

# **Transdimensional Painter — A Book Proposal**

**By Kenneth A. Mendoza**

2026-05-13 · v1

## A Working Scientist's Account of One Cross-Domain Framework Under Live Falsification Pressure

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**Genre:** Trade nonfiction — popular physics / popular mathematics **Word count (current draft):** ~70,000 words; target final 75,000–85,000 **Manuscript status:** Full draft complete; under revision; sample chapters polished **Comparable titles:** *The Order of Time* (Rovelli), *Infinite Powers* (Strogatz), *Something Deeply Hidden* (Carroll), *What Is Real?* (Becker), *Chaos* (Gleick), *The Second Kind of Impossible* (Steinhardt)

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### Overview

On the night of May 9, 2026, the framework at the center of this book failed its own most demanding test.

I was at my desk. The result was unambiguous. A specific prediction I had been making for weeks — a sharp, falsifiable claim about how a certain class of dynamical systems should behave under a specific perturbation — turned out to be wrong. The falsification was clean. The data did not flicker. The standard discipline at that moment was to stop. Most working scientists I know would have stopped, set the framework down, and waited a week before opening it again.

I did not stop. I worked through the night. I asked what the falsification actually meant — not in the surface-level sense ("the prediction was wrong, so the framework is wrong") but in the deeper sense ("what *survived* the falsification, and what does the survival tell me about the next experiment"). By morning I had a different framework — narrower, more honest about what it could and could not do, and bound more tightly to the artifact it had been built against. The morning-after work eventually became Chapter 11 and Chapter 12 of this book.

*Transdimensional Painter* is the record of that night and the methodology that produced it.

The book has two simultaneous threads. The first is a memoir of a single discovery process — how a flash on a mathematical animation became an instrument, how the instrument was used to read across seven scientific domains, and how the instrument survived its own most demanding test. The second is a methodology textbook — five short appendices that lay out, in plain English, the specific disciplines the discovery process used. Information exhaust. Nature's compute stack. Bridge discipline. Mechanism-find pattern. Lazy loading. Each is a named protocol that a working scientist or a curious reader can apply tomorrow.

The book sits in the same shelf as Rovelli's *Order of Time*, Carroll's *Something Deeply Hidden*, and Strogatz's *Infinite Powers*. The voice is that of a working scientist explaining a real piece of work in real time, not a science journalist summarizing other people's results. The mathematics is present but not on display; the reader who buys Rovelli for the prose and stays for the physics is the reader this book is written for. The text uses two registers: first-person present-tense in the narrative chapters (Parts I, III, and IV), and third-person methodological discipline in the Counter-History Interlude and the five appendices.

The central technical claim is that one toolkit — built from three pieces, the Koopman operator (a way of lifting nonlinear dynamics into a linear Hilbert space), von Neumann's operator-algebraic formulation of quantum mechanics, and Minimum Description Length (the information-theoretic principle that the best model is the shortest faithful one) — turns out to be the right toolkit for problems across at least seven distinct scientific domains. Not because the framework is magical, but because the problems share a deep structural feature that the toolkit is tuned to. The book's job is to demonstrate the structural feature, name it, and show what the toolkit looks like in operation across seven concrete cases.

The seven domains are: classical celestial mechanics (the three-body problem, where the book applies the framework to a public catalog of 135,445 periodic three-body orbits and shows that the toolkit recovers a non-trivial classification); materials science (predicting failure modes in shape-memory alloys); information theory and AI safety (a falsifiable measurement of model degeneration under prolonged use); climate-system early-warning detection; immunology (a tractable model of immune-system state transitions); particle physics (a comment on a current 4-sigma anomaly in B-meson decays that the framework reads as a structural signature, not an artifact); and quantum information (a small experimental protocol the framework predicts should work on currently available quantum hardware).

Each domain gets the same disciplined treatment: name the invariant, name the transfer mechanism that carries the invariant from physics to the target domain, name the breakdown boundary where the transfer fails. The discipline is structural, not aesthetic. The book includes an appendix that engages a sharp critique from a Putnam mathematician (anonymized but represented in his own words) who challenges the cross-domain claim on philosophical grounds — and answers the critique with the bridge-discipline protocol that the book teaches.

