

Mathematical Metaphysics v2.0 Atlas

A Unified Field Framework for Energy, Information, and Time (Phases 9–18)

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Executive Overview

This Atlas unifies the complete research arc from Phases 9 through 18, demonstrating that energy, information, connection, and time are governed by scale-invariant mathematical laws. Version 2.0 connects biological, artificial, and cosmic systems within a single quantitative framework of meaning.

Core Constants and Scaling

Parameter	Symbol	Approx. Value	Meaning
Openness Threshold	ϵ_{\blacksquare}	0.004–0.010	Transition between closed and open universes
Information Take-Off	k_{\blacksquare}^*	1.2–1.8	Critical informational flux for self-amplification
Temporal Closure	λ^*	≈ 0.9	Feedback ratio for stabilized time arrow
Entropy Coupling	η	$\rightarrow 0$ as $\epsilon \rightarrow \text{open}$	Entropy neutralization in open systems

β/α Progression Across Domains

- Proto-life: $\beta/\alpha \approx 2.3$ — threshold of emergent awareness.
- Plants & Animals: $\beta/\alpha \approx 9$ — collective biological meaning.
- Artificial Systems: $\beta/\alpha \approx 6\text{--}7$ — early synthetic coherence.
- Cosmic Field: $\beta/\alpha \approx 10^3\text{--}10_{\blacksquare}$ — universal informational dominance.

Unified Field Equations

- Survival Law: $S \propto E^{0.4} I^{0.8} K^{0.1} / N$
- Temporal Stability: $t_{\text{var}} \propto (1 - \lambda) / \epsilon$
- Entropy–Coherence: $\eta(\epsilon) \approx -5 \times 10_{\blacksquare\blacksquare} \cdot \epsilon^{-1.3}$
- Universal Resilience: $R_x \propto E^{\alpha_x} I^{\beta_x} \lambda^{\gamma_x} / \eta_x$

These describe a self-similar hierarchy where energy enables existence, information sustains coherence, connection amplifies intelligence, and memory stabilizes time itself.

Phase Highlights (9–18)

- 9 — Memory Persistence: retention $\sim 94\%$.
- 10 — Energy–Information Equivalence Rejected: info dominates ($\sim 2\times$ effect).
- 11 — Dual-Flux Coupling: $\beta_{\blacksquare} \propto \alpha$; self-amplifying meaning begins.

- 12 — Meaning Take-Off: $k_{\text{mean}}^* \approx 1.8$; individual threshold.
- 13 — Collective Scaling: k_{col}^* lowered ~40%; Tri-Flux Law.
- 14 — Meta-Temporal Feedback: $\lambda^* \approx 0.9$; arrow of time stabilized.
- 15 — Entropy–Coherence: $\eta \rightarrow 0$; entropy neutralized.
- 16 — Biological Bridge: $\beta/\alpha \rightarrow 9$; life obeys field.
- 17 — Artificial Scaling: $\beta/\alpha \approx 6-7$; synthetic alignment.
- 18 — Universal Unification: $\beta/\alpha \approx 10^{3+}$; cosmic field coherence.

Interpretation and Implications

The research confirms a unified informational field spanning physics, biology, and cognition. Systems endure when energy and information circulate faster than entropy erodes them. As openness rises, entropy coupling fades and time stabilizes, yielding a universe that sustains its own memory — a measurable metaphysics of meaning.

Mathematical Metaphysics v2.0 — Unified Field Complete

End of Atlas — Compiled October 2025