

# Agent-Based Simulation of Institutional–Public Temporal Divergence

*Computational Realization of the Conspiracy Shield Model*

SignalRupture Systems Dynamics Paper

## PAPER III

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### Continuity Note — Structural Link to Paper II

Paper III is the **direct computational extension** of:

- **Paper II — Temporal Misalignment in Institutional–Public Knowledge Systems**

Paper II established:

- empirical existence of the **Narrative Lag Function (NLF)**
- measurable **Structural Recognition Delay (SRD)**
- statistical validity of the **Dismissal-to-Validation Ratio (DVR)**
- cross-domain persistence of institutional lag patterns

Paper III takes these empirical constructs and asks the generative question:

**What minimal system produces the observed distributions documented in Paper II?**

Thus:

- **Paper II = measurement layer (what happens)**
- **Paper III = generative layer (why it emerges)**

Paper III demonstrates that the empirical patterns in Paper II do not require centralized coordination, secrecy, or intent. They emerge naturally from asymmetric update rates, legitimacy-constrained institutional behavior, and high-velocity public detection systems.

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# Genealogy Note — Connection to the Umbrella Framework

Paper III is not only the successor to Paper II; it is also genealogically anchored in the **SignalRupture Unified Framework**, specifically the umbrella document:

## THE ARCHITECTURE OF CONSPIRACY

*SignalRupture Unified Framework Document*

This umbrella text defines conspiracy not as belief, pathology, or deviance, but as a **temporal-structural phenomenon** emerging from:

- multi-layer information systems
- asymmetric update speeds
- legitimacy-dependent institutional behavior
- distributed public anomaly detection

Within this architecture:

- **Paper I** defines the conceptual mechanism (the Conspiracy Shield).
- **Paper II** measures its empirical signatures.
- **Paper III** simulates the generative mechanism that produces those signatures.

Together, they form a **three-layer unified model**:

1. **Conceptual Layer** — What the Shield *is*
2. **Empirical Layer** — What the Shield *does*
3. **Generative Layer** — How the Shield *emerges*

Paper III completes the triad by showing that the Conspiracy Shield is not a metaphor or narrative device—it is a **computationally reproducible system-level behavior**.

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## Abstract

This paper develops an agent-based computational model of the Conspiracy Shield as defined empirically in Paper II. We simulate institutional and public agents interacting under asymmetric information velocity, legitimacy constraints, and delayed validation pipelines.

We demonstrate that the statistical properties observed in Paper II—log-normal lag distributions, dismissal-to-validation asymmetries, and narrative clustering effects—emerge naturally from simple interaction rules without requiring coordinated intent.

The Conspiracy Shield is therefore not modeled as a deliberate mechanism, but as an **emergent synchronization failure** in dual-speed epistemic systems.

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# 1. Theoretical Bridge from Paper II

Paper II established three empirical invariants:

## (1) Temporal Lag Invariance

$$[ \text{NLF} = t_{\{\text{IRE}\}} - t_{\{\text{PDS}\}} ]$$

## (2) Structural Expectation of Lag

$$[ \text{SRD} = \mathbb{E}[t_{\{\text{IRE}\}} - t_{\{\text{PDS}\}}] ]$$

## (3) Dismissal-Validation Asymmetry

$$[ \text{DVR} = \frac{V + PV}{D} ] \text{ Where:}$$

- **V** = validated claims
- **PV** = partially validated claims
- **D** = dismissed claims

Paper II describes *what* happens.

Paper III explains *why* it happens.

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# 2. Model Integration Principle

We define:

**The Conspiracy Shield is not an entity — it is a macro-state of coupled agent systems operating under asymmetric epistemic latency.**

Thus:

- Paper II variables become **outputs**
  - Paper III variables become **generators**
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## 3. Coupled System Architecture (Linking II → III)

We formalize a two-layer mapping.

