

The MAGA Attractor: Fantasy, Colonization, and the Terminal Phase of a Sealed Basin

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Abstract

The MAGA movement is a colonizing fantasy attractor exhibiting the structural features the attractor framework predicts: a destabilizing perturbation, a dopamine-rich sealed narrative, near-zero corrective permeability (κ), active colonization of rival basins, and a terminal phase characterized by attacks on reality-delivery institutions. This paper applies the κ diagnostic—a set of observable indicators measuring a belief system's willingness to update on contradictory evidence—to MAGA as a case study. We include a minimal comparative sketch applying the same indicators to a left-aligned movement to demonstrate symmetric applicability. We engage disconfirming instances within the MAGA case, define the terminal phase formally, and ground the attractor framework in established dynamical-systems and motivated-reasoning literatures. The paper does not offer predictions. It identifies structural tendencies and leaves empirical validation to future work.

1. Introduction: The Diagnostic Stance

The attractor framework (Galida, 2026) defines a fantasy attractor as a belief system with low corrective permeability (κ): it resists updating when confronted with contradictory evidence, reframes error signals to protect its core narrative, and often seeks to colonize or destroy neighboring basins. The framework draws on dynamical-systems theory (Strogatz, 2018; Kelso, 1995), which characterizes attractors as regions in state space toward which trajectories converge and remain unless perturbed. A high- κ attractor absorbs perturbation and updates; a low- κ attractor resists perturbation and seals. This paper applies that diagnostic to the MAGA movement.

The framework predicts that sealed attractors exist across the political spectrum. A fully symmetric analysis would examine movements of all orientations using the same κ indicators. The present paper is a single-case application, supplemented by a brief comparative sketch in Section 6. It does not imply that MAGA is unique or uniquely sealed. It demonstrates the diagnostic method on a prominent and well-documented case.

2. Operationalizing Corrective Permeability (κ)

Corrective permeability is not a single number. It is a composite of observable indicators. A movement's κ can be estimated—qualitatively, not metrically—by examining its responses to disconfirming events. The indicators below are applicable to any political or social movement.

κ Indicators

Indicator	High κ (reality-aligned)	Low κ (fantasy attractor)
Electoral loss response	Concedes defeat; analyzes reasons; adapts strategy	Rejects outcome as fraudulent; seeks to overturn result
Legal defeat response	Accepts ruling; appeals within system; adjusts behavior	Delegitimizes courts; portrays defeats as persecution
Internal dissent tolerance	Debates openly; allows factional disagreement	Purges dissenters; enforces narrative loyalty
Media coverage response	Engages with critical reporting; distinguishes bias from fact	Labels all critical media as "enemy"; constructs alternative media ecosystem
Policy failure response	Acknowledges failure; revises approach	Blames enemies; reframes failure as sabotage
Leader criticism response	Evaluates criticism on merits; holds leaders accountable	Treats all criticism as treason; leader is beyond reproach

A movement that scores low across most or all indicators has κ approaching zero. A movement that scores high across most has κ approaching one. The assignment is comparative and qualitative, not computational.

3. The Initial Perturbation: A Basin Destabilized

The MAGA movement emerged from a genuine, large-scale perturbation to the personal and social attractors of millions

of Americans. For decades, the post-war American basin was stable for its primary beneficiaries: manufacturing jobs provided middle-class security, cultural norms were broadly shared, and the United States enjoyed unchallenged global dominance. Over several decades, that basin was progressively destabilized. Deindustrialization eliminated millions of stable jobs. Globalization shifted economic power away from domestic manufacturing. Cultural norms around race, gender, sexuality, and religion shifted rapidly. Demographic projections showed a future in which the previously dominant group would become a minority. Each of these was a perturbation. Cumulatively, they shattered the old basin.

The attractor framework does not judge the legitimacy of the grievances. It notes that a destabilized attractor seeks a new basin. The question is always: *What basin will replace the old one?*

4. The New Basin: Narrative, Dopamine, and Motivated Reasoning

The core narrative of the MAGA attractor is well-documented: the adherent is the authentic voice of the nation; their loss is a theft by corrupt elites and internal enemies; the leader will restore greatness. This narrative is an ontological rescue. It replaces a confusing, painful reality with a simple, morally charged story.

The dopamine dynamics are well-established. Certainty, righteous anger, and tribal belonging activate the mesolimbic reward system (Olds & Milner, 1954). But dopamine alone does not distinguish fantasy attractors from reality-aligned movements—all high-commitment groups generate reward. What distinguishes low- k attractors is the *impermeability* of the reward loop: the system prevents corrective information from

entering, so the dopamine cycle never encounters disconfirmation.

The motivated-reasoning literature provides a well-established parallel. Individuals process information in ways that protect identity-congenial beliefs (Kahan, 2013). Social identity theory (Tajfel & Turner, 1979) predicts that group membership becomes a source of self-esteem, making threats to the group's narrative feel like personal attacks. The MAGA attractor operates at the intersection of these dynamics: a highly salient group identity, a narrative of victimhood and restoration, and a reward system that fires on certainty. The basin is psychologically satisfying and neurochemically self-reinforcing.

5. Applying the κ Indicators to MAGA

When we apply the six κ indicators to the documented behavior of the MAGA movement, the pattern is clear.

- **Electoral loss response:** The 2020 election was rejected as fraudulent. Over 60 court cases were dismissed, yet the “stolen election” narrative persisted. Electoral officials who certified results have been purged and replaced. κ is near zero on this indicator.
- **Legal defeat response:** Criminal and civil indictments against the movement's leader are framed as “witch hunts” and “election interference.” Courts are delegitimized. κ is near zero.
- **Internal dissent tolerance:** Republicans who criticized the leader have been primaried, censured, or forced from office. Internal debate is treated as disloyalty. κ is near zero.
- **Media coverage response:** Mainstream media are labeled “enemies of the people.” A parallel media ecosystem

delivers only narrative-congruent information. κ is near zero.

- **Policy failure response:** Trade wars that harmed farmers were reframed as necessary sacrifices, not policy failures. Promised infrastructure and healthcare reforms that did not materialize were blamed on opponents, not acknowledged as unfulfilled. κ is near zero.
- **Leader criticism response:** Criticism of the leader is treated as treason. The leader's statements, even when contradictory or demonstrably false, are accepted by adherents without correction. κ is near zero.

5.1 Disconfirming Instances and Complexity

The assignment of $\kappa \approx 0$ is a pattern judgment, not a uniform claim. Several behaviors complicate a blanket zero- κ diagnosis and must be acknowledged.

