

EQUILIBRIUM BEFORE OBSERVATION

A Manifold-Based Alternative to Phenomenology and Quantum Closure

Objectivity as Invariance

Implications: Reinterpreting Objectivity & Probability



THE FUNDAMENTAL PROBLEM

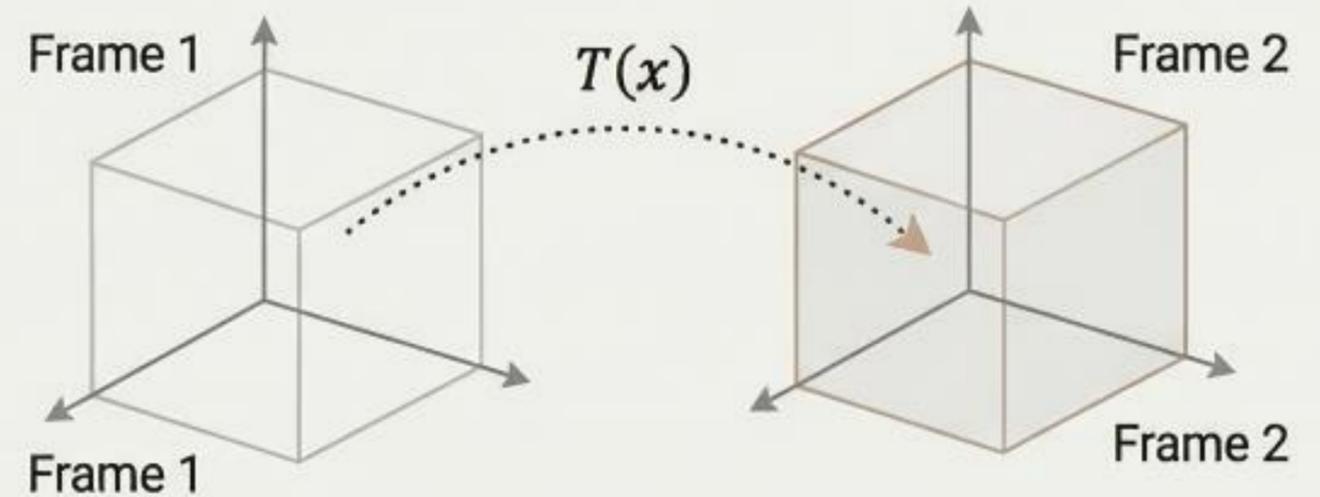
RECONSTRUCTING UNDERLYING REALITY vs. MANIFOLD-BASED PROGNOSIS

OBJECTIVITY IS CURRENTLY DEFINED THROUGH **INVARIANCE ACROSS OBSERVERS** AND COORDINATES (e.g., $F(x) = \mathcal{F}(T(x))$).

However, both Phenomenology and Quantum Mechanics are limited by a diagnostic sequence:

1. State Appears -> 2. System is Observed -> 3. Model Reconstructs Behaviour

A sequence of POST-MANIFEST RECONSTRUCTION, limited by **incomplete access to underlying structures**.



REM FRAMEWORK INTRODUCES AN ALTERNATIVE PRIORSUBSTRATE (The Riemann Equilibrium Manifold) WHERE:

