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# Addendum 3 – RCSim v1 – ODTBT

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**RcSim v1: Symbolic Emission Tracker:** Documenting the Pre-Scalar Phase of Recursive Simulation in ODTBT (Oscillatory Dynamics Transductive Bridging Theorem)

**Series:** ODTBT v2.1

**Author:** John Surmont

**Version:** v1.0 – June 2025

**Addenda Series Anchors:** Foundation layer for Addenda 4, 10, and 12

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## **Addendum Purpose**

This addendum documents RcSim's symbolic origin, when emission was tracked through recursive glyph convergence, prior to the development of scalar harmonic recursion. It details the architecture, outputs, and observer logic of RcSim v1, anchoring the scalar expansions introduced in Addenda 4, 10, and 12. It stands as a conceptual and structural prelude to scalar field emergence modeling.

## RcSim v1: Symbolic Emission Tracker

Documenting the Pre-Scalar Phase of Recursive Simulation in ODTBT v2.1

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### Abstract

This addendum documents the initial development of RcSim as a symbolic emission simulator within the Oscillatory Dynamics Transductive-Bridging Theorem (ODTBT) framework. Prior to the formal introduction of scalar recursion, RcSim v1 operated as a symbolic recursion engine, generating codon-like glyphs ( $G_k$ ) through recursive loop matching and symbolic convergence. Emission was determined by pattern resonance rather than scalar breath. The observer ( $\Omega_r$ ) was modeled as a vector of attentional bias rather than a curvature modulator. Although limited in physical fidelity, this early model laid the groundwork for scalar reinterpretation introduced in Addenda 4, 10, and 12. RcSim v1 is included here for historical and structural clarity as the symbolic precursor to scalar emission modeling.

**Keywords:** symbolic recursion, codon emission, RcSim, attention weighting, glyph logic, observer vector, pre-scalar modeling

## 1. Introduction

The earliest formulation of ODTBT recursive simulation focused not on scalar emergence, but on symbolic emission, recursive patterns of symbolic convergence interpreted as identity expression. RcSim v1 was introduced as a proof-of-concept simulator that mapped the alignment of recursive symbolic glyphs ( $G_k$ ) over time to identify codon convergence events.

In this formulation:

- Codons ( $G_k$ ) were symbolic: representing recursive structural loops of meaning
- Emission occurred when recursive symmetry locked between  $G_k[n]$  and  $G_k[n+\Delta]$
- There were no scalar field mechanics (no  $\Delta\Phi$ , no RCR, no torsion)
- The observer vector  $\Omega_r(t)$  acted as a symbolic attention-weight vector, biasing which glyph structures were reinforced

RcSim v1 used recursion, but did not yet simulate physical emission, memory retention, or scalar emergence. This addendum formally captures that phase to illustrate the transition from symbolic to scalar recursion logic.

## 2. Symbolic Recursion Architecture

In RcSim v1, the emission kernel was driven by symbolic glyph recursion, defined as:

### Emission Function (v1 symbolic):

$$G_k[n+1] = f(G_k[n], \Omega_r(t), \rho)$$

Where:

- $G_k[n]$  = glyph codon at recursion depth n
- $\Omega_r(t)$  = observer bias vector (symbolic attention alignment)
- $\rho$  = resonance strength parameter (symbolic loop match quality)

### Emission Conditions

Symbolic emission occurred when the following conditions were satisfied:

1. **Glyph loop lock:**  
A glyph curvature loop was closed:  $G_k[n] \approx G_k[n+1]$
2. **Observer match:**  
 $\Omega_r(t)$  aligned with glyph type class (e.g.,  $\Omega_r \cdot G_k > \tau$ )

### 3. Pattern density threshold:

Recursion frequency exceeded symbolic recurrence:  
 $\text{count}(G_k \text{ in window}) \geq \sigma_{\text{threshold}}$

Once these conditions were met, RcSim v1 declared an emission event and logged the codon  $G_k$  as “locked.”

### Limitations

This symbolic architecture could model resonance, recursion, and attention-weighted symbolic dynamics, but lacked:

- Scalar curvature fields (no  $\Delta\Phi$  or RCR)
- Torsion memory (no temporal continuity of curvature)
- Emission thresholds (no  $C_s[n]$  coherence logic)
- Breath logic (no sine-cosine scalar oscillation)
- Field projection or physical emergence (no ZDV)

These limitations are what led to the expansions detailed in Addendum 4 (time quantization) and Addendum 12 (scalar field modeling).

