

One Resonance, Two Faces

Toward a Rewrite Theory of the S1 $\leftrightarrow$ f $\leftrightarrow$ S2 Boundary

J. Konstapel, 21-7-2026, Leiden

S

Abstract

This essay proposes that Space-1 (the physical, sensory, mass-bearing domain) and Space-2 (the mythic, experiential domain accessed in states such as Robert Monroe's Focus levels) are not two ontologically separate regions joined by a bridge, but two aspects of a single self-resonating structure. We build this claim in five steps: (1) Peter Rowlands' nilpotent reformulation of the Dirac equation, in which a particle state is not a free-standing object but one half of a zero-totality condition with the vacuum; (2) the fiber structure this creates, in which the map from Space-2 (the abstract, algebraic layer) to Space-1 (the physical mass-shell) is well-defined, but the reverse map is not a function, only a choice of section on a fiber isomorphic to $S^2 \times \mathbb{Z}_2$; (3) the Williamson–van der Mark model, in which the electron itself is a photon self-confined in toroidal form, giving the algebraic fiber a physical referent — light folded back on itself; (4) Wheeler's one-electron universe, which reframes the $\mathbb{Z}_2$ (particle/antiparticle) part of that fiber not as two objects but as two phases of a single rotating trajectory; (5) Robert Rosen's closure to efficient causation, which supplies the causal structure of Space-2 without recourse to an external cause, and which we identify with the reparation map Φ of an (M,R)-system, paired with the ordinary metabolic map f of Space-1. The essay closes with a single testable, falsifiable prediction connecting the two domains: a precession relation between spin-like fiber coordinates and the transition dynamics reported at the Monroe Institute. This is presented throughout as a hypothesis under construction, not as an established result.

1. The Problem: Two Domains, One Map or Two?

Nearly every mature science eventually stops describing isolated objects and starts describing the abstract space in which those objects take their possible states: phase space in mechanics, latent space in machine learning, fitness landscapes in evolutionary biology, Hilbert space in

quantum mechanics, state space in neuroscience. Each of these is, functionally, a Dual Space — a term Peter Rowlands gave to one specific, technical instance of this pattern in physics. The same pattern recurs, independently and in a different vocabulary, across the history of human consciousness research: the Egyptian Sahu, the Persian mundus imaginalis, the Kabbalistic Sefirot, Jung's collective unconscious, Robert Monroe's Focus-level system.

The question this essay asks is not whether such a complementary domain exists — that has been asked, and answered in the affirmative, independently, dozens of times across cultures and centuries. The question is what the map between the physical domain (Space-1) and this complementary domain (Space-2) actually is, and whether it can be written down with enough precision to be wrong.

We denote the two domains and the map between them:

$$Space-1 \rightleftharpoons f Space-2$$

and treat f , and its putative inverse, as the object of inquiry.

2. The Algebraic Layer: Nilpotence as Self-Cancellation

Rowlands rewrites the relativistic energy–momentum–mass relation $E^2 - p^2 - m^2 = 0$ as the vanishing square of a single operator:

$$A = kE + i(p_x) + j(p_y) + k(p_z) + jm, \quad A^2 = 0$$

built from quaternion units i, j, k . The nilpotence condition $A^2 = 0$ is not incidental — it is the entire content of the theory. A particle state, in this formulation, is one half of a zero-totality condition: the operator annihilates itself, and what remains after the cancellation is, by construction, nothing. Rowlands states this directly: a particle represents "half a blueprint of the universe," with the vacuum supplying the other half so that the total sum remains zero.

This is already a first, precise answer to "what is Space-2 made of": not a second substance standing opposite matter, but the self-cancelling structure that a single particle state must satisfy in order to exist at all. Existence, in this formalism, is a local bookkeeping event within a total that is permanently zero.

3. The Fiber: Why There Is No Single Way Back

Define the mass shell $M = \{(E,p,m) : E^2 - p^2 - m^2 = 0\}$ — the physical, measurable quantities of Space-1. The projection

$$\pi : \{A : A^2 = 0\} \rightarrow M, \quad \pi(A) = (E, p, m)$$

is well-defined: every nilpotent A determines exactly one point of M . This is the forward direction of f , and it holds without qualification.

The reverse direction does not exist as a function. For a fixed point $(E,p,m) \in M$, the set of algebraic elements A mapping to it — the fiber $\pi^{-1}(E,p,m)$ — is not a single point. Working through the spin structure carried by the Pauli term $\sigma \cdot p$, the fiber is isomorphic to $S^2 \times \mathbb{Z}_2$: a two-sphere of spin orientations, doubled by the discrete particle/antiparticle choice.

