

From Differences to Distinguishability

How contact becomes memory and stable closure becomes form in a minimal non-neural carrier

Amir Tlinov Independent research 20 July 2026 materials & source two-page PDF theory PDF

STARTING CLAIM

This work begins from a physical conjecture: before the finished object there are *differences*—ways one possible state can change another otherwise.

Differences exist before a contact in which they can become distinguishable. Absence of distinguishability in one contact is therefore not absence of differences; this contact has simply not yet made them part of one physical fate.

A particle, body, or material form is treated as a persistent closure of differences: not a final bead of reality and not a graph of bonds, but a temporarily stable balance of mutually sustaining differences. Once later contact meets that closure as one whole, it becomes distinguishable as one at its scale and a new difference for the next closure.

CONTACT PRODUCES DISTINGUISHABILITY

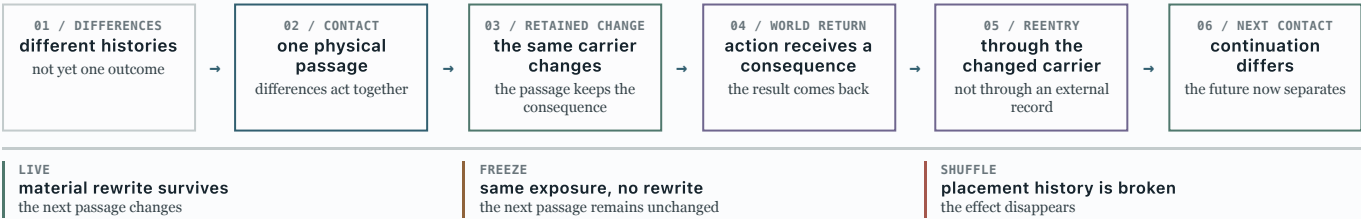
Differences become distinguishability when meeting acquires a physical consequence: replacing one history with another changes the distribution of a later contact. D+ is the strongest such future difference over admitted continuations. One blind probe cannot establish equivalence across every future.

Measurement is therefore contact, not an external photograph. It participates in which differences close into a registered result; the outcome belongs to the joint continuation of system and apparatus. The same criterion anchors memory: the past matters when retained change alters what can happen next.



Difference becomes distinguishability in a held relation.
+A and -A are gestures in this encounter, not permanent properties of two objects.

EXACT CAUSAL MECHANISM · REENTRY PASSES THROUGH THE SAME CHANGED CARRIER



D+ is an external witness of the changed future; it does not select a path.

Figure 1. Contact makes differences operative together. Memory begins when the resulting change remains in the carrier, survives world return, and conducts a different future contact.

FROM CONTACT TO FORM

Memory is a changed future carried by the changed body itself.

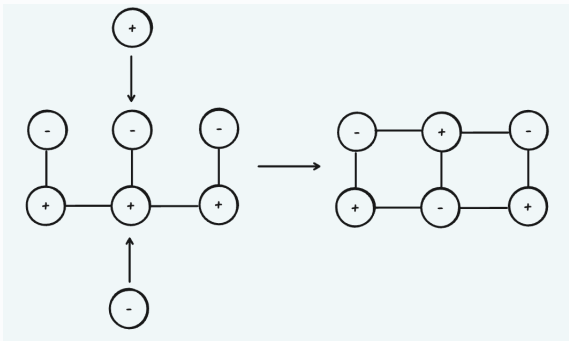


Figure 2. New differences are retained when their contact strengthens the group by closing relations it can sustain. The signs mark roles in this encounter.

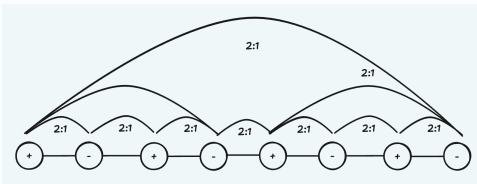


Figure 3. A whole organism is a balance of relations at their shared scale of form. The lower-scale 2:1 closures remain inside it.

I(a) → 0

local inversion →
correction
global order is the receipt

BUBBLE SORT: LOCAL DIFFERENCE BECOMES WHOLE-SCALE ORDER

Zhang, Goldstein & Levin use sorting as a minimal model of morphogenesis. In an inverted neighboring pair, difference becomes locally distinguishable as imbalance. Each swap resolves one inversion, so global $I(a)$ falls to zero although no element stores the final sequence. Their cell-view variants show robustness under damage and unexpected clustering in mixed arrays. This is the same causal form—local difference, contact, correction, stable whole. The carrier question goes further: can the substrate's own history form and alter the contacts that sorting receives from its programmer?

1 · Contact survives as changed repair

In the public relational-closure-carrier, A/B histories later close differently after temporary-world deletion, restart, common washout, and the same renewed injury—even though current extent and large-scale conductance match. Organization-preserving address relabeling preserves the effect; shuffling where return was retained erases it. This is the implemented receipt: history held by the carrier changes later closure.

2 · Passage itself becomes memory

The later one to two PC carrier is one writable mmap tissue conducted by a local Metal law. Three events reuse the same sixteen conducting relations; a mismatched world return changes their common R^* , separates the next matched and mismatched contacts, and survives reopen. Severed conductance can regrow from surviving context. Memory is no longer a table about the passage: it is the changed passage.

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public explicit-topology
assay tests pass

2,058

matched events preserved
by hostile relabeling

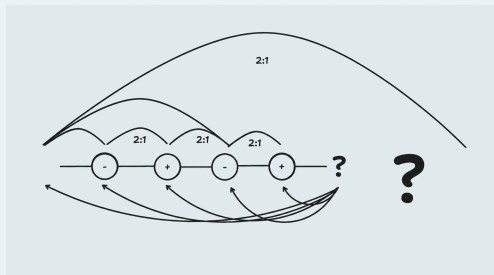
1 R^* / 3

one shared relation across
three PC events

reopen

changed future remains
after restart

Regeneration restores whole-scale balance



Loss opens the closure. Different returns can restore whole-scale balance without replaying the prior local placement; imbalance may remain elsewhere.

The material test

In a random memristive network, conductance, heat, and hysteresis can be state, memory, and the condition of the next contact at once. Parameters are fixed on A and predict held-out B. After damage and reentry, live must change a hidden next contact more than freeze, blocked, and shuffle. No held-out gain, no survival after power loss, or an externally selected route defeats the carrier hypothesis.

QUESTION FOR BIOLOGY

Given two tissues matched in present anatomy and immediate behavior but differing only in repair history, **what perturbation would show that their future form is held by a closure of differences rather than ordinary hysteresis**—without supplying the desired anatomy from outside?

SCOPE & REFERENCES

1. **Claim:** differences precede distinguishability; contact closes them into form; retained closure becomes memory and a difference at the next scale. **Shown:** one public engineered carrier in which survived contact changes later repair. **Decisive next test:** matter itself owns contact, path, and reconfiguration.
2. Levin (2022), *Technological Approach to Mind Everywhere*; Zhang, Goldstein & Levin (2025), sorting algorithms as a model of morphogenesis.
3. Durant et al. (2017), long-term editing of regenerative anatomy; Emmons-Bell et al. (2015), alternative planarian head anatomies.