Image Dynamics Theory: A Unified Dynamical Framework for Consciousness

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Date: December 2025

Abstract

Image Dynamics Theory models consciousness as the continuous evolution of a high-dimensional representational system projected into low-dimensional slices. Slice orientation encodes dominant cognitive mode; radial extension encodes available computational resources. Microslices are millisecond-level prediction-driven updates. A single control parameter — liminality (L) — modulates attractor depth, prior rigidity, transition variance, and reachable state space. The system behaves as a dynamical manifold with attractor basins and entropy-driven cascade transitions. This framework generates testable predictions about brain-state entropy, reconfiguration kinetics, and latent structure.

Unified Dynamical Equation

We define an augmented state vector
$z(t) = [\, x(t) \mu\blacksquare(t) \blacksquare \mu\_M(t) \,]\blacksquare$

Potential landscape:
$V(x, \mu; L) = \Sigma\_\{i=1\}\hat{}M\ a\_i(L)\ \blacksquare x - \mu\_i\blacksquare^2$

Unified dynamics (boxed):
$dz/dt = F(z; L, y(t)) + \Xi(t)$

with the expanded form exactly as:
$d/dt\ [x\ \mu\blacksquare\ \blacksquare\ \mu\_M] = [-\nabla\_x V + G\varepsilon\ I\blacksquare\gamma(L)(x-\mu\blacksquare)\ \blacksquare\ I\_M\gamma(L)(x-\mu\_M)] + \text{noise terms}$

$\gamma(L) = \gamma\blacksquare\ e\hat{}\{\alpha L\}$, $\varepsilon = y - \blacksquare$, etc.

Slices & Microslices

s(t) = W x(t)
r(t) = ■s(t)■ (resources)
u(t) = s(t)/r(t) (mode/orientation)
Microslices: discrete s_n at ~1–10 ms intervals.

Testable Predictions

• Entropy peaks precede slice reorientations
• Radial extension shrinks with fatigue
• Liminality expands manifold volume (psychedelics, meditation)
• Microslice destabilization rate predicts subjective flicker