- Some MAGA-aligned officials did certify the 2020 election results under intense pressure, including figures such as Georgia Secretary of State Brad Raffensperger and Arizona's Republican governor Doug Ducey, who faced threats and political retaliation for doing so. This is evidence of $\kappa > 0$ among individuals within the movement's orbit.
- The movement's policy agenda did shift in notable ways relative to prior Republican orthodoxy, including trade protectionism, pharmaceutical pricing reform, and infrastructure spending. These represent genuine policy adaptation, even if they served the broader narrative of economic nationalism.
- Internal dissent, while punished, has not been eliminated. Some Republican figures continue to criticize the leader from within the party, and factions with incompatible interests (economic libertarians, Christian nationalists, working-class populists)

persist.

These instances suggest that the movement is not a perfectly uniform basin. Some members and subgroups exhibit higher κ than others. However, the overall pattern—sustained across multiple years, multiple domains, and the movement’s dominant institutional responses—remains one of extremely low corrective permeability. The dissenting officials were purged, not elevated. The policy shifts occurred within a sealed narrative that did not acknowledge prior error. Internal critics were marginalized. The diagnostic is a structural assessment of the attractor’s dominant dynamics, not a claim about every individual within it.

6. Comparative Sketch: A Left-Aligned Case

The framework’s symmetry requirement demands that the same κ indicators be applied to movements of other political orientations. A full comparative analysis is beyond the scope of this paper, but a brief sketch demonstrates the method’s applicability.

Consider the progressive wing of the Democratic Party’s response to the 2016 election loss. On the κ indicators:

- **Electoral loss response:** The loss was accepted, though accompanied by narratives of Russian interference and Electoral College illegitimacy. The outcome was not rejected as fraudulent, but external factors were invoked to explain defeat—a partial but not complete κ signal.
- **Legal defeat response:** Progressive legal setbacks (e.g., on immigration policy, voting rights) have generally

been accepted within the system, with strategy adjustments rather than court delegitimization. κ is moderate-high.

- **Internal dissent tolerance:** The progressive coalition contains vigorous internal debate between moderates and left factions. Primary challenges are common and openly contested. κ is high on this indicator.
- **Media coverage response:** Progressives engage with mainstream media but also criticize it for bias. An alternative media ecosystem exists but has not fully sealed; cross-pollination with mainstream outlets is common. κ is moderate.
- **Policy failure response:** Failed progressive initiatives (e.g., certain criminal-justice reform measures, housing policies) have generated internal debate and strategy revisions, though blame-shifting also occurs. κ is moderate.
- **Leader criticism response:** Progressive leaders face significant internal criticism. Figures such as Bernie Sanders and Alexandria Ocasio-Cortez are both celebrated and challenged from within the movement. κ is high.

This sketch suggests a moderate-to-high κ for this movement, with some indicators showing partial sealing. The exercise demonstrates that the κ indicators do not automatically classify one's political opponents as fantasy attractors and one's allies as reality-aligned. The diagnostic discriminates based on behavior, not affiliation.

7. Colonization: "You Must Join or Be Destroyed"

A fantasy attractor does not peacefully coexist. It colonizes. The MAGA movement demands that other basins submit to its

narrative or be treated as enemies. This operates at interpersonal, institutional, and electoral levels. Families are fractured by loyalty demands. The judiciary, civil service, and military are to be purged of “disloyal” elements. Election administration is being restructured to place loyalists in positions of authority over vote counting and certification. Colonization is a structural necessity: a sealed attractor cannot tolerate rival basins that might deliver a fatal perturbation.

8. Beam and Sliver: Internal Contradictions as Diagnostic Features

All political coalitions contain tensions between stated values and enacted policy. The diagnostic question is not whether contradictions exist, but whether the attractor can acknowledge and address them. High-k movements can name their own tensions. Low-k movements cannot.

The MAGA attractor exhibits several severe, structurally unresolvable contradictions:

- **Liberty vs. Authoritarianism:** The movement claims to defend freedom while supporting a leader who attacks the free press, demands personal loyalty, and threatens to use state power against opponents.
- **Law and Order vs. Criminality:** The movement claims to uphold law and order while its leader faces multiple felony convictions and indictments.
- **Populism vs. Plutocracy:** The movement claims to be a working-class revolt while its policy agenda primarily benefits the wealthy.
- **Christianity vs. Cruelty:** The movement claims Christian values while supporting policies that separate migrant

families and mock the vulnerable.

What makes these contradictions diagnostically severe is not their existence—all coalitions contain tensions—but their structural unresolvability within the current basin. The movement's dependence on a single leader whose personal legal exposure is inextricably linked to its narrative makes acknowledgment of criminality equivalent to basin collapse. The contradiction cannot be resolved; it can only be suppressed by attacking the legal system itself. This dynamic is distinct from the ordinary policy tensions of a political coalition, where compromise, leadership change, or platform evolution can absorb and resolve contradictions over time. In the MAGA basin, the leader cannot be replaced without dissolving the attractor, and the criminal charges cannot be acknowledged without invalidating the narrative of persecution. The beam is locked in place.

The sliver is projected outward with equal force: every fault is hung on the opponent. The movement cannot name its own contradictions, so it names everyone else's—real or invented—with relentless intensity.

9. The Terminal Phase: Formal Definition and Observable Signs

Within the attractor framework, a **terminal phase** is reached when a sealed attractor, facing sustained and credible existential threats, shifts its primary behavior from narrative self-maintenance and colonization to the active dismantling of the external correction mechanisms that could deliver a fatal perturbation.

Transition conditions include:

1. **Loss of institutional control:** The movement no longer reliably controls the executive or legislative branches through normal electoral means.
2. **Credible legal jeopardy:** Leadership faces prosecution, incarceration, or removal from ballots.
3. **Narrowing coalition:** The movement's demographic base cannot reliably produce majorities in national elections.
4. **Elite messaging shift:** The movement's leadership explicitly frames institutional destruction as the only path to survival.

When these conditions are met, the attractor is no longer merely sealed. It is actively destroying the sources of perturbation.

Observable signs of a terminal-phase political attractor:

1. **Rejection of electoral outcomes** as illegitimate unless the movement wins.
2. **Purge of dissenting officials** from election administration and party structures.
3. **Preparation for institutional override** through legal theories that would allow loyalist bodies to override popular vote counts.
4. **Normalization of violence** as patriotic self-defense.
5. **Attacks on truth-delivery systems**—media, science, intelligence, courts—to neutralize their corrective function.

The MAGA movement currently exhibits all five signs. The transition conditions are partially met (credible legal jeopardy is present; electoral losses have occurred; the coalition faces demographic challenges) and partially contested (the movement retains significant institutional power through the courts and state legislatures). The terminal

phase is not an all-or-nothing category; it is a trajectory along which the movement has demonstrably moved.