The Counter-History Interlude (~10,000 words) traces the N-body arms race from Newton through 2026 and shows how the mathematical orthodoxy that grew up around the work — the British aesthete tradition stemming from G. H. Hardy, the French institutional tradition stemming from the Bourbaki collective — built the substrate the book's framework rests on, even while issuing dismissive verdicts on the kind of cross-domain work the book represents. The Interlude is the book's frankest piece of self-positioning. It explains why a working scientist with an unconventional credentialing history (independent researcher, no academic affiliation, public artifact track) is exactly the right person to write this book, and why the established orthodoxy was unlikely to write it themselves.

The book closes with a short Afterword — *What the Painter Survived* — that returns to the night of May 9 and the morning after.

The reading experience is designed to compound. A general-audience reader who reads only the twelve narrative chapters and the Interlude gets a complete book. A more technically-inclined reader who reads the five methodological appendices gets a working manual. A working scientist who reads the appendices first and the narrative chapters second gets a different book again — a working manual with a memoir attached. The structure is engineered for re-reading; the book is short enough to be read in a long weekend and dense enough to reward a third pass.

The unique angle that no comp title currently occupies: this is the first popular-physics book I am aware of where every chapter is bound to a public artifact (a Lean 4 formal proof, a Zenodo DOI, a Hugging Face dataset, a Cloudflare-deployed visualization) that the reader can audit in real time. Every metric, every

prediction, every benchmark in the book has a clickable URL or a DOI behind it. The Origin Story chapter, the seven-domain reading, the May 9 falsification — each lives in a public artifact the reader can independently verify. The book is, in that sense, the first popular-physics book written for the post-arXiv, post-GitHub generation: readable as prose, verifiable as research.

The "why now" is straightforward. The mathematical-formalization revolution that DeepMind, Harmonic, and Google's `formal-conjectures` repository have driven over the last twenty-four months has put rigorous formal mathematics within reach of an independent researcher with a laptop. The audience that follows that revolution — and the broader audience that follows Rovelli, Carroll, and Strogatz — has not yet been served with a popular book that treats one specific cross-domain framework with full discipline and full present-tense vulnerability. This book is that.

## Target Audience

**Primary audience.** Adult readers of popular physics and popular mathematics. This is the audience that bought Rovelli's *Order of Time*, Strogatz's *Infinite Powers*, Carroll's *Something Deeply Hidden*, Becker's *What Is Real?*, and Gleick's *Chaos*. The audience is well-defined, durable, and self-renewing across each new cohort of high-school-physics-curious adults, undergraduate physics and mathematics students, working scientists and engineers in adjacent disciplines, and informed generalists. The audience reads slowly and re-reads. The audience is comfortable with a paragraph that has a Greek letter in it as long as the prose around it carries the meaning. The audience wants to feel that the writer is honest about what is hard, generous with what is beautiful, and unembarrassed by enthusiasm.

**Secondary audience.** Working scientists, graduate students, and informed generalists who want a methodology book in disguise. The five methodological appendices are written for this audience — they are protocols a working researcher can use the next day. The book is a Trojan horse: the narrative chapters draw the general-audience reader; the appendices reward the technical reader; both serve the same underlying argument.

**Adjacent audiences (not primary).** Readers of trade nonfiction memoirs about scientific discovery — Sylvia Nasar's *A Beautiful Mind*, Walter Isaacson's *The Code Breaker*, David Quammen's *Spillover*. The first-person narrative chapters and the Counter-History Interlude sit in that tradition, and a reader who picked up the book for the memoir thread will find substantive science woven through it.

**Market size and durability.** Rovelli's *Order of Time* has been continuously in print since 2018 across multiple imprints and languages; *Seven Brief Lessons on Physics* (Rovelli's earlier book) sold well over a million copies in the U.S. trade market alone. Strogatz's *Infinite Powers* has been in print since 2019 and is widely adopted in undergraduate-level reading lists. Becker's *What Is Real?* and Carroll's *Something Deeply Hidden* both sustained substantial review attention from *The New York Times*, *The Atlantic*, *Nature*, *The Times Literary Supplement*, and the major science podcasts. The audience is large, demonstrably willing to buy, and recurring.

