Critical Comparison Summary: Processing Grammar vs. Emergence & Coherence Theories

Core Thesis:

Protodomain processing grammar explains coherence via differentiation, constraint, stabilization, and completion vs. closure, avoiding ontological and normative claims.

Alignment & Divergence:

- Bedau (Weak Emergence): Aligns structurally; replaces simulation criterion with pressure/coherence.

- Synergetics (Haken): Shares constraint redistribution; adds failure taxonomy for rigidification.

- Kauffman (RAF): Resonates with completion; introduces pressure loops for brittleness.

- Friston (FEP): Similar coherence logic; rejects optimization normativity.

- Enactivism: Complements sense-making; adds non-moral failure analysis.

- IIT (Tononi): Warns against reification; reframes high integration as closure risk.

- Kuramoto Models: Provides computable proxies; interprets over-synchrony as premature closure.

- Deacon: Strong synergy; adds antagonist (pressure) and diagnostic machinery.

Unique Contributions:

1) Pressure as cross-scale antagonist explaining closure attraction and fragility.

2) Completion vs. Closure distinction for resilience analysis.

3) Non-ontological discipline enabling cross-domain translation.

Limitations:

- Lacks operational metrics compared to FEP/IIT.

- Requires heuristics for practical application.

Implications:

Framework generalizes emergence theory, adds structural failure analysis, and informs design for adaptive coherence across physical, cognitive, and institutional systems.