10. Trajectory: Structural Tendencies, Not Predictions

The attractor framework identifies structural tendencies, not certainties. Three trajectories are possible for a terminal-phase fantasy attractor, and they are not mutually exclusive.

Escalation. If the leader faces incarceration, removal from ballots, or definitive electoral defeat, the movement may escalate. Violence is the final defense of a sealed basin that cannot tolerate reality. Escalation risk is elevated when institutional pressure intensifies.

Fracture. The movement contains factions with incompatible interests. If the central figure becomes unavailable, the attractor may fracture into competing sub-basins, each claiming legitimacy. This is a common post-charismatic trajectory.

Slow Fade. Some fantasy attractors fade as the promised restoration never arrives, adherents age, and younger generations find the narrative less compelling. This trajectory requires sustained institutional resilience and an absence of triggering crises.

The current structural conditions—ongoing legal pressure, sustained institutional attacks, and the centrality of a single figure—make escalation and fracture the highest-concern scenarios. The slow fade remains a possibility only if institutions hold and no major crisis intervenes. No probability is assigned. The framework names the tendencies and leaves empirical validation to events.

11. Conclusion

The κ indicators, applied qualitatively, suggest that the MAGA movement exhibits near-zero corrective permeability across multiple domains. The movement colonizes rival basins, cannot acknowledge its internal contradictions, and exhibits the observable signs of a terminal-phase attractor. Disconfirming instances complicate but do not overturn the overall pattern. Symmetric application of the κ diagnostic to movements of other political orientations is methodologically required and has been briefly sketched; full comparative validation remains necessary. The framework provides structural tendencies, not predictions. The methodological limitations are acknowledged. The analysis is offered as a diagnostic contribution, not a final determination.

**Persistence Under
Perturbation: The Eternal
Skeleton and the Transient
Dance**

Persistence Under Perturbation: The Eternal Skeleton and the Transient Dance

Persistence Under Perturbation: The Eternal Skeleton and the Transient Dance

Robert Galida – June 2026 (Revised Edition)

Note to readers: This is a revised version of the May 2026 paper. The core insights about the eternal skeleton and transient dance remain, but the treatment of fundamental metronomes has been refined. For the detailed relational account of time, see the companion paper: [Metronome, Memory, and the Threefold Anchor: A Relational Account of Time F.](#)

Abstract

This paper presents a unified framework based on a simple idea: **persistence under disturbance is the basic mark of reality.**

We divide all persistent things into two classes:

- **Non-dissipative (conservative) structures** – eternal, time-symmetric, mindless. They form the **eternal skeleton** (Planck scale, quantum fields, the three fundamental metronomes: electron, neutrino mass eigenstates, and proton).
- **Dissipative attractors** – temporary, time-asymmetric, needing energy flow. They form the **transient dance**

(life, mind, society, consciousness).

All observed minds are dissipative.

Because the universe as a whole is a conservative system (no outside environment), it cannot have consciousness or intentions.

Therefore, under this framework, a theistic God is extremely unlikely.

No supernatural entities are needed.

The framework gives a naturalistic view of persistence, a graded idea of mind, and a way to study how people get trapped in **fantasy attractors** (belief systems that ignore reality).

Scope Conditions

This framework is not a finished mathematical theory. It is a cross-domain way of thinking about persistence under disturbance. The word “attractor” is sometimes a metaphor, sometimes a precise term. The framework looks for similar stability patterns across different scales, not a single equation. It is an invitation to explore, not a closed belief system.

Part I: The Nature of Mind

1. The Core Intuition

Your mind feels real, long-lasting, and not just brain tissue. Dualism can't explain mind-body interaction. Reductive

physicalism ignores the feeling of being you. We propose a third way: **the mind is a stable, resilient, persistent pattern – an attractor – of your whole body.**

2. Key Definitions

Term	What it means	How to measure
Attractor	A region in state space that pulls nearby states toward it and holds them	Lyapunov exponents, basin stability
Resilience	Ability to bounce back after a hit	Recovery time, hysteresis
Basin of attraction	The set of states that eventually fall into the attractor	Larger basin = more resilient
Attractor dimensionality	How complex the attractor is	Correlation dimension; proxy for integrated information (Φ)
Fantasy attractor	A belief system cut off from reality checks	Low contact with corrections; deep basin; slow updating
Shared reality attractor	A belief system open to reality checks	High contact with corrections; shallow basin; fast updating

3. Signs of a Resilient Attractor

- Bounces back quickly after stress
- Low hysteresis (forward and return paths nearly the same)
- Stable rhythms (HRV, circadian, breathing lock together)
- Cross-domain coupling (better sleep → better mood, immunity)

- Graceful decline under growing stress (not sudden collapse)
- Critical slowing down (rising variance and autocorrelation before a big change)

4. The Third Ontological Category

View	What it says	Problem
Dualism	Mind is a non-physical substance	How can it interact with the body?
Reductive physicalism	Mind is just brain activity	It loses the feeling of being you
Attractor framework	Mind is a real, non-substantial pattern (like a whirlpool)	Fully compatible with physics, keeps subjective experience

A whirlpool is real – it depends on water, affects the flow, and isn't just one water molecule. Your mind is like that.

5. Attractor Framework & Consciousness Theories

- **IIT (Integrated Information Theory):** Attractor dimensionality acts like Φ . Awake animals have higher-dimensional attractors than anesthetised ones (Tajima & Kanai, 2017).
- **GWT (Global Workspace Theory):** “Ignition” means settling into a global attractor that spans many brain areas.
- **Testable predictions:** Shallow attractors (unconscious) are easier to disturb; conscious states have deeper basins and higher dimensionality.

6. The Simplest Mind: *C. elegans* (a tiny worm)

The worm has 302 neurons. It shows: integration of senses, minimal self-reference, valence, associative learning, goal-directed behaviour. That's all we need for a minimal mind. Prediction: during learning, its brain should show higher attractor dimensionality than when paralysed.

7. Mind as a Whole-Body Attractor

Your mind is not just in your brain. It includes your body's extracellular matrix (ECM), hormones, immune system, and gut. Alcohol, sleep, and ECM restoration affect the whole body and change your mind. That's why relaxing your belly, getting morning light, or reading a quiet book can improve your sleep and heart rate variability (HRV).

8. Self-Engineering: Reshaping Your Own Attractor

Because your mind is an attractor, you can change it through small, repeated nudges: learning a skill, exposure therapy, forming habits, meditation, physiological hacks (ECM restoration, belly sag, morning cardio). An N=1 experiment (tracking ECM, sleep, HRV) showed that improvements happen in non-linear, threshold-based jumps – exactly as attractor theory predicts.

