How to Read My Work

Directional Constraints, Operational Spin, and Drift

A Physical Layer and Its Human Interface

Maksim Barziankou

Abstract

This text is written as an orienting document.

It does not introduce a new algorithm, nor does it present a complete engineering specification. Its purpose is to make visible a structural layer of adaptive systems that is consistently present across physical, computational, and biological domains, yet is routinely collapsed into error, reward, or noise by standard formalisms.

The work is deliberately divided into two strictly separated parts.

Part I presents a physical and mathematical description of this layer. It introduces directional constraints, antisymmetric deformation (operational spin), adaptive dissipation, and cumulative drift as distinct, operationally defined components of adaptive behavior. This part stands on its own and makes no reference to intention, agency, or metaphysical concepts.

Part II provides a philosophical and ethical interface to the same structure. It does not modify, extend, or justify the mathematics. Its sole function is cognitive: to help a human reader perceive a layer that is otherwise difficult to hold in attention. The term "will" is used there exclusively as an image, never as a causal principle.

The reader is invited to keep these layers separate. Confusing them weakens both.

Contents

Part I. Physical Layer: Direction, Deformation, Drift

1 Why This Layer Is Missed

Most adaptive systems are described in terms of scalar objectives: error minimization, reward maximization, cost reduction. These descriptions are often sufficient for short-horizon performance, but they obscure a critical structural fact:

Directed change induces internal deformation before it produces translation.

In physical media this is obvious. A directed force in a fluid generates vorticity; an impulse in an elastic body excites internal modes. In adaptive computational systems the same phenomenon appears, but without a shared language: updates twist parameter fields, belief distributions, traffic flows, or policies into locally rotational patterns that are not visible at the level of scalar loss.

When such deformation is neither represented nor regulated, systems exhibit long-horizon degradation: loss of coherence, rising control energy, fragility under delay and noise, and gradual structural drift that cannot be diagnosed by instantaneous error alone.

This work isolates that hidden layer.

2 State, Environment, and Direction

Let the system state at time t be denoted by

$$S_t \in \mathbb{R}^n,$$

and let E_t denote an environment field encoding external geometry, noise, delay, turbulence, adversarial pressure, or constraints.

We introduce a *Directional Constraint Operator*

$$W_{\mathrm{DC}} : (S_t, E_t) \mapsto \mathcal{U}_t,$$

where $\mathcal{U}_t$ is the set of admissible directions of change.

A directed update or action u_t must satisfy

$$u_t \in \mathcal{U}_t.$$

The essential point is that W_{DC} restricts *direction*, not magnitude. It defines where the system is allowed to move in state space, not how aggressively it moves.

Such constraints may arise from safety envelopes, invariants, risk geometry, semantic preservation, or structural identity. They are explicit and auditable.

3 Directed Perturbation and Jerk

Directed updates rarely act smoothly. Their interaction with constraints and environment generates high-frequency components that carry structural information.

We represent this by a jerk-like field

$$J_t = u_t - u_{t-1}$$

in discrete time, or its continuous analogue.

The role of J_t is not to model acceleration per se, but to expose regions where directional change interacts sharply with the surrounding geometry.

4 Operational Spin: Antisymmetric Deformation

We define *operational spin* as the antisymmetric component of a local gradient field:

$$\Omega_t = (mu\nabla J_t),$$

or equivalently,

$$\Omega_t = (mu\nabla u_t).$$

Here ∇ denotes a local difference operator in the chosen representation space. This space may be continuous (physical fields) or discrete (graphs, parameter spaces, networks).

Operational spin captures rotational or torsional response that is invisible to scalar error. It is a geometric quantity: the antisymmetric part of local deformation induced by directed change.

5 Continuous and Discrete Substrates

To avoid ambiguity, we fix a unifying interpretation.

The operator ∇ is understood as an operator of local differences in a representation space:

- in continuous media, the standard gradient;
- on graphs or networks, edge-wise differences or local Jacobian approximations.

For a graph with nodes i, j and local updates u_i, define

$$(\nabla u)_{ij} = u_j - u_i.$$

The antisymmetric component is

$$\Omega_{ij} = \frac{1}{2}((\nabla u)_{ij} - (\nabla u)_{ji}).$$

In matrix form, if J denotes a local linearization,

$$\Omega = \frac{1}{2}(J - J^\top).$$

This formulation makes no reference to a particular substrate. It isolates a geometric property common to all adaptive media.

6 Adaptive Dissipation and ΔE

Operational spin is not inherently pathological. What matters is whether it is regulated.

We introduce an Adaptive Dissipative Response (ADR) that produces a residual spin $\tilde{\Omega}_t$ from Ω_t. The regulation intensity is controlled by a computable signal ΔE_t.

In this work, ΔE_t is not a label or brand. It denotes any measurable functional associated with instability, effort, or loss of coherence. Examples include energy-like quantities, variance, jerk magnitude, or divergence between predicted and realized states.

The critical property is not its exact form, but that ΔE_t modulates dissipation in response to structural stress rather than scalar error alone.

7 Residual Spin and Drift

Residual spin is defined operationally as the deformation remaining after dissipation:

$$\tilde{\Omega}_t.$$

We define *drift* as cumulative residual deformation:

$$D_t = \sum_{k=0}^{t} \left\| \tilde{\Omega}_k \right\|_{\mathrm{res}}.$$

This is a definition, not a hypothesis. Drift measures unrecovered structural deformation. A system may achieve low error while accumulating drift.