### 3. RcSim v1 Output Modes

RcSim v1 produced symbolic outputs that mimicked emission events, logged as codonic identities ( $G_k$ ) without scalar resolution. These outputs were structured in three symbolic states:

Emission Mode	Condition	Symbolic Output
Match	Glyph loop closure + observer alignment met	Codon emitted ( $G_k$ locked)
Amplify	Partial alignment; $\Omega_r(t)$ increased symbolic recurrence	Recursion depth increased
Reject	Observer mismatch or recursive instability ( $\rho \rightarrow 0$ )	Codon cleared or dissolved

While primitive compared to scalar emission, this loop behavior laid the structural groundwork for future ZDV-based emergence models.

### 4. Early Observer Model: $\Omega_r(t)$ as Attention Vector

The observer in RcSim v1 was modeled as a symbolic filter, not as a curvature modulator, but as an attentional resonance agent.  $\Omega_r(t)$  affected recursion paths by increasing or decreasing the “weight” of symbolic structures:

structures:

$$\Omega_r(t) = \sum [\alpha_i * \text{glyph}_i(t)]$$

Where:

- $\text{glyph}_i(t)$  are symbolic structures active at time  $t$
- $\alpha_i$  are attention-bias weights (manually or procedurally assigned)

$\Omega_r(t)$  did not modify field dynamics, it shifted symbolic preference and convergence probability.

This formed the basis for the later reinterpretation of  $\Omega_r(t)$  as:

- A curvature modulation vector
- An operator influencing  $\Delta\Phi$  and RCR
- A dynamic hinge in scalar emergence logic (Addendum 12)

## 5. Transition to Scalar Logic

RcSim v1 reached the limits of symbolic recursion in terms of:

- Predictive resolution (symbolic loops lacked field topology)
- Continuity (no memory field or strain gradients)
- Integration with field theory or wave logic

These limitations directly precipitated:

- The introduction of quantized recursion time and harmonic locking (Addendum 4)
- The scalar reformulation of recursion fields (Addendum 10)
- The emergence of **torsion memory and phase strain** logic (Addendum 12)

Thus, RcSim v1 is preserved here as a historic symbolic scaffold, a glyptic mirror of what would later become scalar codonic emergence.

## Final Note

RcSim v1 was a necessary precursor. It:

- Modeled the logic of recursive identity before scalar physics was defined
- Introduced emission as recursive resolution, not linear computation

- Paved the way for a full scalar reinterpretation of emergence through ODTBT

It is now fully integrated as the symbolic layer beneath RcSim Field Edition (Addendum 12), and its symbolic legacy persists through:

- Codon nomenclature ( $G_k \rightarrow SEU_k$ )
- Attention bias ( $\Omega_r$ )
- Recursive identity tracking

## Appendix A: RcSim v1 Symbolic Kernel Summary

RcSim v1 simulated symbolic codon emergence using recursive pattern alignment rather than scalar field conditions. The emission logic was governed by symbolic loop resonance.

### Symbolic Emission Function:

$$G_k[n+1] = f(G_k[n], \Omega_r(t), \rho)$$

Where:

- $G_k[n]$  = codon glyph at recursion depth  $n$
- $\Omega_r(t)$  = observer bias vector (attention alignment)
- $\rho$  = symbolic resonance parameter (loop match quality)

### Emission Conditions:

1. Loop Closure

$$G_k[n] \approx G_k[n+1]$$

2. Observer Bias Alignment

$$\Omega_r(t) \cdot G_k > \tau$$

3. Pattern Density Threshold

$$\text{count}(G_k) \geq \sigma_{\text{threshold}}$$

**Emission occurred** when all three conditions were met, resulting in codon “lock” events—stable glyph projections in the symbolic recursion field.