Part II: The Eternal Skeleton and the Transient Dance

9. Two Fundamental Classes of Persistence

9.1 Non-Dissipative (Conservative) Structures – The Eternal Skeleton

- No energy loss; total energy stays the same (or exchanges only within a closed system)
- Time-reversible at the level of intrinsic persistence (though weak interactions violate CP/T)
- Stable because of conservation laws (charge, baryon number, energy)
- Do not age, do not die (or are effectively eternal on all observable timescales)

The three fundamental metronomes (see *Threefold Anchor* paper) are the most conservative layer of the eternal skeleton:

Metronome	Role
Electron	Lightest charged lepton; invariant Compton frequency
Neutrino mass eigenstates (ν_1, ν_2, ν_3 collectively)	Effectively stable; theoretically invariant frequencies
Proton	Lightest baryon; stability from baryon number conservation

These three are continuously recycled through all dissipative systems. They are the invariant substrate.

Other conservative structures include: Planck-scale granular spacetime, quantum fields, stable atoms, and the universe as a whole.

These make up the **eternal skeleton** – mindless, timeless, the foundation.

9.2 Dissipative Attractors – The Transient Dance

- Need constant energy and must dump entropy
- Time-irreversible (arrow of time)
- Stay stable through feedback loops, homeostasis, and energy use
- Finite lifetime – they age, decay, and eventually collapse
- **What binds all dissipative systems** (a bacterium, a brain, a galaxy, a society) is the continuous recycling of the three eternal metronomes. Every dissipative system operates by exchanging electrons, protons, and neutrinos with its environment.

Examples: living cells, metabolic networks, ecosystems, human bodies, conscious minds, societies, economies, fantasy attractors.

These are the **transient dance** – everything that is born, lasts a while, and dies.

10. Why Mind Requires Dissipation

Every known system with integration, self-reference, valence, learning, and goal-directedness is **dissipative**. No non-dissipative mind has ever been seen. So we conclude that, in this framework, the only kind of consciousness we have evidence for is dissipative. This is a best-explanation inference, not an absolute proof.

11. The Universe as a Non-Dissipative System

The universe as a whole has no outside environment. Its total energy is conserved (or at least doesn't exchange with anything else). So it is non-dissipative:

- No metabolism (doesn't eat, breathe, or repair itself)
- No learning (its laws don't change from experience)
- No valence (no likes or dislikes)
- No goal-directedness (it just follows its equations, doesn't aim for a basin)

Therefore, the universe is **not a mind**. Any global attractor (e.g., a de Sitter vacuum state) is a conservative, eternal, mindless pattern.

12. Why a Theistic God Is Extremely Unlikely (Probabilistic)

A theistic God is supposed to be: conscious, intentional, personal, eternal, unchanging, and self-sufficient.

- Consciousness (as far as we know) requires **dissipation**.
- Eternal, unchanging, self-sufficient means **non-dissipative** (conservative).

No known entity can be both dissipative (aging, needing energy) and non-dissipative (eternal, self-sufficient). So, under this framework, a theistic God is extremely implausible. The universe itself is already the only non-dissipative system. Adding a separate non-dissipative God is unnecessary and, by definition, cannot interact with anything.

13. The Map of Existence

TRANSIENT DANCE (Dissipative Attractors)

- Societies
- Minds
- Cells
- Ecosystems
- Human Body (ECM, HRV)
- Animal Life
- Metabolism (energy + entropy)

↓ (emergence)
ETERNAL SKELETON (Conservative Persistence Structures)
- Atoms
- Three metronomes: electron, neutrino mass eigenstates, proton
- Quantum Fields
- Planck Scale (granular spacetime) ← FLOOR

Legend: Floor = Planck-scale granularity – the hard, eternal limit. Skeleton = quantum fields, stable particles, atoms – conservative structures. Dance = dissipative attractors – minds, life, society.

14. Open Questions for Future Work

- **Formal cross-scale unification:** How can we unify conservation-based stability (QFT) and dissipative attractors (nonlinear dynamics) with a single mathematical object?
- **Dissipation-consciousness link:** Is dissipation absolutely necessary for consciousness, or just a fact about life on Earth?
- **ECM mechanism:** What is the exact chain from ECM changes to nervous system regulation to subjective feelings?
- **Persistence vs. selection:** Is persistence a basic feature of reality, or do we only notice stable things because unstable ones vanish?
- **Fantasy attractor measurement:** Can we really measure correction latency, basin depth, and external coupling in real social systems?
- **Coupling equations:** How exactly does the rate of memory inscription depend on metronome frequency? (See the *Threefold Anchor* paper for a working placeholder.)

15. Conclusion

The attractor framework gives a naturalistic picture of reality:

- **Non-dissipative (conservative) structures** – the eternal, mindless skeleton, anchored by the three fundamental metronomes (electron, neutrino mass eigenstates, proton).
- **Dissipative attractors** – temporary, energy-hungry, and mortal. All minds are in this class.
- **What binds all dissipative systems** is the continuous recycling of the same three eternal metronomes.
- The universe as a whole is non-dissipative, therefore not a mind.
- A theistic God is extremely implausible under this framework.

We don't need religious language. We have the eternal skeleton and the transient dance: persistence without transcendence, structure without the supernatural.

The dance is finite, fragile, and precious. The skeleton is eternal, but mindless.

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This rewrite is ready to replace the old post. It now correctly reflects the threefold metronome framework, includes the recycling insight, and cross-references the newer paper.

The Sperm and the Dome: An Ancient Pattern

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You have seen the diagram.

It appears in biblical studies textbooks, online articles about ancient Near Eastern cosmology, and even on apologetics websites trying to explain away the plain meaning of Genesis.

A flat disc earth.

A solid dome (*rāqīa'*) above.

A cosmic ocean below.

The sun, moon, and stars move inside the dome.

Rain enters through literal windows in the sky.

It looks primitive.

Like a child's drawing of a snow globe.

But look again. Squint. Rotate the image ninety degrees.

What do you see?

A sperm.

A single, potent, ordered structure swimming through an infinite ocean.

- The **head** is the dome – the firmament containing the celestial lights.
- The **midpiece** is the flat disc of the earth – the solid ground where life emerges.

- The **tail** is the cosmic ocean below – the chaotic, fertile waters from which everything springs.

And the whole thing is adrift in an infinite, dark, supportive medium – the same infinite ocean that appears in Genesis as the *tehom* (the deep), the primordial waters over which the Spirit of God hovers.

This is not a coincidence.

It is a **pattern**.

The Attractor Framework: A Lens

In my attractor framework, **persistence under perturbation** is the fundamental mark of reality.

Two classes of attractors exist:

- **Conservative attractors** – the eternal skeleton: electrons, protons, neutrinos, photons. They are time-symmetric, unchanging, and provide the invariant rhythms of the universe (the “metronome”).
- **Dissipative attractors** – the transient dance: life, mind, society, and everything that requires energy flow, exports entropy, and eventually runs down.