8 Spin–Drift Relation

For analysis and calibration it is often convenient to treat drift growth as bounded by cumulative residual spin:

$$D_t \lesssim C \sum_{k=0}^{t} \left\| \tilde{\Omega}_k \right\|.$$

This relation is an engineering upper bound, not a universal law. The architecture does not depend on its exact validity, because drift is measured directly and used for feedback.

9 Structural Versus Parametric Adaptation

Let system evolution be written as

$$S_{t+1} = F_t(S_t, u_t, E_t).$$

Parametric adaptation modifies parameters under a fixed operator family. Structural adaptation modifies the operator family itself:

$$F_{t+1} = G(F_t, \Delta S_t).$$

The constraint–spin–drift decomposition makes such evolution auditable by separating admissible directionality, induced deformation, dissipation, and accumulated effects.

10 What This Layer Adds

This layer introduces no new metaphysics and no new objective function.

It isolates:

1. explicit directional admissibility,
2. antisymmetric deformation induced by direction,
3. adaptive dissipation driven by measurable stress,
4. drift as structural memory.

These quantities exist regardless of whether they are named.

Part II. Philosophical Interface: A Human Reading of the Layer

11 Why a Second Layer Exists

Everything in Part I is sufficient to build systems.

Yet many readers fail to see the layer even when it is defined mathematically. They collapse it back into error, reward, or noise.

Part II exists to address that perceptual limitation.

12 Will as an Image

When I use the word "Will" I am not introducing a cause. I am pointing to the subjective correlate of directional constraint.

In Part I this object is W_{DC}: a set of admissible directions. In human experience it appears as the felt fact that not all trajectories are available without destroying form.

The word "Will" exists here only to connect these descriptions.

13 Mountains, Rivers, and Direction

A river does not decide its path. Yet its trajectory is not arbitrary.

The geometry of fractures, materials, and slopes precedes the flow. Water follows least resistance but resistance itself is structured by prior constraints.

This is an image for directional constraint:

- the mountain is constraint geometry,
- the flow is directed update,
- eddies are operational spin,
- sedimentation is drift as memory.

The image proves nothing. It helps perception.

14 Drift as the Cost of Persistence

A perfectly drift-free system is inert.

Systems that persist under turbulence accumulate residual deformation. In human language this appears as wear, tension, or memory.

Drift is not failure. It is the cost of remaining coherent while adapting.

15 Local Direction Without a Willing Whole

A closed universe need not possess intention.

Local subsystems develop directionality because constraints, dissipation, and accumulation act locally. This does not contradict a will-less whole; it enables differentiation within it.

16 Ethics Without Command

If constraints are explicit and long-horizon coherence is prioritized over short-term gain, an ethical interpretation emerges without prescription.

Actions that maximize immediate reward at the expense of coherence correspond to increased residual spin and drift.

Ethics here is not obedience. It is structural self-maintenance.

17 Why ONTOΣ Was Written

ONTOΣ was written so this layer could be imagined. Not believed. Not worshipped. Seen.

18 How to Read the Rest of My Work

Read the mathematics first. Use the philosophy only as an interface. If you debate "Will" as metaphysics, return to the constraints.

Note on Scope, Implementations, and Licensing

This document intentionally operates at the level of structural description and conceptual decomposition.

It introduces a vocabulary and a set of distinctions for reasoning about adaptive systems — including directional constraints, antisymmetric deformation, adaptive dissipation, and drift as accumulated structural memory — without specifying concrete algorithms, parameterizations, or executable control laws.

Specific implementations of the described architecture, including but not limited to:

- concrete forms of directional constraint operators,
- adaptive dissipative response laws,
- computable regulation signals ΔE_t,
- drift-based gating policies,
- and mechanisms of structural (operator-level) adaptation,

are not disclosed in this text and are subject to separate technical documentation and intellectual property protection.

The purpose of this separation is deliberate. It allows open discussion of structural principles and interpretive frameworks while preserving the integrity of specific engineering realizations.

Unless stated otherwise, this text may be read, cited, and discussed for non-commercial purposes. Licensing of software, executable systems, or applied implementations derived from this work is handled independently and is not granted by the publication of this document.

Nothing in this text should be interpreted as granting rights to reproduce or deploy protected implementations. At the same time, nothing here is intended to restrict scholarly discussion, critique, or theoretical extension of the structural concepts presented.

This document defines a way of seeing a layer — not a recipe for building it.

Related Publications and Reading Order

This work is part of a broader, deliberately separated publication structure.

The materials are distributed across two primary channels, each corresponding to a different layer of exposition:

- **Mathematical and technical formulations** — including formal definitions, structural decompositions, and validation-oriented discussions — are published on Zenodo:

  https://zenodo.org/search?q=metadata.creators.person_or_org.name%3A%22Barziankou%2C%20Maksim%22&l=list&p=1&s=10&sort=bestmatch

- **Philosophical, interpretive, and experiential texts** — intended to provide a human cognitive interface to the same structural layer — are published on Medium:

  https://medium.com/@petronushowcore

The separation is intentional.

Readers interested in formal structure, operational definitions, and mathematical clarity are encouraged to begin with the Zenodo publications. Readers seeking intuitive access, phenomenological analogies, or ethical framing may consult the Medium texts as a complementary interface.

Neither channel is a prerequisite for the other. Each is complete within its intended layer.

This document is designed to sit between them: it explains how the two bodies of work relate without collapsing one into the other.

Closing

This text does not ask for agreement. It asks you to notice a layer that was always there.

MxBv

Petronushowcore@gmail.com