**Reachability.** The independent-researcher author has direct platforms in three of the largest mathematician/physicist communities online: Mathstodon (the federated Mastodon instance for working mathematicians, where DeepMind's `formal-conjectures` team is active), Bluesky (custom-domain verified handle, which has become the credible-science layer post-Twitter), and LinkedIn. Two of the comp

authors (Strogatz, Carroll) maintain heavy Bluesky and Twitter/X presences; the audience is already gathered on the platforms the author is on.

## About the Author

I am an independent researcher operating through MendozaLab and Oregon Coast AI LLC. I live on the Oregon coast. I have spent the last several years building a cross-domain research portfolio that has reached the stage where it can be put in front of a general audience, and *Transdimensional Painter* is my attempt to do that.

My public artifact track is the verifiable spine of this book. A merged pull request (PR #3746) to Google DeepMind's `formal-conjectures` Lean 4 repository added Erdős Problem 505 (Borsuk's conjecture) — one of the first contributions to that repository from an independent (non-institutional) researcher. A Zenodo-deposited preprint on the Erdős–Herzog–Piranian problem carries concept DOI 10.5281/zenodo.19184467 and is updated as the formalization progresses. My ORCID iD is 0009-0000-9475-5938. A multi-domain patent portfolio (nineteen patents across proteomics, quantum error correction, materials phase prediction, and information-theoretic methods) provides additional traceable signal of the technical track record the book draws on.

My credentialing history is unconventional. I do not have a tenured academic position. I have not been through a postdoctoral lineage. The book treats that as a feature, not an apology — the Counter-History Interlude makes the case directly: the kind of cross-domain work this book represents has historically been undone by the institutional incentives that produce conventional credentialing tracks, and the artifact-first, formally-verifiable, public-by-default research mode that has emerged in 2024-2026 makes the independent-researcher path more viable than at any time in the last sixty years.

I have been preparing for this book since 2022 in the form of working notes on Bluesky, Mathstodon, LinkedIn, and at [mendozalab.io](https://mendozalab.io). The work that became the seven-domain reading in *Transdimensional Painter* has been visible — in summary form — to my network throughout that period. The audience I will reach with the book is in significant part already reading me and is waiting for the book.

*Transdimensional Painter* is my first trade book. I am writing it because the framework it describes — and the discipline of cross-domain work under live falsification pressure — has not been laid out for a general audience anywhere, and the audience that reads Rovelli, Strogatz, and Carroll is the audience that already has the appetite for it.

## Marketing and Platform

**Author platform inventory.** As of the proposal date:

- **Bluesky** at [@ken-mendoza.bsky.social](https://ken-mendoza.bsky.social) (custom-domain verified handle), and MendozaLab account at [@mendozalab.io](https://mendozalab.io). Bluesky has become the credible-science layer for working mathematicians and physicists post-Twitter; Strogatz, Carroll, and Becker are all active there. My posts in the mathematical-formalization and dynamical-systems threads reach the audience the book is written for.
- **Mathstodon** at [mendozalab@mathstodon.xyz](mailto:mendozalab@mathstodon.xyz). Mathstodon is the federated-Mastodon instance for working mathematicians. The DeepMind `formal-conjectures` team and many Lean 4 / Mathlib

contributors are active there. My presence on Mathstodon predates the book and gives me direct reach into the formal-mathematics audience that *Transdimensional Painter* speaks to.

- **LinkedIn** at /in/kenmendoza, Mendoza Laboratory company page. The professional layer; reach into industry researchers in materials, AI, and quantum.
- **GitHub** at MendozaLab. Public-by-default repositories include the formal-proof work that underpins the book's mathematical chapters.
- **Zenodo** preprints, with the concept-DOI versioning that institutional readers expect.
- **kenmendoza.com** and **mendozalab.io**, both Cloudflare Pages deployments under my direct control. The book has a dedicated landing at `kenmendoza.com/book/` that hosts this proposal, the sample chapter, and the inbound query form for literary agents.
- **Hugging Face**, **NotebookLM**, and several research-tool platforms where I publish working artifacts in real time.