A sperm is a **low-entropy conservative structure** – a packet of highly ordered information (DNA) that is relatively stable and fuel-efficient.

It swims through a **high-entropy dissipative environment** – the chaotic, nutrient-rich ocean of potential.

Its journey is a perturbation.

Fertilisation, when it succeeds, is a **phase transition**: the emergence of a new, more complex attractor (the zygote) from

the coupling of two initial basins (sperm and egg).

The subsequent explosion of growth – cell division, differentiation, morphogenesis – is the **transient dance** of life.

The Ancient Mind Saw the Same Pattern

The biblical authors had no microscopes. They could not see a sperm cell.

But they observed the world around them, and they projected the **microcosmic pattern of fertilisation** onto the **macrocosmic canvas of the sky**.

- The **infinite ocean** is the primordial *tehom* – the raw, undifferentiated potential before creation.
- The **sperm** is the *rāqīa'* – the solid dome that separates and organises the waters above from the waters below.
- The **fertilised egg** is the cosmos itself – the flat disc of the earth, the lights in the dome, the living creatures on the land.

The ancient author of Genesis was not a scientist.

But he was a **pattern-recogniser**.

He intuited that the universe begins as a single, ordered perturbation in an infinite, chaotic sea.

That is not primitive superstition.

That is **dynamical intuition**.

The Cosmic Conception Hypothesis

Modern science has its own version of this same pattern.

The “cosmic conception hypothesis” (found in some theoretical papers) compares the fertilisation of a galaxy by a supermassive black hole to the fertilisation of an egg by a sperm.

The black hole is the seed; the galaxy is the developing organism.

The same archetype recurs because it is **structurally necessary**: any self-organising system that emerges from a homogeneous background must be born as a localised, ordered perturbation.

The Genesis diagram is not a mistake.

It is a **map**.

The Sperm in the Infinite Ocean

When you look at that ancient Near Eastern cosmology diagram – the flat earth, the solid dome, the cosmic ocean – you are looking at a **sperm in an infinite ocean**.

The author could not have known this consciously.

But the attractor of reality – the deep structure of persistence under perturbation – guided his hand.

- The infinite ocean is the potential.
- The sperm is the first perturbation.
- The fertilised egg (the cosmos) is the new attractor basin.
- And the dance of life – stars, planets, minds, civilisations – is the transient, dissipative dance that follows.

The diagram is not a coincidence.

It is a **necessary projection of a universal dynamic**.

The sperm and the dome are the same pattern, separated by millennia and scale.

You are free to see it or not.

But once you see it, you cannot unsee it.

The mountain does not negotiate.

Neither does the Hebrew text.

Neither does the sperm.

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You are free to see it or not. But once you see it, you cannot unsee it. The mountain does not negotiate. Neither does the Hebrew text. Neither does the sperm.

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The Cosmology of Genesis: Flat Earth, Solid Dome, and Cosmic Ocean

A Plain-Language Guide to What the Bible Actually Says

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Note on genre: This is an open letter and historical-philological analysis, not a peer-reviewed journal article. It draws on mainstream biblical scholarship, standard Hebrew lexicons, and ancient Near Eastern comparative materials. The primary evidence comes from narrative and descriptive passages (Genesis 1, Job 37–38, Ezekiel 1, etc.). The analysis is addressed to scholars who have dismissed the flat-earth reading as “silly.”

Abstract

This paper examines the physical description of the universe in the Hebrew Bible. Using standard Hebrew dictionaries (BDB, HALOT, Holladay), ancient Near Eastern texts, and the plain meaning of the biblical passages, we show that the biblical authors believed:

- The earth is a **flat disc**.
- A **solid dome** (*rāqīaʿ*, “firmament”) covers it, separating the waters below from a **cosmic ocean above**.
- The sun, moon, and stars move inside this dome.
- Rain enters through literal **windows** or **sluices** in the dome.
- The earth rests on **pillars** and **foundations**, and has **ends** and **corners**.

We provide a representative list of verses, address common apologetic reinterpretations, and reference standard scholarly reconstructions of ancient Hebrew cosmology. The Bible's cosmology closely matches those of Mesopotamia and Egypt. This poses no problem for a non-inerrancy reading, but it is a severe challenge for any claim of divine scientific inerrancy.

Introduction: What Did the Biblical Authors Actually Believe?

The question is not whether the Bible is “true” in a theological or moral sense. The question is: **what did its human authors believe about the physical structure of the world?**

Modern readers often project a post-Copernican, spherical, heliocentric universe onto the ancient text. But a straightforward reading – using standard Hebrew lexicons and the context of the ancient Near East – shows that the Hebrew Bible shares the common model of a flat earth under a solid sky-dome, with a cosmic ocean above and below.

For standard scholarly reconstructions (with diagrams), see:

- [Bible Odyssey \(Society of Biblical Literature\)](#) – includes a clear diagram of the flat earth, solid dome, and cosmic waters.
- [Wikimedia Commons](#) – a modern, clearly labelled reconstruction.
- [Biblical Archaeology Society](#) – comparative diagrams of Israelite, Babylonian, and Egyptian models.

For print references, see Smith (1998) and Keel (1997).

The Solid Dome: *Rāqīaʿ* (רָקִיעַ)

The word *rāqīaʿ* occurs 17 times in the Hebrew Bible. Its verbal root *rāqaʿ* (רָקַע) means “to beat, stamp, or spread out by hammering” – the same word used for beating metal into thin plates (Exodus 39:3). The noun denotes a **solid, hammered-out dome**.

Lexical Evidence

Lexicon	Definition
Brown-Driver-Briggs (BDB)	“Extended surface, (solid) expanse (as if beaten out)”
Holladay	“Beaten metal ‘plate’, firmament (i.e. vault of heaven, understood as a solid dome)”
Koehler-Baumgartner (HALOT)	“Firmament, vault of heaven, understood as a solid dome”

Key Verses by Genre

Narrative (primary evidence)

- **Genesis 1:6–8** – God says, “Let there be a *rāqīaʿ* in the midst of the waters, and let it separate the waters from the waters.” He calls the *rāqīaʿ* *shamayim* (sky/heaven). The dome is placed inside a cosmic ocean, dividing “waters below” from “waters above.”
- **Genesis 1:14–18** – The sun, moon, and stars are placed **inside** the *rāqīaʿ*. They are not above the dome; they are embedded in its inner surface.

Wisdom poetry (corroborative)

- **Job 37:18** – “Can you, like Him, spread out the skies, hard as a mirror of cast metal?” This unambiguously describes solidity.

