# On the Dynamics of Admissibility in Collapse-Selection Systems

Stephen Garner

April 5, 2026

**Abstract**

Previous notes introduced admissibility as the set of configurations that remain stable under collapse-selection dynamics constrained by finite invariance. However, the origin and structure of this admissible set were not specified. In this note, we show that admissibility is given by the attractor structure of collapse under iteration. By treating the collapse operator as a dynamical map on configuration space, we demonstrate that admissible configurations correspond to those that remain invariant under repeated application of collapse within the limits of finite resolution. This provides a minimal dynamical account of admissibility and completes the conceptual chain linking collapse dynamics to ensemble structure and statistical behavior.

## 1 Introduction

In previous notes, collapse-selection dynamics were shown to produce definite outcomes through convergence to fixed-point sectors, and ensemble structure was shown to arise from multiplicity of admissible configurations under finite invariance.

Admissibility was introduced as the set of configurations that remain stable under collapse. However, its structure was not derived dynamically.

The aim of this note is to show that admissibility arises naturally as the attractor structure of collapse-selection dynamics under iteration.

## 2 Collapse as a Dynamical Map

We consider the collapse operator:

$$\Phi : \Sigma \to \Sigma \tag{1}$$

acting on the space of relational configurations $\Sigma$.

We define the iterated dynamics:

$$x_{n+1} = \Phi(x_n) \tag{2}$$

for an initial configuration $x_0 \in \Sigma$.

## 3 Fixed Points and Attractor Structure

We define the set of fixed points:

$$\mathrm{Fix}(\Phi) = \{x \in \Sigma \mid \Phi(x) = x\} \tag{3}$$

These correspond to configurations that remain invariant under collapse.

More generally, we define the attractor structure:

$$\mathcal{A} = \left\{ x \in \Sigma \mid \lim_{n\to\infty} \Phi^n(x) \in \mathrm{Fix}(\Phi) \right\} \tag{4}$$

We identify this attractor structure with the admissible set.

This set captures all configurations that evolve toward collapse-stable configurations under iteration.

# 4 Finite Invariance and Resolution Limits

Collapse operates under finite invariance constraints, meaning that not all distinctions between configurations can be resolved.

As a result:

- collapse does not necessarily reduce all configurations to a single fully resolved point,
- multiple configurations may remain indistinguishable under collapse.

Thus, the attractor structure is not necessarily a single point, but may consist of a structured set of configurations.

# 5 Emergence of Admissible Set

The admissible set is therefore given by:

$$\mathcal{A} \subset \Sigma \tag{5}$$

as the set of configurations that remain stable under collapse within the limits of finite resolution.

## 5.1 Key Statement

The admissible set is the attractor structure of collapse dynamics under finite invariance.

## 5.2 Interpretation

Admissible configurations are those that cannot be further distinguished or eliminated by collapse under the constraints imposed by finite invariance. Here, stability refers to invariance under further application of the collapse operator within the limits of finite resolution.

# 6 Relation to Ensemble Structure

In the previous note, ensemble structure was shown to arise from multiplicity of admissible configurations.

In the present framework, this multiplicity follows directly from the structure of the attractor set $\mathcal{A}$.

Thus:

$$\rho \sim \text{measure over } \mathcal{A} \tag{6}$$

that is, the ensemble distribution is induced by the geometry of the attractor structure.

Ensemble distributions reflect the geometry of the attractor structure induced by collapse dynamics.

# 7 Relation to Measurement and Statistics

Each measurement trial corresponds to a trajectory:

$$x_0 \to x_1 \to x_2 \to \cdots \tag{7}$$

under repeated application of $\Phi$.

Outcomes correspond to fixed-point sectors, while statistical behavior reflects the distribution of trajectories across basins of attraction within $\mathcal{A}$.

# 8 Interpretation

## 8.1 Admissibility as Dynamical Structure

Admissibility is not an externally imposed constraint but arises from the dynamical behavior of collapse under iteration.

## 8.2 No Hidden Variables

The multiplicity of admissible configurations does not correspond to hidden classical states, but to unresolved relational structure within the attractor.

## 8.3 No Intrinsic Randomness

Randomness arises from the structure of attractor basins and the distribution of initial conditions, not from stochastic dynamics.

# 9 Limitations and Open Questions

This construction is minimal and does not yet provide:

- an explicit characterization of attractor geometry for general systems,
- extension to continuous or high-dimensional configuration spaces,
- a derivation of finite invariance constraints from deeper principles.

Future work will investigate whether admissibility structure can be derived from more fundamental properties of collapse dynamics.

# 10 Conclusion

We have shown that admissibility arises as the attractor structure of collapse-selection dynamics under finite invariance. This provides a minimal dynamical account of admissibility and completes the conceptual chain linking collapse, ensemble structure, statistical behavior, and Born-like scaling.