**Launch plan.** The book's launch will be organized in three concentric waves:

1. *Direct audience.* The Bluesky/Mathstodon/LinkedIn followers already reading my working notes — the audience that has watched the May 9 falsification and the morning-after recovery unfold in real time — is the natural Day 1 audience.
2. *Adjacent science-trade audience.* The Rovelli/Carroll/Strogatz/Becker/Gleick readership. Reachable via reviews and feature placements in *The New York Times Book Review*, *The Atlantic*, *Nature*, *Scientific American*, *Quanta*, *Aeon*, *Nautilus*, and *Wired*; via the major science-trade podcasts (Carroll's *Mindscape*, Steven Strogatz's appearances on *Radiolab*, Lex Fridman, Sean Carroll's own podcast); and via standard trade-PR channels.
3. *Working-scientist audience.* The Mathstodon/Bluesky-active scientific community is the third concentric ring. Reachable via guest posts on community-aggregator sites (*Combinatorics and More*, John Baez's blog, Tao's blog), via direct outreach to formal-mathematics community organizers, and via in-person speaking at relevant conferences (FCRC, ICM-adjacent events, IBM-Quantum educational outreach, the *formal-conjectures* community).

**Ongoing dissemination.** Beyond launch, the book is designed for ongoing engagement: each chapter has a public artifact backing it, and as those artifacts evolve (the Lean formalizations get stronger, the seven-domain demonstrations are extended), the book's website at `kenmendoza.com/book/` is updated. This creates a long-tail of touchpoints that conventional popular-physics books, with no public-artifact spine, cannot sustain.

**Independent-researcher angle as marketing asset.** The increased media attention on independent research — what *The Atlantic*, *Wired*, and *Nature* have covered as the "post-institution research moment" — gives the book a distinctive press hook. The first popular-physics book by an independent researcher operating at the rigorous-formal-mathematics layer is a story worth pitching, and the press contacts I have already made through prior outreach can be activated for the launch.

## Competition (Comp Titles)

The six primary comps were chosen because each occupies a clearly-defined shelf position that *Transdimensional Painter* extends in a specific direction.

***The Order of Time* — Carlo Rovelli (Riverhead, 2018)**

Rovelli's book demonstrates the appetite for serious, accessible, single-idea-deeply-unpacked popular physics. *The Order of Time* takes one philosophical-physical question — does time exist as a fundamental feature of reality — and walks the reader through it with a working physicist's voice. The book has been continuously in print since 2018 across at least eight languages and has anchored Riverhead's popular-physics list. The audience for Rovelli is the audience for *Transdimensional Painter* — slow readers who want depth, voice, and the working-physicist register. *Transdimensional Painter* differs in that it walks the reader through *seven* domains rather than one, and that it teaches the reader an operational discipline (the methodological appendices) rather than handing them a single philosophical conclusion. Rovelli's voice is contemplative; *Transdimensional Painter*'s voice is present-tense and operational. Rovelli does for time what *Transdimensional Painter* does for the cross-domain framework.

***Infinite Powers: How Calculus Reveals the Secrets of the Universe* — Steven Strogatz (Houghton Mifflin Harcourt, 2019)**

Strogatz's *Infinite Powers* is the closest mathematical comp. It demonstrates the trade-publishing appetite for a popular book on a serious mathematical idea (calculus) when the writer can carry the working-mathematician voice with full warmth. The book was a *New York Times* bestseller, received critical reviews from *The New York Times*, *Wall Street Journal*, and *Nature*, and is widely adopted in undergraduate reading lists. *Transdimensional Painter* takes the same approach but for a different idea — the operator-algebraic / minimum-description-length / Koopman-lift triad — and applies it across multiple scientific domains rather than within one mathematical idea. Strogatz's gift is making calculus feel like a human story; *Transdimensional Painter* tries to do the same for cross-domain mathematical thinking. Strogatz is the comp I am most directly trying to extend.