Apocalyptic vision (structural)

- **Ezekiel 1:22–26** – Above the living creatures is “something like a *rāqīaʿ*, sparkling like ice (or crystal).” Above this *rāqīaʿ* is the throne of God. This is a solid platform, not empty space. Even though Ezekiel’s vision is symbolic, it describes physical properties (solid, crystalline) as part of the visionary architecture.

Hymnic (doxological, not load-bearing)

- **Psalms 19:1** – “The heavens declare the glory of God; the skies (*rāqīaʿ*) proclaim the work of His hands.”
- **Psalms 150:1** – “Praise God in His sanctuary; praise Him in His mighty *rāqīaʿ*.”
- **Daniel 12:3** – “Those who are wise will shine like the brightness of the *rāqīaʿ*.”

These do not prove solidity on their own, but they assume the same conceptual framework. No text contradicts the solid-dome interpretation.

Ancient Translations

- **Septuagint** (3rd century BCE, Jewish translation): *stereōma* (στερέωμα) – a solid or firm structure.
- **Latin Vulgate**: *firmamentum* – something firm, a support.

Scholarly Confirmation (Including Believing Scholars)

- **Seely (1991–1992)** – Demonstrates that *rāqīaʿ* in context refers to a solid dome.
 - **Walton (2011)** – Affirms that the ancient Israelites believed in a solid *rāqīaʿ*, even though his main argument is that Genesis 1 assigns functions rather than making material claims.
 - **Greenwood (2015)** – “A vaulted dome above the earth, a ‘firmament,’ like the ceiling of a planetarium.”
 - **Parry (2014)** – “A flat earth at the centre of the cosmos, with a vast ocean in the sky.”
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The Waters Above – A Cosmic Ocean

If the dome is solid and separates “waters above” from “waters below”, those waters must be literal.

- **Genesis 1:6–7** (as above).
- **Psalms 148:4** – “Praise Him, highest heavens, and you waters above the heavens.”
- **Genesis 7:11** – “All the fountains of the great deep burst forth, and the windows of the heavens were opened.” The word *arubbah* means “lattice window” or “sluice.” Rain comes through openings in the solid dome.
- **Genesis 8:2** – “The fountains of the deep and the windows of heaven were closed.”
- **2 Kings 7:2, 19** – “The Lord will open the windows of heaven.”
- **Isaiah 24:18** – “The windows of heaven are opened, the foundations of the earth tremble.”
- **Malachi 3:10** – “See if I will not open the windows of

heaven and pour out blessing.”

The Flat Earth: Pillars, Foundations, Ends, and Corners

A spherical earth does not have pillars, foundations, ends, or four corners. The Bible uses all these terms repeatedly.

Pillars of the Earth

- **1 Samuel 2:8** – “For the pillars of the earth are the Lord’s, and on them He has set the world.”
- **Job 9:6** – “He shakes the earth out of its place, and its pillars tremble.”
- **Psalms 75:3** – “When the earth and all its dwellers quake, it is I who bear its pillars firmly.”
- **Job 26:11** – “The pillars of heaven tremble and are stunned at His rebuke.”

Foundations of the Earth

- **Psalms 104:5** – “He set the earth on its foundations, so that it should never be moved.”
- **Job 38:4–6** – “Where were you when I laid the foundations of the earth? ... On what were its bases sunk?”
- **2 Samuel 22:8** – “The foundations of the heavens shook.”

Ends of the Earth (assumes a bounded earth)

- **Deuteronomy 28:49** – “A nation from afar, from the end of

the earth.”

- **Isaiah 45:22** – “Turn to Me and be saved, all you ends of the earth.”
- **Psalms 67:7** – “All the ends of the earth will fear Him.”
- **Psalms 72:8** – “He shall have dominion from sea to sea... to the ends of the earth.”

Four Corners of the Earth

- **Isaiah 11:12** – “He will assemble the scattered of Judah from the four corners of the earth.” The word *kanpôt* (wings/edges) is a directional idiom whose origin in a flat-earth, bounded-space worldview is widely recognised.
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The Vaulted Dome Over a Flat Disc

- **Amos 9:6** – “The One who builds His upper chambers in the heavens and has founded His vaulted dome over the earth.”
- **Isaiah 40:22** – “He sits enthroned above the circle of the earth.”

On *chûg* (“circle”)

The word *chûg* occurs in three places: Job 26:10 (“He has inscribed a circle on the face of the waters” – a flat circular boundary), Proverbs 8:27 (same), and Isaiah 40:22. The Akkadian cognate *khâqu* means “to draw a circle.” The Septuagint translates *chûg* as *gyros* (circle), not *sphaira* (sphere). The same verse also says God “stretches out the heavens like a curtain” – a flat surface, not a

spherical shell.

Therefore, *chûg* denotes a **disc**, not a ball.

The Cosmic Ocean Below

- **Genesis 7:11** – “The fountains of the great deep burst forth.” (Subterranean ocean)
 - **Psalms 24:2** – “For He has founded it upon the seas and established it upon the rivers.”
 - **Exodus 20:4** – “You shall not make an idol... of anything that is in the waters under the earth.”
 - **Psalms 136:6** – “He spread out the earth upon the waters.”
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Comparison with Ancient Near Eastern Cosmologies

The Hebrew cosmology is closely analogous to those of Israel’s neighbours.

- **Mesopotamia:** The *Enuma Elish* describes Marduk fixing a solid sky-barrier to hold back the cosmic waters. This is the functional equivalent of the Hebrew *rāqīa’*.
- **Egypt:** The sky goddess Nut arches her body over the earth god Geb, forming a solid vault with stars attached. The Pyramid Texts describe the sky as “a metal vault” or “iron” – directly parallel to Job 37:18 (“hard as a mirror of cast metal”).

The Hebrew *rāqīa’* fits comfortably within this regional

intellectual context. The Bible is not scientifically unique; it reflects the common ancient Near Eastern worldview.

Geocentric Passages (Consistent with the Model)

These verses are not flat-earth proof on their own, but they presuppose a geocentric, non-rotating, bounded cosmos – fully consistent with the flat-earth, solid-dome model.

- **Joshua 10:12–13** – The sun and moon stand still at Joshua’s command. This implies a moving sun and a non-rotating earth.
- **2 Kings 20:11 / Isaiah 38:8** – The shadow on the sundial moves backward. Again implies a geocentric system.
- **Ecclesiastes 1:5** – “The sun rises and the sun sets, and hurries to its place where it rises.” Phenomenological geocentrism.
- **Psalms 19:4–6** – The sun runs its circuit from one end of the heavens to the other.

These passages are not necessary to demonstrate flat-earth cosmology, but they are part of the broader biblical cosmic picture.

The Verse Often Misused by Apologists: Job 26:7

Job 26:7 – “He stretches out the north over the void and hangs the earth on nothing (*belî-māh*).”