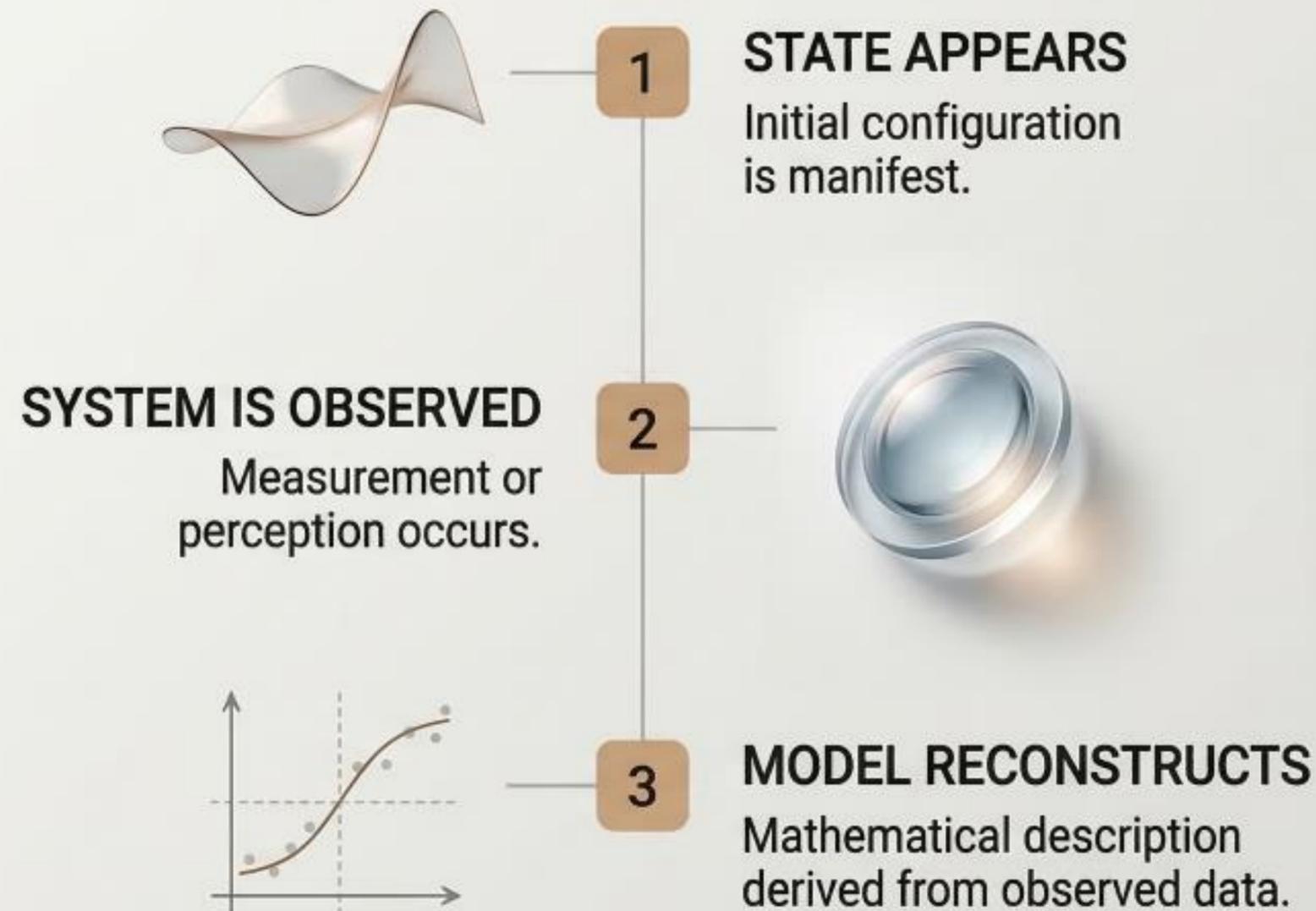
- PHYSICAL SYSTEMS & CONSCIOUSNESS ARE DERIVED **CONFIGURATIONS** OF AN **EQUILIBRIUM SUBSTRATE**.
- APPARENT PROBABILISTIC BEHAVIOUR IS AN ARTEFACT OF INCOMPLETE TOPOLOGICAL ACCESS.

The Diagnostic Sequence: Post-Manifest Reconstruction

A shared structural limitation in standard physics and phenomenology:
operating on realised states and working backwards.

KEY LIMITATION: DIAGNOSTIC APPROACH

- Backward-looking: works from manifestation to theory.
- Limited access to underlying structure.
- Diagnostic rather than prognostic analysis.



$$x(t + 1) = F(x(t))$$

Linear or stepwise
evolution between
observed states.