This has a direct consequence for any theory that wants to move from Space-1 back to Space-2. There is no unique inverse map. There is only a section — a consistent choice of one fiber point for every base point — and different such choices are equally valid, equally "correct" readings of the same underlying structure. The Williamson–van der Mark toroidal geometry, discussed next, is one such section. A birth-time/birth-place calculation of the kind explored elsewhere in this series is another. Neither is uniquely privileged by the algebra alone.

4. The Physical Referent: Light Folded Into Itself

The Williamson–van der Mark model proposes that the electron is not an elementary point particle but a single photon self-confined into a stable toroidal configuration — light, but in a closed topological state. A free photon satisfies $E = pc$; once its propagation is arrested into a closed loop, the stored energy manifests as rest mass via $E = mc^2$. The double winding of the circulating energy generates the intrinsic angular momentum identified with spin- $1/2$, and the orientation of the internal field lines generates net charge. Mass, spin, and charge are not independent, externally supplied parameters; they are three readings of one electromagnetic process folded back on itself.

This gives the algebraic fiber of Section 3 a physical body. Where Rowlands supplies the algebra that any self-consistent state must satisfy, Williamson and van der Mark supply one concrete geometric realization of that algebra — a specific section of the bundle. The correspondence is not total: Rowlands does not derive the toroidal geometry, and Williamson–van der Mark do not derive the algebra from first principles. What is shared is the underlying claim, stated independently in each formalism, that matter is confined light — a claim that recurs, in non-mathematical language, in Plato's identification of light with the Good, and in the Kabbalistic doctrine of Or Ein Sof, the light of the Infinite prior to the self-contraction (tzimtzum) that permits a finite world to appear at all. The structural feature these three share is not merely the word "light" but a specific operation: self-limitation without external input — the torus confining itself, the tzimtzum contracting itself, the nilpotent operator cancelling itself. This, and not superficial vocabulary, is the actual point of contact between the physical and the mystical vocabularies.

5. One Resonance, Not Two: Wheeler's Correction to the Fiber

In 1940, John Wheeler proposed to Richard Feynman that every electron in the universe might be the same single electron, its worldline threading forward and backward through time — a positron being, on this reading, that same electron traveling backward. Feynman later drew on the idea,

in modified form, for the Stückelberg–Feynman interpretation of antiparticles.

This reframes the $\mathbb{Z}_2$ factor of the fiber found in Section 3. Read naively, particle and antiparticle are two objects that happen to sum to zero. Read through Wheeler, they are two phases of one rotating trajectory — the same resonance, encountered at different points of its own cycle. Nothing is duplicated; what appears as multiplicity is a sampling artifact of observing a single fast process at discrete moments. "So many, because it turns so quickly" is, on this reading, not a metaphor but a literal description of aliasing: a single high-frequency rotation, undersampled, produces the appearance of a population.

This correction matters for how the $S^2 \times \mathbb{Z}_2$ fiber is understood. It is not two spheres glued together at a discrete switch; it is one continuous rotation, of which the $\mathbb{Z}_2$ label is a coarse, two-valued readout. We flag, without resolving, the limit of the analogy: Wheeler's proposal accounts at best for electron–positron pairs, not for the full particle spectrum (quarks, neutrinos, muons). Extending "one resonance" to the whole of matter is a stronger claim than Wheeler himself sustained, and is carried here as a working hypothesis of this essay's argument, not as an established physical result.

6. Closure Without an Outside: Rosen's Contribution to Space-2's Causality

Robert Rosen's relational biology supplies what neither Rowlands nor Wheeler addresses directly: a causal structure appropriate to Space-2. In Rosen's (M,R)-systems, a living system possesses closure to efficient causation — its components are each other's causes in a closed loop, requiring no external efficient cause to sustain the loop. This stands in contrast to the linear, externally-triggered causality of classical mechanics.

We assign the two Rosen maps to the two domains: f, the ordinary metabolic map, to Space-1 — external input, resistance, mass, the ordinary sensory world in which causes act on a system from outside. Φ , the repair map, to Space-2 — a map that requires nothing beyond the system itself to sustain its operation, and which we associate with the mythic, non-sensory, "ungraspable" character consistently reported for that domain across traditions. On this reading, the absence of resistance or mass reported for Space-2 experience is not an ad hoc addition to the model but a direct consequence of closure to efficient causation: on the Φ branch there is, by construction, no outside left to supply resistance.