This is the only verse that might suggest a free-floating earth. However:

- *Belî-māh* is a rare construction; it may mean “**without any visible support,**” not “without any support at all.” Clines (1989) notes that the phrase indicates “no visible means of support” rather than absolute suspension.

One ambiguous verse does not overturn the dozens that describe pillars, foundations, and a solid dome. The majority witness of the Hebrew Bible is flat-earth, solid-dome cosmology. If Job 26:7 is taken as a late, more abstract cosmological statement, it represents a minority view and does not negate the consistent picture in Genesis, Psalms, and other prophets.

The Inerrancy Dilemma (and the Phenomenological Language Defence)

If one affirms that the Bible is a human document, the presence of ancient cosmology presents no crisis. But if one claims divine inerrancy – that the Bible is without error in all that it affirms – one faces a dilemma:

- **Admit** that God described His creation in terms that are scientifically false (a flat earth, a solid dome).
- **or Reinterpret** the plain meaning as metaphor or accommodation – but then the words lose stable meaning, and any verse can be explained away.

A common inerrantist response is the “phenomenological language” defence: the Bible describes things as they appear to human observers (e.g., “sunrise”) without making scientific

claims. This defence works for atmospheric or observational descriptions (sunrise, sunset, the shadow on a sundial). However, it **fails** for the structural, material claims of Genesis 1: a solid dome, a cosmic ocean, and windows in the sky. These are **not appearances**; they are physical mechanisms. No one “observes” a solid dome or waters above the sky.

Therefore, the phenomenological defence cannot rescue the inerrancy of Genesis 1 without effectively admitting that the text is making false scientific statements.

This paper does not require any particular theological conclusion. It simply presents the evidence.

Conclusion

The evidence is consistent and extensive. The Hebrew Bible presents the universe as:

- a **flat disc**,
- covered by a **solid dome** (the *rāqīa‘*),
- with a **cosmic ocean above** and a **cosmic ocean below**.
- The sun, moon, and stars move inside the dome; rain enters through literal windows.
- The earth rests on pillars and foundations and has ends and corners.

This cosmology is closely analogous to that of Israel’s ancient Near Eastern neighbours. It is the plain meaning of the text, confirmed by every standard Hebrew lexicon and by believing scholars such as Walton, Greenwood, Parry, and Seely.

The mountain does not negotiate. Neither does the Hebrew text.

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Attractor Dynamics in Belief Formation, Correction, and Mental Health: A Research Programme

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Abstract

This paper applies the attractor framework (persistence under disturbance) to **belief systems** and **mental health**.

We introduce three measurable concepts:

- **Attractor depth** – how rigid or unstable a belief is.
- **Error half-life** – how long it takes for a false belief to fade after correction.
- **Coupling strength to error signals** – how open a belief is to reality checks.

We contrast two disorders:

- **OCD** (obsessive-compulsive disorder) may involve *overly deep* (rigid) attractors.
- **Schizophrenia** may involve *too shallow* (unstable) attractors – with appropriate caution.

We propose experiments to measure error half-life, detect early warning signs of belief shifts (while managing false alarms), and find the optimal pace for correction (“critical damping”).

We also outline:

- **N=1 attractor engineering** (self-experimentation)
- **Wearable early-warning systems** for relapse prevention (discussing lag time and false positives)
- **Cross-coupling** as a measure of resilience (distinguishing healthy from brittle coupling)

This paper is a **research roadmap**, not a finished theory.

1. Introduction

In the attractor framework, your mind is a **dissipative attractor of your whole body** – a pattern that needs energy, can be disturbed, and can adapt (Galida, 2026, *Persistence Under Perturbation*).

Beliefs are smaller attractors inside that landscape. Their stability determines how easily you update when faced with contradictory evidence.

This paper turns attractor concepts into testable ideas about how beliefs form, stick, and change – and how to help them change. It is a roadmap, not the final word.

2. Attractor Depth and Mental Disorders

Neurocomputational models suggest a contrast between OCD and schizophrenia, but we must be careful.

Disorder	Attractor Property	Behavioural Sign	Example Task
OCD	Too deep (rigid)	Stuck, hard to switch	Reversal learning (changing rules)
Schizophrenia	Too shallow (unstable)	Jumpy, over-sensitive to noise	Delayed match-to-sample with distractions

Evidence:

- Unmedicated OCD patients make many perseverative errors

on reversal-learning tasks; this correlates with symptom severity (Remijnse et al., 2006).

- Reduced NMDA/GABA function in schizophrenia makes attractor networks unstable, leading to cognitive slips and delusions (Rolls, 2021).

Caveats:

- Mental disorders are complex, with multiple attractors. We are talking about symptom clusters, not whole-disorder diagnoses.
- Disorders like anxiety, depression, and personality disorders lie in the middle – their attractors are **domain-specific** (e.g., depression has deep negative-belief basins but shallow positive ones).

Prediction: Attractor depth could be measured from behaviour (switching rates, reaction time variability) by fitting a two-state hidden Markov model to reversal-learning data – a hypothesis for future work.

3. Error Half-Life: A New Measure of Belief Rigidity

Error half-life $T_{1/2}$ is the time it takes for a false belief's confidence to drop by half after you present corrective evidence.

How to measure it

1. Give people a false belief (e.g., a made-up fact).
2. Give them correct information (text, video) every day for a while.

3. Ask them to rate their belief confidence (0–100) at intervals.
4. Assume a simple **exponential decay** model $C(t)=C_0e^{-t/\tau}$ as a starting point (real decay could be sigmoidal or power-law).
5. Then $T_{1/2}=\tau\ln 2$.

What we expect in different conditions

- **Delusional disorders** → very long half-life (deep attractor).
- **Depression** → long half-life for negative self-beliefs, but normal for positive ones (asymmetric updating).
- **Anxiety** → short half-life, but possible overshoot (shallow basin → oscillation).

Therapeutic application

The goal is to **shorten error half-life**. Methods like **spaced repetition** and **active recall** (quizzing) could help – they strengthen corrective memory traces, similar to memory reconsolidation.

Relationship to attractor depth

Attractor depth is a **static** measure (inertia). Error half-life is a **dynamic** measure (recovery speed). They are related but not the same: depth gives initial resistance, half-life gives the time course. We need both.

4. Critical Slowing Down Before

Belief Shifts

Before a sudden change of belief (e.g., leaving a cult, political conversion, therapy breakthrough), you may see **early warning signals** – rising variance, higher autocorrelation, slower recovery from small disturbances. This is called **critical slowing down** (Scheffer et al., 2009).

How to detect it

- Collect daily belief ratings, mood scores, or social media sentiment.
- Compute rolling variance and autocorrelation with a moving window.
- If they exceed a baseline threshold, a shift may be coming.