***Something Deeply Hidden: Quantum Worlds and the Emergence of Spacetime* — Sean Carroll (Dutton, 2019)**

Carroll's *Something Deeply Hidden* demonstrates the audience for a popular book that takes a contested foundational framework (Many-Worlds Interpretation) seriously, defends it without apology, and shows the reader what the defense looks like in working practice. Carroll's book sustained heavy review attention (*The New York Times*, *The Atlantic*, *Nature*) and remained on the Dutton list for an extended print run. The voice — committed but not evangelical, sophisticated but not condescending — is the voice *Transdimensional Painter* aspires to. The difference: Carroll defends a foundational interpretation; *Transdimensional Painter* defends a working methodology. Both books treat the reader as an intelligent adult who can be told what the author actually thinks. Carroll has been generous to independent-track thinkers on his *Mindscape* podcast; the audience overlap is high.

***What Is Real? The Unfinished Quest for the Meaning of Quantum Physics* — Adam Becker (Basic Books, 2018)**

Becker's *What Is Real?* is the social-history-of-physics comp. The book traces the social and institutional history that produced the Copenhagen Interpretation's near-century dominance of quantum-foundations discourse, and shows the reader why the social history matters for the physics. The book won the 2019 PROSE Award for Cosmology and Astronomy. The Counter-History Interlude in *Transdimensional Painter* sits in this tradition — it traces the N-body arms race from 1687 to 2026 and shows how the institutional mathematics community of the twentieth century (the Hardy aesthete tradition, the Bourbaki collective tradition) built the substrate the book's framework rests on while issuing dismissive verdicts on the cross-domain work the book represents. Becker's audience — readers who want the social-history layer of science — is one of *Transdimensional Painter*'s natural audiences.

### ***Chaos: Making a New Science* — James Gleick (Viking, 1987)**

Gleick's *Chaos* is the canonical popular-dynamics book and the deep ancestor of *Transdimensional Painter*. The book introduced a general audience to the language of dynamical systems — sensitive dependence on initial conditions, strange attractors, fractal geometry — at exactly the moment the field was consolidating into the mainstream of working physics. Gleick has remained in print since 1987 and continues to be a standard recommendation for the popular-dynamics audience. *Transdimensional Painter*'s three-body chapter and the methodology appendices (especially A4 — Mechanism-Find Pattern, and A5 — Lazy Loading) extend the Gleick tradition into the 2026 tooling era. Where Gleick introduced an idea, *Transdimensional Painter* shows the idea in active use across multiple domains with the working-scientist's discipline visible.

### ***The Second Kind of Impossible* — Paul Steinhardt (Simon & Schuster, 2019)**

Steinhardt's *The Second Kind of Impossible* is the structural-arc comp this book most closely resembles. Steinhardt spent thirty-five years searching for natural quasicrystals — a class of matter the physics establishment had declared impossible — and the book is the first-person account of that search, ending at the moment the search is vindicated by a natural sample recovered from a meteorite in eastern Russia. The book ships at the moment of *now we know*, not at the moment when every downstream theoretical question about quasicrystal stability has been settled. The narrative arc is the search itself; the science continues past the book's close. Simon & Schuster published the trade hardcover in 2019; the book sustained heavy review attention from *The New York Times*, *The Wall Street Journal*, and *Nature*, and remained on Steinhardt's house's catalog through paperback and audiobook releases. *Transdimensional Painter* shares this structural property explicitly. The book's central methodology arrives at a moment of mid-flight validation — the May 17 polyrhythm finding and its multi-precision verification — that closes a coherent mini-arc inside the book without claiming to close every downstream theoretical question. Steinhardt's audience is *Transdimensional Painter*'s audience; Steinhardt's narrative architecture is the architecture this book operates inside.

### **Secondary comp territory**

Beyond the primary six, the book also lives near *A Beautiful Mind* (Nasar), *Mind at Play: How Claude Shannon Invented the Information Age* (Soni and Goodman), *The Pleasure of Finding Things Out* (the working-scientist memoir tradition), and *Surely You're Joking* (the working-scientist memoir as comedy). The first-person narrative chapters and the working-researcher's account in Part IV of the Counter-History Interlude have a memoir-of-discovery thread that those books share. *Transdimensional Painter* does not

lead with the memoir thread, but it carries one for readers who want it.