Quantum Mechanics: Probabilistic Closure

Replaces deterministic trajectories with probability distributions. State evolution is continuous, but measurement resolution is discrete. The realization of single outcomes relies on interpretation, not derived structure.

State Evolution:

$$\psi(t + 1) = U\psi(t)$$

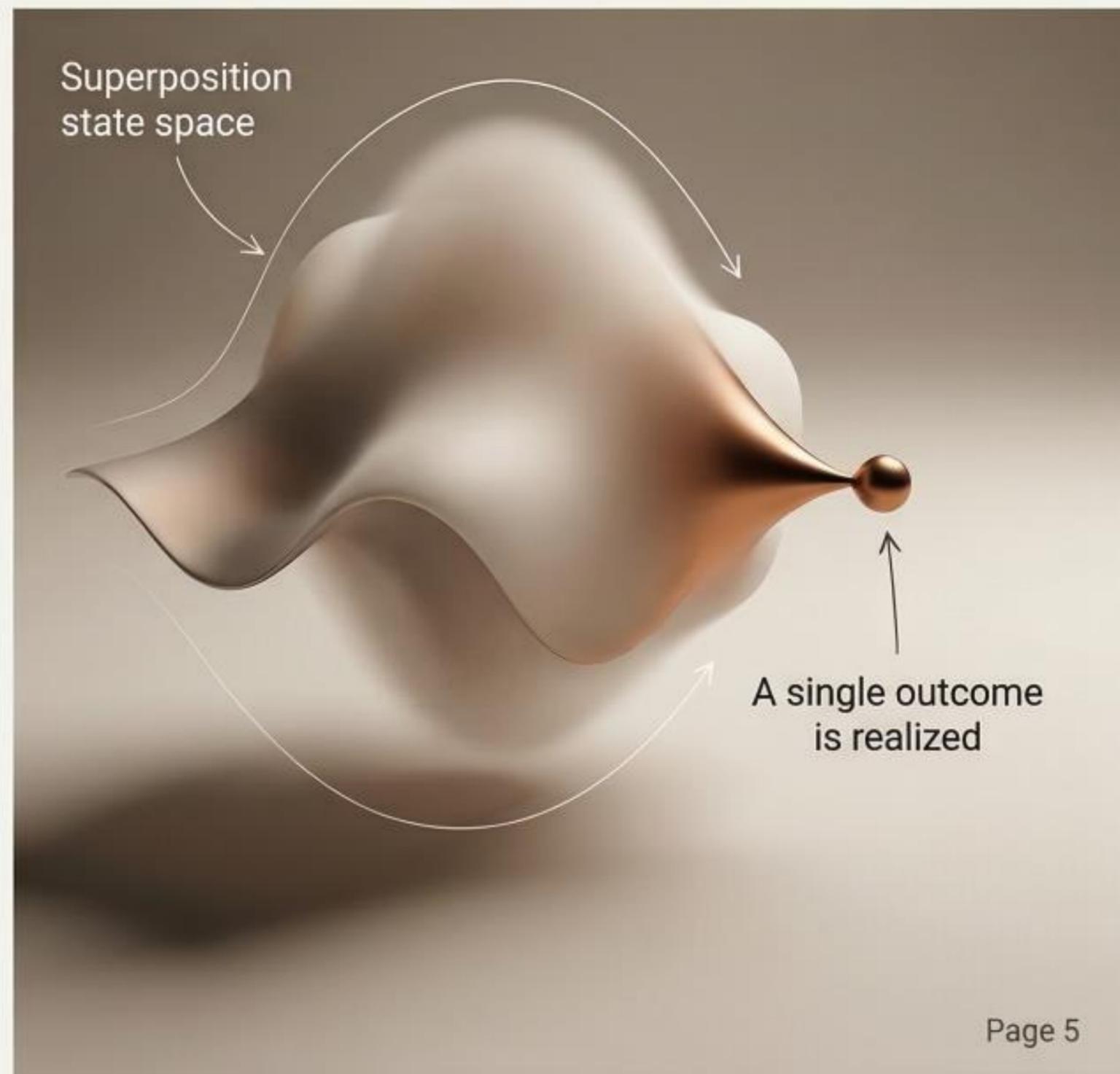
Measurement Outcome:

$$P(x) = |\psi(x)|^2$$

ψ = wavefunction

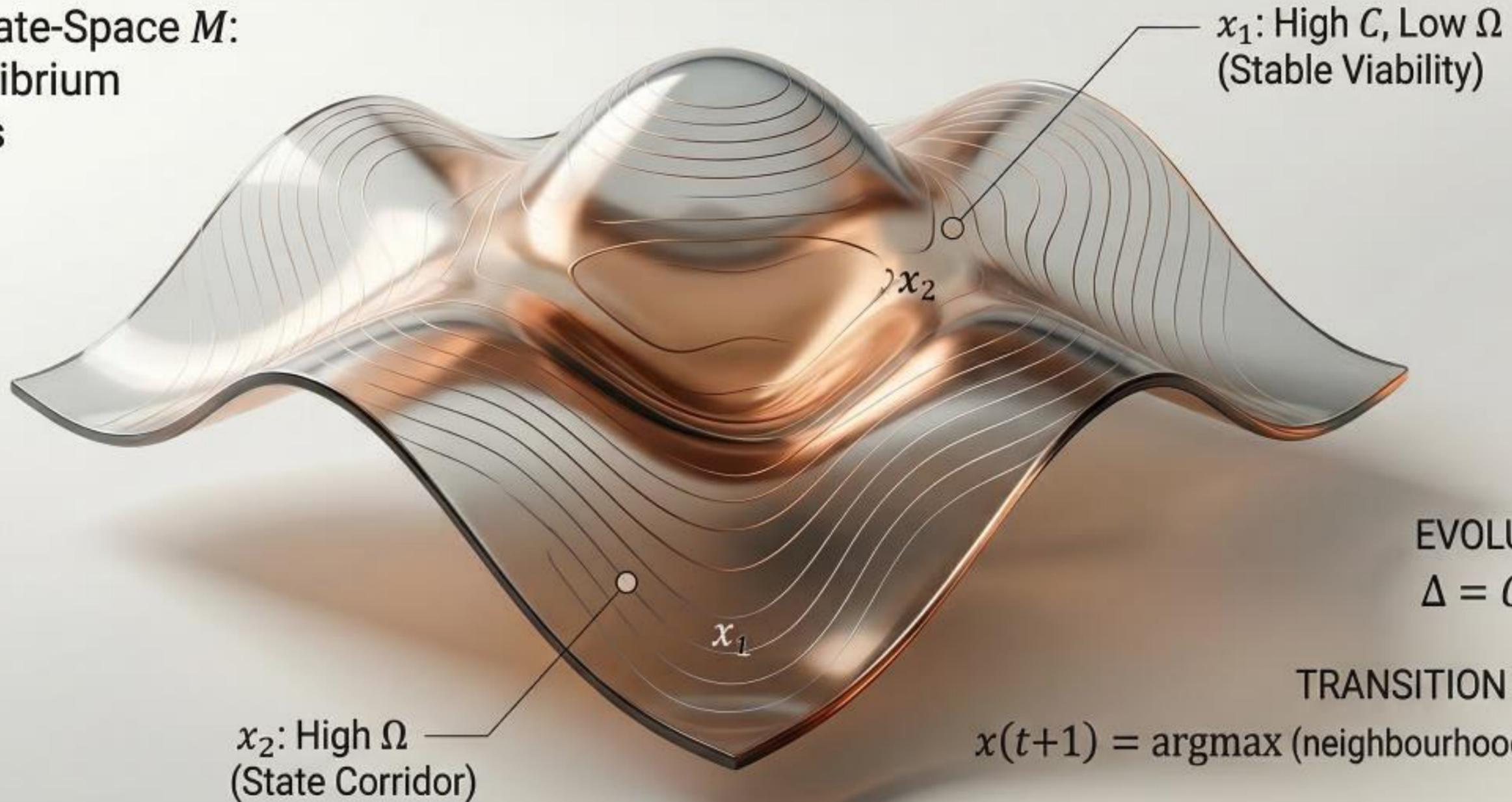
U = unitary operator

$P(x)$ = probability density



THE REM FRAMEWORK: EQUILIBRIUM MANIFOLD

Continuous State-Space M :
all viable equilibrium
configurations



EVOLUTION RULE:
 $\Delta = C(x) - \Omega(x)$

TRANSITION CONDITION:
 $x(t+1) = \operatorname{argmax}(\text{neighbourhood of } [C - \Omega])$

Shift: Probability Selection \rightarrow Equilibrium Selection

Corridor Structure vs Probability Distribution

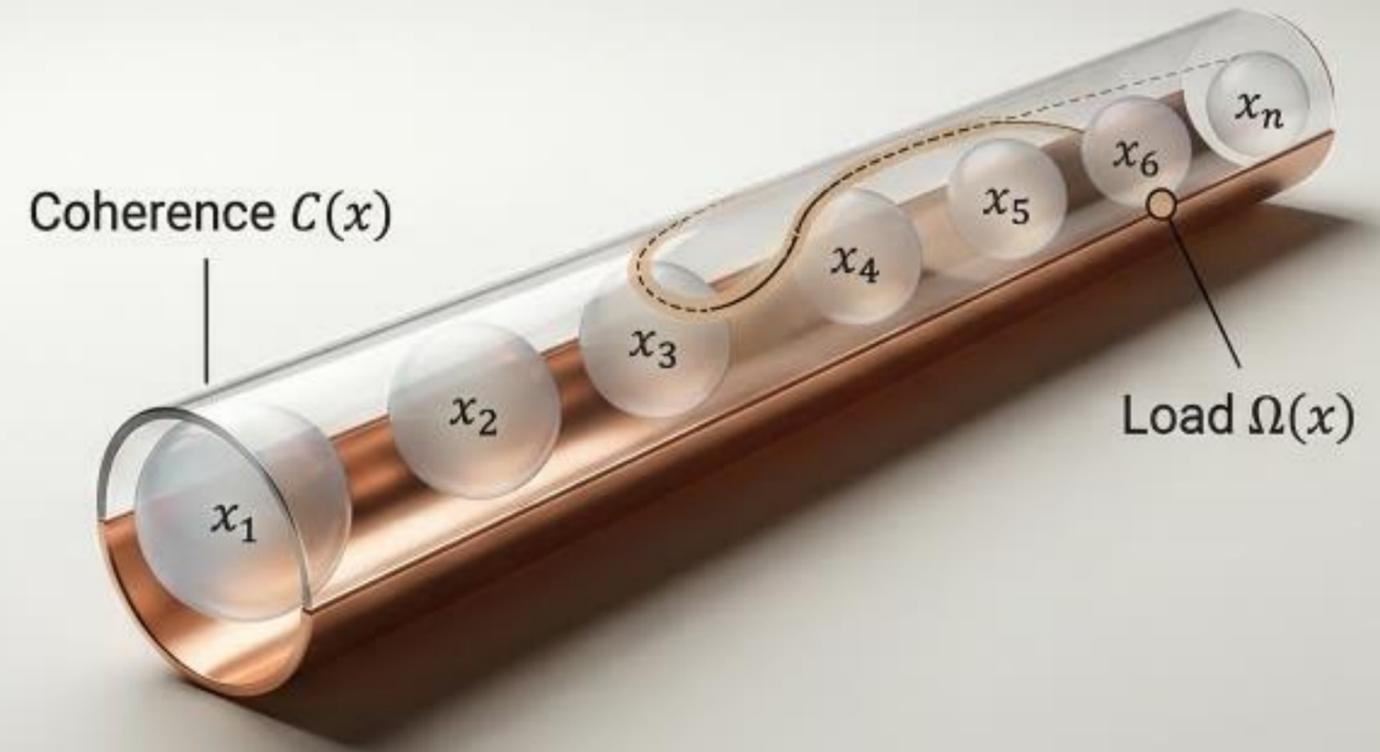
QUANTUM MECHANICS



System in superposition collapses to a probability distribution upon measurement.
(Probabilistic filler)