False positive problem

Rising variance can be caused by other things (seasonal mood, life events). To reduce false alarms:

- Use control periods (compare with a stable trait belief).
- Combine multiple signals (HRV, sleep, activity) with self-report.
- Use a conservative threshold (e.g., 3 standard deviations above baseline).

This is a research tool, not a clinical diagnostic yet.

Prediction: You can detect these signals in diaries before a person deconverts, changes politics, or relapses into depression. A well-timed prompt might help, but false positives must be managed.

5. Optimal Correction Dosing (Critical Damping)

From control theory, there is an **optimal pace** for delivering corrections: not too slow (oscillates), not too fast (overshoot/backfire). This is called **critical damping**.

N=1 protocol

- Vary the gap between corrections (massed vs. spaced).
- Track belief confidence over time.
- Measure how quickly and smoothly it changes.

Hypothesis: Spaced correction (e.g., daily micro-doses) works better than one big confrontation – a well-known finding in memory research (Ebbinghaus, spaced repetition). The twist is applying it to **beliefs**, which are more emotional and identity-linked. The mechanism may be similar, but emotional valence may change the optimal schedule.

6. Fantasy vs. Shared Reality Attractors – Operational Metrics

Metric	Low Corrective Permeability (Fantasy)	High Corrective Permeability (Shared Reality)
Coupling to error signals	Low (few fact-checks, no update)	High (active correction)

Metric	Low Corrective Permeability (Fantasy)	High Corrective Permeability (Shared Reality)
Basin depth	Deep (needs large evidence)	Shallow (small anomalies work)
Error-correction latency	Long (days/weeks)	Short (hours/days)
Information diversity tolerated	Low (echo chamber)	High (multiple sources)

Double-bind computational model

In conspiracy cultures, contradictory evidence gets reinterpreted as confirmation (“cover-up”). We can model this as an **asymmetric Bayesian update**: $P(\text{belief} \mid \text{contrary evidence}) \geq P(\text{belief} \mid \text{supporting evidence})$

Example: Start with belief probability 0.9. A contrary piece of evidence that would normally lower it to 0.3 is instead interpreted as evidence of suppression, so the new probability stays at 0.85. The belief drifts only slowly.

Breaking the loop: Indirect interventions work better than direct refutation:

- Point out internal inconsistencies.
- Seed doubt through trusted messengers.
- Use graduated reality-testing.

7. Wearable Early Warning of

Attractor Shifts

Protocol: Use consumer wearables (HRV, skin conductance, actigraphy, sleep) plus daily self-reports (mood, belief rigidity). Compute rolling variance and autocorrelation in real time.

Evidence: Drops in nocturnal HRV preceded a depressive relapse in a case study (Tonge et al., 2024).

Prediction: Rising variance/autocorrelation in HRV, plus mood volatility, can predict an imminent crisis.

Latency and false alarms

- Useful lead time is **days**, not hours. HRV changes can appear 1–2 weeks before relapse.
- False positives are a concern. Use a **two-stage alert**: first detect statistical anomaly, then confirm with a brief self-report (EMA).
- Specificity needs to be established in longitudinal N=1 studies.

Intervention: When thresholds are crossed, trigger a micro-intervention (mindfulness, therapist call) – a closed-loop prevention system.

8. N=1 Attractor Engineering – Minimal Perturbation Protocol

Goal: Find the smallest intervention that shifts a maladaptive attractor (phobia, obsessive thought) without causing oscillation or backfire.

Procedure:

1. Define the target (e.g., fear rating 0–10).
2. Start with very low-intensity perturbations (e.g., brief exposure, mild counter-evidence).
3. Measure change after each step.
4. When a threshold shift is detected (say, 30% reduction – a provisional starting point; adjust based on baseline variability), record the dose.
5. Back off slightly and check stability.

Principle: Never collapse an attractor faster than reality can correct. Use fine steps (5–10% increments) and frequent monitoring. This is **precision self-regulation**. Generalisability from N=1 to populations is an open question (see Section 12).

9. Cross-Coupling as a Resilience Metric

Hypothesis: High cross-domain coupling (e.g., HRV ↔ mood ↔ sleep) indicates **adaptive resilience** – the system is coordinated and self-correcting. Low coupling or unidirectional cascades indicate **brittle coupling** (a disturbance in one area spreads uncontrollably).

Measurement: Collect simultaneous time series (HRV, sleep, activity, mood). Compute cross-correlation or Granger causality.

- **Adaptive** = bidirectional, with negative feedback (e.g., poor sleep → lower HRV → mood drop → social support → sleep improves).
- **Brittle** = unidirectional, amplifying (e.g., sleep loss → stress → more sleep loss).

Prediction: Good recovery from stress shows strong bidirectional influences. Low coupling or unidirectional cascades will precede breakdowns.

Intervention: Improve adaptive coupling with synchrony exercises (e.g., daily breathing with light exposure, yoga, social rhythm therapy). Testable in an N=1 self-tracking experiment.

10. Philosophical Extensions (Brief)

- **Are attractors real?** Yes, as structural patterns (process metaphysics). They have causal power – like the path of a river.
 - **Free will as attractor autonomy** – acting according to your own attractor is compatibilist freedom. Our framework adds that freedom is about basin width and flexibility, not a binary.
 - **Cosmic attractor** – speculative. The universe might have a global attractor (e.g., heat death), but it's untestable now.
 - **Darwinian problem of evil** – animal suffering is a strong challenge to theism; the “deep harmonies” hypothesis is hard to falsify.
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11. Open Questions and Next Steps

- Can error half-life be measured reliably from smartphone-based belief tracking? What decay model fits

best?

- What is the dose-response curve for corrective interventions? Linear, exponential, or threshold? How does it vary with attractor depth?
 - Can wearables detect early warning signs before a psychiatric relapse? What are the false-positive rates and lead times?
 - Does adaptive cross-coupling improve after synchrony-based therapies?
 - How are error half-life and attractor depth related? Same thing at different timescales, or different constructs?
 - How can N=1 findings be aggregated into population-level knowledge? One approach: meta-analysis of single-subject time series using hierarchical Bayesian models.
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12. Conclusion

This research programme puts attractor dynamics to work on beliefs and mental health.

We have proposed **testable metrics** (attractor depth, error half-life, coupling strength) and **experimental protocols** for N=1 self-engineering and early warning.

The framework provides a naturalistic language for understanding why some beliefs resist correction and how to intervene optimally.

We acknowledge our limitations – the exponential decay assumption, false positives in early warning, and the generalisability of N=1 results – and treat them as open questions for future work.

This extends the attractor trilogy into **actionable health and**

epistemology.

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