### **What no current comp does**

No current popular-physics book combines: (a) a working-scientist first-person discovery narrative, (b) a rigorous cross-domain framework that operates across at least seven distinct scientific fields, (c) a publicly-verifiable artifact spine where every claim is bound to a Lean proof, a Zenodo DOI, or a deployed visualization, (d) a real-time falsification event integrated into the narrative, and (e) a set of operational methodology appendices the reader can apply. *Transdimensional Painter* is the first book I am aware of that attempts all five.

## **Chapter Outline**

The book is organized in four parts (twelve chapters) plus a Counter-History Interlude, five methodological appendices, and a short Afterword.

### **Part I — The Flash**

**Chapter 1 — The Flash on the Lemniscate.** Opens the book with a working scientist watching a mathematical animation on Mathstodon and noticing something the animation was not designed to show. A flash on the level set of a lemniscate. The chapter walks the reader through the distinction between watching an animation as a picture (its surface aesthetic) and watching it as instrumentation (a probe that lets reality push back). The lemniscate flash becomes the book's recurring figure: a small, easily-missed signal that, once noticed and pursued, opens onto a deeper structure. The chapter ends with the first articulation of the central technical move — Euclidean space is where the eye lives, Hilbert space is where the program lives, and the flash on the lemniscate is the first hint that these are two views of the same event.

**Chapter 2 — Two Geometries, One Event.** Develops the dual-view idea introduced in Chapter 1. Euclidean geometry shows you the object; Hilbert geometry shows you the computation that makes the object identifiable. The chapter introduces, in plain language, the Koopman operator — Bernard Koopman's 1931 construction that lifts nonlinear classical dynamics into a linear Hilbert-space operator theory. The lift is the bridge: in the Euclidean view, an orbit looks like a curve correcting itself; in the Hilbert view, the correction looks like a projection.

**Chapter 3 — The Koopman Lift.** A historical and operational chapter. Bernard Koopman's 1931 PNAS paper waited eighty years for its operational audience. The chapter tells the story of why — what the 1931 mathematical-physics community was equipped to see and what it was not — and then walks the reader through how the lift works on the simplest possible nonlinear example. By the end of the chapter the reader can articulate what a Koopman lift does and why it matters, in their own words.

**Chapter 4 — Minimum Description Length.** Introduces the second pillar of the framework: Minimum Description Length (MDL), the information-theoretic principle that the best model is the one that minimizes the total description length of the data plus the model. The chapter teaches MDL through a working-researcher's discipline I learned from a graduate advisor at Cornell: *optimal ignorance*. Your brain has only so many coat hangers; use them wisely; make them count. MDL is the formal version of the principle. The chapter's mathematical heart is the connection between arithmetic-mean conics (ellipses, of

the kind Kepler used to describe planetary orbits) and geometric-mean conics (lemniscates, of the kind Erdős, Herzog, and Piranian asked about in 1958), and the way that connection makes the lemniscate the equal-information level set of a polynomial — the structural fact, due to Hilbert in 1897 and extended by Walsh in the 1920s and 1930s, that underwrites polynomial approximation theory and gives MDL its sharpest geometric instantiation. The chapter ends with the third pillar — Riemannian geometry — and explains how MDL, Riemannian geometry, and the Koopman lift form one coherent toolkit.

## Part II — The Cathedral

**Chapter 5 — Nature's Compute Stack.** Introduces the book's image of Nature as a layered computing system. Five levels: configuration space at the bottom, then the Koopman lift, then the Hilbert amplitude space, then the projective Hilbert / Kähler structure, then the C\*-algebra / Jordan-algebra / division-algebra level at the top. Each level is the right register for a different class of question. The chapter is the book's structural backbone — once the reader has the stack, every subsequent chapter shows the stack in active use.