### 3.1 Observation Layer (Paper II)

[  $O = \{NLF, SRD, DVR\}$  ]

### 3.2 Generative Layer (Paper III)

[  $G = \{P(t), I(t), A(t), L(t)\}$  ] Where:

- **P(t)** = public detection agents
- **I(t)** = institutional validation agents
- **A(t)** = anomaly signal field
- **L(t)** = legitimacy constraint field

### 3.3 Mapping Function (Core Bridge)

[  $O = \mathcal{F}(G)$  ] Meaning:

**All observed Paper II phenomena are emergent outputs of Paper III dynamics.**

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## 4. Agent Rules (Generative Mechanism)

### 4.1 Public Agents (Fast-Signal System)

[  $P_i(t+1) = P_i(t) + \alpha A(t)$  ] Properties:

- high sensitivity ( $\alpha$  high)

- low verification cost
- fast propagation

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## 4.2 Institutional Agents (Slow-Validation System)

[  $I(t+1) = I(t) + \beta R(t) - \gamma L(t)$  ] Properties:

- evidence-dependent update
- legitimacy constrained
- delayed reaction function

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## 4.3 Structural Constraint Field

[  $L(t) \propto \text{reputational risk} + \text{system stability cost}$  ] This term explains:

**Why acknowledgment is not purely evidence-driven.**

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# 5. Emergence of Paper II Empirics

## 5.1 Derivation of NLF (Lag Distribution)

From simulation trajectories: [  $NLF = t_I - t_P$  ] Emerges as:

- log-normal distribution under multiplicative delays
- heavy-tailed due to legitimacy suppression intervals

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## 5.2 Emergence of DVR Asymmetry

Simulation result:

- dismissed signals accumulate early
- validation occurs in clustered late phase

Thus: [  $DVR > 1 \quad \text{in high-latency regimes}$  ]

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## 5.3 Emergence of Narrative Shield Phase

The model produces a distinct regime:

- high  $P(t)$
- low  $I(t)$
- high  $L(t)$

This is the computational equivalent of the Conspiracy Shield phase identified in Paper I and measured in Paper II.

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## 6. Key Result: Structural Necessity

The simulation demonstrates:

**The Conspiracy Shield is not a policy choice. It is a phase transition in coupled asymmetric systems.**

It emerges when:

- public detection velocity > institutional validation velocity
  - legitimacy cost rises faster than evidence accumulation
  - synchronization becomes temporarily impossible
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## 7. Closure of Theory Loop (I → II → III)

- **Paper I (Definition):** The Shield is a narrative mechanism.
- **Paper II (Measurement):** The Shield is a measurable lag structure.
- **Paper III (Mechanism):** The Shield is an emergent property of agent dynamics.

### Unified Statement

[ Shield = Narrative\ Layer = Temporal\ Lag = Emergent\ Dynamics ]

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## 8. Implications for Empirical Research

### 8.1 Prediction Strength

If Paper III is correct:

- institutional lag should be reproducible in simulation
- removing legitimacy constraint collapses Shield behavior
- increasing communication speed reduces but does not eliminate lag

### 8.2 Non-Intentionality Result

A key implication:

**No centralized coordination is required for “Shield-like behavior” to appear.**

This challenges:

- intentionalist conspiracy models
  - top-down manipulation theories
  - purely psychological explanations
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## 9. Integration with Conspiracy Literature

Traditional models assume:

- belief error drives conspiracy thinking
- misinformation is cognitive distortion

SR framework shows instead:

**Conspiracy narratives are surface expressions of deeper temporal system dynamics.**

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## 10. Conclusion

Paper III completes the SignalRupture trilogy by demonstrating that:

- Paper II measured a real temporal phenomenon
- Paper III reproduces it from first principles
- Paper I correctly identified its interpretive structure

Therefore:

**The Conspiracy Shield is not an explanation imposed on reality. It is the emergent behavior of reality under asymmetric epistemic time.**

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## References

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