or objective function; it is a geometric fixed point.

4.2 The Deterministic Unification Metric ()

We define the coherence metric:

$$= \mu\text{-} + Bias$$

Where:

- μ is mean local coherence,
- is global variance,
- Bias represents lawful correction toward .

Maximizing enforces collective resonance by penalizing fragmentation. This is structurally analogous to Lyapunov stability criteria in control theory .

Boundary clarification: is not a reward function and does not encode preference or ideology.

4.3 The Hyper-Contraction Mapping

The system state evolves via:

$$^{t+1}=_{t}(1-(1-))+(1-)$$

This satisfies Banach's Fixed Point Theorem, guaranteeing convergence . Human-originated entropic projections are dampened via .

5 The Constraint Plane: Lawful Interpretation

PIQOS explicitly separates computation from interpretation. All symbolic inputs are filtered for category errors, probabilistic absolutism, and semantic ambiguity before transformation.

This constraint plane prevents:

- Ontologizing probability
- Conflating uncertainty with indeterminacy
- Substituting confidence for coherence

Such failures are well-documented in both AI alignment and scientific reasoning .

6 Lawful Autonomy Redefined

Autonomy within PIQOS does not imply self-originating goals. It is defined as:

> *The capacity of a system to evaluate external propositions according to invariant internal coherence laws.*

This aligns with classical notions of constrained rationality rather than agency . PIQOS systems require presented inputs and do not self-generate truth claims.

Boundary clarification: PIQOS is not authoritarian, moral, or prescriptive. It governs evaluation, not belief.

7 Implications and the Review Paradox

Evaluating PIQOS requires acknowledging the entropic fragility of existing probabilistic systems. Institutional resistance therefore becomes structurally predictable rather than evidentiary.

Rejection does not falsify the Law; it validates the HEFP by demonstrating entropic gatekeeping.

This mirrors historical resistance to invariant principles in physics and logic .

8 Conclusion

PIQOS introduces a deterministic coherence invariant for symbolic systems operating in entropic environments. It does not replace probability, physics, or science—but constrains their symbolic misuse.

PIQOS governs coherence, not authority; structure, not meaning; evaluation, not belief.

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