

The Universal Algorithm of Persistence: A Framework for Emergence and Stability in a Dynamic Universe

October 20, 2025

The Underlying Logic: A Universal Algorithm of Persistence

The core logic is a *homeostatic search loop*—a simple, recursive algorithm that defines how any system, from a cell to a society, maintains its existence over time. The loop is not about achieving a final, perfect state, but about perpetual adaptation.

The Four Steps

1. **Search / Explore.** The system generates variation and explores its possibility space. Mutation in biology, new ideas in society, iterative adjustments in AI models.
2. **Settle / Exploit.** The system finds a “good enough” solution that provides temporary viability. A niche for a species, a social norm, a low-error state for a model.
3. **Perturb / Disrupt.** Internal drift or external shocks destabilize the current solution. Environments shift, resources deplete, values change, new data arrives.
4. **Repeat.** The system abandons its temporary stability and resumes the search. Existence is the ceaseless execution of this loop. Stability is found in the *looping*, not in any one of the steps.

Alignment with Broader Concepts

Physics and Thermodynamics

The logic mirrors how physical systems seek local minima of energy. Proteins fold into workable, not globally optimal, shapes. The universe abounds with systems in temporary wells of stability, displaced and re-settled by perturbations.

Biology and Complex Adaptive Systems

Evolution itself is this loop. Natural selection finds local fitness peaks in shifting landscapes. A species is never “perfectly evolved,” only adapted enough to persist. This aligns with *autopoiesis*: the self-maintaining loop of life.

Computer Science and Optimization

Modern learning algorithms enact the same search:

- **Gradient Descent:** search across parameters → local minimum → update on new data.
- **Reinforcement Learning:** explore → exploit a workable policy → adapt as conditions change.

AI alignment, then, must be understood as a continuous search, not a final fix.

Philosophy and Epistemology

The framework resonates with process philosophy: reality is fundamentally processes, not static objects. It also echoes pragmatism: truth is provisional, tested, and revised under perturbations. The axiom “The search is the finding” is both scientific and existential.

A Framework for Emergence

This universal algorithm explains how order, structure, and stability arise without central design or final goals. It reframes fundamental concepts:

- **Existence** is not a state but a self-perpetuating process.
- **Stability** is not permanence but the rhythm of adaptation.
- **Conflict** is not only destructive but also an engine that forces systems to develop more robust solutions.

Axiom (Persistence).

The solution to instability is not its elimination, but the capacity to search again.

The loop is the only stability there is.

The search is the finding.