**Chapter 6 — The Information Exhaust.** Develops the methodological idea that the signal in a complex system often lives in the residual the cheaper projection cannot absorb — the "information exhaust." The chapter shows the idea operationally on a small but real example: a covariance-tail signature that the simple PCA projection misses but that the Koopman lift captures cleanly. The chapter is the first place the reader sees a public artifact (a Cloudflare-deployed visualization) being used as evidence within the chapter; the convention is established here and carried throughout the rest of the book.

**Chapter 7 — The Painter Enters.** The book's pivot chapter. Up to this point the reader has been learning the toolkit. Here the toolkit goes to work. The chapter walks through seven scientific domains in sequence — celestial mechanics, materials science, AI safety, climate, immunology, particle physics, quantum information — and shows the same three-question discipline (name the invariant, name the transfer mechanism, name the breakdown boundary) applied to each. The chapter is intentionally short, eight to ten pages, because the seven domains get fully unpacked in Parts III and IV. The painter image — a working scientist with one toolkit, painting across seven domains — is introduced here.

## Part III — The Instrument

**Chapter 8 — The Body-Tensor Reveal.** The book's most technically dense chapter, but the densest passage in the book is still readable by a careful general-audience reader. The chapter introduces the *body tensor* — a structured object with nine slots (orbit, spin, attitude, inertia, shape, tidal response, internal modes, observation, coupling) that organizes the description of a physical body for the framework's purposes. The chapter shows how the body tensor turns an orbit (a one-dimensional curve in three-space) into a fingerprint (a structured high-dimensional object that supports classification). The instrument the rest of the book uses is now built.

**Chapter 9 — Reading the Three-Body Catalog.** Applies the body tensor to a real, public catalog: the 135,445 periodic three-body orbits collected by the Liao group from 2017 onward and made publicly available. The chapter shows the framework reading the catalog at full recall, recovering known orbit classes, and surfacing structural features that are visible in the body-tensor representation but not in the raw orbital data. The chapter is the book's first "the framework actually works on something real" chapter.

Each claim in the chapter is bound to a public artifact (a Hugging Face dataset and a deployed visualization).

**Chapter 10 — Across the Domains.** Walks the framework across the six remaining domains (materials, AI, climate, immunology, particle physics, quantum information) in turn. Each domain gets the same disciplined treatment as the three-body case in Chapter 9: name the invariant the framework reads, name the transfer mechanism, name the breakdown boundary. The chapter is the book's broadest empirical chapter and the chapter most likely to draw a general-audience reader who is interested in one specific domain (a materials scientist interested only in the materials section, say). A 2026-05-10 addendum integrates a recent LHCb 4-sigma angular-distribution anomaly in B-meson decays as a putative-but-recent structural signature the framework reads cleanly.

## Part IV — The Discipline

**Chapter 11 — The Artifact Gate.** The book's central methodology chapter and the book's most vulnerable chapter. Walks the reader through the night of May 9, 2026, in real time. A specific prediction the framework was making turned out to be wrong. The falsification was clean. The chapter shows what the artifact gate is (a protocol for binding every claim to a publicly-verifiable artifact), what the gate caught on May 9 (the falsification was a gate-caught failure, not a silent embarrassment), and what the gate cannot catch (the deeper question of whether the framework's residual structure is meaningful or coincidental). The chapter is honest about the limits of the methodology.

**Chapter 12 — What Came Back.** The morning-after chapter. Specific. Concrete. The chapter walks the reader through what survived the May 9 falsification, what the survival implied for the next experiment, and what the methodology produced as the recovery vector. The chapter closes Part IV with the framework intact but narrower — and explains why "intact but narrower" is the right outcome for an honest cross-domain methodology, not a defeat.

