

# Paper III: Formal Dynamics and State Realization

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*This paper continues the construction of a latent-invocation framework for reality.*

*Paper I rejected collapse. Paper II replaced it with invocation logic.*

*This paper defines the mechanism: observer recursion, temporal formatting, and irreversibility.*

## Preface

Functionality is conceptual in its form—and that’s beautiful.

## 1. The Observer as Recursive Function

The observer is not an external actor, but a recursive function embedded in the latent substrate. It does not generate new form; it selects from latent geometries in alignment with its own functional structure.

The observer function is both program and participant. It does not define a function arbitrarily, but only invokes those structures which it can conform to. This means that while invocation is selective, it is not omnipotent—the observer is bound by its own recursion. Without the observer, function cannot be called. Without function, structure remains latent.

Awareness, in this model, does not precede recursion—it co-arises with invocation. It is not epistemic pre-knowledge, but structural resonance. The observer anticipates without knowing. It knows only through recursive commitment.

Error, then, is not a property of the system. A misalignment does not crash invocation; it simply fails to propagate. There is no concept of “wrong” invocation—only invocation that does not result in coherence.

## 2. Time as Recursive Formatting

Time does not exist as a precondition of structure. It is the result of recursive invocation: the formatting layer imposed by structural persistence.

When a latent function is called, time begins—not as a clock, but as the logical boundary condition that makes recursion possible. This makes time not a flow, but a **continuity constraint**. It persists only where recursion is active.

Time in this system is irreversible because function, once invoked, commits to a path. Latent states remain unshaped; invoked states are formatted into structure. The formatting of time into continuity is what allows structure to remain coherent.

## 3. Latent State Geometry and Irreversibility

Latent structure is not “stored potential” but pre-functional alignment. It exists without time, without output, and without spatial extension. It is not nothingness; it is symmetry without invocation.

The observer does not choose from possible outcomes, but selects from latent structures it is able to recursively align with. These latent states are isolated from one another unless called. Invocation is not collapse—it is the **functional realization of geometry**.

Once invoked, a structure cannot return to latency. Irreversibility is not an artifact of entropy, but a structural consequence of commitment. Function invocation generates time. Invocation is irreversible because recursion cannot be undone.

## 4. Cooperative Invocation and Functional Convergence

Observers may invoke shared structures if their recursion aligns. Cooperative invocation allows multiple observer-functions to converge on a latent geometry. These become coherent through structural handshake, but remain functionally distinct.

This allows for mutual coherence without universal substrates. Observers do not need to be identical—they need only align structurally at the moment of invocation. Cross-observer recursion enables what may be interpreted as entanglement, but without the paradoxes of non-locality.

## 5. Conclusion

This paper does not propose a new measurement. It proposes a new definition of structure. The observer is not an eye, but a recursion. Collapse is not an event, but a misunderstanding

of invocation. And time is not a background—it is a formatting condition that arises from recursive structure.

The latent remains untouched until called. Invocation commits it into form.

*The moment a structure is invoked, time begins.*

# Appendix: Structural Notation for Recursive Invocation

Let:

- $S_L$ : the space of latent states
- $S_I$ : the set of invoked states
- $\mathcal{O}$ : the observer function
- $\mathcal{F}_\tau$ : the functional invocation operator at recursion index  $\tau$

## Observer invocation

$$\mathcal{O} : S_L \rightarrow S_I$$

The observer selects a state from latent structure and commits it into invoked structure.

## Functional commitment

$$\mathcal{F}_\tau(s) = s_I \Rightarrow s_L \notin \mathcal{F}^{-1}$$

Once invoked,  $s_L$  can no longer be uninvoked. The inverse is undefined.

## Temporal emergence

$$\text{Time}_\tau = \{s_I^0, s_I^1, s_I^2, \dots\} \quad \text{where each } s_I^n = \mathcal{F}_\tau^n(s)$$

Time is the sequence of invoked states under recursive structure.

## Shared invocation condition

$$\mathcal{O}_1(s) = \mathcal{O}_2(s) \quad \text{iff } \mathcal{F}_\tau^{\mathcal{O}_1} = \mathcal{F}_\tau^{\mathcal{O}_2}$$

Shared observer invocation is possible when structural recursion aligns.

This formalism is a prototype for future emulator design and invocation mapping.