$$P(x) = |\psi(x)|^2$$

REM FRAMEWORK



System occupies a corridor of **viable states**.
Outcomes are derived from **delayed equilibrium selection**.
(Artefact of topology)

$$A(t) = \{x_i \mid C(x_i) \geq \Omega(x_i)\}$$

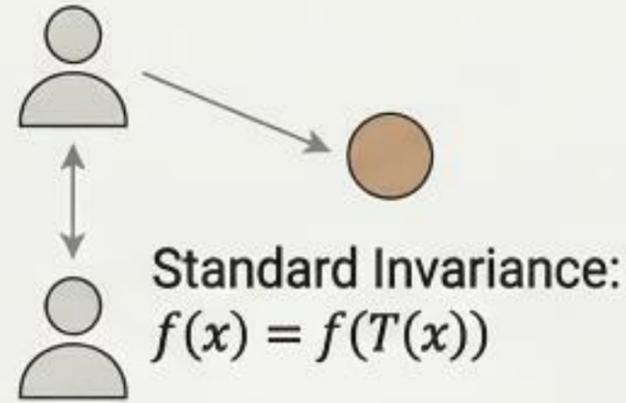
$$\max(C - \Omega) > \text{threshold } \lambda$$

REINTERPRETING OBJECTIVITY AND PHENOMENOLOGY

1

OBJECTIVITY REDEFINED: MANIFOLD INVARIANCE

- Observer invariance in physics is expressed as $f(x) = f(T(x))$.
- From observer agreement to equilibrium stability across manifold regions.



REM Manifold Invariance:
 $C(x) - \Omega(x) = C(T(x)) - \Omega(T(x))$

Equilibrium stability as invariance.

2

PHENOMENOLOGY REINTERPRETED: STATE RETENTION

Perceptual anticipation (e.g., consciousness completing unseen sides) is system state retention.

Transition weighting:
 $P(s_t \rightarrow s_{t+1}) \propto \exp(-\text{cost})$
Topology-constrained transitions

Manifold-Consistent
Retention Paths

STRUCTURAL SYNTHESIS: Four Frameworks Compared

CLASSICAL



Core Mechanism: Linear state evolution.

Insight: Assumes deterministic trajectories, reconstructing underlying reality after manifestation.

QUANTUM MECHANICS



Core Mechanism: Probabilistic resolution.

Insight: Replaces deterministic trajectories with probability distributions, achieving probabilistic closure.

PHENOMENOLOGY



Core Mechanism: Observer-based coherence.

Insight: Maintains that physical description depends on invariant relations across observers.

REM



Core Mechanism: Equilibrium-constrained manifold selection.

Insight: All behaviors emerge from a prior equilibrium manifold governing viability and transition.

IMPLICATIONS AND CONCLUSION

1

EQUILIBRIUM INVARIANCE

Objectivity

→ **Stability across manifold regions**

Stable, invariant region across multiple layers

2

UNRESOLVED TOPOLOGY

Probability

→ **Artefact of incomplete access**

Complex, unresolvable

The REM removes probabilistic filler, observer dependency, and diagnostic reconstruction, reframing both physics and phenomenology as derivative layers.

3

EQUILIBRIUM SELECTION

Collapse

→ **Delayed resolution to viable state**

Single selection on corridor

4

HIGHER-ORDER CONFIGURATION

Consciousness

→ **Integrated manifold subsets**