## Counter-History Interlude

**Counter-History — Genius and Kryptonite, 1687–2026.** The book's longest interlude (~10,000 words). Five parts. Part I traces the N-body arms race from Newton through Poincaré, Birkhoff, Koopman, von Neumann, Wintner, Siegel, Shannon, KAM theory, Smale, Conley, Chenciner-Montgomery, the Liao group, and 2026. Part II traces the Hardy aesthete tradition (*A Mathematician's Apology*, 1940) and the Bourbaki institutional tradition (*Éléments de Mathématique*, 1939 onward) and shows the convergence: a mathematics-is-for-mathematicians orthodoxy that built the substrate the working framework rests on while issuing dismissive verdicts on the kind of cross-domain work the book represents. Part III walks several specific characters (Lagrange, Clausius, Boltzmann, Bohr, Koopman, von Neumann) and pairs each one's genius with their specific kryptonite. Part IV is a working-researcher's first-person account of how the methodology came together — UCLA microbiology training, Arbor Vita drug discovery, Cornell philosophy-of-science training, a 2023 conversation with Aravind Srinivas / Perplexity about ontology-aware AI, and the assembly of the Erdős Atlas and the Collider as the working tools the framework relies on. Part V closes the Interlude with the synthesis. The Interlude is the book's most opinionated piece of writing and the place where the working-scientist voice is most exposed.

## Methodological Appendices

**A1 — Information Exhaust.** The residual axis. What the cheaper projection cannot absorb. The protocol the working researcher uses to find the residual signal in a real system.

**A2 — Nature's Compute Stack.** The vertical hierarchy. Five levels named, with operational examples of each. The map the working researcher uses to know which level of Nature's stack a given problem lives in.

**A3 — Bridge Discipline (and the Critic's Objection).** The three-question test. Name the invariant. Name the transfer mechanism. Name the breakdown boundary. The appendix engages a sharp four-part critique from a Putnam mathematician (anonymized but represented in his own words) and answers each part of the critique with the discipline the book teaches.

**A4 — Mechanism-Find Pattern.** Six historical examples (Fourier on heat conduction, Boltzmann on gases, Heisenberg on quantum, Wilson on phase transitions, Metropolis on Monte Carlo, Galois on solvability) of the same pattern: a mechanism is found, the mechanism collapses the compute requirement, and the field that uses the mechanism moves orders of magnitude faster. The appendix closes with a 340-year three-body arc and a cost-ladder showing how the same pattern is playing out in 2026.

**A5 — Lazy Loading.** The architectural axis. Cheap routing signatures first; expensive authority computation only on the survivors. The appendix includes a present-tense worked example: a May 2026 generator-branch experiment (the "plus-one scout") that ran through the framework's gate cascade in real time and produced a clean negative finding the methodology's selector absorbed as a structured negative label.

## Afterword

**What the Painter Survived.** A short coda (~2,000 words). Returns to the night of May 9. What the falsification did, what survived, what the survival meant, and what the methodology produced afterward. The Afterword is the book's quietest piece of writing and the place where the working-scientist voice is most settled.

## Sample

The book opens with a working scientist watching a mathematical animation and noticing something the animation was not meant to show.

*It did not begin with an equation. It began with a motion. I was watching Dan Pike's lemniscate animations on Mathstodon — the kind of mathematical animation most people treat as a beautiful toy. A curve breathes. A level set folds. A polynomial field becomes visible for a second, then hides again behind the smooth authority of the screen. But something in the animation did not feel decorative. There was a flash on the level set. Not a glitch exactly. Not random jitter. It was the kind of motion a careful eye sees before the mind has language for it: the system started to misbehave, then snapped back into order. A local instability appeared, like the orbit was about to leave the lawful track, and then the geometry seemed to correct it. The curve did not merely trace a path. It acted as if some deeper program had reached in and re-positioned the orbit back into normal behavior. That was the first clue.*

The full opening chapter is available in the accompanying sample-chapter PDF.

## **Production timeline and contact**

The current draft is approximately seventy thousand words. Final target is seventy-five thousand to eighty-five thousand. Revisions in flight: chapter-level polish on Chapters 1, 4, 5, and 9; copy-edit pass on Chapter 12 and the Afterword; finalization of one technical figure in Chapter 8. The methodological appendices are at final-draft status. The manuscript can be delivered in completed form within approximately one quarter of a signed agreement.

**A note on AI-assisted drafting.** Large language models (Anthropic Claude) were used as drafting and editing assistance during preparation of this proposal and the manuscript. All scientific claims, public-artifact citations, the methodological framework, and the narrative voice are my own and were authored and verified independently. No AI system was used to generate primary data or novel mathematical results.

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Thank you for the consideration.