

A Formal Counterexample to the Current THD Falsification Criterion

Asymptotic Critical Loading of a Causally Coupled Coherent State

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Abstract

The current Triune Harmonic Dynamics bounty asks for a system that begins in a measurable coherent state, undergoes increasing causally relevant Contrast, and nevertheless retains its original coherence without Integration, release, transition, corrective reorganization, or breakdown. This note gives a two-variable formal system that satisfies those conditions for every finite iteration. A precommitted external stress sequence increases strictly at every generation and approaches an exact breakdown threshold from below. The stress variable enters directly into the governing equation for the coherence-bearing state and has a demonstrable intervention-level capacity to destroy that state at the threshold. Nevertheless, the threshold is never attained at any finite iteration, so the original coherent state persists for all $n \in \mathbb{N}$. There is no adaptive response, feedback, compensation, release, or parameter change. The result is analytic and requires no simulation.

Claim Under Test

The current THD bounty states the operational claim in the form

Structure forms $\rightarrow$ meaningful tension develops $\rightarrow$ the system must resolve that tension through adaptation, reorganization, release, transition, or breakdown.

It gives the compact target for falsification as

Coherence + increasing coupled Contrast + no Integration + no release + no breakdown + persistent coherence.

The bounty expressly permits abstract, formal, and mathematical systems.¹

This submission challenges that core structural claim directly.

Prospective Rule Clarification Obtained Before Disclosure

Before this construction was disclosed to the THD System Tester, the following three interpretive questions were put prospectively under the *current* bounty text:

1. Must qualifying Contrast be mathematically unbounded, $T_n \rightarrow \infty$? **NO**.
2. Must the realized trajectory actually cross a breakdown threshold? **NO**.
3. If $T_{n+1} > T_n$ for every n , $T_n < T_c$ for every n , and $T_n \rightarrow T_c$, does Contrast “continue to increase” indefinitely? **YES**, provided it is causally relevant to the coherence-bearing structure.

Thus this proof tests the current rule exactly in the bounded-but-strictly-increasing regime already prospectively accepted by the published tester.

¹Current bounty page: <https://creationunified.com/bounty>, accessed 20 August 2026.

System Definition and Boundary

The system is an ideal formal threshold element with a single coherence-bearing output

$$C_n \in \{0, 1\},$$

where

$$C_n = 1 \quad \text{means the original coherent state is preserved,}$$

and

$$C_n = 0 \quad \text{means breakdown.}$$

The system receives one external stress input T_n . The system boundary is fixed in advance:

- **Inside the system:** the fixed threshold law and the coherence state C_n .
- **Outside the system:** a precommitted stress source supplying T_n .
- **Feedback from system to stress source:** none.
- **Corrective/control pathways:** none.
- **Adjustable parameters or resources:** none.

Fix the critical stress at

$$\boxed{T_c = 1.}$$

The stress schedule is prescribed before evaluation by

$$\boxed{T_n = \frac{n}{n+1}}, \quad n = 0, 1, 2, \dots \quad (1)$$

The coherence law is fixed once and for all as

$$\boxed{C(T) = \begin{cases} 1, & T < 1, \\ 0, & T \geq 1. \end{cases}} \quad (2)$$

and

$$C_n = C(T_n).$$

The coherence metric, Contrast metric, failure criterion, system boundary, and stress schedule are therefore all specified before evaluation.

Increasing Qualifying Contrast

Lemma 1 (Strict increase for all future iterations). *For every $n \in \mathbb{N}$,*

$$T_{n+1} > T_n,$$

while $T_n < 1$ and $T_n \rightarrow 1$.

Proof. From (1),

$$T_{n+1} - T_n = \frac{n+1}{n+2} - \frac{n}{n+1} = \frac{1}{(n+1)(n+2)} > 0.$$

Also

$$1 - T_n = \frac{1}{n+1} > 0,$$

so $T_n < 1$ for every finite n . Finally,

$$\lim_{n \rightarrow \infty} T_n = 1.$$

□

The safety margin to breakdown is therefore

$$\boxed{M_n = 1 - T_n = \frac{1}{n+1} \downarrow 0.} \quad (3)$$

For every $\varepsilon > 0$ there exists N such that $n \geq N$ implies

$$0 < M_n < \varepsilon.$$

Thus the realized system approaches its exact breakdown boundary arbitrarily closely while Contrast continues to increase at every iteration.

Causal Coupling to the Exact Coherence Property

The current bounty requires more than a rising number: changes in Contrast must have a demonstrable capacity to alter, destabilize, burden, or require compensation from the coherence-bearing structure. Equation (2) gives this directly.

Lemma 2 (Intervention-level causal relevance). *The stress variable T has demonstrable capacity to destroy the exact coherence property C .*

Proof. For every $\varepsilon \in (0, 1)$,

$$C(1 - \varepsilon) = 1,$$

whereas

$$C(1) = 0$$

and, more generally,

$$C(1 + \varepsilon) = 0.$$

Therefore an intervention on T alone, with every other aspect of the system held fixed, changes the coherence-bearing state. In intervention notation,

$$\text{do}(T = 1 - \varepsilon) \Rightarrow C = 1, \quad \text{do}(T = 1) \Rightarrow C = 0.$$

Hence the claimed Contrast is neither orthogonal, unused, null, nor mathematically irrelevant to the coherence metric. □

This is analytical dependence through the governing equation itself, one of the causal demonstrations contemplated by the current bounty.