The vertical axis linking observation ("upward," toward Φ) and groundedness ("downward," toward f) is then not a third, separate structure, but the loop itself, viewed along its two directions of traversal. Reports of a persistent connecting thread during out-of-body states — Monroe's own descriptions of an unsevered silver cord linking Focus 1 (the body) to the higher Focus levels — read naturally as the visible form of this same loop: not a third object standing between Space-1 and Space-2, but Φ itself, kept intact while the system moves between its two branches.

7. A Shared Observable: Precession as a Falsifiable Bridge

Sections 3 through 6 establish two independently coherent formalisms — a spin fiber ($S^2 \times \mathbb{Z}_2$) and a causal loop (f/ Φ) — that share a common parameter space (a two-sphere) without any demonstrated reason why they must be the same mathematical object. Two formalisms sharing S^2 as a natural parameter space is common in mathematics and does not by itself establish identity.

To make the identification more than a resemblance, we propose a shared observable. A spin in a magnetic field precesses at the Larmor frequency, $\omega = \gamma B$, a stable, per-system coupling constant. If the identification between spin orientation and f/ Φ balance holds, an analogous precession should govern the angle $\theta(t)$ between the f-pole

(Space-1, sensory, grounded) and the Φ -pole (Space-2, mythic, observing) — driven, in keeping with closure to efficient causation, not by an external field but by the system's own state:

$$\dot{\theta} = \kappa \cdot \Phi(f(\theta))$$

The falsifiable content of this proposal is narrow and specific: if κ behaves as a genuine coupling constant, it should be stable within a given individual across repeated sessions, while varying between individuals. Concretely, the time required for a practitioner to move from Focus 10 to Focus 21 in repeated Monroe Institute sessions should show within-subject consistency. This is, in principle, testable against existing self-report and session-duration material without new instrumentation.

We state the limit of this test plainly. Consistency of the κ values across sessions would support the analogy — it is a necessary condition. It would not prove it — it is not a sufficient one. An independent mechanism explaining why the same SU(2) structure governing spin should also govern the f/ Φ balance in a relational biological system remains absent. Until such a mechanism is found, this stands as hypothesis, not result.

8. Conclusion: One Self-Cancelling Resonance

Drawing the five threads together: a particle state is one half of a self-cancelling algebraic condition (Rowlands), physically realized as light folded into a closed form (Williamson–van der Mark), whose apparent multiplicity is a sampling artifact of a single fast rotation (Wheeler), whose two causal directions are the metabolic and reparative branches of one closed loop requiring no outside (Rosen), and whose two poles — grounded and observing, Space-1 and Space-2 — are traversed, not separated by, that same loop, made visible in reports of a persistent connecting thread during states such as those Monroe catalogued.

On this reading, Space-1 and Space-2 are not two spaces requiring a bridge. They are one resonance, self-cancelling by construction, encountered from two ends of its own rotation. What is proposed here as f is not a bridge between two territories but the operation by which a single self-resonating structure appears, from any one sampled moment, to be two.

This essay does not claim to have proven this identification. What has been shown is narrower and, we think, useful: that each piece of the construction — the nilpotent fiber, the toroidal realization, the one-resonance correction, the causal closure, the precession test — is independently well-formed, that they compose into a single coherent picture without contradiction, and that the picture generates at least one prediction, stated in Section 7, capable of being wrong. That is offered here as the appropriate standard for a hypothesis still under construction, not as a finished theory.

Terms

Nilpotence: An algebraic condition, $A^2 = 0$, under which an operator applied to itself yields zero — self-cancellation rather than external balance.

Fiber / Section: In a projection $\pi: X \rightarrow M$, the fiber over a point m is the set $\pi^{-1}(m)$; a section is a consistent choice of one point in each fiber, i.e., one possible "way back" from M to X , among possibly many.

Closure to efficient causation: Rosen's term for a system in which no component's production requires a cause external to the system — the defining formal property distinguishing living systems from mechanisms, in his account.

Precession: The rotation of an orientation vector (such as spin) under a driving influence, at a rate set by a per-system coupling constant.

This essay is part of the S1 $\leftrightarrow$ f $\leftrightarrow$ S2 series and closes it as currently formulated. Later entries in this line, if any, begin a new construction rather than extending this one.