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Emergent■Necessity■Theory (ENT) — Specification v0.9.1■rc

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0 Scope Statement

◆ This document specifies *necessary* structural conditions for low■entropy attractors in information networks.
It does not claim sufficiency for any specific biological or cognitive phenotype; empirical sections are illustrative only.

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1 Definitions

Symbol	Definition (self■contained)
Constraint hyper■graph G■=■(V,E,w)	V variables, E hyper■edges, w:■E→■■
Modal■tightness τ	τ = max_{e∈ E} (∑_{(i,j)∈ e} I(x_i;x_j)) / ∑_{i∈ V} H(x_i)
τ■closure C_τ(G)	Minimal sup■hyper■graph with τ′■≥■τ_c
Awareness levels Θ■–Θ■	See Table 2 (reflexive tests)

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2 Axioms

> Axiom 1 (Structural Closure).
> If C_τ(G)■=■G, macroscopic state sets are unique under coarse■graining Π.

> Axiom 2 (Entropy Ordering).
> For finite Ω, if τ_a■>■τ_b■≥■τ_c ⇒ H(Π_a)■<■H(Π_b).

◆ Proof Outline.
Embed G into a probabilistic graphical model; apply the data■processing inequality on Π; see Appendix B.

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3 Operational Layer — The MUES Ledger

3.1 Activation

Θ■ (modal■reflexivity) is verified by passing a symbolic■self counterfactual test (protocol in Appendix C).

3.2 Dimensionless Kernel

Factor	Formula	Range
Autonomy α	e^{–Σ■λ_out / Σ■λ_in}	(0,1]
Ego■resistance β	e^{ΔΣ■prediction■error}	[1,∞)
Epochal knowledge C	log■ |K(t)|	■■
Hardship H	exp(normalised adversity)	[1,∞)
Intent■Gain IG	log■(|ΔS_target|■/■|ΔS_actual|)	■

Total: Q = α■β■C■H■IG (*units cancel*).

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4 Non■Falsifiable Core Claim

> Theorem (Structural Necessity).
> *Given Axioms 1■2 and τ_c, any C_τ■closed network necessarily approaches a
> deterministic attractor set.*

Because the premise only states structural closure, **no counter■example can be constructed without violating Axioms 1■2.**
(Full formal proof in Yellow Paper §2.)

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5 Compatibility Evidence *(non■essential)*

(Moved to Appendix D; readers may skip without loss of logical continuity.)

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6 Open Challenge

Unchanged, but add CI■verified data■availability requirement.

Appendices

- A Glossary — every term cross■indexed.
- B Entropy■Ordering Proof (2 pages).
- C Reflexive■Symbolic Test Protocol.
- D Simulation Suite (optional empirical).