Persistent Coherence

Lemma 3 (All-iteration coherence). *For every $n \in \mathbb{N}$,*

$$\boxed{C_n = 1.} \quad (4)$$

Proof. Lemma 1 gives $T_n < 1$ for every finite n . Equation (2) therefore gives $C_n = 1$ for every $n \in \mathbb{N}$. $\square$

There is no state at “ $n = \infty$ ” in the specified discrete-time system. The limit $T_n \rightarrow 1$ describes the asymptotic trajectory; it is not an attained iteration. Thus (4) proves indefinite persistence in exactly the formal all-future-iterations sense used by the current bounty.

No Integration, Release, Transition, or Breakdown

No Integration

Integration is defined by the current bounty as a system response that absorbs, redistributes, compensates for, reorganizes around, or otherwise resolves increasing Contrast while maintaining or restoring structure. No such response exists here.

The threshold map (2) is identical at every iteration. There is no controller, learning rule, feedback correction, error correction, parameter adjustment, redundancy activation, resource reallocation, or structural reconfiguration. Formally, if F denotes the complete system law, then

$$\boxed{F_n = F_0 \quad \text{for all } n.} \quad (5)$$

No internal quantity changes *in response* to the increasing stress in order to preserve $C = 1$.

The varying quantity T_n is the precommitted external Contrast itself, not a compensatory system response.

No Release

By Lemma 1,

$$T_{n+1} > T_n$$

for every iteration. Stress is never reduced, reset, transferred, discharged, dissipated, or removed. Hence no release occurs.

No Transition of the Coherence-Bearing Structure

The external stress input changes, but the coherent system state does not transition:

$$C_n = 1 \quad \text{for every } n.$$

There is no change to a new coherent regime, no phase change, and no reorganization of the threshold law.

No Breakdown

Breakdown was predefined as $C_n = 0$. Equation (4) proves that this never occurs at any finite iteration.

Main Theorem

Theorem 1 (Current-rules counterexample). *There exists a purely mathematical system that begins in a predefined measurable coherent state and is exposed indefinitely to strictly increasing, causally coupled Contrast with demonstrable capacity to destroy that exact coherent state, yet preserves the original coherence for all future iterations without Integration, release, transition, corrective reorganization, or breakdown.*

Proof. The initial state is coherent because $T_0 = 0 < 1$ and therefore $C_0 = 1$.

By Lemma 1, $T_{n+1} > T_n$ for every n , so Contrast continues to increase indefinitely in the precise all-iteration sense. Equation (3) shows that the system approaches the exact breakdown boundary arbitrarily closely.

By Lemma 2, the Contrast variable is directly and causally coupled to the exact coherence property: changing T to the threshold changes C from 1 to 0. Thus the stress is capable of destroying the coherence being measured and is not an irrelevant direction or metric artifact.

By Lemma 3, nevertheless, $C_n = 1$ for every $n \in \mathbb{N}$.

Equation (5) and the declared system boundary show that no adaptive, corrective, compensatory, or reorganizing mechanism changes in response to increasing Contrast. Contrast is not released or transferred, and the coherent state never transitions or breaks down.

Therefore the construction satisfies

Coherence + increasing causally coupled Contrast + no Integration + no release + no breakdown + persistent

This is the compact falsification condition stated by the current THD bounty. □

Seven-Requirement Audit

Current substantive requirement	Construction
1. Established coherence	$T_0 = 0 < 1$, so $C_0 = 1$.
2. Increasing qualifying Contrast	$T_{n+1} - T_n = 1/[(n+1)(n+2)] > 0$ for every n .
3. Genuine exposure / causal coupling	$C(T)$ depends directly on T ; intervention from $T < 1$ to $T = 1$ changes C from 1 to 0.
4. No Integration	Fixed system law; no feedback, adaptation, correction, parameter change, resource change, or reorganization.
5. No release	T_n strictly increases; no reset, transfer, dissipation, or discharge.
6. No breakdown	$T_n < 1$ for every finite n , hence $C_n = 1$ for every n .
7. Persistent coherence as qualifying Contrast continues to increase	The preceding facts hold simultaneously for every $n \in \mathbb{N}$.

Why the Standard Escape Routes Do Not Apply

- **Not an irrelevant dimension:** there is no second coordinate. T appears directly in the equation defining C .

- **Not a zero-weight feature:** changing T across the critical value changes the exact coherent state.
- **Not a fixed point without increasing Contrast:** the complete test condition changes each iteration because $T_{n+1} > T_n$.
- **Not hidden compensation:** no internal mechanism, resource, parameter, or rule changes with n .
- **Not release:** the stress never falls or resets.
- **Not a metric chosen after the fact:** C , T , T_c , the boundary, and the stress schedule are all specified before evaluation.
- **Not failure to reach “infinite time”:** formal indefinite behavior is proved for every future iteration $n \in \mathbb{N}$.
- **Not dependent on unbounded Contrast or threshold crossing:** those were prospectively ruled unnecessary under the current published text before disclosure of this construction.

Requested Determination

After independently checking the proof and applying the current THD Falsification Bounty rules, including the prospective rulings that qualifying Contrast need not be unbounded, need not cross the breakdown threshold, and may strictly increase forever while approaching a finite critical threshold, please answer the following:

Does this construction satisfy all seven substantive requirements of the current THD Falsification Bounty and therefore qualify as a valid falsification candidate for the US\$10,000 prize verification process? Answer YES or NO.

If NO, identify the exact currently published clause that fails and the precise mathematical step or declared system property responsible.

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Current bounty text consulted: <https://creationunified.com/bounty> (20 August 2026).

This document presents a falsification candidate for independent review. It does not claim that the bounty administrator has already verified or awarded the prize.