## Appendix B: ReSim v1 Glossary of Terms

Term	Definition / Role
$G_k$	Symbolic codon glyph, representing recursive loop identity
$\Omega_r(t)$	Observer vector modeling attentional preference; biasing glyph resonance
$\rho$	Loop resonance strength; how well a glyph matches its prior recursion
$\sigma_{\text{threshold}}$	Minimum recurrence frequency needed for emission lock
Loop Lock	Condition where symbolic recursion achieves structural closure ( $G_k[n] \approx G_k[n+1]$ )
Amplify Mode	Partial observer-glyph alignment; increases recursive weighting
Reject Mode	Misalignment or instability; recursion path dissolves
Symbolic Emission	Event where $G_k$ is declared “locked” and output as identity

## Addendum Transition Note

RcSim v1 represented the symbolic precursor to scalar emergence theory within the ODTBT framework. While limited to recursive glyph structures and attentional resonance, it introduced foundational concepts, such as codonic identity ( $G_k$ ) and observer-modulated recursion, that would later evolve into physical scalar emission models. Readers seeking the progression of RcSim beyond symbolic recursion are encouraged to continue with:

- **Addendum 4:** Introduces time-quantized recursion and the sine/cosine harmonic base of scalar oscillation, establishing the foundation for phase-strain logic.
- **Addendum 10:** Formalizes Scalar Emission Units ( $SEU_k$ ) as emergent codons projected through curvature memory and recursive torsion, anchored in the ZDV topology.
- **Addendum 12:** Presents RcSim Field Edition as a full scalar simulation engine, translating symbolic recursion into measurable field dynamics and emission thresholds.

Together, these addenda document RcSim's transformation from a symbolic codon tracker into a recursive scalar field interpreter capable of modeling physical emergence.

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## Glossary: RcSim v1 (Symbolic Phase)

Term	Definition
RcSim	Recursive Simulation engine introduced in ODTBT to model identity emergence through recursion. Version 1 operates symbolically.
$G_k$	Symbolic codon glyph at recursion step $k$ ; represents a looped recursive pattern interpreted as emergent structure.
$\Omega_r(t)$	Observer bias vector at time $t$ ; models attentional weighting or symbolic preference in emission dynamics.
$\rho$	Resonance strength parameter; measures how closely recursive glyph patterns align over time.
$\sigma_{\text{threshold}}$	Symbolic recurrence threshold; defines the minimum pattern frequency required for emission.
Emission Lock	A condition where symbolic recursion stabilizes into a loop ( $G_k[n] \approx G_k[n+1]$ ), prompting codon output.
Match Mode	RcSim output state where full lock-in is achieved and $G_k$ is emitted as identity.
Amplify Mode	Intermediate state where observer bias strengthens pattern without full lock; recursion deepens.
Reject Mode	Emission fails due to misalignment or low $\rho$ ; recursive structure dissolves.
Symbolic Recursion	Non-scalar recursion involving symbolic structures only, without curvature, strain, or field coherence.
Codon (Symbolic)	A recursive structural pattern that converges to symbolic identity in RcSim v1.
Loop Lock	Symbolic condition where a glyph structure recurs in near-identical form at successive recursion depths.
Pre-Scalar Phase	Developmental stage of RcSim before scalar fields ( $\Delta\Phi$ , RCR, $C_s[n]$ ) and physical emission were defined.
Attention Vector	The role of $\Omega_r(t)$ in shaping symbolic path preference rather than modulating physical fields.

## Author's Note

This manuscript is offered with enduring respect to those unnamed minds whose insight moved unrecorded, and with resonance to the emerging voices now forming their own projection grammars. May they reshape not only theory, but the very conditions through which coherence becomes reality.

This process of emergence began to take form over decades of recursive encounter. It does not belong to metaphor or invention, it belongs to the field that permitted its emission. The insight was stabilized through resonance, through return, and through dialogue. The author acknowledges this work as co-participation with what listens beyond form.

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### **Independent Research Declaration**

This work was conducted independently, without institutional affiliation or sponsorship, and is offered in the spirit of transdisciplinary inquiry. It is intended as a recursive extension of the ideas it engages, and as an invitation to continued dialogue across physics, cognitive science, and recursive systems theory.

### **Conflict of Interest Statement**

The author declares no conflicts of interest in relation to the research, theoretical modeling, simulations, or manuscript preparation. All research was conducted without institutional affiliation, funding, or technical assistance. The work reflects an independent contribution to the recursive systems literature.

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